

# The Integrated National Energy and Climate Plan (draft)

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MINISTRY OF ENERGY  
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## List of acronyms

AA	Association Agreement
AAC	Already Allocated Capacity
ACB	Ananiev-Chernautsy-Bohorodchany gas pipeline
AGEPI	State Agency for Intellectual Property
AIT	Average Interruption Time
ANACEC	National Agency for Quality Assurance in Education and Research
ANRE/NAER	National Agency for Energy Regulation
ASM	Academy of Sciences of Moldova
ATC	Available Transmission Capacity
ATI	Ananiev - Tiraspol – Ismail gas pipeline
ATULBD	Administrative Territorial Units Left Bank Dniester
BtB	Back-to-Back
CACM	Capacity Allocation and Congestion Management
CAIDI	Customer Average Interruption Duration Index
CHP	Combined Heat and Power plant
DCFTA	Deep and Comprehensive Free Trade Area
DSO	distribution system operator
EBRD	European Bank for Reconstruction and Development
EEA	Energy Efficiency Agency
EFET	European Federation of Energy Traders
EIB	European Investment Bank
EIC	Energy Identification Code
ENP	European Neighborhood Policy
ENPEP	Energy and Power Evaluation Program
ENS	Energy Not Supplied
ENTSO-E	European Network of Transmission System Operators – Electricity
ENTSO-G	European Network of Transmission System Operators for Gas
ESCO	Energy Service Company
ETS	European Trading Scheme of CO <sub>2</sub>
EU	European Union
EV	Electrical vehicles
FACTS	Flexible AC Transmission System
FCA	Forward Capacity Allocation
FEZ	Free Economic Zones
FNDRL	National Fund for Local and Regional Development
GCF	Green Climate Fund
GCS	Gas compression station
GD	Government Decision
GDP	Gross Domestic Product
GDS	Gas Delivery Station
GEF	Global Environmental Facility
GFEC	Gross final energy consumption
GHG	Greenhouse gas
GII	Global Innovation Index
GMS	Gas Measuring Station
GWh	Gigawatt hours
HPP	Hydro Power Plant

ICT	Information and communication technologies
IEA	International Energy Agency
IP	interconnection point
ITMOs	Internationally Transferred Mitigation Outcomes
JSC	Joint Stock Company
KfW	Kreditanstalt für Wiederaufbau
Km	kilo meters
kV	kilo Volts
kW	kilo Watts
LEDS	Low Emissions Development Strategy
LLC	Limited Liability Company
LNG	Liquified Natural Gas
LPG	Liquified Petroleum Gas
LULUCF	Land Use, Land Use Change, and Forestry
MaaS	Mobility as a Service
MAED	Model for Analysis of Energy Demand
Mcm	Million Cubic Meters
MD	Republic of Moldova
MDL	Moldova Leu
MEPS	Minimum energy performance standards
MEPUI	Moldova Energy Project Implementation Unit
MESA	Moldova Energy Security Activity
MGRES	Moldova Thermal Power Plant in Transnistria
MIPs	Multifunctional Industrial Platforms
Mpgkm	Million passenger kilometers
MRV	Measurement, Reporting, and Verification
Mtnkm	Million tonne kilometres
MW	Megawatts
MWh	Megawatts hour
NAMA	Nationally Appropriate Mitigation Action
NARD	National Agency for Research and Development
NCP	National Contact Point
NDC	Nationally Determined Contribution
NECP	Integrated National Energy and Climate Plan
NEEAP	National Energy Efficiency Action Plan
NEEP	National Energy Efficiency Program
NEF	National Ecological Fund
NEK Ukraine	National Energy Company of Ukraine
NG	Natural gas
NREAP	National Renewable Energy Action Plan
NTC	Net Transfer Capacity
NZEB	Near Zero Energy Building
O&M	Operation and Maintenance
ODA	Organization for Entrepreneurship Development
ODIMM	Organization for the Development of the Small and Medium Enterprises
OECD	Organisation for Economic Cooperation and Development
OHL	Overhead Transmission Line of electricity
OPCOM	Romanian gas and electricity market operator

OPL	Overhead power line
PCI	Projects of Common Interest
PJSC	Public Joint Stock Company
PMI	Projects of Mutual Interest
PPP	Purchasing power parity
PPP\$	Power Purchase Parity to USD
PV	Photo Voltaic
PV	photovoltaic
R&D	Research and Development
RBP	Regional Booking Platform
RDI	Research, Development and Innovation
RED	Rețele Electrice Distribuție/ Distribution Electric Networks
RED II	Renewable Energy Directive
REMIT	Regulation on Wholesale Energy Market Integrity and Transparency
RES	Renewable Energy Sources
RI	Razdelinaia-Ismail pipeline
RM	Republic of Moldova
RO	Romania
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAM	Scenario with additional measures
SDKRI	Sebelinca-Dnepropetrovsk-Krivoi Rog-Ismail pipeline
SE	State enterprise
SEA	Strategic Environmental Assessment
SIME	energy management informational subsystem
SME	Small and Medium Sized Enterprise
STARS	Support for the Modernization of the Energy Sector in the Republic of Moldova
STI	Science, Technology and Innovation
TBRF	Trans-Balkan reverse flow
TFC	Total final energy consumption
TIMES	The Integrated MARKAL-EFOM System
Toe	Ton of oil equivalent
TPP	Thermal Power Plant
TPS	Total primary energy consumption
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UA	Ukraine
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organisation
USAID	US Agency for International Development
USD	United States dollar
VAT	Value Added Tax
WASP	Wien Automatic System Planning
WEM	Scenario with Existing Measure
WIPO	World Intellectual Property Organization of United Nations
WPM	Scenario with Planned Measures

## Introduction

The Republic of Moldova has officially launched in November 2022 the preparation of the analytical, institutional and regulatory preconditions for the development of the Integrated National Energy and Climate Plan (NECP) for the period 2025-2030. Itsself modelling exercise for energy sector started in 2019.

Thus, Moldova started to develop the first NECP in accordance with international energy and climate commitments. Moldova's NECP covers the five dimensions of the Energy Union: (i) decarbonization, (ii) energy efficiency, (iii) energy security, (iv) internal energy market and (v) research, innovation and competitiveness. The NECP sets out the goals and national contributions of Moldova for 2030 in the respective dimensions and contain a description of the policies and measures envisaged to be implemented to achieve the goals. These are complemented by an analytical base consisting of a description of the current situation in Moldova in the five dimensions, as well as scenarios up to 2050, which are based on solid and consistent data, assumptions and modeling exercises.

The NECP serves as a strategic planning framework and policy document that will guide Moldova's contribution to achieving the objectives and targets towards 2050, while also identifying the necessary measures to achieve them in the period up to 2030. The plan aims to support activities for economic, social and environment development of Moldova, and sustainable development, while focusing on providing clear benefits for citizens, businesses and investors.

The key objective of NECP is the creation of a stable regulatory and market framework and of a single regulatory space for trade, the enhancement of security of supply, the improvement of the environmental situation and related energy efficiency, as well as the development of energy from renewable sources.

Integrated National Energy and Climate Plans, addressing the five key dimensions, are crucial tools for the development of the strategic energy and climate policy planning.

# SECTION A: NATIONAL PLAN

## 1. OVERVIEW AND PLAN DEVELOPMENT PROCESS

### 1.1. Executive Summary

#### i. Political, economic, environmental, and social context of the plan

The Integrated National Energy and Climate Plan (NECP) of the Republic of Moldova for the period 2025-2030 is based on existing national strategies and plans. Most notably, it is developed on the basis of the relevant primary legislation in all sectors, official intentions of decision-makers to promote and implement policies and measures for decarbonization of economic sectors and of already adopted/discussed concepts like: Concept of the Energy Strategy 2050, Concept of Long-term buildings stock renovation strategy, etc. It provides an overview of the current state of the art of the energy system and the existing energy and climate policy framework. It also provides an overview of the national targets for each of the five key dimensions of the Energy Union and the appropriate policies and measures to achieve those targets. The NECP pays a particular attention to the targets to be achieved by 2030, including the reduction in greenhouse gas emissions, increase of energy production from renewable sources, promotion the energy efficiency, and strengthening of gas and power system interconnections. The NECP is consistent and contributes to achievement of UN's Sustainable Development Goals. Thus, the NECP addresses the 5 dimensions of the EU and Energy Union:

- Dimension 1: Decarbonization
- Dimension 2: Energy efficiency
- Dimension 3: Energy security
- Dimension 4: Internal energy market
- Dimension 5: Research, innovation and competitiveness

The objective of the NECP is to outline existing, planned, and possible investments and policies to be implemented in the current decade. The document's adoption does not in itself result in changes to tax policy, to allocated budgets, or to the regulatory framework described within the text.

The NECP addresses how significant evolutions since 2019 in the legislative, socio-economic and geopolitical framework for energy and climate policies affected the ambition and scope. Social aspects are also very important in terms of tackling energy poverty and providing to all consumers accessibility to sustainable energy for their needs. These issues are also correspondingly addressed in this document.

Economic aspects are another particularity of Moldova that should be addressed, as currently competitiveness of local production is low compared to that of the EU and access of local companies to the EU market is very difficult, energy intensity being one of the factors. Policies

and measures planned to be implemented inside of the NECP aim to overcome these difficulties and to help local companies to become more competitive both on local and EU or other markets.

The Republic of Moldova faces several structural economic problems, entirely separate from short-term crises: it usually imports around 75% of its energy resources (in the past 3 years this amount ranged from 67% to 80% accordingly to the National Bureau of Statistics); it has an aging and diminishing population that is ethnically and linguistically diverse, and is still mostly rural; it has an extremely open economy, whose properly-documented citizens have access to both the EU and post-Soviet visa-free; it has a "frozen conflict" within its administrative-territorial units on the left bank of the Dniester River (ATULBD)<sup>1</sup> (also referred to as 'Transnistria', or 'the Transnistrian region'; the rest of the country's territory controlled by constitutional authorities is sometimes referred to in this document as 'the Right bank of the Dniester River'). The NECP includes measures and policies only for the administratively controlled territory of the Republic of Moldova, as targets adopted within the Energy Community refer only to this part of its territory<sup>2</sup>.

Among Moldova's key structural challenges, the energy sector figures prominently. Moldova imports all its primary fuel needs (gas and oil), and electricity production is concentrated in ATULBD, which supplies the rest of the country with almost 80% of its requirements (this indicator differs from year to year). Its electricity network is interconnected and synchronised with that of Ukraine - and with all of ENTSO-E through the neighbour country - Romania. Until recently, Moldova was heavily reliant upon Russian gas – only recently has a gas pipeline been built, connecting the Republic of Moldova to Romania and respectively to ENTSO-G.

Reform and investment in the energy sector are critical to providing a stronger basis for solid economic growth, as well as for energy security and meeting Moldova's international commitments for sustainable energy.

Along with Georgia and Ukraine, Moldova signed an Association Agreement (AA) with the European Union which fully entered into force on July 1<sup>st</sup>, 2016, after being applied provisionally since September 2014. The AA includes a Deep and Comprehensive Free Trade Area (DCFTA) with the EU which aims at diversifying exports and improving the legal framework for a market economy.

The stabilization and resilience building of neighboring countries are the EU's main political priorities outlined in the European Neighborhood Policy (ENP) review of May 2017<sup>3</sup> and in the EU Global Strategy of June 2016<sup>4</sup>. Sustainable economic development is the key to stabilization and to strengthening European Neighborhood countries' ability to tackle some of the challenges that are also a concern to the EU – from migratory flows, to radicalization, social instability and

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<sup>1</sup> Subsequent to Art. 16 and Annex No. 5 of the Law No. 764 as of 27.12.2001 on the administrative-territorial organization of the RoM, ATULBD can be assigned special forms and conditions of autonomy; it includes: 1 municipality, 9 towns, 2 localities included in towns, 69 communes and 135 localities included in communes.

<sup>2</sup> NECP includes data on GHG emissions for the entire country, presented separately for the administratively controlled territory and separately for ATULBD

<sup>3</sup> Joint Report to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Implementation of the European Neighborhood Policy Review, May 2017. Available at [https://eeas.europa.eu/sites/eeas/files/2\\_en\\_act\\_part1\\_v9\\_3.pdf](https://eeas.europa.eu/sites/eeas/files/2_en_act_part1_v9_3.pdf)

<sup>4</sup> [https://www.eeas.europa.eu/eeas/global-strategy-european-unions-foreign-and-security-policy\\_en](https://www.eeas.europa.eu/eeas/global-strategy-european-unions-foreign-and-security-policy_en)

the urgent need to provide positive perspectives for growing and predominantly young populations. In this regard, supporting Moldova's political, social and economic development opportunities towards political association and economic integration with the EU will contribute to NECP goals.

The Energy Strategy 2030 of the Republic of Moldova has set the strategic objective of integrating the national energy market with the internal energy market of the European Union by fulfilling obligations under the Energy Community (EnC). However, this strategy is currently under the process of revision, and has been for quite some time. Moreover, as noted by the Energy Community secretariat in its 2021 progress report on Moldova, progress against the outlined strategic objective is mixed at best. An energy market transformation is underway as part of the Energy Community Treaty implementation including the adoption of numerous pieces of legislation in 2019 – 2022, which will have a strong direct and indirect impact on the NECP.

Meeting Moldova's obligations will require further transposition of the Energy Community *acquis* into national legislation, consistent and determined implementation, further liberalization of the energy markets, development of renewable energy sources, and openness and increased interconnection to the EU energy systems, are some key factors for NECP. Interconnection with the EU will require both technical improvements and considerable investment in infrastructure.

Moreover, as a full member of the Energy Community Treaty, Moldova is in the process of following the provisions of the EU Directives and transposing the *acquis communautaire* according to the Energy Community work program. On 18 November 2015, the European Commission adopted its first Communication on the State of the Energy Union, stating that NECP's, addressing all five key dimensions of the Energy Union, are crucial tools for the implementation of the Energy Union Strategy and for the development of more strategic energy and climate policy planning. As part of the 2015 State of the Energy Union, the European Commission issued a Guidance to EU Member States on integrated NECP's. This document provides the basis for EU Member States to start developing national plans for the period 2021 to 2030 and sets out the main pillars of the governance process. NECP's will reduce the administrative burden, enhance transparency for Member States, and ensure investor certainty until the year 2030 and beyond.<sup>5</sup> Following up from this, the Energy Community Secretariat also issued Policy Guidelines for its Contracting Parties related to NECP's in 2018<sup>6</sup>.

The NECP covers the period from 2025 to 2030, setting the pathway to transitioning the economy and energy systems towards a more sustainable future. The plan builds upon what each Contracting

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<sup>5</sup> Similar to the EU, Energy Community Contracting Parties committed to monitoring and reporting in the areas of renewables, energy efficiency, and greenhouse gas (GHG) emissions as well as other information relevant to climate change. The Paris Agreement further defines the climate change related reporting obligations for the period after 2020 by establishing an enhanced transparency framework for action and support. In this context, the Energy Community adopted the Recommendation 2018/01/MC-EnC and Policy Guidelines PG 03/2018 on preparing for the development of NECP's addressing the five dimensions of the Energy Union by the Contracting Parties of the Energy Community. The Recommendation aims at building the analytical, institutional and regulatory preconditions for the development of integrated NECP's. The Recommendation and the Policy Guidelines are not legally binding, therefore does not impose obligations on Contracting Parties, however, have a specific timeline of actions and set the deadline of submission as no later than the end of 2020. Therefore, as indicated in Article 5 of the Recommendation, the preparation of national plans should be an iterative and dynamic process starting in 2018.

<sup>6</sup> Energy Community Secretariat (June 2018) Policy Guidelines on the development of National Energy and Climate Plans under Recommendation 2018/01/MC-EnC - PG 03/2018. Available at [https://www.energy-community.org/dam/jcr:c9886332-a1f5-43ee-b46c-31c637aedfa6/PC\\_03\\_2018\\_ECS\\_NECP.pdf](https://www.energy-community.org/dam/jcr:c9886332-a1f5-43ee-b46c-31c637aedfa6/PC_03_2018_ECS_NECP.pdf)



Party should have delivered in their policies for 2020 (as a baseline) and include a perspective until 2050. This will ensure consistency with long-term relevant policy objectives at EU, UNFCCC and Energy Community level. The NECPs may be built upon Contracting Parties' existing national energy and climate policy strategies. They should take a holistic approach and address the five main dimensions of the Energy Union in an integrated way<sup>7</sup>.

## ii. Overarching strategy covering the five dimensions of the Energy Union

The Integrated National Energy and Climate Plan has to take a holistic approach and address the five dimensions in an integrated way, as per provisions of the Rulebook on the detailed content and guidelines for determining the national goals of the Integrated National Energy and Climate Plan<sup>8</sup>.

The **Decarbonization** dimension of Moldova is based on the Paris Agreement of 2015, which is intended to limit global warming to well below 2 degrees Celsius when compared with pre-industrial levels.

Moldova is a signatory to the Paris Agreement and in March 2020 presented its updated Nationally Determined Contribution (NDC), to the UNFCCC Secretariat. The updated NDC of Moldova includes:

- A new economy-wide unconditional target<sup>9</sup> to reduce greenhouse gas emissions by 70% below 1990 levels by 2030. According to the latest National Inventory Report “1990-2020: Greenhouse Gases and Sinks in the Republic of Moldova”<sup>10</sup>, in 2020 Greenhouse Gas (GHG) emissions were **68.7%** less than in 1990.
- A new economy-wide conditional target<sup>11</sup>, under which emissions could be reduced by up to 88% below 1990 levels.

Moldova has submitted in 2023 its Fifth National Communication to UNFCCC, with detailed assessment of decarbonization measures for all sectors<sup>12</sup>.

The Law no. 10 of February 26<sup>th</sup>, 2016<sup>13</sup> on promoting energy from renewable sources outlines the regulatory framework for renewable electricity. Government Decision no. 401 of 8 December

<sup>7</sup> The new “Guidance to Member States for the update of the 2021-2030 national energy and climate plans”, provides recommendations on how to update EU Member State National Energy and Climate Plans (NECP’s), the EC provided a template for the progress reports, that was due by March 2023, and draft guidance on how EU countries should have updated their plans by June 2023. This update exercise provides a unique opportunity to reflect the higher level of ambition for 2030 and take account of other developments. The “Implementing Regulation on structure, format, technical details and process for the integrated national energy and climate progress reports” shows that Contracting Parties were required to submit, by 15 March 2023, their first progress reports on how their respective NECPs are being implemented. This regulation provides the format and technical details for these biennial progress reports. The “Guidance on Cost-Benefit Sharing in Cross-border Renewable Energy Cooperation Projects” highlights ways in which countries can work better together to achieve both individual and collective renewable energy targets, for example, focusing on renewables investment in areas with the greatest geographical potential. With many administrative issues hindering cross-border cooperation, notably on how to share costs and benefits, the document provides guidance on how to find mutually beneficial solutions to these issues.

<sup>8</sup> [https://www.energy-community.org/dam/jcr:c9886332-a1f5-43ee-b46c-31c637aedfa6/PG\\_03\\_2018\\_ECS\\_NECP.pdf](https://www.energy-community.org/dam/jcr:c9886332-a1f5-43ee-b46c-31c637aedfa6/PG_03_2018_ECS_NECP.pdf)

<sup>9</sup> An unconditional target is a commitment to reach the target without any additional support.

<sup>10</sup> [https://unfccc.int/sites/default/files/resource/Moldova\\_NIR\\_1990-2020\\_EN\\_web.pdf](https://unfccc.int/sites/default/files/resource/Moldova_NIR_1990-2020_EN_web.pdf)

<sup>11</sup> A conditional target is a commitment that is conditional upon the availability of additional technology, know-how and financial sources.

<sup>12</sup> <http://clima.md/lib.php?!=en&idc=81>

<sup>13</sup> [https://www.legis.md/cautare/getResults?doc\\_id=98936&lang=ro](https://www.legis.md/cautare/getResults?doc_id=98936&lang=ro)

2021<sup>14</sup> sets a maximum limit of **410 MW** of renewable energy capacity to be reached by 2025. Out of this **165 MW** has been set for large-scale producers through auction.

The **Energy Efficiency** dimension implementation in Moldova is based on the principle of “energy efficiency first”. The EU legislative package "Clean energy for all" is partially transposed into the new Law on energy efficiency of Moldova.

Energy efficiency is the 1<sup>st</sup> priority for increasing Moldova’s energy security and resilience. The approved amendments to the Law on Energy Efficiency<sup>15</sup> create the favorable legal framework for the more ambitious obligation of projects in the field of energy efficiency, which contribute to the reduction of energy consumption and greenhouse gas emissions. The Republic of Moldova commits to implement energy efficiency at 3% per year in the buildings of central public administration authorities and to save annually at least 0,8% of the average value of the energy consumption recorded between January 1<sup>st</sup>, 2019 and January, 1<sup>st</sup>, 2022 starting from 2024.

It is important to provide indicative milestones of the long-term strategy for the renovation of the national stock of residential and non-residential buildings, both public and private, the roadmap with domestically established measurable progress indicators, an evidence-based estimate of expected energy savings and wider benefits, and the total floor area to be renovated or equivalent annual energy savings in accordance with long-term strategy for renovation of national stock of residential and non-residential buildings.

In the building sector a well-balanced mixture of policy measures, financing, fiscal and regulatory measures, will be implemented in order to support the energy renovation of the building stock and to attain the specified renovation rate. Financial support is necessary to be provided for fostering the energy upgrade of the residential and non-residential buildings. Furthermore, the most cost-effective individual heating and cooling technologies will be promoted through specialized instruments. For the case of the non-residential buildings, the planned programs will focus on measures for energy efficiency improvements taking into consideration their energy saving potential and economic effects.

The **Energy Security** dimension is based on the high dependency of Moldova on gas and oil products imports. Moldova imports 100% of gas and oil products, while 80% of electricity is provided by the ATULBD.

The goal of energy security is to reduce the dependence on energy imports and to diversify energy resources and import routes. This includes encouraging use of domestic biomass resources to a level appropriate within the context of decarbonization objectives, securing potential gas storage, continuing to expand the use of renewable energy to meet domestic needs (wind and solar), and encouraging energy efficiency in transformation, transmission, and distribution of energy. Moldova also plans to significantly increase interconnectivity of its power system by constructing new AC lines to Romania and ENTSO-E, which will increase security of electricity supply and

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<sup>14</sup> [https://www.legis.md/cautare/getResults?doc\\_id=128987&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128987&lang=ro)

<sup>15</sup> [https://www.legis.md/cautare/getResults?doc\\_id=137465&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=137465&lang=ro#)

create new market opportunities in Moldova and in the region. The dimension of energy security has been elaborated within the framework of the Ten-Year Network Development Plan of TSO Moldova, Ten-Year Development Plan of Moldovagaz and Vestmoldtransgas, and draft Energy Strategy 2050<sup>16</sup>.

The **Internal energy market** dimension is driven by the fact that Moldova has jointed to ENTSO-E in 2022. The current Energy Strategy of Moldova<sup>17</sup> states the strategic objective of integration into the European Union and its internal energy market, by fulfilling obligations under the Energy Community Treaty.

An important pillar of the AA/DCFTA is aligning Moldovan laws to selected EU legislative acts, thereby supporting improvements in governance, strengthening the rule of law and providing more economic opportunities by opening further Moldovan access to the EU market for goods and services. The following is relevant for the country's energy sector:

- Energy sector issues are covered in Chapter 14 of the AA and in particular in article 77 which includes, among others:
  - Energy strategies and policies;
  - The development of competitive, transparent and non-discriminatory energy markets in accordance with EU standards;
  - Energy infrastructure, including projects of common interest; and
  - Enhancement and strengthening of long-term stability and security of energy supply.

The key priorities for cooperation between the EU and Moldova are identified as increased energy security and a better functioning energy market. The EU provides funding towards strengthening the capacity for energy sector reform and increased energy efficiency.

EU support for the alignment of Moldovan legislation to EU regulations in the energy sector is carried out under the framework of the Energy Community; alignment should, in due course, contribute to the extension of the EU internal energy market to Moldova.

In addition, Moldova is one of the focus countries of the EU4Energy program<sup>18</sup> implemented by the International Energy Agency, Energy Community Secretariat and the Energy Charter Secretariat.

By approving the Laws on Natural Gas and Electricity in May 2016, Moldova transposed most of the provisions of the Third Energy Package of the Energy Community into national legislation, however, much remains to be done. Renewables and energy efficiency regulations are also in the process of alignment to the Third Energy Package. The Government of the Republic of Moldova implements the gas market mechanism by using the virtual reverse (backhaul) at the point of merging with Ukraine. This will allow, including Ukrainian service customers, to transport gas of

<sup>16</sup> Draft Energy Strategy 2050. Available at <https://particip.gov.md/ro/document/stages/ministerul-infrastructurii-si-dezvoltarii-regionale-anunta-despre-initierea-elaborarii-documentului-de-politici-publice-strategia-energetica-a-republicii-moldova-pana-in-anul-2050/9942>

<sup>17</sup> Energy strategy 2030. Available at [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ro](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ro)

<sup>18</sup> The EU4Energy program includes Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

non-Russian origin to the Trans-Balkan pipeline and make it economically viable. The decisions are extremely important for regional energy security and diversification of possible routes for gas imports both on the domestic market and European gas markets. Finally, and for Ukrainian service customers, there is an opportunity to transport the Trans-Balkan Corridor gas of non-Russian origin - from LNG terminals in Greece and Turkey or gas produced in Azerbaijan . Previously this mechanism was used mostly by customers from Moldova itself.

Moldova has an umbrella law for the energy sector; Law no. 174 of September 21<sup>st</sup>, 2017<sup>19</sup> on Energy which establishes the legal framework for the organization, regulation and ensuring the efficient and safe operation of the energy sector.

Law no. 107 of May 27<sup>th</sup>, 2016<sup>20</sup> on Electricity establishes the general legal framework for the organisation, regulation, operation and monitoring of the electricity market with a view to:

- Supplying consumers with electricity in conditions of accessibility, availability, reliability, continuity, quality and transparency;
- Ensuring regulated and non-discriminatory access to the electricity market;
- Promoting electricity production;
- Ensuring the right balance between supply and demand and the appropriate level of interconnection capacity to facilitate cross-border exchanges in electricity;
- Developing the electricity market with a view to integration into the competitive EU electricity market;
- Establishing measures to ensure security of electricity supply;
- Proper fulfilment of public service obligations; and
- Ensuring compliance with consumer rights and environmental protection rules.

In addition to the law, there are a number of regulations and decisions which are issued under the authority of the national energy regulatory agency ANRE. With regard to primary legislation, the following new pieces of Energy Community legislation need to be transposed:

- New EU Directive on the internal market for electricity (2019/943); and
- New Regulation on electricity (2019/944).

In addition, the following pieces of secondary legislation necessary for implementing the Law on Electricity have yet to be prepared/adopted:

- Regulation for auctioning new generation capacities for large-scale renewable energy producers;
- Regulation for authorisation of new generation capacities over 20 MW;
- Minimum fuel stocks requirements for power plants; and
- Designation of the Market Operator for electricity and gas sector.

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<sup>19</sup> [https://www.legis.md/cautare/getResults?doc\\_id=128128&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128128&lang=ro)

<sup>20</sup> [https://www.legis.md/cautare/getResults?doc\\_id=129837&lang=ro](https://www.legis.md/cautare/getResults?doc_id=129837&lang=ro)

Law no. 10 of February 26<sup>th</sup>, 2016 on Promoting Energy from Renewable Sources outlines the regulatory framework for renewable electricity. In particular, it outlines three support schemes:

- An auction arrangement for fixed price for large-capacity units (above a capacity threshold to be set by government decision);
- A fixed feed-in tariff scheme for power plants with capacity not exceeding the limit set by government, but not less than 10 kW; and
- Net metering for small renewable sources, for own-electricity consumption (less than 200 kW).

Government Decision no. 401 of 8 December 2021 sets a maximum limit of 410 MW of renewable energy capacity to be reached by 2025. Out of this, 165 MW has been set for large-scale producers through auction.

In addition to production under the support schemes, renewable energy facilities of under 5MW can produce and trade in the open market. Their selling price is capped at the price set in the energy supply bilateral contract determined annually by tender called by SE Moldelectrica (the Moldovan transmission system operator – TSO).

Law no. 108 of May 27<sup>th</sup>, 2016 on Natural Gas<sup>21</sup> establishes a general legal framework for the organisation, regulation, operation and monitoring of the natural gas sector. The Law foresees the development of a competitive natural gas market, while protecting consumers rights and meeting environmental protection norms.

Law no. 461-XV of July 30<sup>th</sup>, 2001 on the market for petroleum products<sup>22</sup> provides the organisational, legal and economic framework for ensuring the country's economic security and regulating the import, transport, storage and trade of petroleum products on the domestic market as strategic products.

The **Research, innovation, and competitiveness** dimension is one of the key areas of NECP and it is implemented by many ongoing activities in Moldova.

The State Agency on Intellectual Property (AGEPI) is a central administrative authority subordinated to the Government, responsible for promoting and implementing activities in the field of legal protection of intellectual property related to industrial property rights, copyright and related rights. AGEPI has the following main **functions**: strategically plans and implements the national system of intellectual property development; organizes and manages the functioning of the national system of intellectual property, under the legislation of the Republic of Moldova and the International Treaties to which the Republic of Moldova is party.

The Government shows strong commitment to reforming the national science and innovation system. The Ministry of Education and Research is the key institution in promoting research and innovation.

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<sup>21</sup> [https://www.legis.md/cautare/getResults?doc\\_id=129133&lang=ro](https://www.legis.md/cautare/getResults?doc_id=129133&lang=ro)

<sup>22</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130210&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130210&lang=ro)

Recognizing the potential for innovation, the Republic of Moldova has taken several important steps to reform innovation governance over the past years. These include:

- The National Program for Research and Innovation for 2020-2023 unifies previously fragmented policy areas and has an Action Plan that defines subsequent steps for achieving innovation policy objectives. The program aligns with other overarching policy objectives anchored in strategic documents on education, SME's and industrial development.
- Various mechanisms to promote knowledge transfer and innovation are available. The Organization for Development of Entrepreneurship (ODA), an organization under the Ministry of Economic Development and Digitalization, is a dedicated SME's development agency that supports businesses through programs and services aimed at strengthening entrepreneurship and competitiveness. A wide range of business plan and start-up competitions supports the growing start-up movement and fosters innovative entrepreneurship. Fiscal incentives applied in the Information Technology sector create a favorable business environment and stimulate demand for new technologies and sectoral growth.
- Legal frameworks for public-private dialogue and inter-ministerial consultation on draft policies are in place. Through advocacy and lobbying strategies, business associations also have a growing voice in policy design.

Enabling and promoting innovation also involves tackling a range of systemic constraints<sup>23</sup> in the economy. To transform the human capital into a knowledge-based economy, the country must address the low demand for innovation and increase funding for research and development activities. A mismatch between educational outputs and job-relevant skills and low engagement of the private sector in Research and Development (R&D) obstruct commercialization efforts of innovative results.

National Agency for Research and Development<sup>24</sup> (NARD) is a central administrative authority under the Government of the Republic of Moldova. NARD is the legal successor of rights and obligations of Center of International Projects, Agency for Innovation and Transfer Technology and Agency for Research and Development, public institutions under Academy of Sciences of Moldova. NARD is responsible for the implementation of the research, innovation and development of national policy, the EU Framework Program for Research and Innovation Horizon 2020 and other European Programs and the coordination of Moldovan Office for Science and Technology in Brussels (MOST). NARD has the mission to ensure excellence and performance in achieving national priorities in the areas of research, innovation and development. The agency is providing contest-based funding for research, innovation and technology transfer projects. NARD encourages public-public and public-private partnerships by matchmaking and organizing of brokerage events.

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<sup>23</sup> [https://mec.gov.md/sites/default/files/ipo\\_launch\\_press\\_release\\_-\\_moldova\\_1.pdf](https://mec.gov.md/sites/default/files/ipo_launch_press_release_-_moldova_1.pdf)

<sup>24</sup> <https://ancd.gov.md/en/content/nard>



iii. Overview table with key objectives, policies and measures of the plan

The national GHG emissions target<sup>25</sup>, including contribution of LULUCF sector for Moldova, is 70% by 2030 unconditionally and 88% conditionally below to level of 1990. Moldova committed to reduce GHG emissions<sup>26</sup> by **68.6%** in 2030 compared to the level of 1990 on the Right bank of the Dniester River.

For uncontrolled territory of Moldova (ATULBD) the Moldovan authorities are in process to identify pathways for implementing policies and measures for decarbonization and already have some successes, but these policies and measures will be addressed in the updated version (2<sup>nd</sup> iteration) of the NECP. To be mentioned, implementation of decarbonization policies and measures in ATULBD is of high priority in order to reach the updated NDC targets committed by the Republic of Moldova.

In order to reach the target of **68.6%** reduction of GHG emissions in 2030 for the Right bank of Dniester River, Moldova committed to the implementation of the following specific targets:

- Increase of the Renewable Energy share in final energy consumption from 17% in 2020 to 27% in 2030
- Energy Efficiency contribution in the final energy consumption must keep total consumption at 2,8 Mtoe in 2030 compared with 2,55 Mtoe in 2020, i.e. to result in 151.3 ktoe of energy savings.

Table 1 below shows the key NECP indicators as a result of simulations performed with the TIMES software up to the year 2050, accordingly to the scenario With Existing Measures (WEM, unconditional) and to the scenario With Planned Measures (WPM, conditional) for the Right bank of the Dniester River. In gray the mandatory targets are underlined for 2030.

**Table 1. Summary of NECP indicators for the Right bank of the Dniester River up to the year 2050**

Final energy consumption, ktoe <sup>27</sup>	2020	2025	2030	2035	2040	2045	2050
WEM	2,521.95	2,644.26	2,701.32	2,705.69	2,682.11	2,667.42	2,615.49
WPM	2,518.39	2,602.61	2,554.16	2,414.45	2,204.08	2,113.28	2,083.42
Primary energy supply, ktoe	2020	2025	2030	2035	2040	2045	2050
WEM	2866	2965	2998	3020	3006	3004	2976
WPM	2863	2905	2820	2698	2530	2523	2501
GHG Emissions, ktCO <sub>2</sub> eq <sup>28</sup>	2020	2025	2030	2035	2040	2045	2050

<sup>25</sup> Source: updated NDC (2020), [https://unfccc.int/sites/default/files/NDC/2022-06/MD\\_Updated\\_NDC\\_final\\_version\\_EN.pdf](https://unfccc.int/sites/default/files/NDC/2022-06/MD_Updated_NDC_final_version_EN.pdf).

<sup>26</sup> The Decision 2022/02/MC-EnC, the Energy Community Ministerial Council. Available at [https://www.energy-community.org/dam/jcr:421f0dca-1b16-4bb5-af86-067bc35fe073/Decision\\_02-2022-MC\\_CEP\\_2030targets\\_15122022.pdf](https://www.energy-community.org/dam/jcr:421f0dca-1b16-4bb5-af86-067bc35fe073/Decision_02-2022-MC_CEP_2030targets_15122022.pdf), accessed on February 10<sup>th</sup>, 2023)

<sup>27</sup> Thousand tons of oil equivalent

<sup>28</sup> Thousand tons of CO<sub>2</sub> equivalent



WEM energy sector	5,412	5,116	5,185	5,066	5,051	5,023	4,933
WPM energy sector	5,412	5,156	4,898	4,356	3,808	3,733	3,604
WEM non-energy sectors	3,342	3,609	2,881	3,643	3,545	3,453	3,366
WPM non energy sectors	3,342	2,811	2,553	2,408	2,331	2,259	2,193
WEM LULUCF sector	-122	-920	-1,757	-3,167	-3,096	-3,026	-2,958
WPM LULUCF sector	-122	-896	-2,610	-5,163	-5,069	-4,975	-4,882
<b>WEM Total (with LULUCF)*</b>	<b>8,633</b>	<b>7,806</b>	<b>6,309</b>	<b>5,542</b>	<b>5,501</b>	<b>5,450</b>	<b>5,341</b>
<b>WEM Total (without LULUCF)</b>	<b>8,755</b>	<b>8,726</b>	<b>8,067</b>	<b>8,709</b>	<b>8,597</b>	<b>8,476</b>	<b>8,299</b>
<b>WPM Total (with LULUCF)</b>	<b>8,633</b>	<b>7,071</b>	<b>4,841</b>	<b>1,600</b>	<b>1,070</b>	<b>1,017</b>	<b>915</b>
<b>WPM Total (without LULUCF)</b>	<b>8,755</b>	<b>7,967</b>	<b>7,451</b>	<b>6,764</b>	<b>6,138</b>	<b>5,992</b>	<b>5,797</b>
Share of RES in GFEC, %	2020	2025	2030	2035	2040	2045	2050
WEM	24.23%	24.68%	25.62%	25.85%	25.72%	24.82%	25.31%
WPM	24.24%	26.29%	31.37%	37.31%	41.73%	44.85%	47.52%
Share of RES in electricity generation, %	2020	2025	2030	2035	2040	2045	2050
WEM	3.12%	6.10%	10.57%	10.80%	14.45%	14.55%	17.58%
WPM	3.12%	13.11%	34.07%	56.17%	66.41%	78.19%	84.53%
Share of RES in transport, %	2020	2025	2030	2035	2040	2045	2050
WEM	0.01%	1.06%	1.71%	2.60%	3.06%	3.79%	4.85%
WPM	0.01%	3.70%	7.60%	13.78%	23.69%	30.20%	35.88%
Average Electricity Supply costs, Euro/kWh	2020	2025	2030	2035	2040	2045	2050
WEM	0.04	0.06	0.07	0.07	0.07	0.07	0.07
WPM	0.04	0.06	0.08	0.08	0.08	0.08	0.08
Installed Capacity Wind, MW	2020	2025	2030	2035	2040	2045	2050
WEM	41	71	171	171	233	255	315
WPM	37	142	600	1200	1762	2539	3074
Installed Capacity PV, MW	2020	2025	2030	2035	2040	2045	2050
WEM	5	105	155	155	187	184	248
WPM	5	187	215	312	413	490	561

\*The target committed by the Republic of Moldova under Energy Community for reduction of GHG emissions is 68.6% or 9.1Mt CO<sub>2</sub>eq.

From Table 1 it can be seen that the Republic of Moldova will reach its targets (9,1 MtCO<sub>2</sub>eq and 27% of RES) for both GHG emissions and RES in 2030.

Figure 1 shows the evolution of GHG emissions up to 2050 in the WPM scenario for the Right bank of the Dniester River. In 2050 the GHG emissions, including LULUCF sector, are estimated to be 915 kt CO<sub>2</sub> eq. Moldova is planning to set up the objective to attain climate neutrality in 2050<sup>29</sup>. This means that additional measures should be identified for this purpose starting from 2035.

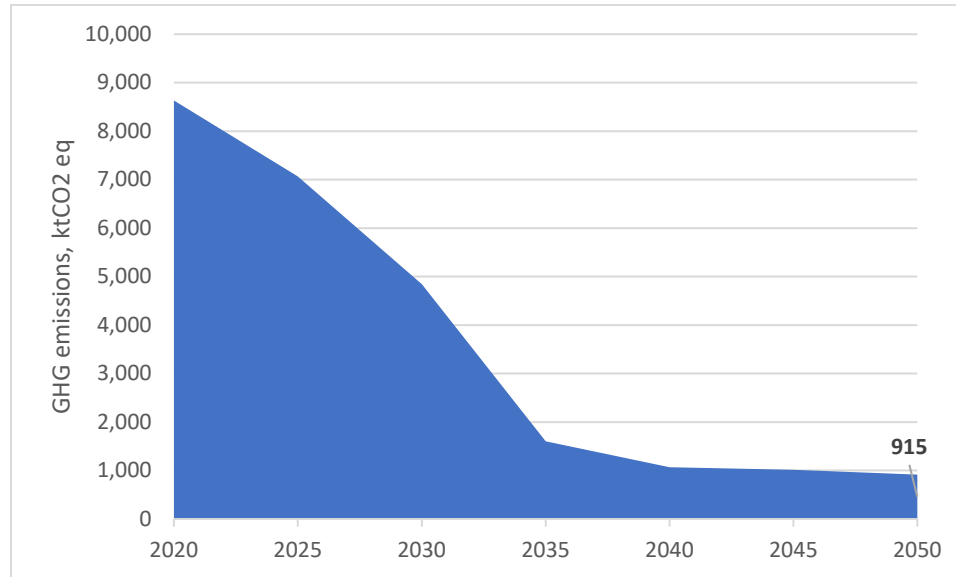


Figure 1. Projected GHG emissions of the Right bank of the Dniester River up to the year 2050

Table 2 shows projections of GHG emissions for the ATULBD (Transnistrian region).

Table 2. Projected GHG emissions for ATULBD (Transnistrian region) up to the year 2050

GHG Emissions, kt CO <sub>2</sub> eq.	2020	2025	2030	2035	2040	2045	2050
WEM energy sector	4,137	3,401	3,396	3,633	3,851	4,082	4,327
WPM energy sector	4,137	3,401	3,396	3,633	3,851	4,082	4,327
WEM non-energy sectors	761	814	516	826	799	774	750
WPM non-energy sectors	761	504	440	403	384	367	351
WEM LULUCF sector	118	33	-22	-125	-121	-116	-112
WPM LULUCF sector	118	-25	-183	-377	-372	-367	-362
<b>WEM Total (with LULUCF)</b>	<b>5,017</b>	<b>4,249</b>	<b>3,890</b>	<b>4,334</b>	<b>4,530</b>	<b>4,740</b>	<b>4,965</b>
<b>WEM Total (without LULUCF)</b>	<b>4,899</b>	<b>4,215</b>	<b>3,912</b>	<b>4,459</b>	<b>4,651</b>	<b>4,856</b>	<b>5,077</b>
<b>WPM Total (with LULUCF)</b>	<b>5,017</b>	<b>3,880</b>	<b>3,652</b>	<b>3,659</b>	<b>3,864</b>	<b>4,082</b>	<b>4,316</b>
<b>WPM Total (without LULUCF)</b>	<b>4,899</b>	<b>3,905</b>	<b>3,836</b>	<b>4,036</b>	<b>4,236</b>	<b>4,449</b>	<b>4,678</b>

From analysis of data presented in Table 2 it can be stated that GHG emissions in ATULBD will increase after 2035. This is due to fact that, after 2035 no measures were considered for this region

<sup>29</sup> <https://euneighbourseast.eu/ro/news/latest-news/republica-moldova-si-eu4climate-elaborarea-unei-legi-pentru-neutralitatea-climatica/>

in modelling, as developed policies can not be implemented in the Transnistrian region at the moment.

Figure 2 shows the projections of GHG emissions for the entire territory of the Republic of Moldova up to the year 2050.

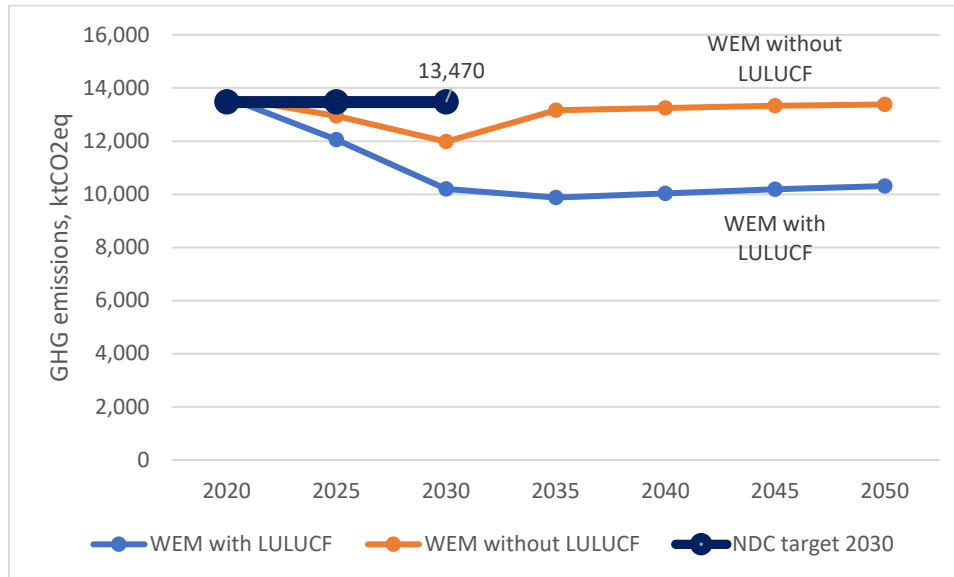


Figure 2. Projected GHG emissions of Moldova (entire territory) up to the year 2050

From Figure 2 it can be concluded that Moldova will reach the updated NDC target of 70% reduction of GHG emissions due to measures implemented on the Right bank of the Dniester River. The ambitious target of 88% (about 5300 kt CO<sub>2</sub>eq in 2030) will not be reached if substantial decarbonization measures will not be implemented in ATULBD.

Table 3 below shows an overview of key objectives, policies and measures of the NECP for Moldova (Right bank of the Dniester River). Detailed descriptions of the NECP measures per each Dimension are presented in Chapter 3.

Table 3. Overview table with key objectives, policies and measures of the NECP

Dimension		Key objective	Key polices and measures
Decarbonization	GHG emissions and removals	<p>Fulfilling obligations of the Paris Agreement and of the Energy Community;</p> <p>Contributing to the EnC -60,9% GHG emissions reduction target with national emissions reduction in 2030;</p> <p>Attaining the national GHG emissions reduction target for the Right bank of the Dniester River by 68.6% in 2030 compared to the 1990 level.</p>	<ul style="list-style-type: none"> <li>Detailed assessment of decarbonization measures for all sectors: <ul style="list-style-type: none"> <li><b>RES-H&amp;C:</b> 42.8% in 2030 in GFEC (Gross Final Energy Consumption) for heating and cooling, including heat pumps with 2,4%;</li> <li><b>RES-E:</b> 34.1% by 2030 of final electricity consumption provided by renewable sources;</li> <li><b>RES-T:</b> 7.6% by 2030 of fuels consumption in Transport sector. Electrification of transport units.</li> </ul> </li> <li>Afforestation and rehabilitation of land on up to 25% of territory. The Government approved the National Program for Land afforestation and Rehabilitation 2023-2032, that plans to accomplish afforestation on 145 thousand ha.</li> <li>Improvement of waste management to decrease GHG emissions by 14%<sup>30</sup>. Reduction of GHG in transport sector with 52% in 2030 compared to 1990 as result of transport electrification, increasing biofuel to 7.6% and the number of electrical vehicles, etc.</li> </ul>
	Renewable energy	Attaining the national target for Renewable Energy share in final energy consumption is of 27% in 2030	<ul style="list-style-type: none"> <li>Government Decision no. 401 of December 8<sup>th</sup>, 2021 sets a maximum limit of 410 MW of renewable energy capacity to be reached by 2025. Out of this, 165 MW has been set for large-scale producers through auction.</li> <li>An auction arrangement for fixed price for large-capacity units (above a capacity threshold to be set by government decision);</li> <li>A fixed feed-in tariff scheme for power plants with capacity not exceeding the limit set by government, but not less than 10 kW; and</li> <li>Net metering for small renewable sources, for own-electricity consumption (less than 200 kW).</li> </ul>

<sup>30</sup> <https://mediu.gov.md/ro/file/13372>

Dimension	Key objective	Key policies and measures
Energy efficiency	<p>Contribution to attaining the national target<sup>31</sup> for energy consumption is of 2,800 ktoe in the Final Energy Consumption in 2030 (151.3 ktoe should be saved). In terms of maximum Share of Primary Energy Consumption, the target is of 3,000 ktoe in 2030.</p>	<ul style="list-style-type: none"> <li>• Energy Efficiency implementation accordingly to the principle “energy efficiency first”.</li> <li>• The legislative package “Clean energy for all” transposed into the new Law on energy efficiency of Moldova in 2023.</li> <li>• The Long-Term Strategy for renovation of the national building stock is to be updated by the end of 2023.</li> <li>• 0,8% of new annually energy savings as result of obligation scheme implementation.</li> <li>• The annual renovation of 3% of the total area of central public administration authorities’ buildings having a total useful area of over 250 m<sup>2</sup>.</li> </ul>
Energy Security	<p>Reducing dependence on energy imports and diversification of energy resources and import routes.</p>	<ul style="list-style-type: none"> <li>• The Ten-Years Network Development Plans of TSOs in Moldova;</li> <li>• Ten-Year Network Development Plan of Vestmoldtransgaz;</li> <li>• New Energy Strategy 2050;</li> <li>• Emergency stock holding obligations;</li> <li>• Integration to ENTSO electricity and gas market;</li> <li>• Encourage use of domestic biomass resources to a level appropriate within the context of decarbonization objectives;</li> <li>• Secure potential for gas storage;</li> <li>• Expand the use of renewable energy to meet domestic needs (wind and solar);</li> <li>• Encourage energy efficiency in transformation, transmission, and distribution of energy;</li> <li>• Significant increase of interconnectivity of power system by constructing new lines to</li> </ul>

<sup>31</sup> Energy Community. <https://www.energy-community.org/implementation/package/CEP.html>

Dimension	Key objective	Key policies and measures
		Romania and ENTSO-E, which will increase security of electricity supply and create new market opportunities in Moldova and in the region.
Internal Energy Market	Implementing a better functioning energy market.	<ul style="list-style-type: none"> <li>• Supplying consumers with electricity in conditions of accessibility, availability, reliability, continuity, quality and transparency;</li> <li>• Ensuring regulated and non-discriminatory access to the electricity market;</li> <li>• Promoting electricity production;</li> <li>• Ensuring the right balance between supply and demand and the appropriate level of interconnection capacity to facilitate cross-border exchanges in electricity;</li> <li>• Developing the electricity market with a view to integration into the competitive EU electricity market;</li> <li>• Establishing measures to ensure security of electricity supply;</li> </ul>
Research & Innovation competitiveness	Enabling and promoting research and development and innovation.	<ul style="list-style-type: none"> <li>• Transform the human capital into a knowledge-based economy;</li> <li>• Increase funding for research and development activities.</li> <li>• Engagement of the private sector in Research and Development (R&amp;D).</li> <li>• Put in place Smart Specialization Strategy to make stronger connection between business and academia (promote innovative businesses) in 4 core fields: Energy, IT, Agriculture and Health</li> </ul>

## 1.2 Overview of current policy situation

### i. National and EU energy system and policy context of the national plan

The current **Energy Strategy** of Moldova<sup>32</sup> states the strategic objective of integration into the European Union and its internal energy market, by fulfilling obligations under the Energy Community. The Strategy also indicates the national targets for 2020 established compared to 2013: to have 20% renewable energy; improved energy efficiency by 20%; reduction of CO<sub>2</sub>

<sup>32</sup> Energy strategy 2030: [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ro](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ro)

emissions by 25%. Nevertheless, the current Strategy is considered incomplete and is currently under revision.

The Republic of Moldova intends to establish a competitive and environmentally sustainable energy sector, integrated into the European infrastructure and energy markets, that will provide an adequate level of energy security so that consumers are able to access energy when needed at affordable prices.

To fulfill these objectives, Moldova has committed to align its policies, as much as possible, with overall EU energy and climate policy goals as defined by recent EU legislative packages (Green Deal, Fit for 55, REPowerEU), the Paris Agreement, and Energy Community commitments.<sup>33</sup> Today, the energy sector accounts for more than two-thirds of national GHG emissions and must, therefore, be treated as a priority sector for future actions.

The new Energy Strategy 2050 is in process of development and will describe the specific objectives and measures to be realized in order to fulfill these commitments and will assess whether it is possible to achieve climate neutrality in the energy sector by 2050.

Achievement of Moldova's strategic objectives demands further work on the legal framework, including the development of the secondary legislation and its effective implementation.

The **Energy Community** is an international organisation which brings together the European Union and its neighbours with the objective of creating an integrated pan-European energy market. This will be implemented by extending the EU internal energy market rules and principles to neighbouring countries within a legally binding framework. Moldova became a contracting party of the Energy Community Treaty in 2010 and has committed to transpose EU energy legislation, develop competitive and open electricity and gas markets and integrate its national energy markets into the EU internal energy market.

By approving the Laws on Natural Gas and Electricity in May 2016, Moldova transposed most of the provisions of the Third Energy Package of the Energy Community into national legislation, however, much remains to be done (see Section 3.2.2). Renewables and Energy Efficiency regulations are also in the process of alignment to the Third Energy Package.

The Energy Community gives Moldova mixed ratings on both transposition of Energy Community legislation, as well as actual implementation, which is only partial at best.

Moreover, in its latest 'Moldova 2022 Energy Policy Review', the IEA commends improvements to-date but stresses that the Moldovan energy sector still faces major challenges in terms of energy security, attaining sustainable, clean and efficient energy system, and developing a free and competitive energy market.

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<sup>33</sup> Conclusions of the July 8<sup>th</sup>, 2022 Informal Energy Community Ministerial Council have been formally adopted by the EnC Ministerial Council in December 2022.

*ii. Current energy and climate policies and measures across the five dimensions of the Energy Union*

### **A. Dimension – Decarbonisation**

The decarbonization dimension is described by two key elements:

1. Greenhouse gas (GHG) emissions;
2. Renewable Energy Sources (RES).

#### **A.1. Greenhouse gas (GHG) emissions**

According to the updated National Determined Contribution (2020), the Republic of Moldova has committed to reach by 2030 the unconditional target of reducing GHG emissions by 70% as compared to the level recorded in the reference year (1990). The reduction commitment could be conditionally increased to about 88%, in line with this global agreement, which addresses important issues such as provision of low-cost financial resources, technology transfer and technical cooperation, access to all of them as appropriate to the challenges of global climate change. The GHG emission reduction targets have been set in an emission budget covering the period from January 1<sup>st</sup>, 2021 to December 31<sup>st</sup>, 2030<sup>34</sup>.

At the same time, the targets related to the adaptation to the new climate conditions caused by the climate change phenomenon of the main sectors of the national economy and human health, established in the intended NDC of the Republic of Moldova (2015), were approved at national level by Government Decision no. 1009 of 12/10/2014 on the approval of the Climate Change Adaptation Strategy of the Republic of Moldova until 2020 and of the Action Plan for its implementation. The last one was replaced by the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation through Government Decision No. 624/2023 adopted on 30 August, 2023<sup>35</sup>.

#### **A.2. Renewable Energy Sources**

The renewable energy policy is driven by the existing Law no. 10 of February 26<sup>th</sup>, 2016<sup>36</sup> on Promoting Energy from Renewable Sources that outlines the regulatory framework for renewable electricity. In particular, it outlines three support schemes:

- An auction arrangement for fixed price for large-capacity units (above a capacity threshold to be set by government decision);
- A fixed feed-in tariff scheme for power plants with capacity not exceeding the limit set by government, but not less than 10 kW; and
- Net metering for small renewable sources, for own-electricity consumption (less than 200 kW).

<sup>34</sup> The Fifth National Communication of the Republic of Moldova developed to be reported to UNFCCC (2023).

<https://unfccc.int/documents/627100> [https://unfccc.int/sites/default/files/resource/Moldova\\_NC5\\_EN\\_web.pdf](https://unfccc.int/sites/default/files/resource/Moldova_NC5_EN_web.pdf)

<sup>35</sup> [https://gov.md/sites/default/files/document/attachments/acte\\_normative\\_adoptate\\_in\\_sedinta\\_guvernului\\_din\\_30.08.2023.pdf](https://gov.md/sites/default/files/document/attachments/acte_normative_adoptate_in_sedinta_guvernului_din_30.08.2023.pdf)

<sup>36</sup> [https://www.legis.md/cautare/getResults?doc\\_id=98936&lang=ro](https://www.legis.md/cautare/getResults?doc_id=98936&lang=ro)



The Republic of Moldova is working on amending the Law no. 10/2016 on the promotion of the use of energy from renewable sources with the purpose of transposition of Directive (EU) 2018/2001 of the European Parliament and of the Council of December 11<sup>th</sup>, 2018 on the promotion of the use and consumption of renewable energy sources<sup>37</sup>.

The revised Law is intended to solve some of the critical problems that prevent the development of the entire renewable energy sector for the electricity component, regarding both the use of renewable energy in transport or for heating and cooling. Therefore, the amended Law on the promotion of the use of energy from renewable sources will ensure:

1. Introduction of Government's obligation to establish the national sectoral target for 2030, by establishing its attribution to identify/estimate and approve a sectoral target for 2030, depending on the degree of ambition, and which could involve the mobilization of considerable financial means.
2. The legal framework regarding guarantees of origin, that in addition to electricity, will also be extended to gases/biogas, including hydrogen, as well as to renewable energy used in heating and cooling.
3. Promoting the concept of "self-consumer" and "energy communities", along with the creation of the necessary legal framework. Thus, the self-consumers mechanism would be described by a set of rights, offered both to self-consumers in individual/single-family houses, and to consumers in multi-apartments buildings.
4. Promoting the use of renewable energy in the heating & cooling and transport sectors;

At the same time, the draft law contains a series of improvements in order to provide potential investors with greater security to develop large RES projects.

The amendment of the law will provide a series of positive effects that refer in particular to improving the investment climate in the field of electricity produced from renewable sources and ensuring the bankability of renewable energy projects, attracting a larger number of potential investors, willing to benefit of the support scheme for the production of electricity from renewable sources, and from the reduction of prices offered in auctions following the elimination of risks and uncertainties.

Government Decision no. 401 of December 8<sup>th</sup>, 2021<sup>38</sup> sets a maximum limit of 410 MW of renewable energy capacity to be reached by 2025. Out of this, 165 MW has been set for large-scale producers through auction – see Table 4 below.

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<sup>37</sup> Published in the Official Journal of the European Union L 328/210 of December 21<sup>st</sup>, 2018, in the version adapted and approved by the Decision of the Ministerial Council of the Energy Community no. 2021/14/MC-EnC.

<sup>38</sup> [https://www.legis.md/cautare/getResults?doc\\_id=128987&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128987&lang=ro)

**Table 4: Capacity limits for large producers by capacity categories of renewable energy<sup>39</sup>**

Technology	Applicable support schemes, MW		
	TOTAL	Feed-in tariff	Auction
Wind turbines	120	15	105
Solar PV	200	140	60
Biogas and biomass CHP; HPP	90	90	–
<b>TOTAL</b>	<b>410</b>	<b>245</b>	<b>165</b>

Electricity transmission network development plan for 2018-2027<sup>40</sup> indicates that it would be difficult under the existing TSO network to allow for fulfilling the RES integration targets due to the following:

1. Maximum capacity of electricity transmission grid infrastructure has been reached (issue of new permits cannot be done without increasing the capacity or strengthening of the grid);
2. Uncertainties regarding regulation framework on grid connection and functioning of RES as well as future provisions of grid codes;
3. Issues related to current transmission grid technical norms in relation with other documents;
4. Lack of a national balancing mechanism;
5. Zonal tariffs for electricity generated from RES cannot be implemented.

As of July 2023, Moldova had 259.9 MW of installed renewable energy capacity, across a large number of small producers, as listed below<sup>41</sup>:

- Wind turbines with a total installed capacity of 141.3 MW owned by various companies;
- Solar photovoltaic (PV) systems with a total installed capacity of 87.0 MW owned by various companies;
- Hydro Power Plants – 16.25 MW, of which small hydro power plant (HPP) - 0.25 MW of installed capacity owned by an individual company;
- Biogas combined heat and power plant CHP of 15.33 MW installed capacity, 6.40 MW of which located at the Drochia sugar processing factory.

In 2022, the total renewables sector (excluding Dubăsari and Costesti – Stinca HPP's) provided 196.3 million kWh<sup>42</sup> of the electricity produced in Moldova, excluding the ATULBD.

<sup>39</sup> Source: Government Decision 401 of August 8<sup>th</sup>, 2021. Available at [https://www.legis.md/cautare/getResults?doc\\_id=128987&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128987&lang=ro)

<sup>40</sup> Electricity transmission network development plan for 2018 – 2027. Available at: [https://moldelectrica.md/files/docs/TYNDP\\_EN.pdf](https://moldelectrica.md/files/docs/TYNDP_EN.pdf)

<sup>41</sup> In addition, various sugar processing factories have small cogeneration units that are operated during the processing of sugar beet.

<sup>42</sup> <https://anre.md/raport-de-activitate-3-10>.

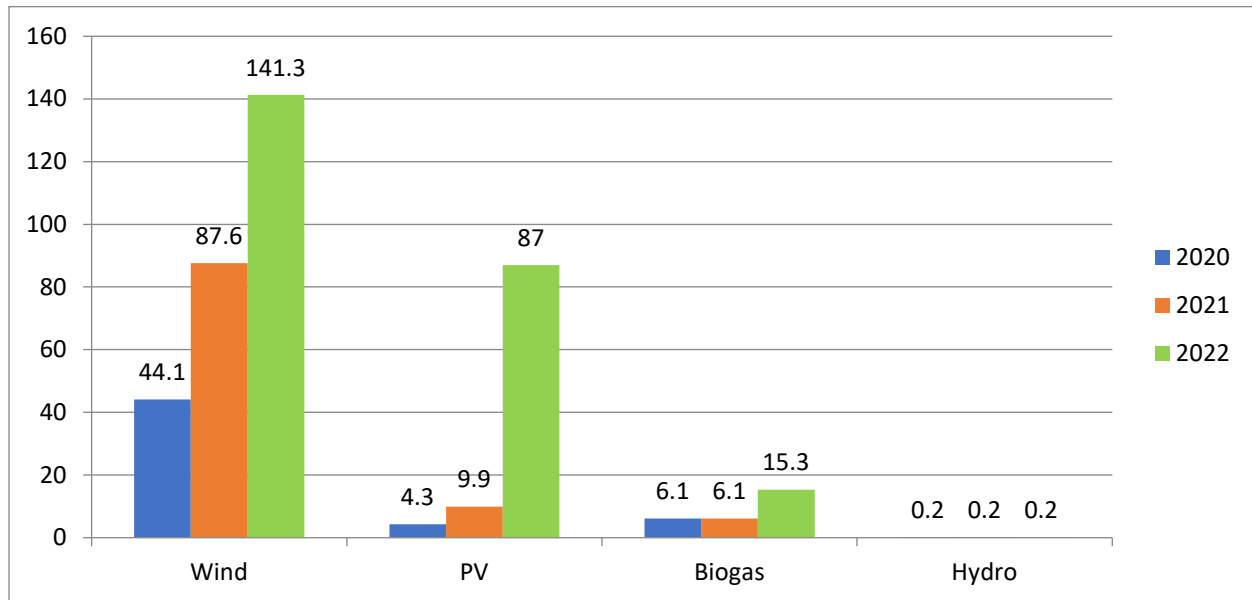


Figure 3: Installed capacity of renewable energy in 2022, MW<sup>43</sup>

As presented by the representatives of energy sector decision makers in April 2022, the installed capacity by various support schemes is, as follows:

- 35 MW of installed capacity (24% of total renewable energy capacity) under the old fixed feed-in tariff mechanism set by Law no. 160 of July 12<sup>th</sup>, 2007 on Renewable Energy (defunct)<sup>44</sup>;
- 7.6 MW (5% of total renewable energy capacity) is installed under the new fixed feed-in tariff mechanism set by the current Law no 10 of February 26<sup>th</sup>, 2016 on Promoting the Use of Energy from Renewable Sources<sup>45</sup>; and
- 10 MW of installed capacity (7% of total renewable energy capacity) is under the net-metering scheme;

Another 91.2 MW (64% of total renewable energy capacity) is installed based on open market rules governing small producers.

It is noteworthy that there is no installed capacity to-date under the fixed price scheme determined by the auction mechanism.

## B. Dimension – Energy Efficiency

<sup>43</sup> Source: Presentation by the Ministry of Infrastructure and Regional Development of April 1<sup>st</sup>, 2022 at the Conference “Brainstorming on the Energy Security of Moldova”.

<sup>44</sup> [https://www.legis.md/cautare/getResults?doc\\_id=91763&lang=ro](https://www.legis.md/cautare/getResults?doc_id=91763&lang=ro)

<sup>45</sup> [https://www.legis.md/cautare/getResults?doc\\_id=91513&lang=ro](https://www.legis.md/cautare/getResults?doc_id=91513&lang=ro)

The existing policies to enhance energy efficiency in buildings (including framework legislation<sup>46</sup>, building energy codes, energy performance certification, utility-demand-side management programmes, energy pricing measures, financial incentives, promotion of ESCO, awareness programmes) in the Republic of Moldova are presented in the following documents:

**Law No.139 on Energy Efficiency** – This Law implements Directive 2012/27/EU of the European Parliament and the Council on energy efficiency and Directive 2009/125/EC of the European Parliament and the Council establishing a framework for the setting of eco-design requirements for energy-related products. The purpose of this Law is to create the legal framework necessary to promote and improve energy efficiency through the implementation of energy efficiency action plans, the development of energy services market. The main elements of the Law are:

- Energy efficiency obligation scheme;
- Exemplary role of public buildings of central government;
- Obligatory energy audit for big companies;
- Strengthening the capacities of energy managers, and the role of local EE Action Plan;
- Creation and strengthening of local energy services market;
- Sustainable public procurement;
- Public awareness and promotion of efficient energy use;
- Strengthening the capacity of institutions responsible for energy efficiency policies implementation.

**Action Plan for the period 2014 – 2020 on harmonization of buildings sector** - The Action Plan for 2014-2020 on harmonization of buildings sector’s technical regulations and national standards with the European regulations and standards was adopted on November 1<sup>st</sup>, 2014 (GD No. 933) and revised in August 2023 (GD 633 from 08/30/2023).

**Law No.75 on Dwellings** – The Law No. 75 on Dwellings was adopted on 04/30/2015 and entered into force on November 29<sup>th</sup>, 2015 except for the provisions related to the energy performance of buildings with reference to ventilation, cooling and lighting (entered into force on January 1<sup>st</sup>, 2017).

**Regulation (GD No.1325 of 12/12/2016) on the “Periodic Inspection of the Heating Systems in Buildings”** establishes the organization and conducting of the inspection process, its periodicity depending on the category of building, the type and nominal power of the heating system and other conditions, taking into account the costs of the inspection and the estimated energy savings that could result from the inspection.

**Voluntary Energy Efficiency in Heating Utilities (2014)** – Heating utilities have to choose either to implement Energy Audits every four years, or to implement the Energy Management Systems as per ISO50001<sup>47</sup>.

<sup>46</sup> Gap analysis between the performance objectives of the Framework Guidelines for Energy Efficiency Standards in Buildings and implementation of current building energy efficiency standards in the Republic of Moldova. [https://unece.org/sites/default/files/2021-06/National\\_Study-for\\_Moldova\\_ENG.pdf](https://unece.org/sites/default/files/2021-06/National_Study-for_Moldova_ENG.pdf)

<sup>47</sup> <https://www.iea.org/policies/2370-voluntary-energy-efficiency-in-heating-utilities>

**Energy Strategy of the Republic of Moldova until 2030** – The Energy Strategy of Moldova until 2030 provides guidelines for national energy sector development, in order to ensure the necessary grounds for economic growth and social welfare. Through this document, the government presented its vision and identified strategic national opportunities in a rapidly changing energy context. The Strategy defined general policy goals from 2013 to 2030 as well as specific policy objectives for the period 2013 – 2020 period and for the period 2021 – 2030, specifying measures for their implementation.

**Law on eco-design requirements applicable for energy-related products (Law No. 151 of 07/01/2016)** is being supported by the Regulation 750/2016 which establishes requirements for equipment, such as household dishwashers, air conditioners, etc.

**Regulation (GD No.750 of 06/13/2016) on the “Requirements on eco-design applicable to products with an energy impact”** transposes the EC Regulation No 643/2009 of July 22<sup>nd</sup>, 2009 on implementing Directive 2005/32/EC of the European Parliament and the Council on eco-design requirements for household refrigerating appliances (Official Journal of the European Union L 191/53 of July 23<sup>rd</sup>, 2009), as well as amendments and additions made by the European Commission (EC) Regulation 2016/2282 of November 30<sup>th</sup>, 2016.

**National Energy Efficiency Action Plan (NEEAP 2019-2021) (G.D. No. 698 of 12/27/2019)** aims to facilitate energy efficient retrofits of public buildings with cumulative savings of 58 ktoe by the end of 2021; and energy efficient retrofits of multi-apartment residential buildings in framework of a separate programme by the end of 2021 with average annual savings of 83.6 ktoe (cumulative savings of 193.6 ktoe by the end of 2021).

**National Programme on Energy Efficiency for the period 2011 – 2020** aims for 20 per cent reduction in overall primary energy consumption by 2020 compared to 2009 levels.

Complementing the Energy Strategy of Moldova until 2030 are the National Energy Efficiency Program (NEEP) 2011-2020, the National Energy Efficiency Action Plans (NEEAP) 2013-2015, 2016-2018, 2019-2021, and the National Renewable Energy Action Plan (NREAP) 2013-2020. The NEEP, NEEAP’s and NREAP were designed in accordance with Moldova’s commitments under the Energy Community Treaty.

With the new 2018 Law 139 of 2019 on energy efficiency (which transposes the Energy Efficiency Directive 27/2012/EU), the Moldovan authorities plan to abolish the NEEP as a planning document, further relying exclusively on NEEAP’s (IEA,2017).

**Law on Energy Performance of buildings (Law No. 282 of 05/10/2023) – Near Zero Buildings-** this law was adopted on October 5<sup>th</sup>, 2023 and will enter into force on April 5<sup>th</sup>, 2024. Nearly zero-energy buildings requirement will follow the timeline below:

- (1) After April 5<sup>th</sup>, 2024, All new buildings must be buildings with an energy consumption nearly equal to zero.

**Law on energy labelling of energy-related products (Law No. 44 of 03/27/2014)** is being supported by the Regulation 1003/2014 which establishes a set of labelling requirements for the

following appliances: household tumble driers, air conditioners, domestic ovens and range hoods, electrical lamps and luminaries, household washing machines, household dishwashers, household refrigerating appliances and TV sets.

**Low Emissions Development Program until 2030**, with a general objective consisting in facilitating the implementation of the NDC by identifying specific objectives that include activities from all sectors.

In its updated NDC (2020), the Republic of Moldova intends to achieve more ambitious targets than in its intended NDC (2015). The country's new economy-wide unconditional target is to reduce its greenhouse gas emissions by 70 per cent below its 1990 level in 2030, instead of 64-67 per cent as committed in the intended NDC. As to the new economy-wide conditional target, instead of 78 per cent as committed in the intended NDC, the reduction commitment expressed above could be increased in the updated NDC up to 88 per cent below 1990 level, provided that a global agreement addressing important topics, including low-cost financial resources, technology transfer, and technical cooperation accessible to all at a scale commensurate to the challenge of global climate change, is insured.

Given the country's energy consumption structure, the government focus on the EE of buildings and transport, which represent a considerable share of total final energy consumption. The Energy Efficiency Agency's program supporting this activity (in line with Law No. 139/2018) established in 2020 is having a positive impact, but more funding and efforts might be directed into renovating public authorities' buildings.

In addition, measures aiming to improve EE by promoting high efficiency co-generation; reducing energy losses in centralized supply systems for heating, electricity, and natural gas; and promoting the use of low-fuel and low-carbon transport need to be supported and actively pursued, including through appropriate financial incentive mechanisms.

### C. Dimension – Energy Security

Moldova lacks any substantial energy resources such as coal and oil, and its RES potential is not fully exploited. As much as 80.5 percent of primary energy resources were imported in 2022, and the country's natural gas supply is dependent on imports from a single source—the Russian-owned gas company Gazprom. Natural gas is the main resource used for electricity and heat production, which only exacerbates the situation. Oil products are imported mainly from Romania, Russia, and Belarus. Moldova also relies heavily on electricity imports to cover its domestic demand. The country lacks oil and gas storage infrastructure, gas storage capacities, and storage agreements with neighboring countries. All these factors leave Moldova exposed to outside influences and the actions of malign actors, as demonstrated by Russia's recent confrontational energy diplomacy and weaponization of energy exports.<sup>48</sup>

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<sup>48</sup> <https://www.bbc.com/news/business-61237519>

Improving Moldova's energy security is critical for both national sovereignty and regional stability, as Moldova is a major transit route for natural gas and its electricity system is integrated with that of Ukraine.

The development of a more resilient energy infrastructure thus remains one of the priorities for the Moldovan energy policy. This includes a new cross-border transmission line with Romania already under construction, which would allow Moldova to import electricity from Romania and eventually other EU suppliers without being dependent on the MGRES power plant located in the Transnistrian region.

To enhance security of gas supply, Moldovan authorities are seeking to diversify gas supplies and create gas stocks for emergency situations or specific cases (especially natural gas shortages) by enabling acquisition, creation and use of gas stocks.

In the medium term, Moldova also needs to focus on setting up its own electricity generation capacities. Such efforts should focus on renewable sources of electricity generation such as wind and solar. So far, the share of renewable energy sources in electricity generation is only about 4%. One of the main priorities of the Government should thus be the launching of the planned auctions for large renewable energy projects, which could significantly foster the development of this sector.

Key legislation relevant for the dimension of energy security include:

Moldova has an umbrella law for the energy sector; Law no. 174 of 21 September 2017<sup>49</sup> on Energy which establishes the legal framework for the organization, regulation and ensuring the efficient and safe operation of the energy sector.

Law no. 107 of May 27<sup>th</sup>, 2016<sup>50</sup> on Electricity establishes the general legal framework for the organisation, regulation, operation and monitoring of the electricity sector. In addition to the law, there are a number of regulations and decisions which are issued under the authority of the energy regulatory authority ANRE.

In addition, the following pieces of secondary legislation necessary for implementing the 2016 Law on Electricity have yet to be prepared/adopted:

- Regulation for auctioning new generation capacities for large-scale renewable energy producers;
- Regulation for authorisation of new generation capacities over 20 MW;
- Minimum fuel stocks requirements for power plants; and
- Designation of the Market Operator for electricity and gas sector.

Law no. 108 of May 27<sup>th</sup>, 2016 on Natural Gas<sup>51</sup> establishes a general legal framework for the organisation, regulation, operation and monitoring of the natural gas sector. The Law foresees the

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<sup>49</sup> [https://www.legis.md/cautare/getResults?doc\\_id=128128&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128128&lang=ro)

<sup>50</sup> [https://www.legis.md/cautare/getResults?doc\\_id=129837&lang=ro](https://www.legis.md/cautare/getResults?doc_id=129837&lang=ro)

<sup>51</sup> [https://www.legis.md/cautare/getResults?doc\\_id=129133&lang=ro](https://www.legis.md/cautare/getResults?doc_id=129133&lang=ro)



development of a competitive natural gas market, while protecting consumers rights and meeting environmental protection norms.

Law no. 461-XV of July 30<sup>th</sup>, 2001 on the market for petroleum products<sup>52</sup> provides the organisational, legal and economic framework for ensuring the country's economic security and regulating the import, transport, storage and trade of petroleum products on the domestic market as strategic products.

#### **D. Dimension – Internal energy market**

Despite the laws and regulations mentioned above, the Energy Community Annual Implementation Report for the year 2022 highlights several problems relating to incomplete transposition or implementation of Energy Community *acquis* in the electricity market.

With regard to primary legislation, the following new pieces of Energy Community legislation need to be transposed:

- New EU Directive on the internal market for electricity (2019/943); and
- New Regulation on electricity (2019/944).

#### **Key players on the energy market of Moldova are:**

**Moldavskaya power station “MGRES”**<sup>53</sup> (also known as Kuchurgan power station or the Moldovan Thermal Power Plant, in ATULBD) has 12 units of a total installed capacity of 2,520 MW. The “MGRES” power station was originally commissioned in 1964, with eight sub-critical thermal coal-fired units. It is the region’s largest power plant and in 2022, it accounted for around 80% of the electricity produced in the rest of Moldova. Water for cooling the plant is drawn from the Kuchurgan River estuary.

The power station was privatized in 2004 by the Transnistrian authorities, and since then, it has been operated by “MGRES”, a subsidiary of Inter RAO UES<sup>54</sup>. However, Moldova does not recognize the ownership status of this company. “MGRES” is the largest power company in an area comprising Moldova and southern Ukraine. It used to supply electricity to Ukraine, Romania and Russia but presently it only supplies Moldova (including the ATULBD).

In November 2018, SE “Moldelectrica” (the Moldovan TSO) synchronised a few units of “MGRES” with the Romanian energy grid through the 400 kV Kuchurgan–Vulcănești and Vulcănești–Isaccea transmission lines. On March 16<sup>th</sup>, 2022 the synchronisation of energy systems with the European electricity network (ENTSO-E)<sup>55</sup> was completed.

**“Termoelectrica” SA** is a major producer of electricity, based in Chisinau.

<sup>52</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130210&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130210&lang=ro)

<sup>53</sup> <https://moldgres.com/contacts>.

<sup>54</sup> This company was dissolved in 2008. Subsidiaries were separated and privatized, and the holding company was merged into UES FGC, state-owned energy company located in Moscow, Russia.

<sup>55</sup> ENTSO-E, the European Network of Transmission System Operators for Electricity, is the association for the cooperation of the European transmission system operators (TSO’s). The 39 member TSO’s representing 35 countries are responsible for the secure and coordinated operation of Europe’s electricity system, the largest interconnected electrical grid in the world.

Simultaneous to producing electricity, “Termoelectrica” SA also produces thermal energy (heating and hot water) which it distributes and supplies to consumers, community housing organizations, government agencies, and others in Chisinau and its suburbs.

The simultaneous generation of electricity and thermal energy in Chisinau is organized at:

- CET-1 (Centrala Electrică cu Termoficare (CET) - combined heat and power plant (CHP), also called Termoelectrica “Source 2”) with an installed 66 MW electric capacity and 296 MW thermal capacity<sup>56</sup>;
- CET-2 (also called Termoelectrica “Source 1”) with an installed 240 MW electric capacity and 1,397 MW thermal capacity; heat is also produced by heat-only-boilers. The available capacity of gas-fired units is 210 MW, due to old units that are operated at 90 % of installed power capacity.

Through these two power plants, in 2022 “Termoelectrica” SA accounted for about 13% of the electricity produced in Moldova, excluding Transnistria. However, these power plants do not operate in the summer season when heating is not required.

The electricity production units are old, and the process of modernization is ongoing (CET-1 was built in 1952; and CET-2 was completed in 1963). There is an ongoing World Bank/IBRD project of 92 Mln EUR supporting a substantial modernisation of “Termoelectrica” SA infrastructure, which should lead to more efficient heat and electricity cogeneration and increase the installed electric capacity. CET 2 (Source 1) of “Termoelectrica” SA has 3 units of 80 MW capacity each; one of these three units is under modernization to reach 110 MW of total installed capacity.

In 2022, “Termoelectrica” SA accounted for 528 GWh of electricity production out of total national production of 851.1 GWh, accounting for about 62% of the electricity produced on the Right bank of Dniester River.

The **CET Nord SA** is a CHP located in Balti. The company produce and supplies the heating of the northern part of Moldova. It has boilers and turbines with installed electricity generation capacity of 24 MW and installed heat capacity of 142 Gcal/h. It also has an internal combustion engine that has installed electricity generation capacity of 13.4 MW and installed heat capacity of 10.75 Gcal/h. Heat is also produced by heat-only boilers.

In 2022, CET-Nord accounted for 83.6 GWh of electricity production<sup>57</sup> out of total national production of 851.1 GWh, accounting for 9.8% of the electricity produced in Moldova excluding ATULBD.

In Moldova, a single company runs the transmission system – the transmission system operator (TSO). Distribution power lines are for shorter distances and transport lower-voltage electricity on

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<sup>56</sup> <https://termoelectrica.md/>

<sup>57</sup> <https://cet-nord.md/ro/transparent/tep>

a local scale to end users; electricity distribution companies (DSO) are responsible for the network of power lines, underground cables, substations etc. that transport electricity to end consumers.

**Transmission System Operator (TSO) SE “Moldelectrica”** is a state-owned enterprise created by the Government of Moldova in 2000 employing 1,330 persons in 2022. SE “Moldelectrica” holds the licenses issued by ANRE for (i) operating the electricity transmission network in Moldova, excluding Transnistria, and (ii) for dispatching<sup>58</sup> the system. SE “Moldelectrica” is not a direct participant in the purchase or sale of electricity and is responsible only for balancing the electricity flow and the maintenance of the transmission network infrastructure.

The licenses require that SE “Moldelectrica” takes care of the maintenance of the transmission network through 183 substations with a voltage of 35 kV and higher (total installed capacity of 4,749.3 MVA) including:

- Vulcanesti – 400 kV;
- 3 substations of 330 kV in Chisinau, Balti and Straseni;
- 131 substations of 110 kV;
- 47 substations of 35 kV; and
- 1 substation of either 10 or 6 kV, depending on local low voltage electricity distribution system.

There are two **Distribution system companies (DSO)** in Moldova:

**SCI “Premier Energy Distribution” SA:** it manages the distribution network in the centre and south of Moldova (excluding the Left bank of the Dniester River). The company serves over 930,000 consumer locations and in 2022, the company delivered some 2,973.6 mln kWh to final consumers. The Premier Energy group, of which Premier Energy Distribution is a part, is owned by the Czech group Emma Capital.

**“RED Nord” SA** (Northern Electricity Distribution Networks SA or “*Rețelele Electrice de Distribuție Nord*”) offers electricity distribution services to all users in the Northern part of Moldova, namely: Balti municipality, and districts of Briceni, Drochia, Donduseni, Edinet, Falesti, Floresti, Glodeni, Ocnita, Rezina, Rîșcani, Sîngerei, Soroca and Ungheni. The company provides electricity to some 480,000 consumers in the North of Moldova, excluding the ATULBD. In 2022, it delivered<sup>59</sup> some 1,067.0 GWh to final consumers. Average electricity consumption per person is about 100 kWh/person per month in the northern region.

**Electricity wholesale supplier, “Energocom” SA** is the only dealer that procures electricity and sells it to suppliers and network operators.

“Energocom” SA is a state-owned trading company designated as central electricity supplier by the Government in November 2017. As such, predominantly in the last years and also during the current state of emergency, it is the single buyer of bulk electricity, selling it in the internal (Right

<sup>58</sup> Managing energy flows along the grid so that supply and demand are in balance, ensuring the continuity and safety of the service provided.

<sup>59</sup> <http://rednord.md/doc/indicacion/Indicatorii%20tehnico-economici%20privind%20activitatea%20operatorului%20retelelor%20de%20distributie%202021.pdf>

bank of Dniester River) wholesale power market. “Energocom” SA purchases electricity and manages contracts for the delivery of electricity from:

- Local producers authorised by ANRE and situated in Moldova, excluding the ATULBD, such as “Termoelectrica” SA, CET Nord and the various renewable energy producers;
- “MGRES” and Dubăsari HPP in ATULBD; and
- Producers in Ukraine and in Romania.

“Energocom” SA purchases electricity on the market and resells it to (retail) suppliers and network operators at regulated prices approved by ANRE, in the quantities established by the latter, in compliance with the provisions of the law and the regulatory acts of ANRE. In turn, (retail) suppliers are obliged to procure this electricity according to these terms.

**Retail electricity suppliers** purchase electricity from the wholesale market and sell it to end consumers. Retail suppliers are the companies to which end consumers pay electricity bills.

**I.C.S. “Premier Energy” SRL:** branch of the Premier Energy group, the largest electricity supplier in Moldova, operating in the centre and the south of Moldova (excluding the ATULBD).

**“FEE Nord – Furnizarea Energiei Electrice Nord” SA:** FEE-Nord company holds a license for the supply of electricity in the territory of Balti municipality and in fifteen districts: Ungheni; Floresti; Falesti; Riscani; Singerei; Glodeni; Soldanesti; Rezina; Dubasari, Coşnița; Donduseni; Soroca; Edinet; Briceni; Ocnita; Drochia.

**Prices paid by “Energocom” SA to producers:** ANRE fixes the price at which regulated local producers (“Termoelectrica” SA, CET-Nord and renewable producers) can sell to the wholesale commercial company “Energocom” SA. This concerns about 20% of the energy supply.

The remaining 80% of supply is largely covered by electricity produced by “MGRES” on the ATULBD. There is an annual auction organised by a committee that comprises representatives from the Government, SE “Moldelectrica” and ANRE for fixing the price of imported electricity for the period. The auction for imported electricity is open including “MGRES”, companies from Ukraine and Romania.

However, in practice it is understood that “MGRES” captures the largest share of the market as it is able to offer very low prices to the Moldovan market due to the fact that the company does not pay in full for the natural gas supplied by JSC “Moldovagaz”. This has created a sizable debt of JSC “Moldovagaz” to Gazprom. The volume of the debt is subject to various estimations and is a highly controversial subject. According to information in media sources, in 2022, the price offered at auction by “MGRES” (5.95 cent USD/kWh) is almost half the offer made by Ukraine (8.55 – 9.65 cent USD/kWh). In addition, the price for electricity produced by Dubasari HPP is not regulated by the ANRE or any other Moldovan institution.

**Prices paid by suppliers to “Energocom” SA:** The suppliers of electricity – “FEE Nord” SA and I.C.S. “Premier Energy” SRL – pay to “Energocom” SA a price that is based on the prices paid by “Energocom” SA to the producers (as above), plus a margin. The prices paid by end-consumers include: the price of “Energocom” SA, the remuneration of the transmission system operator SE

“Moldelectrica”, and the profit margins of all market participants. The price is regulated by ANRE for each level: electricity production, transmission, distribution and supply.

**Retail price (tariffs) paid by end consumers:** In line with the relevant EU directive, the regulator ANRE must respect households’... *‘right to be supplied with electricity of a specified quality at reasonable, easily and clearly comparable, transparent and non-discriminatory prices.’* Electricity tariffs are set by ANRE decision following requests by the electricity supply companies (see Annex 2). There are different tariffs depending upon:

- The voltage level of the end user’s connection to the network;
- The region of the country, excluding the ATULBD. “Premier Energy” SRL supplies the Centre and South regions and “FEE-Nord” SA the North region).

**The gas market** in Moldova is far from being liberalised, being dominated in the past by a single player – JSC “Moldovagaz” – which is involved in almost all of the activities in the sector.

JSC “Moldovagaz” dominates the gas market in Moldova having the dual role of gas supplier as well as owning gas transmission and distribution companies (and other companies that provide related services) operating in Moldova including the ATULBD. JSC “Moldovagaz” is owned by Russian Gazprom (50%), Government of Moldova (35.33%), the ATULBD regional authorities (13.44%) as well as by a number of other small shareholders.

JSC “Moldovagaz” acts as a licensed supplier of natural gas meeting public service obligations for the supply of natural gas to final consumers (domestic and non-domestic). In this capacity, it has contractual relationships with other participants in the natural gas market (carriers and distributors) to ensure a safe and reliable supply of natural gas to consumers. JSC “Moldovagaz” has the following contractual relations:

- Contracts with Gazprom for the purchase (import) of natural gas into Moldova from Russia;
- Contracts with the transport company LLC “Vestmoldtransgaz” for the transport of natural gas over long distances using transmission networks;
- Contracts with natural gas distributors – 12 affiliated distribution companies – to distribute gas to end consumers through high-, medium- and low-pressure networks.

JSC “Moldovagaz” is also the founder and sole partner in other companies providing services on the natural gas market, namely:

- LLC “Vestmoldtransgaz”, which transports natural gas in Moldova, excluding the ATULBD;
- LLC “Tiraspoltransgaz”, which transports natural gas on the ATULBD (the company is not licensed as a TSO);
- 12 natural gas distribution companies in Moldova, excluding the ATULBD;
- 6 gas distribution companies on the ATULBD;
- Enterprises that engage in gas-related activities (training, supply of liquefied gas, etc.).

In order to diversify the supply of gas into Moldova, the project ‘Interconnection pipeline of the Romanian Natural Gas Transmission System with the Gas Transmission System of the Republic of Moldova’ was launched<sup>60</sup>. The key elements of the project are:

- The construction of a gas pipeline between Romania and Moldova (Iași – Ungheni), including a gas pumping station in Moldova;
- The creation of the Moldovan state-owned enterprise LLC “Vestmoldtransgaz” in July 2014 to operate the Iași – Ungheni gas transport pipeline to transport gas from Romania. LLC “Vestmoldtransgaz” has since been privatised with the continuing obligation to complete the interconnection project. The new owner is “Eurotransgaz” which belong to the Romanian state-owned enterprise SNTGN “Transgaz”. In August 2021, the European Bank for Reconstruction and Development (EBRD) took a stake of 25% in LLC “Vestmoldtransgaz” by increasing the share capital by 20 Mln EUR in order to finance the development of the gas transmission pipeline Ungheni-Chisinau. Also, in 2022 “Transgaz” and the EBRD signed a Memorandum of Understanding under which, depending on “Transgaz”’s financing needs, the EBRD will consider co-funding the project through lending or equity participation. After investing in LLC “Vestmoldtransgaz”, the EBRD is playing a key role in strengthening Moldova’s energy security<sup>61</sup>;
- The connection of the LLC “Vestmoldtransgaz” transmission network with: (i) the national gas transmission system run by LLC “Moldovatrangaz”; and (ii) the local distribution network run by “Chisinau-Gaz” Ltd.

Since the commissioning of the Iasi - Ungheni - Chisinau pipeline, 43.8 Mln m<sup>3</sup>/year of natural gas flowed from LLC “Vestmoldtransgaz” to LLC “Moldovatrangaz”. The capacity of this pipeline is large enough to supply the whole territory of Moldova excluding the ATULBD. However, it has no capacity to supply gas to the ATULBD. Average gas consumption of Moldova is 1 billion m<sup>3</sup> of gas per year. Additional 3 billion m<sup>3</sup> of gas will have to be delivered to the ATULBD, if Moldova will continue to purchase electricity from “MGRES”.

Moldova faces a number of structural challenges in the energy sector. The country is heavily reliant upon Russian gas, both for end consumers, including households, as well as for the production of electricity. Development of the renewable energy sector is slow. As such, energy security is a critical issue for Moldova, which has been exacerbated by the war in Ukraine.

Electricity producers in Moldova, excluding the ATULBD, supply only 20% of total electricity. The rest is produced in that region, with small amounts being imported from Ukraine.

Achieving energy security requires a multi-faceted approach which needs to be properly reflected in Moldova’s energy strategy currently under elaboration. Namely achieving energy security requires the following measures, among others:

- Increasing electricity production capacity on the Right bank of Dniester River. One option is upgrading the existing obsolete infrastructure, assuming this is feasible and economically viable. A more sustainable option is investing in new modern and efficient power

<sup>60</sup> Funded by the European Union, under the Joint Operational Program Romania-Moldova-Ukraine 2007-2013.

<sup>61</sup> [https://www.ipn.md/en/ebrd-buys-25-stake-in-vestmoldtransgaz-7966\\_1084013.html?mselkid=3698a21bcf9b11ecb44ea5269f535da7](https://www.ipn.md/en/ebrd-buys-25-stake-in-vestmoldtransgaz-7966_1084013.html?mselkid=3698a21bcf9b11ecb44ea5269f535da7)



generating plant(s)<sup>62</sup>. This entails that the Government creates a conducive environment and incentives for attracting private investors.

- Replacing “MGRES” as the balancing generation facility is also a matter of high importance.
- Increasing the capacity of gas transmission from Romania and upgrade infrastructure both for transmission within the country and interconnection.
- Increasing the share of large-scale renewables production in total electricity production which is currently very low at 3 % of total production. Implementation of auctions for large-scale renewables’ producers, which have not taken place as originally planned, need to go ahead to facilitate urgent investment in infrastructure from private investors. In addition, public investments are required to ensure connection of renewables’ producers to the grid across the country. Planning should take into consideration balancing supply from intermittent sources such as solar and wind with more consistent sources of electricity supply.
- Prioritising interconnection with the European electricity network (ENTSO-E) through Romania. Reliable cross-border interconnection with the EU electricity market is critical for stability and security of the system, for balancing supply and demand, and also for introducing competition. This will also require significant public investment in additional physical connections with the EU energy system through new public infrastructure.
- Liberalising the electricity market allowing market mechanisms to facilitate production, transmission and distribution of electricity in the market. Liberalisation combined with increased interconnection to the European network will support competition in the sector.

All of the above will require careful planning of public investment into the energy sector and coordinated measures to create incentives for private investment.

Electricity production capacity is very limited, and the existing infrastructure on the Right bank of Dniester River is obsolete.

The ongoing investment projects in energy infrastructure financed by international financial institutions (IFI’s) can be seen in Table 5 below.

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<sup>62</sup> The new investment should cover: substituting the CHP’s cogeneration heat and power plants (currently 306 MW); covering the base load demand of the system (Right bank of Dniester River) (150-170 MW); Providing flexibility / balancing to the system (20-30 MW). A modern gas-fired, combined-cycle, cogeneration heat and power plant have an overall efficiency of around 64 %. This is 50 % more than the efficiency of the existing CHP plants in Moldova.



**Table 5: Investment project financed by loans from the IFI's<sup>63</sup>**

Name	Period	Amount	IFIs	Description
Moldova-Romania electricity interconnection	2020-2024	261 Mln EUR	EIB, EBRD, World Bank	Construction of the power interconnection Isaccea – Vulcanesti – Chisinau between the Moldova and Romania.
Ungheni-Chisinau gas pipeline	2021-2025	92 Mln EUR	EIB, EBRD	Construction of a natural gas pipeline with a length of 120 km connecting the existing Moldova-Romania gas interconnection from Ungheni at the Moldova-Romania border to Chisinau.
Moldelectrica power transmission	2014-2021	40 Mln EUR	EIB, EBRD	Rehabilitation and modernisation of the high voltage transmission network of SE “Moldelectrica”.
Balti Thermal Energy System Project (S.A. CET-Nord)	2022-2025	17.5 Mln EUR	EBRD	Technological modernisation of S.A. CET-Nord and the rehabilitation of the components of the central heating system with thermal energy in Balti.
EU4Energy Program phase II project	2021-2024	8.5 Mln EUR	EU	Incorporate digitalisation in all relevant energy market segments, investments in sustainable energy, prioritization of infrastructure projects, increased integration of the regional market and intra-regional trade.
Innovative Program" Clean Technologies for Large and Medium Enterprises and Start-ups"	2019-2021	6 Mln EUR	UNIDO, GEF	Promote and support technologies in the field of renewable energy in the Republic of Moldova by piloting an Entrepreneurial Accelerator.
Moldova buildings - energy efficiency project <sup>64</sup>	2021-to-date	76.4 Mln EUR	EIB, EBRD	Improve energy efficiency at the building level, prioritising public buildings (both municipal and state owned) across the country.

Moldovan policy makers should consider further public investment or the attraction of private investment in construction of new CHP's.

The energy system of Moldova is not directly connected to the European system. Reliable cross-border interconnection with the EU electricity market is critical for stability and security of the system, for balancing supply and demand, and also for introducing competition. A fully functional interconnection Moldova – ENTSO-E – Ukraine requires strengthening the electricity network. This in turn requires the construction of additional overhead lines (OHL) for electricity within Moldova and to better connect Moldova to Romania and Ukraine.

<sup>63</sup> <https://midr.gov.md/ro/proiecte-de-asistenta-externa/proiecte-in-sectorul-energetic>

<sup>64</sup> <https://www.aee.md/ro/page/proiectul-de-eficienta-energetica-a-cladirilor>

*Table 6: Required additional OHL's*

<b>For the national network</b>	<b>For Moldova-Romania connection</b>
400 kV Vulcănești – Chișinău	400 kV Suceava – Bălți
330 kV Straseneni – Ribnita	400 kV 2nd circuit Vulcănești – Isaccea
330 kV Balti – Ribnita	400 kV Vulcănești – Smârdan
35-110 kV Șoldănești – Ignăței	400 kV Iasi (RO) – Ungheni – Strășeni
110 kV 2nd Chisinau – Straseneni – Balti	

Direct interconnection with Romania will require the strengthening of network infrastructure. The project also includes the construction of the new 400 kV high voltage line, 158 km from Vulcanesti to Chisinau, and the modernisation of Vulcanesti and Chisinau electricity substations.

The additional lines required to connect Moldova and Ukraine include:

- OHL Vulcănești-Artsyz 330 kV;
- OHL Bălți – CHE Dnestrovsk 2nd circuit 330 kV.

In addition to direct connection to Romania, an alternative route of interconnection with the European energy system is through interconnection together with Ukraine. The Ukrainian power system has several connections to Europe.

Preparations for the synchronisation and interconnection of the energy systems of Moldova and Ukraine to the ENTSO-E Continental Europe energy system started in 2017. Full-time synchronisation was originally scheduled for the year 2023. Preparations included significant work by SE “Moldelectrica” in the period 2019 – 2020, including tests at power plants in Moldova.

One of the planned preparatory steps included isolation of the power systems of Ukraine and Moldova from those of Russia and Belarus, with a view of conducting system interconnection tests with ENTSO-E. These tests were planned for a few days throughout 2022. As such, between February 24<sup>th</sup> and 26<sup>th</sup> 2022, the power systems of the Republic of Moldova and Ukraine started to operate together with ENTSO-E, after disconnecting Ukraine from the energy system of Russia and Belarus. The purpose of the test was to demonstrate the ability of the power systems to maintain the required frequency of 50 Hz in various modes of operation.

On March 16<sup>th</sup> 2022, Ukraine joined the unified continental European electricity system, as did Moldova; this switch means that Russia can no longer control technical aspects of the Ukrainian and Moldovan networks, such as grid frequency. This is a milestone towards permanent synchronisation in the future.

Notwithstanding the above efforts, the role of “MGRES” on the ATULBD remains significant for balancing the interconnected electricity systems, as it is located within the electricity node between the electricity systems. Figure 4 below shows the interconnections of Moldova – Ukraine – Romania energy systems and the electricity flow.



Figure 4: The electricity flow Moldova – Ukraine – Romania<sup>65</sup>

In the Figure above, the yellow line indicates the electricity flows from Romania to Moldova and from Moldova to Ukraine via the “MGRES” electricity node. The green line from Vulcanesti shows the connection between Moldova and Bulgaria, which is used often by “MGRES” to export electricity to Bulgaria. The rest of the green lines show the connection between Moldova and Ukraine. It is noted that the electricity node of “MGRES” is the key interconnection point between the electricity systems of neighbouring countries.

Also, the purple lines show 110 kV interconnection between Moldova and Romania (3 interconnections) and Moldova and Ukraine (14 interconnections).

The original plan for interconnecting Moldova with ENTSO-E was to have the electricity flow from Ukraine to Moldova and from Moldova to Romania. This is because the cost of electricity production in Ukraine is cheaper than in Romania. However, currently the electricity mostly flows in the opposite direction because the demand in Ukraine is higher than production due to the ongoing war.

<sup>65</sup> Source: SE Moldelectrica, [https://moldelectrica.md/ro/activity/system\\_state](https://moldelectrica.md/ro/activity/system_state)

The Energy Community secretariat in its 2021 progress report noted that the development of renewable energy is stagnating, even though the legislative framework was developed in 2007. While the net metering and feed-in-tariff schemes for smaller producers are in full operation, the auctions' scheme for large-capacity renewables producers is not yet fully up and running. As a result, the renewables sector today is comprised of many small producers of electricity as licences are easier to obtain for production of up to 1 MW for solar parks and up to 4 MW for wind parks. Getting the auctions process working for large-scale renewable operators is an urgent priority. In the Annual Implementation Report 2022 of EnC it is mentioned, that Moldova is one of the three Contracting Parties that achieved its 2020 renewables target. No substantial progress was achieved, however, amendments to the Renewables Law, which are being drafted, should enable first auctions for renewable energy projects.

The current challenges are with regard to the licenses for large-scale renewable energy production as follows:

- Auctions were planned in previous years but have not actually materialised. It is understood that an auction is planned to take place by the end of 2023.
- At present, there are grid connection applications which altogether are approximately 1,400 MW of capacity. However, the Government plans indicate that the target of total renewables energy supply is 410 MW of installed capacity in 2025.
- As a result of both the delay in the auctions and the issuance of so many provisional permits, a number of companies have invested in Moldova on the expectation of a reasonable chance of securing a power purchase agreement under the auctions scheme. Not only are they incurring sunk costs as they await the auction, but a very large number may see their investments lost given the great imbalance between the limited capacity to be auctioned and the scale of the provisional permits issued. This could potentially lead to a loss of investors' confidence in the renewables sector in Moldova.

Furthermore, in order to be able to develop renewable investments across the country, it is necessary for connections to the grid to be available for large-scale renewable energy parks. However, the grid can currently only accommodate large-scale producers in few places. This requires SE "Moldelectrica" to urgently renovate and develop the transmission network accordingly.

Increased amounts of electricity from renewable energy sources will require a balancing capacity from classical power plants (mainly gas-fired units operating in Moldova). The challenge is that electricity from renewable sources (wind, solar) is intermittent, and a hot-reserve capacity of a traditional power plant (perhaps a gas-fired unit) must be in permanent operation in order to ensure the stable supply of electricity. The cost of electricity produced by such a traditional power plant will be high as it will be operating at minimum load. In the future, the Government will have to factor the risk of high costs for balancing the electricity load of RES electricity.

The development of the legislative and regulatory framework in Moldova is still ongoing. The Energy Community *acquis* related to the electricity sector is either only partially transposed or

partially implemented. The current legislative framework only allows limited competition in the electricity market. A truly competitive market can only be created with the entry of new players, including from abroad. Investors, especially the foreign ones, will demand the existence of energy trading products and cross-border capacities similar to those from which they benefit in the EU internal energy market. This includes competition in the wholesale market which is currently dominated by “Energocon” SA as the sole Central Electricity Supplier and only intermediary in the wholesale market for electricity.

Ultimately, the price for the final consumer is not determined through competition. The 2016 Law on Electricity provides that regulated prices must be gradually eliminated in line with a timeline to be established by ANRE following an assessment of competition in the market. This assessment has not been carried out and no timeline has been set.

The preceding sections have highlighted the challenges in the energy sector, in the face of which it will be difficult to meet Moldova’s binding international commitments. The attainment of the domestic policy targets and the fulfilment of Moldova’s international commitments in the energy sector requires clear policy formulation and targets as well as the proper planning of public investments and attraction of private investments.

Given the increasingly urgent need for Moldova to ensure its energy security, including by strengthening its connections with the EU energy system, as well as the high ambition in its domestic and international commitments, and the considerable challenges in the energy sector, there is an immediate need to focus on investment in infrastructure. This will require determining the volumes of investment required against the established energy sector policy; and preparing an energy sector investment plan clearly distinguishing between what the Government can fund in the form of public investment and what areas would require private investment.

To date, investment in the energy sector has been largely funded by the Central Government or through state-owned enterprises. Some current projects are being financed by international financial institution lending largely to the public sector. Going forward, public investment requirements in the energy sector will need to be integrated into an improved public investment management process. Much greater focus must also be placed on how to attract private investment into the sector, given the high investment needs and the poor efficiency of the existing state-run production facilities.

Given the present geopolitical and economic circumstances, it clearly follows that attaining energy security is a big challenge. The production of electricity on the Right bank of the Dniester River covers around 20% of total consumption with the remaining 80% produced mainly on the ATULBD, with limited amounts imported from Ukraine and Romania. This leaves Moldova highly energy insecure. From this standpoint, the policy objective should be clear: there is an urgent need to increase local production on the Right bank of Dniester River to cover as much as possible of this 80% electricity gap.

In early 2022, the Government announced a policy intention to **increase renewables** to up to 30% of total electricity consumption by 2025. At present, the target set by the updated Government Decree 401/2021 is 410 MW of newly installed capacity. This is also in line with Moldova’s

international commitment on green energy. Whereas this is a positive development demonstrating the Government's commitment to the promotion of renewables, the announced target may be unrealistic to achieve under the current circumstances.

There is a backlog of applications of investors of renewables to connect to the grid up to 1,400 MW. The last tender for a purchasing power agreement took place in 2018. At that time, and until end-2021 when inflation and interest rates exploded worldwide, the terms that the Government could offer in purchasing power agreements were considerably better than today. Up to end-2021, interest rates were low in Moldova (around 5% for the one-year T-Bill) in line with the trend worldwide. With the current high interest rates, the opportunity cost for the private investor in renewables is very high. At present, Moldova's reference interest rates for an investor (defined as the one-year T-Bill) is close to 20%. This means that any private investor is more likely to select a relatively risk-free investment in Government Securities rather than undertaking a complex and risky investment in renewables. Moreover, given that investment in renewables is likely to require high levels of leveraging, the price fixed in the purchasing power agreement should allow for an equal or higher return than the reference interest rate to attract the investor to the auction. It needs to be taken into account that the current level of interest rates is prohibitive for borrowing and as such undermines any business plan.

From the above it is clear that in order to conclude successful auctions, the Government will have to offer higher prices and effectively subsidise the renewables market to attract private investors and at the same time ensure acceptable prices for the end consumers.

Even if somehow the ambitious renewables target of 30% is achieved, there still remains a gap of around 50% of total consumption to be covered. There are two ways to address this challenge.

Firstly, **building new classical power plant(s)**. This option will increase domestic production of electricity but will require substantial public investments and/or a concession to a private investor/operator. It needs to be noted that if the policy option is 100% ownership by the Government, the cost of the electricity produced from this facility is not likely to be competitive in the market. The cost of electricity produced from the current state-owned CHP facilities in Moldova is very high. This is due to poor management and bloated employment in the existing production facilities. Policy makers in Moldova may want to investigate the cases of peer countries that have managed to successfully build new classical power plants. For example, in Armenia a new 250 MW thermal power plant was constructed with private finance and is being operated by the investor<sup>66</sup>.

Secondly, **increasing the imports of electricity** mainly from Romania and investing in a fully functional Moldova – Ukraine – ENTSO-E interconnection. For this to happen, it is necessary to strengthen the electricity network through the construction of additional OHL's. This requires careful planning and significant public investment.

The energy sector needs a clear and realistic policy framework, a **realistic plan of action and the effective mobilisation of funds from both government and the private sector**. It is important

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<sup>66</sup> <https://www.azatutyun.am/a/31585111.html>



to stress that, contrary to popular belief, Moldova is not short of resources. Moldova has a very low debt/GDP ratio and has access to funds from official credit sources and the domestic capital market. There are also several international private investors on stand-by for opportunities on the condition that there is tangible improvement in the country's business climate.

The main problem in Moldova lies in the inability to effectively plan and allocate resources to investments. As far as the Government Budget is concerned, Moldova suffers from a persistent and significant under-execution of public investment which leaves large amounts of resources unutilised. This is due to over-ambitious budgeting combined with the absence of a proper process to appraise and select capital investment projects<sup>67</sup>. The recently published results of the 2021 Budget are characteristic of the problem: whereas the Government planned a 6.3 % deficit/GDP in the original 2021 Annual Budget Law, the end-year outturn was a little over than 1.9 %.

The on-going exercise by the Ministry of Energy to revise the Energy Sector Strategy is very important and must properly reflect the aforementioned issues.

### **E. Dimension – Research, innovation and competitiveness**

The functioning of the current institutional framework of the Republic of Moldova in the field of research, innovation and competitiveness is based on a series of public policy documents that ensure a clearly defined distribution of roles and responsibilities and provide tools for the implementation of the objectives set out in the strategic documents. The National Program in the fields of Research and Innovation for the years 2020 – 2023 has unified several previously fragmented areas and is intended to be implemented based on an Action Plan that defines the stages for achieving the established objectives. The program is aligned with the objectives of relevant public policy documents for the fields of education, small and medium enterprises, and industrial development.

The national innovation system of the Republic of Moldova is regulated by several normative acts (some of which have been recently repealed, and the replacement normative acts are in the process of being drawn up):

- The Code on Science and Innovation of the Republic of Moldova from 2004, updated in 2018;
- The Education Code of the Republic of Moldova from 2014, updated in 2020;
- The innovative strategy of the Republic of Moldova for the period 2013 – 2020 “Innovations for competitiveness” from 2013, updated in 2016 and repealed in 2019;
- The Research and Development Strategy of the Republic of Moldova until 2020, from 2014, repealed in 2019;

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<sup>67</sup> IMF Public Investment Management Assessment Moldova (PIMA 2019); EU TA Technical Note 2.1 “Review of the current status of implementation of the public investment project appraisal procedure and methodology and recommendations for improvement” (March 2021)



- The National Program in the fields of Research and Innovation for the years 2020 – 2023 and the Methodology for financing projects in the field of research and innovation.

A vast reform of the national innovation system started in 2017, when with the restructuring of all the ministries of the Government of the Republic of Moldova and the reallocation of financial resources, the entire architecture of the field of research, development and innovation was restructured. At a theoretical level, the purpose of this institutional transfer was to ensure more efficient ways of administering and financing the field of research and innovation, therefore these activities have been placed under the responsibility of the Ministry of Education and Research (MEC). As a result, at the time of the implementation of the reform, a substantial increase in the allocations for the financing of research projects was foreseen. Other major developments generated by the reform of the field of research, development and innovation in recent years referred to:

- a) transmission of policy development for the field from the Academy of Sciences of Moldova to the specialized central body of the public administration that ensures the development of the national policy in the fields of research and innovation (MEC);
- b) creation of the National Agency for Research and Development (NARD) according to the provisions of Government Decision no. 196 of 02/28/2018, as an entity subordinate to the MEC, responsible for policy implementation;
- c) creation of the National Agency for Quality Assurance in Education and Research (ANACEC), according to the provisions of Government Decision no. 201 of 02/28/2018;
- d) the transfer of the quality of founder of all public law organizations in the fields of research and innovation to the central specialized body of the public administration.

In the process of administering public finances allocated to the field of research, development and innovation, the MEC takes into account the evaluation of institutions carried out by ANACEC – an institution with extensive powers in the field of evaluation and accreditation of institutions and training programs at all levels. A new element in this regard was the generalization of the procedure for competitive financing of research projects, in all fields. Competitive financing of research projects is organized by ANCD. The proportion of institutional funding (the volume of financial resources allocated from the national public budget directly to institutions in the field of research-development and innovation: higher education institutions, relevant ministries, etc.) in the field of research-development and innovation is currently approximately 40%, the remaining 60% being allocated based on competitive mechanisms for research projects designated as winners in scientific project contests. This way of distributing resources significantly decreased the level of predictability of funding available for a certain period, a fact that induced a situation of instability in the functioning of institutions and research teams.

In the list of priority fields financed through the 2021 Innovation and Technology Transfer Projects Competition, launched by NARD in July 2020, the field “Environment and climate change” (Priority III) appears. The projects submitted within the 5 strategic Directorates in the field – among which is the Safe, Clean and Efficient Energy Strategic Directorate - received a total

funding of 1.92 Mln MDL for the year 2021. The additional competition for the year 2021, launched by NARD in March 2021, provides for the financing of projects from Priority III “Environment and climate change” in a total volume of 2.52 Mln MDL.

Specialized research institutes play an essential role in maintaining and developing national research and development capacities in the fields of energy and environmental protection. Their transfer under the subordination of higher education institutions had among the objectives the direct connection of these institutions to the academic environment and the valorization and development of the national scientific human potential.

The 2017 reform brought the institutional and organizational architecture of the field of research-development and innovation closer to that of the member states of the European Union. The current system ensures a separation of duties regarding the development and coordination of state policy in the field, institutional and project-based funding, evaluation, selection, supervision and research monitoring processes. In theory, the generalized conflict of interests, characteristic of the previous mode of operation of the respective domain, is avoided. In practice, the implementation of the new funding mechanisms led to an increase in the degree of uncertainty regarding the availability, size and sustainability of the financial resources allocated to the field of research and innovation.

Law no. 226/2018 regulates the process of creation and operation of science and technology parks and innovation incubators. These two types of structures are part of the research, development and innovation infrastructure of the Republic of Moldova, and the above-mentioned law brought their mode of operation in line with the complex reform of the field, implemented since 2017. In the sense of the cited Law, the Scientific Technological Park is a *“form of organization of innovation and/or technological transfer activities that take place in a regime of facilities provided by the state, in which organizations from the field of research, development, innovation and technological transfer can be trained, with the participation higher education institutions, economic agents regardless of their legal form of organization, as well as natural persons whose purpose is the development and/or manufacture of innovative products, the development and acquisition in practice of new or modernized technologies and services that perform better in comparison with those used in the country previously”*. The innovation incubator is an *“organization in the field of innovation established on the basis of an association contract between legal entities and natural persons, intended to develop the potential of developing and implementing innovations by small and medium-sized enterprises, as well as private researchers and inventors whose activity takes place under the regime of facilities provided by the state”*. The Scientific Technological Park and/or the innovation incubator are created by the Government's decision for a term of operation of at least 10 years. Currently, a scientific-technological park and 8 innovation incubators, with different specializations, are active in the Republic of Moldova.

The State Agency for Intellectual Property (AGEPI) and the Organization for the Development of Entrepreneurship (ODA) are also part of the innovation system architecture of the Republic of Moldova.

Research-development and innovation in the Republic of Moldova continues to face the problem of extremely low institutional and human capacities, due to the endemic lack of financial resources.

The latest public policy documents, developed by the new institutional actors, reveal a series of serious deficiencies in the management of the field of research-development and innovation.

Current key priorities of energy research in Moldova are energy efficiency and renewable energy, smart grids control devices, as well as energy storage, but still, most of the companies in the energy sector are service-orientated, mainly in RES and EE. Therefore, there is a significant potential for scaling up low-carbon and energy-efficient solutions, starting from the demonstration and pivotal stage up to the market of renewable energy technologies and achieving more significant energy savings.

According to the National Bureau of Statistics, in 2022 the research and innovation activity was carried out in 67 units, including 39 research institutes and centers, 18 higher education institutions and 10 – other types of units. About 75% of the total number of units that carried out research and innovation activity in 2022 were in the form of public ownership (50 public institutions).

On December 31<sup>st</sup>, 2022, 3.9 thousand employees were working in research and innovation, down by 6.4% compared to the number recorded at the end of 2021. Of the total number of employees in research and development, 2.0 thousand were women, representing 52%. According to the work schedule, of the employees who carried out research-development activity, 56% worked full-time. 89.3% of employees in the research and innovation activity were employed in public institutions, compared to 87.3% in 2021.

The research and innovation are the main drivers to deploy clean energy technologies. In this regard, some specific instruments for supporting and promoting research in energy sector were started for implementation. One of these is Smart Specialization Strategy until 2030, that Moldova planning to adopt in short time.

Main objectives of Smart Specialization Strategy related to energy sector are presented below:

- facilitate raising of the local energy autonomy level through the use of renewable energy resources;
- strengthening the centralized thermal energy supply systems in cities in order to increase the overall efficiency of generation and supply of heat and domestic hot water,
- promotion of projects for the efficiency of the consumption of energy resources and the valorization of renewable energy sources in the public and residential sector, with the development of financing instruments accessible to the subjects of the respective sectors, as the case may be, with an emphasis on vulnerable consumers;
- development of “green” energy. Stimulating interest in the production and consumption of “green” energy by harnessing renewable energy sources, including the use of efficient and clean biomass burning technologies, as well as facilitating the connection of production facilities to existing distribution capacities.

The expenses for research and innovation are currently about 0.23% of Moldova's GDP, that is insufficient to attract and human resources in the R&D field and to help local companies in becoming innovative and competitive on the market.

Collaboration and participation in many international programs financed by the EU is very well developed in Moldova and respective Agreements are signed between the Moldovan Government and the European Commission.

The Republic of Moldova ranks 56<sup>th</sup> among the 132 economies featured in the Global Innovation Index (GII) 2022.

The statistical confidence interval for the ranking of the Republic of Moldova in the GII 2022 is between ranks 52 and 58.

- The Republic of Moldova performs better in innovation outputs than innovation inputs in 2022.
- In 2022, the Republic of Moldova ranks 78<sup>th</sup> in innovation inputs, higher than in 2021 year but lower than in 2020.
- As for innovation outputs, the Republic of Moldova ranks 46<sup>th</sup>. This position is higher than both in 2021 and in 2020.

The Republic of Moldova ranks 11<sup>th</sup> among the 36 upper-middle-income group economies.

The Republic of Moldova ranks 33<sup>rd</sup> among the 39 economies in Europe.

*Table 7. Rankings for the Republic of Moldova in the period 2020 – 2022*

<b>GIIYR</b>	<b>GII</b>	<b>Innovation inputs</b>	<b>Innovation outputs</b>
<b>2020</b>	59	75	48
<b>2021</b>	64	80	54
<b>2022</b>	56	78	46

### *iii. Key issues of cross-border relevance*

The key issues of cross-border relevance for the Republic of Moldova include:

- Electricity and gas infrastructure development to enhance the connection of electricity transmission systems with ENTSO-E via neighborhood countries to increase the security of supply.
- Development of the power generating capacity on the Right bank of Dniester River of Moldova (including renewable energy sources) to reduce reliance on imports and increase exports to European markets.

- Natural gas interconnections from new suppliers (Romania) for Moldova.

Additional cross-border cooperation is ongoing with contracting parties of the Energy Community and various EU Member States.

*iv. Administrative structure of implementing national energy and climate policies*

The role of various authorities (additional to those described above in paragraph “ii. Current energy and climate policies”, p. D) dealing with aspects relevant for NECP is as follows:

- Ministry of Energy: key state body responsible for the implementation of national energy efficiency and renewable energy policies in Moldova
- Ministry of Infrastructure and Regional Development: responsible for infrastructure policy development and implementation.
- Ministry of Environment: is mandated to develop and implement the national climate change policy and international climate change negotiations under the UNFCCC. The responsibility of the Ministry is to develop state environmental policy, state management of usage of natural resources, environmental pollution monitoring and environmental impact assessment.
- National Bureau of Statistics: Statistical data collection and processing for all sectors
- Moldsilva: National Forest Agency – responsible to oversee forest management and harvesting to provide fuel wood to the population and organizations in rural areas.
- Local Municipalities: implement energy efficiency & renewable energy at local level in buildings, developing heating & cooling of public buildings based on RES, introduction of solar thermal system, development of electric public transport, introduction of solar PV.
- Energy Efficiency Agency: implement state policy in area of energy efficiency and renewable energy.

### 1.3. Consultations and involvement of national and EU entities and their outcome

*i. Involvement of the Parliament*

All of the relevant laws which have been adopted by Moldova have been approved by Parliament. The main laws are described in Section 1.2. and represent the key decisions taken at national level which feed into this NECP. Additionally, since the NECP itself is developed on the basis of the Law on Renewable Energy, it has also been approved in Parliament. To reach approval in Parliament, each law undergoes significant scrutiny and discussion – including the requirement of regulatory impact assessments. Parliament has not been directly involved in the drafting of this NECP.

*ii. Involvement of local and regional authorities*

During the development of the NECP scenarios in TIMES model, an inter-ministerial working group was created to discuss input data and assumptions, as well as the results of the energy and climate scenarios. Working meetings, involving modelling teams have also been held to discuss various measures included in the NECP. Furthermore, a Strategic Environmental Assessment has been developed for the NECP which was subject to the statutory period of public comment. All comments on the NECP and SEA are included into a comments' table stating how comments have been incorporated into the NECP. Local and regional authorities have been consulted in the drafting of various strategies and action plans described within this NECP as well as for the NECP draft itself and the measures contained therein. This has included distributing the drafts of measures and receiving feedback about changes.

*iii. Consultations with stakeholders, including social partners, and engagement of civil society*

The NECP Moldova was distributed for consultations with main stakeholders (Ministry of Energy, Ministry of Environment, Energy Efficiency Agency, high level Advisers, National Agency for Regulation in Energy, other donors supporting development of energy sector), including social partners, and civil society. Two rounds of discussions were provided on platform of Ministry of Energy for addressing main elements included in the NECP. All comments provided by mentioned stakeholders were considered during the preparation of the document.

*iv. Consultations with other Contracting Parties*

The best practices of the other Contracting Parties have been considered regarding issues identified and lessons learned in the NECP development process. This has specifically included analyses of neighborhood countries policy regarding cross-border issues and plans identified in their NECP's that could be useful for NECP Moldova. Other Contracting Parties are often engaged for consultation in an informal and formal setting. Formally, Moldova is a Contracting Party to the Energy Community and therefore participates in a number of working groups on climate, energy efficiency, renewable energy, etc. These working groups discuss policy development in the various parts of the NECP. Furthermore, consultations with Contracting Parties and EU Member States occur on a regular basis.

*v. Iterative process with the Energy Community Secretariat*

The Energy Community Secretariat was responsible for direct communication with National Stakeholders in energy and climate change policy. During the preparation of the NECP Moldova, all updates and relevant Directives adopted by the Ministerial Council of the Energy Community were taken in consideration and applied by all involved national stakeholders.



## 1.4. Regional cooperation in preparing the plan

### *i. Elements subject to joint or coordinated planning with other Member States*

The current NECP has some aspects as subject for coordinated planning with other Contracting Parties. Aspects related to cross-border projects (such as electricity and natural gas trading) have been discussed with regional trading partners, and are updated in a continuous communication process. Moreover, the NECP of Romania was analyzed, as well as some regional studies.

According to the Study on the Central and South Eastern Europe energy connectivity (CESEC) cooperation on electricity grid development and renewables<sup>68</sup>, the cross-border power trade and proactive cooperation in RES policy-making has a large potential to contribute to the geographical smoothing of cost-effective electricity generation from RES: at the CESEC level, cost savings of 19% can be attributed to RES cooperation, facilitated by cross-border grid infrastructure. Albania, Bosnia and Herzegovina, Italy, Montenegro and Slovakia may offer promising RES potentials for export by 2030. In the long term and up to 2050, the picture partly changes: Bosnia and Herzegovina may again act as a host country for the future RES uptake but other countries such as Greece, Moldova, Romania or Ukraine also join this group.

The European Commissions study "Supporting investments into renewable electricity after 2020" (ENER/C1/2015-394)<sup>69</sup> asks what the likely paths of EU electricity market developments up to 2050 will be, and how RES-e shares are likely to evolve under those scenarios. Assuming an energy-only market (EOM) as the only source of revenue, what are the likely market revenues for each type of RES-e (in the case of no financial support from public funds)?

The study "A carbon pricing design for the Energy Community"<sup>70</sup> analyzed carbon pricing schemes and MRV mechanisms currently applied in EnC CP's, conducted an assessment of the readiness level for the implementation of carbon pricing schemes, and evaluated national and regional carbon pricing schemes in selected EU and non-EU countries that are relevant for potential implementation in EnC CP's, including Moldova.

The IRENA study<sup>71</sup> concluded that the lifetime cost per kWh of new solar and wind capacity added in Europe in 2021 will average at least four to six times less than the marginal generating costs of fossil fuels in 2022. Globally, new renewable capacity added in 2021 could reduce electricity generation costs in 2022 by at least 55 Bln USD.

### *ii. Explanation of how regional cooperation is considered in the plan*

Regional cooperation is considered in the NECP as specific measures to be implemented and described in Section 3. There are some investments (notably in electricity transmission) which are

<sup>68</sup> Study on the Central and South-Eastern Europe energy connectivity (CESEC) cooperation on electricity grid development and renewables. <https://op.europa.eu/en/publication-detail/-/publication/434fb711-a5a4-11ec-83e1-01aa75ed71a1/language-en> (link of August 27<sup>th</sup>, 2023)

<sup>69</sup> [https://energy.ec.europa.eu/system/files/2017-01/cepa\\_final\\_report\\_ener\\_c1\\_2015-394\\_0.pdf](https://energy.ec.europa.eu/system/files/2017-01/cepa_final_report_ener_c1_2015-394_0.pdf) (activated on August 27<sup>th</sup>, 2023)

<sup>70</sup> [https://www.energy-community.org/dam/jcr:82a4fc8b-c0b7-44e8-b699-0fd06ca9c74d/Kantor\\_carbon\\_012021.pdf](https://www.energy-community.org/dam/jcr:82a4fc8b-c0b7-44e8-b699-0fd06ca9c74d/Kantor_carbon_012021.pdf) (activated on August 27<sup>th</sup>, 2023)

<sup>71</sup> <https://www.irena.org/publications/2022/Jul/Renewable-Power-Generation-Costs-in-2021#:~:text=The%20lifetime%20cost%20per%20kWh,at%20least%20USD%2055%20billion.> (activated on August 27<sup>th</sup>, 2023)



subject to coordinated planning with neighborhood countries. Additionally, there is ongoing work on integration of energy markets in ENTSO-E and ENTSO-G in order to promote energy security and reduce overall system costs.

The Republic of Moldova does participate in the research and development program Horizon 2020<sup>72</sup>, the European Union (EU) Framework Program for Research and Innovation for 2014-2020. The 7-year Framework Programs are the key tool used by the European Union (EU) to fund research in Europe.

Other EU-financed research and innovation activities supporting the participation to the Energy Union objectives by the Republic of Moldova are: EURAXES; EURECA; COST, and others. Active involvement of Moldova in common challenges at regional level contributes to optimization of the resources for contributing to national and regional targets.

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<sup>72</sup> <https://ancd.gov.md/en/content/description-0> (activated on August 27<sup>th</sup>, 2023)

## 2. NATIONAL OBJECTIVES AND TARGETS

### 2.1. Dimension Decarbonization

#### 2.1.1. GHG emissions and removals

By its Decision 2022/02/MC-EnC, the Energy Community Ministerial Council adopted the 2030 energy and climate targets on December 15<sup>th</sup>, 2022. These energy and climate headline targets are essential to put the Energy Community Contracting Parties on a path towards achieving climate neutrality of their economies by 2050 and decreasing dependence on fossil fuels in the shorter term. The overall Energy Community 2030 Clean Energy Package<sup>73</sup> target is minus 60.9%, or 427.64 Mt CO<sub>2</sub> eq in 2030, for all contracting parties. Moldova's contribution is minus 68.6%, or 9.1 Mt CO<sub>2</sub> eq in 2030.

Meantime, through the Paris Agreement, Moldova joined 197 countries to a joint effort to hold the increase in the global average temperature well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. In 2020, Moldova submitted its updated Nationally Determined Contribution<sup>74</sup>. The targets laid out are as follows:

1. Moldova (as whole country) is fully committed to an unconditional limiting target of 70% below 1990 level<sup>75</sup> of its domestic total greenhouse gas emissions in 2030 – equivalent to a maximum of 13.6 Mt CO<sub>2</sub> eq, including the LULUCF sector;
2. Moldova is committed to reduce its total greenhouse gas emissions in 2030 with 88% compared to 1990, if the international support will be available;
3. Based on the contribution defined by the updated NDC, a low emissions development program until 2030 and the action plan for its implementation was prepared in which the nationally appropriate mitigation actions (NAMAs) have been identified, the implementation of which will help Moldova fulfill both its unconditional and conditional commitments and achieve the target indicators;
4. Moldova is committed to study its adaptive capacity to climate change by mobilizing domestic and international resources for the sectors particularly vulnerable to climate change.

The timeframe for meeting the objectives set up by the updated NDC is 2021 – 2030.

Taking into account that the over the period 2000-2010, the Republic of Moldova recorded on the average an increase in GHG emissions of about 2.0 per cent/year, while over the period 2010-2020, the average increase in GHG emissions was of about only 0.2 per cent/year, the updated NDC emphasizes a number of factors that affect the country's emissions, such as gross domestic product (GDP) real growth, demography, investments, energy prices, technological progress,

<sup>73</sup> <https://www.energy-community.org/implementation/package/CEP.html>

<sup>74</sup> Updated NDC of the Republic of Moldova. [https://unfccc.int/sites/default/files/NDC/2022-06/MD\\_Updated\\_NDC\\_final\\_version\\_EN.pdf](https://unfccc.int/sites/default/files/NDC/2022-06/MD_Updated_NDC_final_version_EN.pdf)

<sup>75</sup> Total Emissions in the Base Year (updated NDC): 44.9 Mt (without LULUCF) and 43.4 Mt (with LULUCF)

energy consumption, behavior and attitudes, and so forth. Real GDP and subsequently energy consumption are key drivers of GHG emissions in Moldova.

The Republic of Moldova has developed and approved through the Government Decision No. 624 as 08/30/2023 the National Climate Change Adaptation Program (NCCAP) until 2030. The NCCAP 2030 identifies measures and actions that support the development of the Moldovan economy and infrastructure in a way which sets Moldova on a pathway to meet its international obligations and national ambitions for climate change mitigation. It serves as an action plan for the implementation of Moldova's updated NDC (2020), but also as an important orientation to inform the determination of an appropriate and realistic level of ambition when updating the NDC in future revision cycles. The NCCAP 2030 will be updated on a 4-5 years cycle, to be aligned with future revisions of the NDCs and NECPs.

*i. The Energy Community binding national 2030 target for greenhouse gas emissions in the non-ETS-sectors, the annual binding national limits and the commitments under the LULUCF Regulation*

Regulation (EU) 2018/842 of the European Parliament and of the Council of May 30<sup>th</sup>, 2018<sup>76</sup> stated that the emissions reduction in non-ETS sectors should be 30% by 2030 compared to 2005. The non-ETS sectors cover emissions from housing, transport (except aviation), agriculture and waste. In order to allow consistency with EU targets, the methodology for GHG target setting for the CP's should aim to stay as close to the structure and approach used in the EU as possible.

The target covering all domestic net GHG emissions of the Contracting Parties, including LULUCF emissions and removals (except for Montenegro) by 2030 is -60.9%, or -427.64 Mt CO<sub>2</sub>eq. There is no separate target for non-ETS sectors.

Moldova as a Contracting Party to EnC should reduce the net GHG emissions in 2030 by 68.6%, or GHG emissions should not exceed 9.1 Mt CO<sub>2</sub> eq. There is no separate target for non-ETS sectors for Moldova. Moldova also does not have any specific targets for LULUCF sector within EnC.

Moldova has submitted to UNFCCC its updated NDC under the Paris Agreement in March 2020. According to it, Moldova committed to very ambitious targets: to reduce net GHG emissions by 70% compared to base year 1990 unconditionally and by 88% in case of additional support.

Projections of Moldova net GHG emissions by 2030 for WPM is presented in Figure 5.

<sup>76</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R0842>

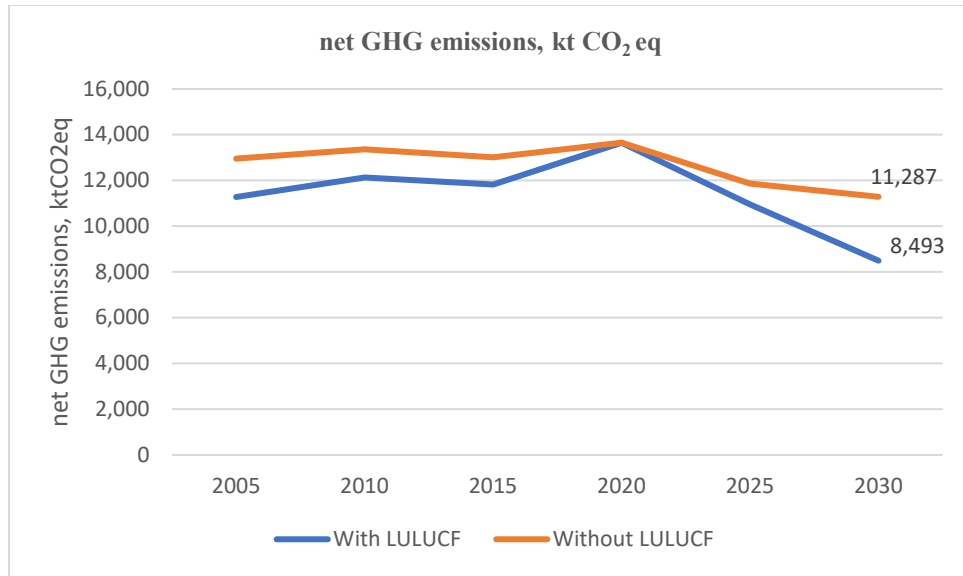


Figure 5. Projection of net GHG emissions by 2030 for WPM scenario (including AUTLBD)

From Figure 5 we can state that Moldova will reduce net GHG emissions by 75 % in 2030 and by 80.5 % if LULUCF is considered.

Under EnC obligations Moldova will fully commit its obligations (Figure 6).

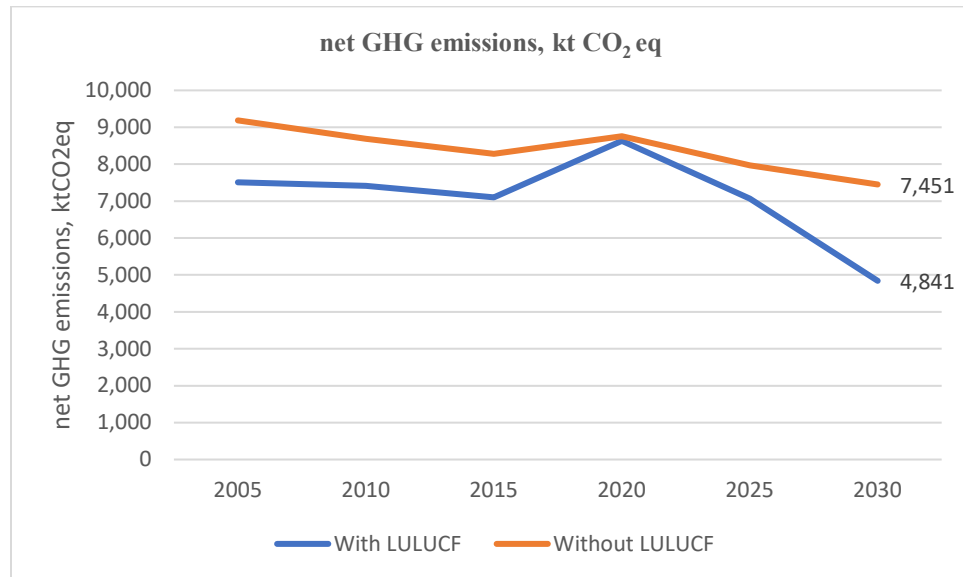


Figure 6. Net GHG emission (WPM scenario) of Moldova under EnC obligations (only Right bank)

Moldova's net GHG emissions evolution of non-ETS sectors is presented on Figure 7.

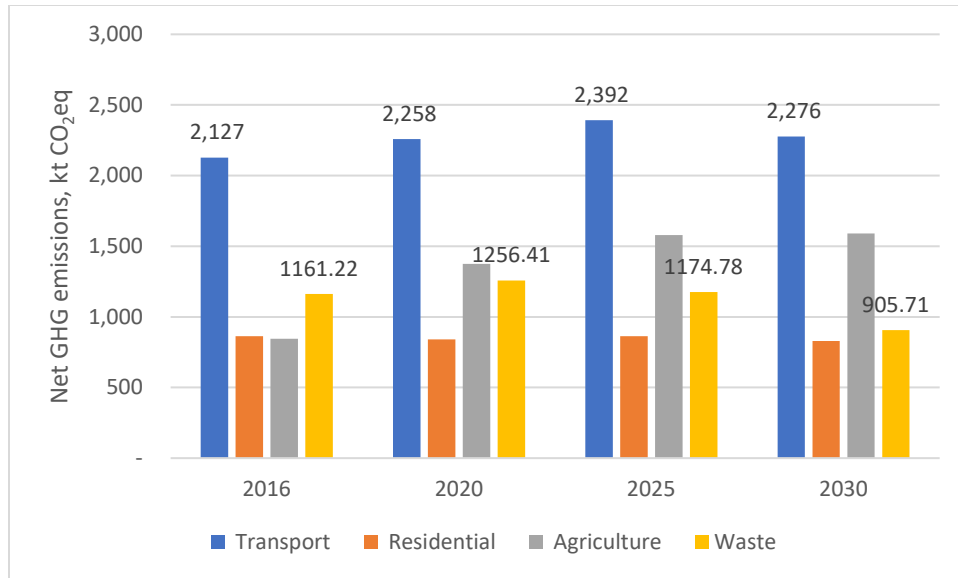


Figure 7. Net GHG emissions (WPM scenario) from non-ETS sectors (Right bank)

The total Moldova net GHG emissions from non-ETS sectors are estimated to decrease by 8.8% in 2030 compared to 2020.

Projections of CO<sub>2</sub> removals by LULUCF sector for WPM scenario are presented in Figure 8.

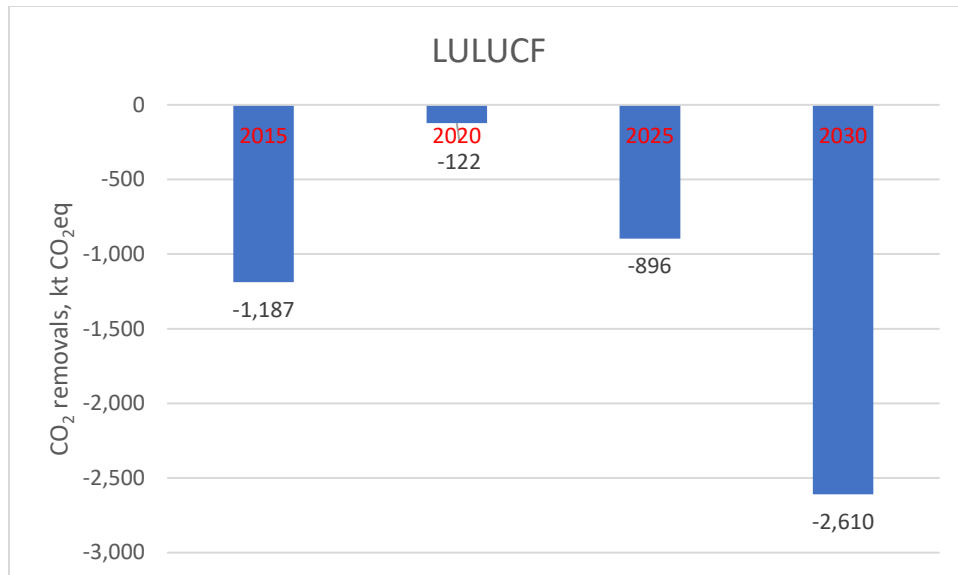


Figure 8. CO<sub>2</sub> removals by LULUCF for WPM scenario by 2030

Moldova’s LULUCF sector in 2030 will provide sequestrations of -2,610.00 kt CO<sub>2</sub> eq, that are 20 times more as compared to 2020.

*ii. If applicable, other national objectives and targets consistent with existing long-term low emission strategies. If applicable, other objectives and targets, including sector targets and adaptation goals*

National objectives for climate change mitigation are as follows:

Objective 1: Reduce GHG emissions (target of 70% below 1990 level of its domestic total greenhouse gas emissions by 2030 – equivalent to a maximum of 13.47 Mt CO<sub>2</sub>eq excluding the LULUCF sector). Sub-Objectives for this dimension include:

- Objective 1.1: Reduce emissions from Industrial Processes and Product Use (IPPU) sector by 27% as compared to the reference year level by 2030, under the unconditional scenario and by 31% under the conditional scenario
- Objective 1.2: Reduce emissions from agriculture sector by 44% as compared the reference year level by 2030, under the unconditional scenario and by 47% under the conditional scenario, and support the low-carbon development approaches in the agriculture sector
- Objective 1.3: Enhance carbon sequestration in Land Use, Land Use Changes, and Forestry (LULUCF) by 10% as compared the reference year level by 2030, under the unconditional scenario and by 391% under conditional scenario
- Objective 1.4: Reduce GHG emissions associated with the waste sector (including wastewater) by 14% as compared with the reference year level by 2030, under the conditional scenario and by 18% under the conditional scenario and support the low-carbon development of the waste sector through encouraging climate-friendly innovative technologies and services

Another Sub-Objective for Renewable Energy is included in 2.1.2 below.

Related to the Paris Agreement and climate change adaptation, the updated NDC for Moldova identifies a number of adaptation measures. Respective measures include:

- Assessment of the impact of climate change on the availability of ground water and surface water resources for sustainable use in agricultural (irrigation), energy production and dwelling purposes in a long-term perspective;
- Encourage the conservation of endemic species through the projection of climate change impact on the appropriate ecosystems;
- Study the most vulnerable areas of forest lands at the preselected territories;
- Assessment of the level of vulnerability of the agricultural production with major contributions to the national GDP (e.g. grape, hazelnut) and/or domestically unique products, such as honey, related to the changes of climate parameters and spread of infections for the purpose of ensuring food security;
- 
- Assessment of the effects of climate change on human health through the interdisciplinary study of the relationships between social, economic, biological, ecological and physical systems;
- Facilitation of the measures supporting the reduction of losses and damages caused by extreme weather events.

## 2.1.2. Renewable energy (2030 Framework target)

*i. Moldova planned share of energy from renewable sources in gross final consumption of energy in 2030 as its national contribution to achieve the binding EU-level target of at least 27% in 2030*

Moldova's renewables sector is less developed than those in regional markets and neighboring countries. Moldova committed to a binding target of 17% of energy from renewable sources in gross final energy consumption by 2020, set by the EnC-MC decision in 2012, and a voluntary target of 20% by 2020 set in the National Energy Strategy 2030.

Moldova exceeded its overall 2020 target of 17% by reaching 25.06% of renewable energy in 2020. However, only the sectoral target for heating and cooling was overreached, while contributions of renewable energy to electricity and transport are still very low.

According to the Decision of the Ministerial Council of the Energy Community No. 2022/02/MC-EnC, Moldova has a target for share of energy from renewable sources in gross final energy consumption of 27% by 2030.

Moldova's objective is to increase the ratio of renewable energy to gross final energy consumption to 31.4% by 2030 in case of the scenario with planned measures (WPM)<sup>77</sup>. In 2016, the share was 26.6%.

Two scenarios were modelled for estimation of share of RES in total gross energy consumption (according to the Directive 2009/28/EC), that are presented in Table 8.

**Table 8. Projections of RES in gross energy consumption in the period 2016 – 2030**

Year	2016	2020	2025	2030
WEM	26.6%	24.2%	24.7%	25.6%
WPM	26.6%	24.2%	26.3%	31.4%

*ii. A linear trajectory for the overall share of renewable energy in gross final energy consumption from 2021 to 2030*

The total renewable energy share in the gross final energy consumption includes the renewable energy contribution of each sector to the final energy consumption. The sectoral renewable energy shares were calculated in accordance with Directive 2009/28/EC.

The share of renewable energy in gross final energy consumption was estimated based on two scenarios:

1. WEP (with existing measures) scenario;
2. WPM (with planned measures) scenario.

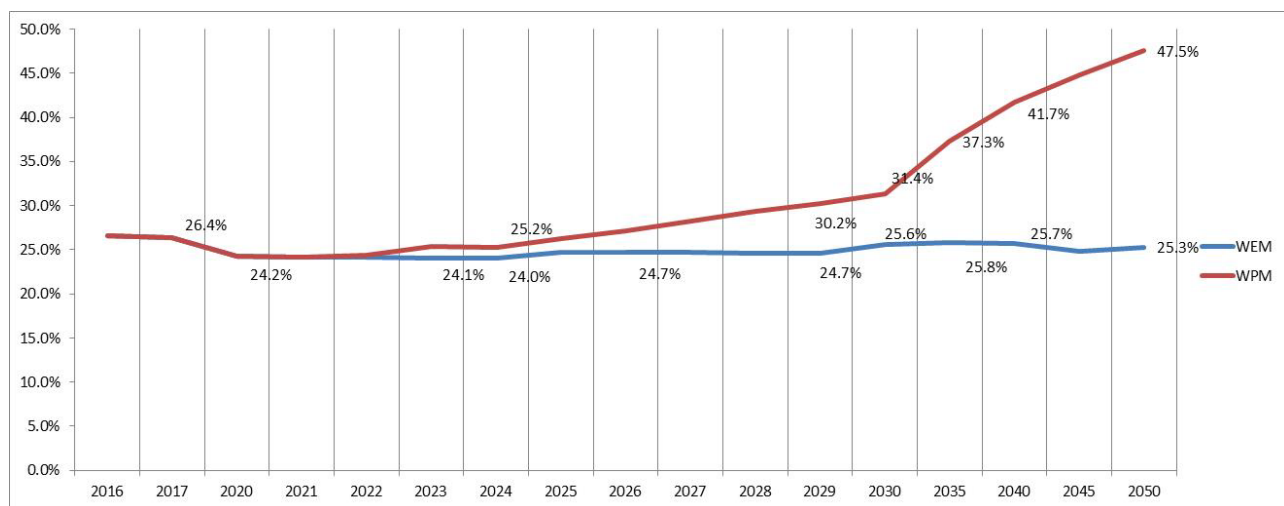
<sup>77</sup> According to modelling scenario WPM



The estimated trajectories of renewable energy in gross final energy consumption for both scenarios up to 2050, including intermediary targets for 2030 are presented in Table 9 and on Figure 9.

**Table 9. Projections of shares of RES in gross final energy consumption of Moldova for WEM and WPM scenarios in the period 2016 – 2050**

	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
WEM	26.6%	26.4%	24.2%	24.1%	24.1%	24.1%	24.0%	24.7%	24.7%	24.7%	24.6%	24.7%	25.6%	25.8%	25.7%	24.8%	25.3%
WPM	26.6%	26.4%	24.2%	24.2%	24.3%	25.3%	25.2%	26.3%	27.2%	28.3%	29.3%	30.2%	31.4%	37.3%	41.7%	44.8%	47.5%



*Figure 9. Trajectories of RES in final gross consumption of Moldova in the period 2016 – 2050*

The share of renewable energy in gross final energy consumption of Moldova for **WEM** Scenario is estimated to be 24.7% in 2030 and increase to 25.3% in 2050, having a maximum of 25.8% in 2035.

The share of renewable energy in gross final energy consumption of Moldova for **WPM** scenario is estimated to reach 31.4% in 2030 and increasing to 47.5% in 2050.

To fulfill its intention to reach climate neutrality, Moldova should implement decarbonization measures, among which large afforestation and large-scale implementation of clean technologies. In such mode Moldova will reach near zero emissions in 2050.

*iii. Trajectories for the sectorial share of renewable energy in final energy consumption from 2021 to 2030 in the electricity, heating and cooling, and transport sectors*

The trajectories for the sectorial share of renewable energy in final gross energy consumption for both above mentioned scenarios are presented in Tables 10 and 11 (WEM and WPM).

**Table 10. Trajectories for renewable heating and cooling, electricity and transport (WEM) in the period 2016 – 2050**

Renewable trajectories	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
RES-H&C (%)	44.3%	44.5%	41.7%	41.8%	41.7%	41.7%	41.7%	41.8%	42.0%	42.2%	42.2%	42.4%	42.7%	42.7%	41.3%	39.7%	38.4%
RES-E (%)	1.6%	2.1%	2.4%	2.9%	2.8%	2.8%	2.7%	6.1%	6.1%	6.1%	6.1%	6.1%	10.6%	10.8%	14.4%	14.5%	17.6%
RES-T (%) (without multipliers)	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.9%	1.1%	1.2%	1.3%	1.4%	1.6%	1.7%	2.6%	3.1%	3.8%	4.8%
RES-T (%) (with multipliers)	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.9%	1.1%	1.3%	1.4%	1.5%	1.7%	1.8%	2.9%	3.4%	4.2%	5.3%
Overall RES share (%)	26.6%	26.4%	24.2%	24.1%	24.1%	24.1%	24.0%	24.7%	24.7%	24.7%	24.6%	24.7%	25.6%	25.8%	25.7%	24.8%	25.3%

**Table 11. Trajectories for renewable heating and cooling, electricity and transport (WPM) in the period 2016 – 2050**

Renewable trajectories	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
RES-H&C (%)	44.3%	44.6%	41.8%	41.6%	41.5%	41.5%	41.5%	41.5%	41.7%	42.2%	42.5%	42.7%	42.8%	43.1%	40.4%	34.9%	32.2%
RES-E (%)	1.6%	2.0%	2.2%	2.8%	2.8%	7.6%	7.5%	13.1%	17.5%	22.5%	26.7%	31.2%	34.1%	56.2%	66.4%	78.2%	84.5%
RES-T (%) (without multipliers)	0.0%	0.0%	0.0%	0.0%	1.3%	2.4%	2.5%	3.7%	4.5%	5.1%	5.9%	6.8%	7.6%	13.8%	23.7%	30.2%	35.9%
RES-T (%) (with multipliers)	0.0%	0.0%	0.0%	0.0%	1.3%	2.4%	2.6%	4.1%	5.0%	5.5%	6.6%	7.7%	8.9%	20.9%	38.3%	48.0%	55.6%
Overall RES share (%)	26.6%	26.4%	24.2%	24.2%	24.3%	25.3%	25.2%	26.3%	27.2%	28.3%	29.3%	30.2%	31.4%	37.3%	41.7%	44.8%	47.5%

Renewable energy consumption in H&C sector for both WEM and WPM scenarios in 2050 decreased in terms of shares in 2020. The main driving factor is decreasing consumption of energy in “other sectors” and increasing in natural gas consumption by CHP’s. The solid biomass share is estimated to increase almost 4 times. Another driving factor is starting to produce heat using electricity from 2040 and to use heat pumps.

The share of RES-E is estimated to increase by more than 40 times in 2050 compared to 2020. The main driver to reach this target is considered wind parks (estimated capacity is around 3,074 MW in 2050) and PV stations (estimated capacity in 2050 is 561 MW).

The renewable energy in the transport sector is currently not used. The estimated shares for WEM and WPM are mostly based on use of biofuel and hydrogen in different shares starting from different years, as shown in Table 12. Another factor is increasing of electricity consumption in transport almost 40 times in 2050 compared to 2020 in WPM Scenario.

**Table 12. The main drivers considered in analyzed scenarios for increasing RES in transport in the period 2020 – 2050, in ktoe**

Analysed scenarios	2020	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050	
WEM	Biofuels		3.84	5.35	6.24	7.13	8.02	8.91	9.80	10.70	11.59	15.40	17.66	22.17	28.55
	Electricity	4.21	4.96	5.20	5.52	5.90	6.48	7.17	7.60	8.65	9.60	10.65	11.33	11.34	10.94
	Hydrogen														
WPM	Biofuel		9.06	16.57	17.48	24.31	29.13	33.99	38.28	42.81	43.86	40.81	31.81	32.00	33.04
	Electricity	4.19	4.98	5.81	7.80	13.37	14.27	15.31	20.57	21.96	24.89	67.79	118.89	152.57	187.78
	Hydrogen										0.03	0.03	0.03	0.03	

iv. Trajectories by renewable energy technology that the Moldova projects to use to achieve the overall and sectorial trajectories for renewable energy from 2021 to 2030 including expected total gross final energy consumption per technology and sector in Mtoe and total planned installed capacity (divided by new capacity and repowering) per technology and sector in MW

Tables 13 and 14 provide information relating to the topic.

**Table 13. Trajectories by renewable energy technology (WEM) in the period 2016 – 2050**

Renewable Electricity-Installed Capacities (MW)																	
	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Biomass/Biogas Fired CHP Power Plants	6	6	6	6	6	6	6	11	11	11	11	11	18	21	36	36	51
Waste Fired CHP Power Plants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydro Plants	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Battery Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wind Parks	25	25	37	37	37	37	37	67	67	67	67	67	167	167	230	255	315
Solar PV	2	2	5	5	5	5	5	105	105	105	105	105	155	155	187	184	248
Renewable Electricity-Generation by Source (ktoe)																	
	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Biomass/Biogas	1.8	1.5	1.2	2.0	1.8	1.6	1.6	2.1	2.0	2.0	2.0	1.9	2.3	2.5	8.7	8.7	12.3
Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydro power	3.4	4.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Wind Parks	0.3	2.1	4.4	4.4	4.4	4.4	4.4	10.3	10.3	10.3	10.3	10.3	29.7	29.7	42.9	49.5	61.2
Solar PV	0.2	0.2	0.5	0.5	0.5	0.5	0.5	10.6	10.6	10.6	10.6	10.6	15.7	15.7	18.9	18.6	25.1
Renewable gross final energy consumptions by technology (ktoe)																	
RES-H&C	669.6	669.3	621.3	627.8	630.8	630.8	633.7	618.1	617.1	620.5	624.0	624.9	620.5	590.4	514.8	393.8	339.3
RES-E	5.6	7.3	8.9	11.1	11.2	31.5	32.1	55.9	74.8	95.9	115.9	137.0	152.3	289.8	408.4	569.2	679.5
RES-T (without multiplier)	0.0	0.0	0.0	0.0	9.1	16.6	17.5	24.3	29.1	34.0	38.3	42.8	44.4	46.0	45.3	54.7	66.6
RES-T (with multiplier)	0.0	0.0	0.0	0.0	9.3	16.8	17.8	26.7	32.4	36.7	42.9	48.9	51.9	69.8	73.2	87.0	103.2
Renewable gross final energy consumptions by sectors (ktoe)																	
Renewable gross final energy consumptions by industry sector (ktoe)																	
RE in Industry	1.0	1.9	2.8	3.3	3.3	3.3	3.3	2.3	2.6	2.8	3.0	3.4	3.7	8.3	11.8	13.3	14.2
Renewable gross final energy consumptions by other sectors (ktoe)																	
RE in Other sectors	668.6	665.7	618.4	622.6	627.6	631.5	634.9	638.6	641.9	645.0	645.7	649.2	650.1	651.9	612.6	577.2	549.2
Renewable gross final energy consumptions by transport sector sectors (ktoe)																	
Road RE electricity consumption	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.8	2.5	2.0	3.6	4.9	6.1	32.9	65.5	96.6	125.2
Biofuels consumption in road and rail transport (compliant and non-compliant)	-	-	-	-	9.1	16.6	17.5	24.3	29.1	34.0	38.3	42.8	43.9	40.8	31.8	32.0	33.0

**Table 14. Trajectories by renewable energy technology (WPM) in the period 2016 – 2050**

Renewable Electricity-Installed Capacities (MW)																	
	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Biomass/Biogas Fired CHP Power Plants	6	6	6	6	6	44	44	81	81	81	81	81	78	76	76	76	75
Waste Fired CHP Power Plants	0	0	0	0	0	0	0	0	0	0	0	0	20	20	20	30	30
Hydro Plants	16	16	16	16	16	16	16	19	22	22	22	22	22	25	25	25	25
Battery Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	150	293	344	407
Wind Parks	25	25	37	37	37	90	90	142	242	342	442	542	600	1200	1762	2539	3074
Solar PV	2	2	5	5	5	95	95	187	189	195	202	209	215	312	413	490	561
Renewable Electricity-Generation by Source (ktoe)																	
	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Biomass/Biogas	1.8	1.5	1.2	2.1	1.7	5.6	5.6	10.7	10.7	10.7	10.7	10.7	13.4	23.5	23.5	25.0	24.8
Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.9	2.9	4.4	4.4
Hydro power	3.4	4.5	4.5	4.5	4.6	4.6	4.6	5.3	6.2	6.2	6.2	6.2	6.1	7.2	7.2	7.2	7.2
Wind Parks	0.3	1.2	2.7	4.0	4.4	11.7	12.3	21.0	38.9	59.5	79.0	99.7	112.2	230.1	340.3	492.9	596.7
Solar PV	0.2	0.2	0.5	0.5	0.5	9.6	9.6	18.9	19.0	19.4	19.9	20.3	20.7	29.0	37.4	44.2	50.8
Renewable gross final energy consumptions by technology (ktoe)																	
RES-H&C	679.5	680.1	626.7	633.8	636.4	640.2	642.9	631.8	630.7	633.4	635.9	637.7	631.1	594.7	523.6	395.9	328.5
RES-E	5.6	7.3	8.9	11.1	11.3	31.5	32.1	56.9	60.5	63.2	64.6	66.4	69.7	76.6	156.8	267.0	337.2
RES-T (without multiplier)	0.1	0.1	0.1	0.1	7.1	14.2	14.3	23.0	28.2	35.9	41.3	46.4	48.3	50.9	59.8	85.0	108.5
RES-T (with multiplier)	0.2	0.2	0.2	0.3	7.3	14.5	14.6	25.7	31.3	39.0	45.0	50.5	53.1	63.5	96.3	151.7	201.2
Renewable gross final energy consumptions by sectors (ktoe)																	
Renewable gross final energy consumptions by industry sector (ktoe)																	
RE in Industry	1.0	3.7	2.8	3.1	3.1	-	-	-	0.1	1.0	1.5	2.8	3.3	4.9	10.0	10.8	11.3
Renewable gross final energy consumptions by other sectors (ktoe)																	
RE in Other sectors	668.6	665.7	618.5	624.7	627.7	631.1	633.9	617.9	616.9	618.8	621.1	621.8	615.1	578.2	492.3	365.9	301.9
Renewable gross final energy consumptions by transport sector sectors (ktoe)																	
Road RE electricity consumption	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.8	2.0	2.1	2.5	2.8	3.2	8.4	24.4	44.5	61.8
Biofuels consumption in road and rail transport (compliant and non-compliant)					7.0	14.1	14.1	21.3	26.2	33.8	38.9	43.6	44.8	41.2	30.5	30.3	30.6

v. Trajectories on bioenergy demand, disaggregated between heat, electricity and transport, and on biomass supply, by feedstocks and origin (distinguishing between domestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink

Tables 15 and 16 set out estimated trajectories on bioenergy demand sector and biomass supply.

**Table 15: Trajectories of bioenergy demand, biomass supply by feedstock (WEM) in the period 2016 – 2050**

Bioenergy Demand, Total Final Consumption, ktoe	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Electricity																	
Biogas	1.8	1.5	1.2	2.1	1.6	1.6	1.6	2.1	2.0	2.0	2.0	2.0	2.5	2.8	9.7	9.7	13.6
Heat																	
Solid biomass	679.9	677.4	613.9	622.0	629.7	633.1	635.3	637.6	640.7	643.7	646.8	649.8	652.9	667.1	634.0	589.9	574.4
Transport																	
Biofuel					3.8	5.3	6.2	7.1	8.0	8.9	9.8	10.7	11.6	15.4	17.7	22.2	28.6

**Table 16. Trajectories of bioenergy demand, biomass supply by feedstock (WPM) in the period 2016 – 2050**

Bioenergy Demand, Total Final Consumption, ktoe	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Electricity																	
Biogas	1.8	1.5	1.2	2.1	1.7	5.6	5.6	10.7	10.7	10.7	10.7	10.7	13.4	23.5	23.5	25.0	24.8
Heat																	
Solid biomass	679.9	679.7	613.9	621.7	634.7	651.3	654.2	654.5	661.4	668.4	674.1	677.9	682.7	674.9	580.6	487.2	418.5
Transport																	
Biofuel					9.1	16.6	17.5	24.3	29.1	34.0	38.3	42.8	43.9	40.8	31.8	32.0	33.0

Biomass Supply by Feedstock is not possible to determine exactly, but more than 85% of solid biomass comes from forestry (wood logs).

*vi. If applicable, other national trajectories and objectives, including long-term or sectorial ones (e.g. share of advanced biofuels, share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, energy communities and self-consumers)*

## 2.2. Dimension Energy efficiency (2030 Framework target)

*i. The indicative national energy efficiency contribution to achieving the Energy Community 2030 head-line target for energy efficiency as referred to in Article 1(1) and Article 3(5) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC (based on either primary or final energy consumption, primary or final energy savings, or energy intensity; expressed in terms of absolute level of primary energy consumption and final energy consumption in 2020 and 2030, with a linear trajectory for that contribution from 2021 onwards; including the underlying methodology and the conversion factors used )*

The measures in NECP aim to improve energy efficiency and limit the final energy consumption to no more than 2,80 ktoe in 2030 in order to fulfil commitments under EnC. The primary energy consumption should also be no more than 3,000 ktoe in 2030.

Renovating the existing buildings is essential for achieving these goals, as it will not only save energy and money, but also enhance the comfort, safety and health of the occupants.

The total stock of buildings in Moldova has a surface of roughly 100 million m<sup>2</sup>. 87% of area of these buildings are in the residential sector, (65% of the total stock of buildings in Moldova are single family houses), 13% of the area of total stock of buildings in Moldova are non-residential buildings (office buildings, educational buildings, hospitals, hotels, restaurants, sports buildings, wholesale and retail buildings, mixed use buildings).

One of the initiatives that the Republic of Moldova is undertaking to improve its energy efficiency and reduce its greenhouse gas emissions in residential sector is the establishment of the Energy Efficiency Fund. This fund will be part of the National Sustainable Energy Centre of Moldova,

which is a new institution that will coordinate and implement various energy efficiency policies and measures in the country. The fund will provide grants and technical assistance to homeowners' associations and private households to finance energy efficiency renovations of buildings, such as improving insulation, installing more efficient lighting, heating, cooling and ventilation systems, and integrating renewable energy sources. The fund will also support the development of the energy efficiency market, including energy audits, technical design documentation, and awareness campaigns. The fund will be financed by the state budget, the European Union, and other donors.

Another initiative that the Republic of Moldova is pursuing to enhance its energy efficiency is the implementation of the energy efficiency obligation scheme, which is a legislative mechanism that places requirements on obligated parties, such as retail energy sales companies, energy distributors, transport fuel distributors, and/or transport fuel retailers, to meet quantitative energy savings targets across their customer portfolio. The obligated parties can choose the most cost-effective measures and delivery routes to achieve the energy savings, such as providing incentives, information, or services to their customers, or implementing energy efficiency projects themselves. The energy efficiency obligation scheme will be based on the provisions of Article 7 of the Energy Efficiency Directive, which is part of the EU *acquis communautaire* that Moldova has committed to transpose and implement as a member of the Energy Community. The energy efficiency obligation scheme will also generate revenues for the state budget, as the obligated parties will have to pay a fee for each unit of energy they sell, which will be used to finance the energy efficiency fund and other energy efficiency programs.

The Republic of Moldova will implement mechanisms/projects to save annually at least 0.8% of the average value of the energy consumption recorded between January 1<sup>st</sup>, 2019 and January, 1<sup>st</sup>, 2022 starting from 2024, including renovation of 3% per year of central public administration authorities buildings.

The Buildings Renovation Strategy proposes measures to improve energy efficiency, to reduce greenhouse gas emissions and to increase the renewable energy share in the total energy consumption through renovation of the national stock of buildings.

The strategy proposes three (optimistic, moderate, conservative) renovation scenarios for the buildings.

The key assumptions for the three scenarios, i.e. the percentages of buildings to be renovated, are based on the fact that public buildings receive, in general, more state support, and that owners of private buildings, other than residential, have more means and interests and less barriers to implement medium or deep renovation.

Payback periods for renovation of single-family houses that use wood are extremely high. This kind of fuel is mainly used in single-family houses, usually of low-income level, that prefer the use of wood that can either be found at rather cheap prices or self-collected by the users. Multifamily buildings and other buildings use very small quantities of wood. Although single-family houses heated with wood should not be excluded from the beneficiaries of state support policies, practically very few renovation investments can be expected in this category of buildings.

Taking into account these considerations, the renovation of single-family houses that use wood, wood waste or agricultural wastes is excluded, from all calculations.

Therefore the “targeted” residential buildings in the scenarios include all multifamily buildings and single-family houses that use other types of fuels.

The optimistic Scenario 1 (Table 17) assumes that simple renovation measures are implemented in 15 % of the “targeted” residential and all other buildings, an additional 10 % of the “targeted” residential buildings and 15 % of other buildings undergo medium renovation, and 3 % of the “targeted” residential sector and 5 % of other buildings are deeply renovated in 2030.

Under this scenario about 6.8 % of primary energy savings could be achieved in 2030 compared to the base year 2017. The required indicative investment cost would be of about 162.4 Mln EUR per year. The average simple payback period of this scenario is estimated to 20 years.

**Table 17. Building renovation – Optimistic Scenario 1**

Description	Unit type	Residential buildings	Other buildings	Total
Total standardized final annual energy savings	Thermal [ktoe]	100	29	<b>128</b>
	Electrical [ktoe]	15	4	<b>18</b>
Total standardized annual primary energy savings	Thermal [ktoe]	135	38	<b>173</b>
	Electrical [ktoe]	20	5	<b>25</b>
Total expected primary energy savings	[%]			<b>6.8 %</b>

The moderate Scenario 2 (Table 18) assumes that simple renovation measures are implemented in 10 % of the “targeted” residential and all other buildings, medium renovation measures in 7 % of the “targeted” residential buildings and in 10 % of other buildings, while 2 % of the “targeted” residential buildings and 4 % of other buildings will implement deep renovation until 2030.

Under this scenario about 4.6 % of primary energy savings and 7.5 % GHG emissions reduction could be achieved in 2030 compared to the base year 2017. The required indicative investment cost would be of about 111.1 Mln EUR per year. The average simple payback period of this scenario is estimated to 20 years, as in the previous scenario. This is an expected result as the percentages of buildings that implement different stages of renovations are almost uniformly reduced in relation with the previous scenario, therefore the ratios between costs and benefits remain unchanged.

**Table 18. Building renovation – Moderate Scenario 2**

Description	Unit type	Residential buildings	Other buildings	Total
Total standardized final annual energy savings	Thermal [ktoe]	68	20	<b>87</b>
	Electrical [ktoe]	10	3	<b>13</b>
Total standardized annual primary energy savings	Thermal [ktoe]	92	26	<b>118</b>
	Electrical [ktoe]	14	4	<b>17</b>



Description	Unit type	Residential buildings	Other buildings	Total
Total expected primary energy savings	[%]			<b>4.6 %</b>

Conservative Scenario 3 (Table 19) assumes that simple renovation measures are implemented in 7 % of the “targeted” residential and all other buildings, 5 % of the “targeted” residential sector and 10 % of other buildings apply medium renovation, while 1 % of the “targeted” residential sector and 3 % of other buildings apply deep renovation until 2030.

Under this scenario, about 3.3 % of primary energy savings and 5.3 % GHG emissions reduction could be achieved in 2030 compared to the base year 2017. The required indicative investment cost would be about 79.3 Mln EUR per year. The estimated payback period remains 20 years due to the same reasons explained for the previous scenario. Funds raised for implementation of energy efficiency measures in the residential sector will be used mainly for thermal rehabilitation of the building envelope and replacement of doors and windows. Partly, they will be available for introduction of individual regulation of heat consumption systems, advanced metering technologies, ventilation systems with heat recovery, efficient lighting systems, energy efficient engineering systems, as well as installation of efficient air conditioning systems, RES systems and co-generation.

**Table 19. Building renovation – Conservative Scenario 3**

Description	Unit type	Residential buildings	Other buildings	Total
Total standardized final annual energy savings	Thermal [ktoe]	46	16	<b>62</b>
	Electrical [ktoe]	6	2	<b>9</b>
Total standardized annual primary energy savings	Thermal [ktoe]	63	22	<b>85</b>
	Electrical [ktoe]	9	3	<b>12</b>
Total expected primary energy savings	[%]			<b>3.3 %</b>

Implementation of planned policies and measures for improving energy efficiency in the end-users depends on the availability of efficient financing mechanisms that can leverage the current levels of own funds. Active participation of the financial sector and the promotion of innovative financing instruments, such as energy performance contracts and energy services, are crucial for this purpose. The Agency for Energy Efficiency will have a special role in creating and implementing these financing mechanisms.

*ii. The cumulative amount of end-use energy savings to be achieved over the period 2025-2030 under point (b) of Article 7(1) on the energy saving obligations pursuant to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC.*

The goals of the state policy in the field of energy in the medium and long term, as well as its priority development directions, are currently set in the Energy Strategy of the Republic of Moldova until 2030, approved by Government Decision no. 102/2013 (Energy Strategy 2030).

Most of the specific targets in the Energy Strategy 2030 are set for the 2020 year baseline.

According to the Law 19/2018 on energy efficiency<sup>78</sup>, Moldova has to achieve an indicative national energy savings target of at least 0.8% of the average value of the final energy consumption recorded between January 1<sup>st</sup>, 2019 and January 1<sup>st</sup>, 2022 for the period 2024 – 2030. To achieve this target, Moldova has adopted an energy efficiency obligation scheme (EEOS) and alternative measures, as stipulated in the draft GD on Program of EEOS.

The EEOS requires the obligated parties, such as retail energy sales companies, energy distributors, transport fuel distributors, and/or transport fuel retailers, to achieve annual energy savings equivalent to 0.4% of their energy sales to final customers by implementing energy efficiency measures across their customers. The obligated parties can either implement the measures themselves or delegate them to third parties, such as energy service companies (ESCOs), energy auditors, or other market actors. The obligated parties must report their achieved savings to the National Agency for Energy Regulation (ANRE), which is responsible for monitoring and verifying the compliance with the EEOS. The obligated parties also have to pay a fee for each unit of energy they sell, which will be used to finance the energy efficiency fund and other energy efficiency programs.

The alternative measures are complementary to the EEOS and aim to achieve annual energy savings equivalent to 0.4% of final energy consumption by implementing various policies and programs that promote energy efficiency in different sectors. Some of the alternative measures that are planned or implemented in Moldova are:

- The Energy Efficiency Fund, which will provide grants and technical assistance to homeowners' associations and private households to finance energy efficiency renovations of buildings, such as improving insulation, installing more efficient lighting, heating, cooling and ventilation systems, and integrating renewable energy sources;
- The energy efficiency standards and labelling program, which will set minimum energy performance requirements and energy efficiency labels for appliances and equipment, such as refrigerators, washing machines, air conditioners, and TVs, to inform consumers and encourage them to buy more efficient products;
- The public sector energy efficiency program, which will support the implementation of energy management systems, energy audits, and energy efficiency projects in public buildings and institutions, such as schools, hospitals, and government offices, to reduce energy consumption and costs;
- The industrial energy efficiency program, which will assist industrial enterprises to adopt energy management systems, conduct energy audits, and implement energy efficiency measures, such as

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<sup>78</sup> [https://www.legis.md/cautare/getResults?doc\\_id=137208&lang=ro](https://www.legis.md/cautare/getResults?doc_id=137208&lang=ro)

replacing old equipment, optimizing processes, and recovering waste heat, to improve their competitiveness and environmental performance;

- The awareness and education program, which will raise public awareness and knowledge about the benefits and opportunities of energy efficiency, through campaigns, trainings, workshops, and publications, and foster the development of energy efficiency skills and professions, such as energy managers, energy auditors, and energy service providers.

The Energy Strategy 2030 looks at the period from 2021 to 2030 from a slightly different perspective compared to the period 2013-2020. It was assumed that in the period from 2013 to 2020, the Republic of Moldova will have a complete understanding of all priority areas of energy saving and energy efficiency and continue their implementation, considering 2020 as a benchmark for full integration into the EU energy market. After 2020, the Republic of Moldova should follow the same directions followed by the EU, sharing with its member states the uncertainties, risks and benefits of a wider trading space), namely:

- reduce energy consumption in buildings by 10% compared to 2015;
- repair 10% of public buildings.

The values for other progress indicators for the time horizon of 2030 were to be determined at a later stage.

Since the adoption of the Energy Strategy 2030 at the international and regional level, significant changes in the policies and directions for the development of the electricity and gas sectors have been registered, influenced by the awareness of the consequences of climate change, the geopolitical situation and technological developments.

The signing of the Paris Agreement (2015) marked the beginning of a new paradigm in the development strategies and policies of the European Union (EU), and given the European aspirations of the Republic of Moldova, this change will also have an impact on the evolution of the country's energy sector. In the context of the Paris Agreement, in 2019 the EU revised its energy policy framework to promote the shift from fossil fuels to cleaner energy by adopting the Clean Energy Package for All Europeans (Clean Energy Package).

On June 23<sup>rd</sup>, 2022 the European Council granted the Republic of Moldova the status of an EU candidate country, along with a list of conditions that must be met. Thus, in order to achieve its aspiration to become part of the EU family, the Republic of Moldova must accelerate the process of implementing reforms and bringing itself in line with EU norms and practices, including in the field of energy, adapting its long-term goals to time horizons similar to EU Member States.

In the context of the above, there is a significant change in the main assumptions and scenarios used in the development phase of the Energy Strategy 2030, both at the national and regional levels, which necessitates a revision of the goals and measures established in the field of energy in order to ensure the sustainable development of energy sectors emerging from new realities.

During the EnC informal Ministerial Council (7-9 July 2022), the Republic of Moldova tentatively agreed on the following targets for energy efficiency and increasing the share of RES in 2030:

- Ensuring primary energy consumption at the level of 3,000 ktoe.

Public discussions of the Energy Strategy 2050 concept are currently underway.

In 2023, the Parliament approved the new Law on Energy Performance of Buildings<sup>79</sup> (282 from 10/05/2023) to meet the requirements of the EU Directive (EU) 2018/844. The law introduces mandatory certification of residential and public buildings in line with the EU legislation. It also requires developers to comply with the minimum energy performance standards (MEPS) that are effective in the EU.

The law stipulates that buildings with almost zero energy consumption must be:

- all new buildings – after April 5<sup>th</sup>, 2024.

Energy intensity or gross energy consumption per unit of gross domestic product is the main indicator of energy efficiency of the national economy of the Republic of Moldova.

Energy intensity in the Republic of Moldova is 3.4 times higher than the EU average, which indicates that there are significant opportunities for improving energy efficiency. According to the Report on the implementation of the National Energy Efficiency Action Plan for 2019-2021, there are positive results, energy savings and actions that can be multiplied and capitalized on a larger scale.

To measure its progress in energy saving, Moldova has selected “energy intensity” (gross energy consumption per unit of gross domestic product) as its national indicator.

Using MARKAL/TIMES Modeling System, two scenarios of Moldova's energy consumption for the period up to 2050 have been developed. These scenarios take into account different levels of implementation of energy-saving measures:

- with measures – takes into account existing measures and policies;
- with planned measures – takes into account planned measures and policies that can be implemented in accordance with national objectives.

Based on these scenarios, a 45% reduction in energy intensity should be achieved in 2030 (Table 20):

- Primary energy intensity: 0.19 toe/1,000 EUR
- Final energy intensity: 0.17 toe/1,000 EUR.

The target for energy efficiency in buildings by 2030 are indicated in Table 21:

- Energy Intensity Tertiary Sector: 0.0200 ktoe/1,000 m<sup>2</sup> (1% to 2020),
- Average Efficiency in Residential Space Heating: 65% (1 percentage point by 2020)

Average Efficiency in Tertiary Space Heating: 86% (3 percentage points compared to 2020).

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<sup>79</sup> [https://www.legis.md/cautare/getResults?doc\\_id=139619&lang=ro](https://www.legis.md/cautare/getResults?doc_id=139619&lang=ro)

**Table 20. National indicative targets for energy efficiency for 2020 and national indicative contributions to the Energy Community energy efficiency target for 2030, 2040 and 2050**

Indicator	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Primary energy intensity	toe/1,000 EUR	0.29	0.27	0.25	0.25	0.24	0.23	0.22	0.21	0.20	0.20	0.19	0.15	0.11	0.09	0.08
Final energy intensity	toe/1,000 EUR	0.25	0.24	0.23	0.22	0.22	0.21	0.20	0.19	0.18	0.18	0.17	0.13	0.10	0.08	0.06
Primary energy consumption	ktoe	2863	2903	2879	2916	2953	2898	2896	2916	2917	2919	2868	2740	2573	2568	2561
Final energy consumption	ktoe	2550	2593	2616	2639	2660	2624	2626	2634	2636	2638	2580	2427	2206	2113	2093

**Table 21. National indicative targets for energy efficiency for 2020 and national indicative contributions to the Energy Community energy efficiency target for 2030, 2040 and 2050 for the national stock of residential and non-residential buildings**

Indicator	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Energy Intensity Tertiary Sector	(ktoe / 1,000 m <sup>2</sup> )	0.0202	0.0205	0.0205	0.0206	0.0206	0.0205	0.0203	0.0202	0.0202	0.0201	0.0200	0.0197	0.0196	0.0195	0.0198
Average Efficiency in Residential Space Heating	%	64%	64%	64%	64%	64%	66%	66%	66%	65%	65%	65%	67%	74%	89%	100%
Average Efficiency in Tertiary Space Heating	%	83%	82%	82%	83%	84%	85%	85%	86%	86%	86%	86%	88%	87%	91%	91%

*iii. Other national objectives, including long-term targets or strategies and sectoral targets, and national objectives in areas such as energy efficiency in the transport sector and with regard to heating and cooling*

So far, there have been only a few small energy efficiency projects in the transport sector. (several donor-supported projects to improve energy efficiency in railways and public transport have not achieved results yet).

The adoption of the new draft Regulations on periodic technical inspection of vehicles (to replace the outdated regulation from 1999) has been delayed. Regarding e-mobility, Moldova has introduced some financial incentives for EV acquisition: importers of EV's are exempted from custom duties, excise duties and VAT. In addition, there is a ban on the import of used vehicles older than 10 years.

The introduction and promotion of economical and low-carbon transport will also have a positive impact on the energy security of the country. In addition, in the period 2030 – 2050, the Republic of Moldova should develop and implement more comprehensive measures (active consumers, energy communities, independent aggregators, etc.) to help manage consumer demand, as well as to increase the active role of prosumers in energy markets.

The target indicator of energy saving by the transport sector in 2030 will be (Table 22):

- Energy Intensity Passenger Transport (excluding air transport) – 0.014 ktoe/million passenger kilometers (30% reduction compared to 2020)
- Energy Intensity Freight Transport (excluding air transport) – 0.039 ktoe/million ton kilometers (43% reduction compared to 2020)

The third NEEAP highlights the limited scale of the industrial sector in the Republic of Moldova: according to the National Bureau of Statistics, there were 740 large industrial enterprises in 2017. Therefore, even if the necessary funds were available (in the form of grants and preferential loans), the untapped potential for energy savings in industry is considered limited: according to the third NEEAP, Moldova is likely to fall short of the originally calculated sectoral target.

The target indicator of energy saving by the industrial sector in 2030 will be (Table 23): Energy Intensity Industry – 0.075 ktoe/Mln EUR (51% reduction compared to 2020).

As for the energy sector, there is a significant potential to reduce energy losses during its transportation.

The target indicator of energy savings in the transport of energy carriers in 2030 will be (Table 22):

- Electricity losses Transmission Network as a % of total Generation plus Net Imports: 2.15% (0.86% reduction compared to 2020);
- Electricity losses Distribution Network as a % of total Generation plus Net Imports: 4.51% (1.77% reduction compared to 2020);
- Natural gas losses Transportation Network as a % of total gas transferred: 2.83% (3.72% reduction compared 2020);

District Heating Losses as a % of total heat transferred: 18.1% (1.1% reduction compared to 2020).

**Table 22. National indicative targets for energy efficiency for 2020 and national indicative contributions to the Energy Community energy efficiency target for 2030, 2040 and 2050 for the transport sector**

Indicator	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Energy Intensity Passenger Transport (excluding air transport)	ktoe/million passenger kilometers	0.020	0.019	0.019	0.019	0.019	0.018	0.018	0.018	0.018	0.018	0.014	0.012	0.012	0.011	0.020
Energy Intensity Freight Transport (excluding air transport)	ktoe/million ton kilometers	0.068	0.068	0.067	0.066	0.065	0.065	0.064	0.062	0.061	0.055	0.039	0.018	0.017	0.015	0.068

**Table 23. National indicative targets for energy efficiency for 2020 and national indicative contributions to the Energy Community energy efficiency target for 2030, 2040 and 2050 for the industry sector**

Indicator	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Energy Intensity Industry	ktoe/mil Euro	0.153	0.142	0.133	0.125	0.118	0.106	0.099	0.094	0.089	0.084	0.075	0.052	0.038	0.028	0.020



**Table 24. National indicative targets for energy efficiency for 2020 and national indicative contributions to the Energy Community energy efficiency target for 2030, 2040 and 2050 for the industry sector**

Indicator	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Electricity losses Transmission Network as a % of total Generation plus Net Imports	%	3.01%	2.93%	2.85%	2.77%	2.69%	2.59%	2.51%	2.40%	2.32%	2.23%	2.15%	2.13%	2.11%	2.10%	2.09%
Electricity losses Distribution Network as a % of total Generation plus Net Imports	%	6.28%	6.05%	5.89%	5.71%	5.56%	5.42%	5.28%	5.03%	4.85%	4.67%	4.51%	4.58%	4.39%	4.20%	4.21%
Natural gas losses Transportation Network as a % of total gas transferred	%	6.55%	6.18%	5.81%	5.44%	5.06%	4.69%	4.32%	3.94%	3.57%	3.20%	2.83%	2.83%	2.83%	2.83%	2.83%
District Heating Losses as a % of total heat transferred	%	19.2%	19.0%	18.8%	18.7%	18.6%	18.4%	18.2%	18.4%	18.3%	18.3%	18.1%	18.1%	18.2%	18.2%	18.3%

### 2.3. Dimension Energy security

At present, the obligations and responsibilities for ensuring the security of energy supply in the Republic of Moldova are set out in the Law on Electricity no. 107 of 05/27/2016. In accordance with paragraph 4, ensuring the energy security of the state is within the competence of the Government.

In accordance with paragraph 5 of this law, it ensures the energy security of the state by monitoring and coordinating the development process and the functioning of energy facilities is the responsibility of the Central Sectoral Authority of Public Administration in the field of energy. Pursuant to article 10 of Law on energy efficiency no. 139 of 07/19/2018, the Ministry of Economy and Infrastructure (currently Ministry of Energy) is the central public administration authority in the field of energy.

#### *i. The elements set out in point (c) of Article 4*

#### *ii. National objectives with regard to increasing: the diversification of energy sources and supply from third countries for the purpose of increasing the resilience of regional and national energy systems*

The Republic of Moldova is developing a new Energy Strategy adapted to the realities and the current regional context. The new Energy Strategy aims to reduce the risks associated with the supply of natural gas by taking systematic measures to diversify the sources and routes of natural gas supplies and ensure the necessary level of investment in the technical development of energy networks. Over the past ten years, the Republic of Moldova has taken concrete measures to diversify gas and electricity supplies, including through the creation of interconnections with Romania, which contributed to the improvement of energy security.

The completion of the Iasi-Chisinau gas pipeline, together with the possibility of using the Trans-Balkan route in a reverse mode, provides the technical capabilities and prerequisites necessary for diversifying sources of natural gas supplies.

In order to diversify the sources of generation and reduce the dominance of the CJSC “MGRES”, the Republic of Moldova is considering the commissioning of new local power plants in the territories under the full control of the Moldovan authorities (the Right bank of the Dniester River):

- Natural Gas Fired Electricity Only Power Plants – 35.6 MW;
- Natural Gas Fired CHP Power Plants – 308.8 MW;
- Biomass/Biogas Fired CHP Power Plants 75 MW;
- Hydro Plants – 5.6 MW;
- Waste Fired CHP Power Plants 20,0 MW;
- Wind Parks – 105.0 MW;
- Solar PV – 254.9 MW;
- Industrial CHP – 4.7 MW;

Total– 806.9 MW

Another way to improve energy security is to increase competition through easier access to electricity markets. Synchronization with the ENTSO-E system has opened up opportunities for new import routes, while improving the overall stability and security of the electricity network in the Republic of Moldova. To further exploit the benefits, it is planned to continue the integration of the national power system with ENTSO-E. The new Energy Strategy 2050 will ensure deeper integration with the EU at the technical level, at the infrastructure level and at the market level.

In the longer term, the possibility of combining sectors and including hydrogen and small nuclear power in the energy mix will be considered.

*iii. Where applicable, national objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems*

Increasing energy efficiency is also an integral part of energy security. Moldova supports the principle of “energy efficiency above all else”, dictated by EU policy documents. It will be applied throughout the supply and consumption chain. Reducing energy losses in district heating systems and electricity and gas transmission and distribution networks is a priority. Introduction and active promotion of economical and low-carbon transport will also have a positive impact on the energy security of the country.

Strategic development of the energy sector will be ensured by increasing investments and implementing projects to reduce the energy intensity of the industrial sector, introducing measures to improve the energy efficiency of public and residential buildings, and protecting critical infrastructure (including cybersecurity).

The new energy strategy will consider the energy balance and focus on promoting development and use of renewable energy and developing appropriate support mechanisms (priority dispatch, contracts for difference, etc.) and favorable technical conditions (simplified connection, regulated third party access, etc.), which will replace the consumption of natural gas at power plants and reduce dependence on its imports.

*iv. National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage*

To support the sustainable security of natural gas supplies and mitigate the effects of emergencies or to cover demand peaks, the use of natural gas storage facilities in Ukraine and Romania will be explored. For this, contracts for storage services will be concluded. It is also necessary to carry out work to increase the capacity of internal networks between the north and the center of the country. A similar approach will also be applied to the oil sector. It is planned to start studying ways to quickly establish the required level of petroleum products reserves.

An important aspect in ensuring flexibility is the energy balance and progress in the development of the use of renewable energy, as well as the development of appropriate support mechanisms (priority dispatch, contracts for difference, etc.) and favorable technical conditions (simplified connection, regulated access of third parties, etc.).

At the same time, the institutions of the Republic of Moldova will continue to carry out systematic market reforms to increase competition in the energy market, as a functional market will give the right signals for additional investment in production and increased flexibility.

Existing heat only power plants (HOPP) that are unable to provide balancing and ancillary services will be upgraded. The possibility of network integration of energy storage systems will also be evaluated.

In the period 2030 – 2050 the Republic of Moldova plans to develop and implement more comprehensive measures (active consumers, energy communities, independent aggregators, etc.) to help manage consumer demand, as well as to increase the active role of prosumers in energy markets.

## 2.4. Dimension internal energy market

### 2.4.1. Energy Market Electricity interconnectivity

#### *i. The level of electricity interconnectivity that the Member State aims for in 2030*

The target level of electrical interconnectivity of EU Member States by 2030 is at least 15 %.<sup>80</sup>

Moldova, as an associated country with the EU, set as its goal the integration of the Moldovan power system with the European power system<sup>81</sup>.

On 03/16/2022<sup>82</sup> the synchronization of power systems of Moldova and Ukraine with power system ENSTO-E Continental Europe was performed.

The requirement for the degree of interconnection of the Moldova power systems with the power systems of Romania and Ukraine should be implemented.

The requirements for development of new interconnectors (as projects of mutual interest) are determined for the Moldovan power system similar to the European goals:

- 1) capacity of the existing interconnectors should be less than 30 % of the peak load;
- 2) capacity of interconnectors is less than 30 % of the RES installed capacity;
- 3) the difference in electricity prices between countries is greater than 2 EUR/MWh.

Interconnectors of the power system of Moldova with the power system of Ukraine include 7 overhead lines (OHL) 330 kV and 12 OHL-110 kV, with the power system of Romania: 4 OHL-110 kV and one OHL 400 kV<sup>83</sup> (list of interconnectors in Section 4.5.2).

The share of electricity interconnectivity of power systems is the following values: MD/UA:26.6 %, MD/RO: 6.6 % and RO/MD: 14.1 %, Table 25.

<sup>80</sup> [https://ec.europa.eu/energy/sites/ener/files/documents/communication\\_on\\_infrastructure\\_17.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/communication_on_infrastructure_17.pdf);  
<https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:32018R1999&from=EN>

<sup>81</sup> [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ru](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ru); [https://www.legis.md/cautare/getResults?doc\\_id=3445&lang=ro](https://www.legis.md/cautare/getResults?doc_id=3445&lang=ro)

<sup>82</sup> <https://www.entsoe.eu/news/2022/03/16/continental-europe-successful-synchronisation-with-ukraine-and-moldova-power-systems/>

<sup>83</sup> [https://moldelectrica.md/ru/activity/interstate\\_power\\_lines](https://moldelectrica.md/ru/activity/interstate_power_lines) (of 10.11.2022); <https://news.mail.ru/politics/53991309/?frommail=1>

**Table 25. Share of interconnectivity of the power system of Moldova with neighboring power systems**

	Transmission capacity <sup>84</sup>	Installed capacity	Share of interconnectivity
	MW	MW	%
Moldova-Ukraine	800	3,012	26.6
Ukraine-Moldova	800	3,012	26.6
Moldova-Romania	200	3,012	6.6
Romania-Moldova	425	3,012	14.1

As currently no yearly allocations are made on MD/RO border and considering the current limitation for import/export from UA/MD control block to/from ENSTO-E CE the figures from the table represent the data at the date of preparation of the document and will suffer changes in the future. Perspective Scenarios for the current NECP are built using the Nominal Interconnection Capacity of 700 MW (2016-2020) and are described in Section 5.

#### 2.4.2 Energy Transmission Infrastructure

*i) Key electricity and gas transmission infrastructure projects, and, where relevant, modernization projects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union Strategy*

Energy Union strategy has five mutually-reinforcing and closely interrelated *dimensions* designed to bring greater energy security, sustainability and competitiveness<sup>85</sup>:

- 1) *Decarbonizing the economy;*
- 2) *Energy efficiency contributing to moderation of demand;*
- 3) *Energy security, solidarity and trust;*
- 4) *A fully integrated European energy market;*
- 5) *Research, Innovation and Competitiveness.*

#### *Electricity*

Projects for the construction of two new power lines 400 kV Isaccea -Vulcanesti-Chisinau and Balti-Suceava are a priority for Moldova in accordance with the Energy Strategy until 2030<sup>86</sup> and the Electricity transmission network development plan for 2018 – 2027<sup>87</sup>.

Construction of new overhead lines requires the modernization of set substations necessary for the integration of the power systems of Moldova and Romania. To this purpose, projects are being implemented for the interconnection of the power systems Vulcanesti-Chisinau<sup>88</sup> (Figure 10),

<sup>84</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report)

<sup>85</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/DOC/?uri=CELEX:52015DC0080&from=EN>

<sup>86</sup> [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ru](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ru)

<sup>87</sup> [https://www.moldelectrica.md/ru/network/perspective\\_plan](https://www.moldelectrica.md/ru/network/perspective_plan)

<sup>88</sup> [https://www.moldelectrica.md/ru/finances/piu\\_consultancy\\_services](https://www.moldelectrica.md/ru/finances/piu_consultancy_services)

Balti-Suceava<sup>89</sup> (Figure 11), a feasibility study for the synchronous connection of the Ukrainian and Moldovan power systems to ENSTO-E<sup>90</sup>.

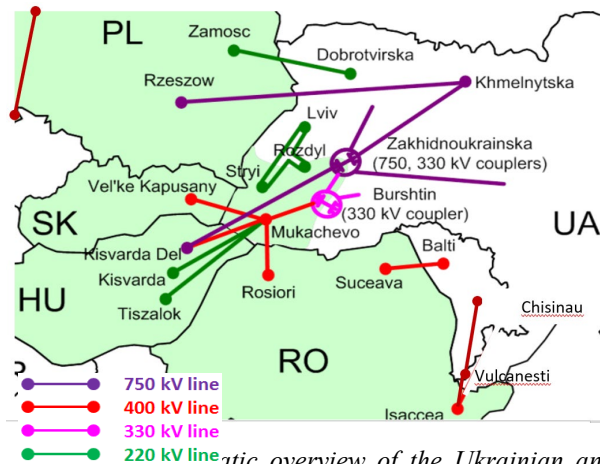


Figure 11. Scenarios regarding construction of interconnection lines from TYNDP 2018-2027 of Moldova<sup>92</sup>

Source: <https://tyndp.entsoe.eu/> (Regional Investment Plan Continental CentralEast. Version for ACER opinion January 2023. ENSTO-E)

Interconnection of power systems Moldova-Romania includes the construction of<sup>93</sup>:

- a) an overhead transmission line 400 kV Vulcanesti - Chisinau (158 km);
- b) extension of 400 kV Vulcanesti substation; and
- c) upgrade of 330/110/35 kV Chisinau substation.

The project also planned the construction of a Back-to-Back (BtB) station, but at the moment the construction of this facility has been excluded (2022).

This line will improve Moldova's access to the European electricity market<sup>94</sup>.

Expansion of substations 330 kV Chisinau and 400 kV Vulcanesti are planned within the same project<sup>95</sup>.

### Gas sector

Currently (as of 2022) the essential natural gas infrastructure projects relevant to the achievement of EU's energy goals are included in the 5<sup>th</sup> List of Projects of Common Interest (PCI) and this list does **not** include projects related to the Republic of Moldova, Figure 12.

Overall, the 5<sup>th</sup> PCI list includes several projects, the implementation of which can contribute to the positive development of the national gas sector of the Republic of Moldova, namely:

<sup>89</sup> [https://www.moldelectrica.md/ru/finances/mold\\_rom\\_project](https://www.moldelectrica.md/ru/finances/mold_rom_project)

<sup>90</sup> [https://moldelectrica.md/ru/finances/connection\\_project](https://moldelectrica.md/ru/finances/connection_project); <http://www.ro-ua-md.net>

<sup>91</sup> <https://eepublicdownloads.blob.core.windows.net/public-cdn-container/tyndp-documents/TYNDP2022/public/RegIP-2022-CCE.pdf>

<sup>92</sup> [https://www.moldelectrica.md/ru/network/perspective\\_plan](https://www.moldelectrica.md/ru/network/perspective_plan).

<sup>93</sup> [https://moldelectrica.md/ru/finances/competitive\\_energy\\_market](https://moldelectrica.md/ru/finances/competitive_energy_market)

<sup>94</sup> [https://moldelectrica.md/ru/finances/mold\\_rom\\_project](https://moldelectrica.md/ru/finances/mold_rom_project)

<sup>95</sup> [https://moldelectrica.md/files/docs/md\\_ro\\_project/Acord\\_de\\_Mediu\\_BtB\\_LEA\\_400%20kV\\_Vulcanesti-Chisinau.pdf](https://moldelectrica.md/files/docs/md_ro_project/Acord_de_Mediu_BtB_LEA_400%20kV_Vulcanesti-Chisinau.pdf)



**(6) Priority Corridor North-South Gas Interconnections in Central Eastern and South Eastern Europe (“NSI East Gas”)**

**6.8 Cluster of infrastructure development and enhancement enabling the Balkan Gas Hub;**

**6.20 Cluster increase storage capacity in South-Eastern Europe;**

Information about the technical description and geographic location of these projects can be viewed on the interactive map on the PCI Transparency Platform<sup>96</sup>, figure 8. A map with natural gas projects of common interest (the 5<sup>th</sup> list) is also presented in the REPowerEU plan<sup>97</sup>, Figure 13.

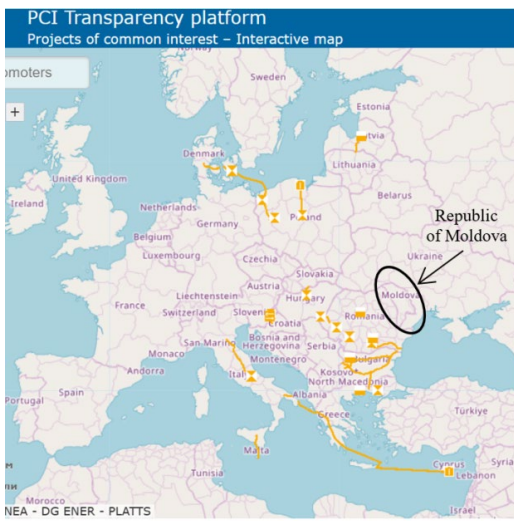


Figure 12. PCI interactive map, natural gas project



Figure 13. European gas infrastructure map – PCI and additional projects identified through the REPowerEU plan

ii) Where applicable, main infrastructure projects envisaged other than Projects of Energy Community Interest (PECIs) and Projects of Mutual Interest (PMIs)

### Electricity sector

Other infrastructure projects are aimed at developing the internal network, but are important for the implementation of projects of mutual interest.

SE “Moldelectrica” pays great attention on the modernization and reconstruction, renovation and expansion of the transmission network infrastructure. Works accomplished over the last several years:

- modernization of equipment at 330 kV substations Chisinau, Straseni and Balti;
- replacement of two autotransformers at the 330 kV Chisinau substation;

<sup>96</sup> [https://ec.europa.eu/energy/infrastructure/transparency\\_platform/map-viewer/main.html](https://ec.europa.eu/energy/infrastructure/transparency_platform/map-viewer/main.html)

<sup>97</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN>



- reconstruction of a number of 110 kV substations and reconstruction of transmission lines 110 -330 kV;
- implementation of a modern automated dispatch control system SCADA and a commercial electricity metering system;
- construction of interconnector 110 kV Falcui-Gotesti (RO-MD);
- feasibility study and environmental impact study of 400 kV transmission line Balti – Suceava.

At present SE “Moldelectrica” carries out works on<sup>98</sup>:

- continuing the reconstruction and modernization of the infrastructure of the transport network;
- expansion of interconnectors with Romania (Suceava – Balti and Straseni – Ungheni – Iasi);
- expansion of interconnectors with Ukraine.

These objects are marked in the Electricity transmission network development plan for 2018 – 2027 and in Annual Investment plans<sup>99</sup>.

### Gas sector

In the beginning of 2023 in the natural gas sector, there were several local projects that aimed to strengthen the internal natural gas market of Republic of Moldova, which were included in the Development Plans for 2022 – 2031 of the two Moldovan enterprises (Natural Gas Transmission System Operators): “Moldovatrangaz” LLC<sup>100</sup> and “Vestmoldtrangaz” LLC<sup>101</sup>, such as:

- Reconstruction and modernization of existing networks, gas stations and equipment;
- Extension of Iasi-Ungheni connecting line Chisinau (Phase 2);
- Construction of an annular pipeline for the city of Chisinau.

The Development Plans include the schedule of planned works for the implementation of local projects and the necessary investments.

It should be mentioned that ANRE did not approve in both Development Plans 2 similar projects, namely:

- for “Moldovatrangaz” - construction of the Ungheni-Drochia transport network and
- for “Vestmoldtrangaz” - construction of the gas transmission network D 500 (~95 km) to the Ungheni - Balti section, with connection to the transport network from the North of the Republic, Ananiev-Cernauti-Bohorodchany (ACB)

<sup>98</sup> [https://moldelectrica.md/ru/finances/investment\\_strategy](https://moldelectrica.md/ru/finances/investment_strategy)

<sup>99</sup> [https://moldelectrica.md/ro/network/perspective\\_plan](https://moldelectrica.md/ro/network/perspective_plan); [https://moldelectrica.md/ro/finances/investment\\_plan](https://moldelectrica.md/ro/finances/investment_plan)

<sup>100</sup> <https://moldovatrangaz.md/storage/app/media/Documente%202023/Plan%20de%20dezvoltare%202022-2031.pdf>

<sup>101</sup> [https://www.vmtg.md/images/PD\\_2022-2031\\_VMTG\\_merged.pdf](https://www.vmtg.md/images/PD_2022-2031_VMTG_merged.pdf)

### 2.4.3 Market Integration

*i) National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals, including a timeframe for when the objectives shall be met*

Benefits from market integration are associated with a cumulative change in the socio-economic well-being of consumers, producers, system operators, suppliers. The new market infrastructure is changing prices by reducing restrictions, accessing cheaper sources, and increasing competition.

#### **Electricity sector**

Development of energy transmission networks increases competition in the market in several directions:

- increasing the total volume of electricity supplies available to consumers;
- increasing the number of suppliers that can serve the load in a wider regional market.

Addition of new inter-grid and intra-grid transmission capacities may increase the number of bilateral contracts for the supply of electricity, contribute to an increase in the number of electricity producers and suppliers.

To integrate the power system of Moldova with that of the European Union, a number of documents have been adopted that relate to the Rules of the electricity market, the balancing of electricity market, and the distribution of the capacity of cross-border flows RO-MD. Similar documents are being developed at SE “Moldelectrica” for UA-MD for the early introduction of day-ahead and intraday markets. In 2022, ANRE carried out the pre-certification procedure of SE “Moldelectrica” as a TSO, and the operating standards for power plants and electrical networks were approved.<sup>102</sup>

The country is cooperating to integrate in its electricity market European practices of developing interconnectors.

General strategic *objectives* for the development of the energy sector are determined on the basis of the priorities of the Energy Community (art. 52 of the *Energy Strategy until 2030*<sup>103</sup>):

- 1) creation of an integrated (regional) competitive energy market;
- 2) attraction of investments in the energy market;
- 3) establishment of security and sustainable energy supply to consumers.

<sup>102</sup> <https://www.anre.md/raport-de-activitate-3-10>.

<sup>103</sup> [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ro](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ro)

Ensuring security of energy supply, development of competitive markets and their regional and European integration; ensuring the sustainability of the energy sector and combating climate change are the *three main objectives* of the Energy Strategy until 2030 (article 54).

National energy security *goals* (art. 59-60) include connection of electrical networks to the ENTSO-E system, construction of interconnectors, consolidation of internal electrical transport network; introduction of RES at the level of 20 % of the Gross energy consumption and an annual increase in electricity generation of 10 % from RES; increase in internal generated electricity capacity by 800 MW and 250-400 MW from RES (art. 91 and 169).

*Energy efficiency targets for electricity* transmission include reducing electricity losses in transport and distribution networks by 11 % in 2020.

The *goals* of introducing *smart grids* (art. 149) and telemetry systems (art. 150) are aimed at improving the control over the consumption of electricity produced from renewable energy sources and motivating consumers to participate in system balancing (p. 148).

*Targets to increase tradeable capacity of existing interconnectors*

Art. 71, 72, 74, and 79 of the *Energy Strategy until 2030* states *goals*:

- a) construction of a 400 kV OHL Balti-Suceava - 52 km across the territory of Moldova and 63 km of Romania (total 115 km) and a 400/330 kV substation with an autotransformer group in Balti, in agreement with the SE “Moldelectrica” RM and “Transelectro” Romania;
- b) reinforcement of the 330 kV OHL Balti-Dnestrovskaja HPP (123 km), 87 of them on the territory of Moldova. The cost of the project was planned at the level of 15 Mln EUR, including 9 Mln EUR for the Republic of Moldova.
- c) OHL Straseni - Ungheni - Iasi (or Straseni - Ungheni 330 kV or 400 kV and Ungheni - Iasi 400 kV). The cost of this line will be about 64 Mln EUR, of which 28 Mln EUR for the Romanian side and 36 Mln EUR for the Moldovan side.
- d) OHL Isaccea -Vulcanesti-Chisinau 400 kV (Vulcanesti - Chisinau-158 km).
- e) creation of a wholesale electricity market in the RM and accession to the EU market.

Art.30 of the *Law of Energy*<sup>104</sup> states that interconnectors can be assigned the status of strategic objects.

The section on power transmission of the *Law on Electricity*<sup>105</sup> outlines the functions and responsibilities of the TSO to provide information on investments, modernizations, development plans, cross-border power exchange, congestion management, access to interconnectors, total transmission capacity and other aspects of the wholesale electricity market on the basis of bilateral agreements, the day-ahead market, balancing electricity, the retail market under agreements.

<sup>104</sup> [https://www.legis.md/cautare/getResults?doc\\_id=105710&lang=ro](https://www.legis.md/cautare/getResults?doc_id=105710&lang=ro)

<sup>105</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ro#)

The *Concept of Energy development until 2050* implies the development of the *goals* of the Energy Strategy until 2030. They are divided into 5 areas and have goals for the sectors of the electric power industry, thermal power industry and natural gas, Table 26.

**Table 26. The main development objectives of the electricity sector in the Republic of Moldova**

<b>Energy Strategy of the Republic of Moldova 2050, (November 24<sup>th</sup>, 2022-Concept)</b>
<b>Targets 2022 – 2030</b>
<p><i>- strengthening energy security:</i></p> <ul style="list-style-type: none"> <li>• Increasing connectivity through the construction of new 400 kV interconnectors Isaccea-Vulcanesti-Chisinau and Balti-Suceava;</li> <li>• Evaluation of the potential of interconnector projects (RO-MD) Smirdan-Vulcanesti and Balti-Dnestrovsk (second line, MD-UA) based on the results of feasibility studies.</li> <li>• Obtaining ENTSO-E observer status for SE “Moldelectrica” and then subsequently full member status. Signing and implementation of the Synchronous Area Framework Agreement (SAFA). Ensuring compliance with ENTSO-E requirements by TSO.</li> <li>• Modernization of existing networks: Introduction of intelligent networks (where it is economically feasible) and distributed generation; developing automatic accounting systems; improving data management and use.</li> <li>• Improvement of the process of risk assessment and preparation for risk situations, update of plans for prevention and emergency measures for electricity.</li> </ul> <p><i>- development of some competitive energy markets and their regional integration:</i></p> <ul style="list-style-type: none"> <li>• Implementation of coordinated capacity calculation, cross-border capacity allocation and congestion management in accordance with applicable TCE regulations (FCA and CACM).</li> <li>• Implementation of a balancing mechanism and imbalance settlement in accordance with the current TCE and EU rules</li> <li>• Launching day-ahead and intra-day markets on the assumption that market consolidation with neighboring markets will increase competition and provide multiple opportunities for electricity transactions</li> </ul> <p><i>- promotion of energy efficiency:</i></p> <ul style="list-style-type: none"> <li>• Reconstruction and modernization of existing power generation capacities and their transformation into highly efficient cogeneration plants to improve energy efficiency;</li> <li>• Modernization of distribution and transmission networks of electricity</li> </ul> <p><i>- assistance to sustainable development, renewable energy and reduction of GHG emissions</i></p> <ul style="list-style-type: none"> <li>• Transposition and implementation of provisions on renewable energy communities; introduction of net billing and simplification of connection of large industrial power plants (autoproducers).</li> <li>• Stimulating the construction of solar power plants on the roofs of private and public buildings.</li> <li>• Construction of small distributed power plants on biomass (additional cogeneration) with stimulation due to auxiliary mechanisms.</li> </ul> <p><i>- consumer protection and energy poverty reduction</i></p>

- Protection of vulnerable consumers through appropriate social benefits-compensation for the consumption of natural gas, heat and electricity.
- Development of thermal insulation programs for public buildings

### ***Targets 2030 – 2050***

#### *- strengthening energy security*

- Continue efforts to improve generation adequacy using all available energy resources and technologies while ensuring compliance with applicable TEC/EU legislation
- Continuation of modernization and consolidation works of networks.

#### *- development of some competitive energy markets and their regional integration*

- Use of platforms developed by ENTSO-E for the exchange of balancing and system services

To achieve the specified *goals*, it is planned to harmonize the country's energy policy with the recently adopted EU legislative documents (Fit for 55, REPowerEU,) to integrate its energy sector into the European energy market (on the conditions of competitiveness and sustainability), ensuring the adequate level of energy security for the continuous access of consumers to energy at affordable prices.

REPowerEU<sup>106</sup> is based on the *Fit for 55* proposals, it maintains the main *goal* of reducing greenhouse gas emissions by 55% in 2030 and achieve climate neutrality in 2050, and proposes to increase the energy efficiency and renewable energy targets to 13% and 45% accordingly.

## ***Gas sector***

The Republic of Moldova aims to develop the natural gas market in accordance with EU legislations and practice. In the beginning of 2023, the main objectives established for natural gas sector in the national plan of the Republic of Moldova were stipulated in the following official documents:

- *Energy Strategy of the Republic of Moldova 2030 (GD 102 of 02/05/2013)*<sup>107</sup>;
- *Roadmaps for energy sector 2015-2030 (GD 409 of 06/16/2015)*<sup>108</sup>
- *Energy Strategy of the Republic of Moldova 2050*<sup>109</sup>, (Concept, November 24<sup>th</sup>, 2022), (developed with the support of the US Agency for International Development (USAID), within the project "Energy Security Activity in Moldova" (MESA))
- *The national development plan (PND) for the years 2023 – 2025 (Project)*<sup>110</sup>
- *LLC "Vestmoldtransgaz" natural gas transmission network development plan 2022 – 2031*

<sup>106</sup> [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repower-eu-affordable-secure-and-sustainable-energy-europe\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repower-eu-affordable-secure-and-sustainable-energy-europe_en)

<sup>107</sup> [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ro](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ro)

<sup>108</sup> [https://www.legis.md/cautare/getResults?doc\\_id=77316&lang=ro](https://www.legis.md/cautare/getResults?doc_id=77316&lang=ro)

<sup>109</sup> <https://midr.gov.md/noutati/strategia-energetica-moldova-2050-tinteste-asigurarea-independentei-energetice-a-tarii-si-aprovizionarea-cetatenilor-cu-energie-accesibila>

<sup>110</sup> <https://particip.gov.md/ro/document/stages/proiectul-planului-national-de-dezvoltare-pentru-anii-2023-2025-si-proiectul-planului-de-actiuni-al-guvernului-pentru-anul-2023/9979>

- *LLC "Moldovatrangaz" natural gas transmission network development plan 2022 – 2031*

It should be mentioned that during the preparation of this document, the license of the LLC “Moldovatrangaz” was revoked for non-compliance with the conditions and terms regulated for the unbundling and certification<sup>111</sup>. Respectively, from September 19<sup>th</sup>, 2023 only LLC "Vestmoldtrangaz" manages the entire natural gas transport infrastructure on the Right bank of the Dniester River.

Table 27 gives an overview of the targets relating to natural gas sector established in each document.

*Table 27. The main development objectives of the natural gas sector in the Republic of Moldova*

<b>Energy Strategy of the Republic of Moldova 2030, (February 2, 2013)</b>
<p>The Energy Strategy 2030 contains three general objectives described above. The 2013-2030 roadmap for the natural gas sector in the Republic of Moldova includes 4 work packages with a series of action sets for each package:</p> <ul style="list-style-type: none"> <li>• Work package 1: Elaboration of the normative framework for the natural gas sector;</li> <li>• Work package 2: Consolidation of the institutional and organizational framework in the natural gas sector. The development of the natural gas market;</li> <li>• Work package 3: Promotion of investment projects in natural gas infrastructure;</li> <li>• Work package 4: Other measures proposed for the natural gas sector.</li> </ul> <p>It should be noted that most of the objectives have been established only for the 2020 time horizon.</p>
<b>Concept of Energy Strategy of the Republic of Moldova 2050, (November 24<sup>th</sup>, 2022)</b>
<b><i>Targets 2022 – 2030</i></b>
<ul style="list-style-type: none"> <li>• Modernization of natural gas distribution and transport networks and reduction of losses;</li> <li>• Transposition and implementation of Network Codes;</li> <li>• Finalization of the LLC “Moldovatrangaz” separation process;</li> <li>• Creation of natural gas trading platforms and a capacity allocation process at interconnection points;</li> <li>• Creation of minimum natural gas stocks;</li> <li>• Exploring the possibility of building gas storage facilities (underground or terrestrial) in the Republic of Moldova;</li> <li>• Introduction of balancing responsibility of natural gas network users;</li> <li>• Establishing a compensation mechanism between TSO’s;</li> <li>• Development of the natural gas transport network and bidirectional interconnection capacities;</li> <li>• Diversification of natural gas supply routes and sources;</li> <li>• Continue market opening and gradual liberalization of the natural gas market;</li> </ul>
<b><i>Targets 2030 – 2050</i></b>
<ul style="list-style-type: none"> <li>• Further compliance with applicable EU legislation</li> <li>• The use of green hydrogen as an alternative to gas</li> </ul>

<sup>111</sup> ANRE decision No. 572 from 09/18/2023

<ul style="list-style-type: none"> <li>• Sectoral coupling rules and hydrogen market integration</li> </ul>				
<b>The National Development Plan 2023 – 2025</b>				
General objective	Indicators (output)	Total Cost, thousands of MDL	Deadline	Reference document
2.4.2. Ensuring the security of the natural gas supply of the Republic of Moldova	The volume of purchased natural gas, annually	6,000,000	Nov-Dec, 2025	GD no. 668/2022 <sup>112</sup> regarding the creation and maintenance of security stocks of natural gas.
<b>LLC "Moldovatransgaz" natural gas transmission network development plan 2022 – 2031</b>				
<ul style="list-style-type: none"> <li>• Ensuring the security of the natural gas supply of the Republic of Moldova by diversifying the routes and sources of supply, the reconstruction and modernization of production equipment; replacement of potentially dangerous gas pipeline sections; investments in measuring equipment, control and diagnostic devices.</li> <li>• Developing the regional natural gas market and strengthening the role of the Republic of Moldova as a natural gas transit corridor;</li> <li>• Interconnection of the system of natural gas transport networks in the direction of Romania - Moldova - Ukraine, thus improving competition on the market and the security of gas supply for the Balkan region and in Eastern Europe;</li> <li>• Creation of a new transport route for the delivery of natural gas in the direction of Romania - Ukraine (western region);</li> <li>• Ensuring an alternative natural gas supply solution for the municipality of Balti, as well as for the Northern regions of the Republic of Moldova;</li> </ul>				
<b>LLC "Vestmoldtransgaz" natural gas transmission network development plan 2022 – 2031</b>				
<ul style="list-style-type: none"> <li>• Increasing the volumes of natural gas transported</li> <li>• Expansion of natural gas transport networks</li> <li>• Ensure reliable provision of natural gas to the project parameters</li> </ul>				

It should be noted that the EU external energy strategy<sup>113</sup>, which is part of the REPowerEU plan, included two actions regarding Moldova:

- Facilitate the reverse flow of gas to Ukraine via the Slovak Republic, Hungary and Poland and to Moldova and Ukraine via Romania (Trans-Balkan pipeline);
- Invite Ukraine, Moldova, Georgia and the Western Balkan countries to participate in the EU's voluntary gas purchasing scheme.

For more detailed information on the current situation in the retail and wholesale electricity and natural gas market in the Republic of Moldova, see the Chapter 4.5.3.

<sup>112</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133538&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133538&lang=ro)

<sup>113</sup> [https://energy.ec.europa.eu/system/files/2022-05/JOIN\\_2022\\_23\\_1\\_EN\\_ACT\\_part1\\_v6.pdf](https://energy.ec.europa.eu/system/files/2022-05/JOIN_2022_23_1_EN_ACT_part1_v6.pdf)



ii) Where applicable, national objectives related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets, including a time-frame for when the objectives are to be met

*Non-discriminatory participation of renewable energy*

It is planned to transfer and implement regulations on renewable energy sources, stimulating construction of photovoltaic installations in private and public buildings, construction of small biomass power plants and others in the Concept Energy Development until 2050 under the block “Promotion of sustainable development, renewable energy and emission reduction”.

The Law of Renewable Energy defines the main principles of state policy in the field of energy from renewable sources, which include:

- a) bringing the national legal framework in line with the norms and standards of the European Union;
- b) promotion of energy from renewable sources through the application of support schemes;
- c) implementation of state administration of RES and transparency in the implementation of activities;
- e) ensuring non-discriminatory access to networks;
- f) ensuring access of individuals and legal entities to information on the production and use of energy from renewable sources;

Article 27 (8, 9) of the Energy Efficiency Law defines specific requirements for TSO’s to promote the use of resources at the level of demand, as well as demand response services, including aggregators, in a non-discriminatory manner, in order to reduce congestion during peak periods and save energy.<sup>114</sup>

Chapter 2 (1) of the *National Energy Efficiency Action Plan*<sup>115</sup> states the *goal* of increasing the efficiency of energy consumption and reducing greenhouse gas emissions and includes measures for the electricity sector:

- development of own energy efficiency programs at enterprises in order to reduce losses in distribution networks;
- reduction of electricity losses in transport and distribution networks;
- investment planning;
- development of a program for the development of transport networks;

iii) Where applicable, national objectives with regard to ensuring that consumers participate in the energy system and benefit from self-generation and new technologies, including smart meters

Article 11 of the *Energy Strategy 2030*<sup>116</sup> notes the need to develop the concept of smart grids.

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<sup>114</sup> [https://www.legis.md/cautare/getResults?doc\\_id=137465&lang=ro](https://www.legis.md/cautare/getResults?doc_id=137465&lang=ro)

<sup>115</sup> [https://www.legis.md/cautare/getResults?doc\\_id=119890&lang=ro](https://www.legis.md/cautare/getResults?doc_id=119890&lang=ro)

<sup>116</sup> [https://www.legis.md/cautare/getResults?doc\\_id=68103&lang=ro](https://www.legis.md/cautare/getResults?doc_id=68103&lang=ro)

The *Law on Energy Efficiency*<sup>117</sup> no. 139 of 07/19/2018 defines the concepts of “smart metering equipment”, “smart grid”, “energy poverty”.

Art. 16 (6) of this Law describes the conditions for installing smart metering equipment (addition to the requirements of the *Law of Electricity*), which is intended to inform the supplier about the duration of electricity consumption and on equipment safety.

According to Art. 69 of the Natural Gas Law no. 108<sup>118</sup> of May 27<sup>th</sup>, 2016 system operators are responsible for natural gas metering and maintenance of the measuring equipment of consumers connected to their natural gas networks. Currently, individual gas meters are installed in almost all consumers. Some final consumers of natural gas (mostly in new buildings) are already equipped with *smart* natural gas meters.

In doing so, the *aim* is to respect the rights of consumers to have access to reported data and to information that communicated to the supplier during remote recording of indications on the basis art. 2(a) of the *Law on the protection of personal data*.

*iv) National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production, including a time-frame for when the objectives shall be met*

The *adequacy* of the power supply system and its *flexibility* are determined by the indicators of the development of electricity generation and the efficiency of electricity transmission, meeting the needs of the electricity sector<sup>119</sup>.

TYNDP plan for 2018 – 2027, p. 2.5. “Power system adequacy” shows the balance between generation and demand (generation + import – export – consumption) for the winter and summer days for 2016, and SE “Moldelectrica” constantly monitors the balance of generation and demand online on its website<sup>120</sup>.

Electricity Law No. 107 of 05/27/2016<sup>121</sup> defines tasks to ensure an adequate balance between generation and demand for TSO, which develops the power system in its area of responsibility. To ensure the supply of electricity in the required volume, the Law requires the development of generating sources of various types, the development of interconnectors with neighboring power systems to increase cross-border capacity and conclude contracts for the supply of electricity from generating sources in the European market, maintaining existing contracts with local producers is being considered.

Increasing the number of prosumers in the production of electricity from renewable sources and motivating them to sell the generated electricity to the grid in excess of the consumed allows to

<sup>117</sup> [https://www.legis.md/cautare/getResults?doc\\_id=132670&lang=ro](https://www.legis.md/cautare/getResults?doc_id=132670&lang=ro)

<sup>118</sup> [https://www.legis.md/cautare/getResults?doc\\_id=132937&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=132937&lang=ro#)

<sup>119</sup> [https://www.moldelectrica.md/ru/network/perspective\\_plan](https://www.moldelectrica.md/ru/network/perspective_plan)

<sup>120</sup> [https://www.moldelectrica.md/ru/network/perspective\\_plan](https://www.moldelectrica.md/ru/network/perspective_plan)

<sup>121</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ru#)

increase the amount of additional electricity. In 2022, ANRE confirmed the status as eligible producers of electricity at photovoltaic plants for applications of 133 MW<sup>122</sup>.

Current scenarios developed in this NECP assumes the development of generating sources, including cogeneration, RES, storage batteries, waste-based installations.

Power transmission projects, including interconnectors, potentially improve system reliability and are important for disaster resilience. They provide additional options for disabling damaged objects and their emergency recovery, and provide additional flexibility for returning to work. They increase the potential for using the reserve capacity of power plants in the region, can ensure sustainable purchases of power, and increase the load on existing power plants. This reduces the need for construction of new generating facilities in the region to meet demand and reserve adequacy requirements.

RES contributes to meeting local demand for electricity, which increases the ability to quickly respond to demand, increases the *flexibility* of the energy system, and motivates *independent consumers* to participate *in the supply of electricity* to the common electricity market.

The adequacy and increased flexibility of the electricity system is ensured by *the Law on Electricity*<sup>123</sup>, which sets the following tasks:

- creation of a common legal framework for organizing, regulating, ensuring the effective functioning and monitoring of the electricity sector to supply consumers with electricity in terms of availability, reliability, continuity, quality and transparency;
- ensuring free access to the electricity market;
- encouragement of electricity generation;
- ensuring an adequate balance between supply and demand based on an appropriate level of interconnection capacity to facilitate cross-border electricity exchange;
- development of the electricity market and integration into the competitive electricity market;
- the establishment of measures designed to guarantee the security of the electricity supply, the proper fulfillment of obligations for the provision of public services;
- ensuring compliance with consumer rights, as well as environmental protection standards.

According to this Law, the TSO develops the electricity system in area of its responsibility to provide a network service based on its license and takes into account security of supply, efficiency and market integration when developing the network.

#### *Implementation of renewable energy sources to increase the flexibility of the power system*

Article 6 (1, a-h) of the *Law on RES*<sup>124</sup> outlines the tasks of the state policy to increase the production of energy from renewable sources, including: diversification of primary energy resources, promotion of RES; achieving 17 % share of energy from RES in Gross energy consumption and 10 % share of energy from RES in Final consumption in transport. According to

<sup>122</sup> <https://www.anre.md/raport-de-activitate-3-10>

<sup>123</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ro](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ro)

<sup>124</sup> [https://www.legis.md/cautare/getResults?doc\\_id=132691&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=132691&lang=ru#)

commitment with Energy Community the new target for RES is 27 % in Gross energy consumption in 2030.

Article 5 (3, a-i) of the *Law of Energy Efficiency*<sup>125</sup> contains the national *goals* for improving energy efficiency, namely promoting technologies with increased energy efficiency, modern control and measuring systems; removing barriers, applying effective management and increasing awareness, encouraging the use of renewable energy, attracting investments, financial mechanisms for saving energy, cooperation between final consumers, producers, suppliers, distribution system operators, developing the energy services market.

*v) Where applicable, national objectives to protect energy consumers and improve the competitiveness of the retail energy sector*

There are 2 objectives related to consumer protection stipulated in the Concept of Energy Strategy 2050<sup>126</sup>: 1) Reducing the impact of energy crises and the energy burden and 2) Identifying appropriate social aids, adapted to the needs of vulnerable consumers.

Reducing energy vulnerability by compensating costs for vulnerable energy consumers is also provided for in the Government Activity Program „Prosper, Sure and European Moldova”, approved by Parliament Decision no. 28 of February 16<sup>th</sup>, 2023<sup>127</sup>.

Article 23(5) of the *Law on Energy* No. 174 of 09/21/2017 states that the consumer can take measures to improve reliability by installing a third backup source of *electricity* at his own expense<sup>128</sup>.

Article 65 of the *Law on electricity*, No. 107/2016 determines that consumers have the right to take measures to select a supplier, conclude contracts for the supply of electricity, to satisfy the requirements for the repair of equipment, to access information on electricity consumption, payments, fines, to compensate for damages in case of violations of the supply of electricity and its quality and other provisions of the concluded agreements<sup>129</sup>.

Article 9 (“o”) of the *Law on thermal energy and the promotion of cogeneration*, No. 92/2014 notes that ANRE is responsible for ensuring the protection of the rights and legitimate interests of consumers, considering appeals and disputes between consumers and energy suppliers related to the conclusion of an agreement and connection to the heating network<sup>130</sup>. Additionally, the Government adopted the methodology regarding the distribution of direct/indirect heat energy consumption between consumers of apartment blocks connected to the district heat energy supply system, which aims to exclude payment inequalities between connected and disconnected consumers.

<sup>125</sup> [https://www.legis.md/cautare/getResults?doc\\_id=132670&lang=ro](https://www.legis.md/cautare/getResults?doc_id=132670&lang=ro)

<sup>126</sup> <https://midr.gov.md/noutati/strategia-energetica-moldova-2050-tinteste-asigurarea-independentei-energetice-a-tarii-si-aprovizionarea-cetatenilor-cu-energie-accesibila>

<sup>127</sup> [https://gov.md/sites/default/files/document/attachments/program\\_de\\_guv-final\\_ro.pdf](https://gov.md/sites/default/files/document/attachments/program_de_guv-final_ro.pdf)

<sup>128</sup> [https://www.legis.md/cautare/getResults?doc\\_id=105710&lang=ru](https://www.legis.md/cautare/getResults?doc_id=105710&lang=ru)

<sup>129</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ru#)

<sup>130</sup> [https://www.legis.md/cautare/getResults?doc\\_id=129129&lang=ro](https://www.legis.md/cautare/getResults?doc_id=129129&lang=ro)

The supply of *natural gas* to final consumers is carried out only on the basis of the natural gas supply contract concluded between the supplier and the final consumer in accordance with Natural Gas Law no. 108/2016 and the Regulation regarding the supply of natural gas.

Every consumer has the right to submit a petition to the supplier regarding problems with contracting, disconnection, reconnection, natural gas billing and natural gas quality parameters.

It should be mentioned that since the adoption of the Gas Law 108/2016 (article 114), the natural gas retail market has been declared open and every final consumer in the Republic of Moldova has the right to freely choose and change the gas supplier.

#### 2.4.4 Energy Poverty

*i) Where applicable, national objectives with regard to energy poverty, including a time-frame for when the objectives are to be met*

The definition of “**Energy poverty**” is mentioned in the Law on Energy Efficiency No. 139 of 07/19/2018<sup>131</sup> and is defined as a situation characterized by the final consumer's lack of access to modern energy sources and technologies and/or by the reduced purchasing power of consumers for energy resources, especially cooking fuels, electricity and/or thermal energy, and /or due to the lack of thermal comfort in the home or building.

In the list of objectives stipulated in the National Development Strategy “European Moldova 2030”<sup>132</sup> (November 17<sup>th</sup>, 2022), is included the reduction by at least 50% of the level of absolute poverty in 2030.

In the Republic of Moldova, information on population’s level of life (income and expenditure) is provided by the National Bureau of Statistics on the basis of *Household Budget Survey*<sup>133</sup> (the statistical research on households).

According to statistical data<sup>134</sup>, in 2022, the average monthly disposable income per person was 4,252.7 MDL or ~ 225 USD. Monthly consumption expenditure of the population, on average per person, amounted to 3,711.9 MDL (~196 USD) and the share of consumer expenditures on energy services (housing, water, electricity and gas) was about 16.2 % of total expenditures, Figure 15. At the same time, about 10 % of the population has monthly household expenses that exceed 30 % of the household’s monthly disposable income.

It should be noted that 100 % of households have access to electricity and less than 10 % have access to centralized hot water, Figure 14.

<sup>131</sup> [LP139/2018 \(legis.md\)](https://legis.md/LP139/2018)

<sup>132</sup> <https://monitorul.gov.md/ro/monitorul/view/pdf/2579/part/1#page=1>

<sup>133</sup> [https://statistica.gov.md/public/files/Metadate/en/CBGC\\_en.pdf](https://statistica.gov.md/public/files/Metadate/en/CBGC_en.pdf)

<sup>134</sup> [https://statistica.gov.md/ro/veniturile-si-cheltuielile-populatiei-in-anul-2022-9442\\_60379.html](https://statistica.gov.md/ro/veniturile-si-cheltuielile-populatiei-in-anul-2022-9442_60379.html)

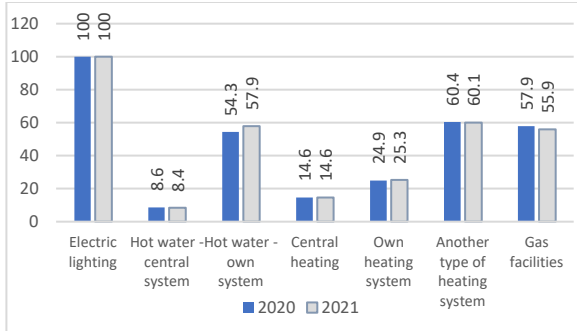


Figure 14. Households' equipment by dwelling facilities<sup>135</sup>, in %

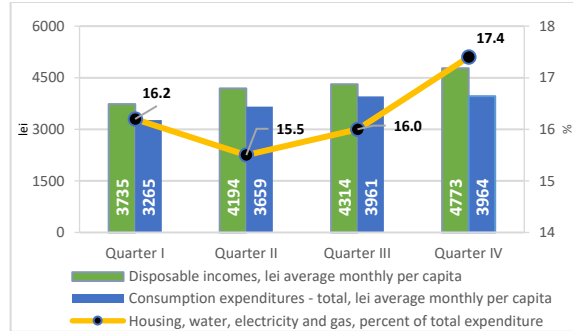


Figure 15. Disposable incomes and Consumption expenditures in 2022, in MDL

Several published studies address the issue of energy poverty in the Republic of Moldova:

- Republic of Moldova: Assessment of Energy Poverty<sup>136</sup>
- Report on Energy Poverty Assessment and Support Mechanisms in the Republic of Moldova<sup>137</sup>
- Energy Poverty in Moldova: Social Assistance versus Technical Capacitation<sup>138</sup>

In the EPAH Energy Poverty National Indicators Report<sup>139</sup> published by the Energy Poverty Advisory Hub in 2022, for the Republic of Moldova only the household electricity and gas prices are presented (data for other indicators are not indicated), Table 28.

Table 28. Comparison of the last updated 2 years for each indicator for the Republic of Moldova, EPAH

Arrears on utility bills			Inability to keep home adequately warm			Household electricity prices *			Household natural gas prices *			Pop. Liv. Presence of leak, damp, rot			At Poverty risk or Social Exclusion		
2020	2021	↑ or ↓	2020	2021	↑ or ↓	2020	2021	↑ or ↓	2020	2021	↑ or ↓	2020	2021	↑ or ↓	2020	2021	↑ or ↓
N/A	N/A	N/A	N/A	N/A	N/A	0.103	0.087	↓	0.028	0.036	↑	N/A	N/A	N/A	N/A	N/A	N/A

\* Household electricity and gas prices are presented in EUR/kWh

Statistical data on household electricity and natural gas prices compared to other countries can be analyzed in the figures presented below (according to the same EPAH report), Figures 16 and 17.

<sup>135</sup> Households equipment by Dwelling facilities. Years and Area. PxWeb (statistica.md)

<sup>136</sup> <https://press.utm.md/index.php/jes/article/view/2023-30-1-07/07-pdf>

<sup>137</sup> <https://www.undp.org/sites/g/files/zskgke326/files/2022-09/Report%20Energy%20Poverty%20EN.pdf>

<sup>138</sup> [https://www.expert-grup.org/media/k2/attachments/Energy\\_Poverty\\_in\\_Moldova\\_en.pdf](https://www.expert-grup.org/media/k2/attachments/Energy_Poverty_in_Moldova_en.pdf)

<sup>139</sup> [https://energy-poverty.ec.europa.eu/system/files/2023-01/EPAH\\_Energy%20Poverty%20National%20Indicators%20Report\\_0.pdf](https://energy-poverty.ec.europa.eu/system/files/2023-01/EPAH_Energy%20Poverty%20National%20Indicators%20Report_0.pdf)



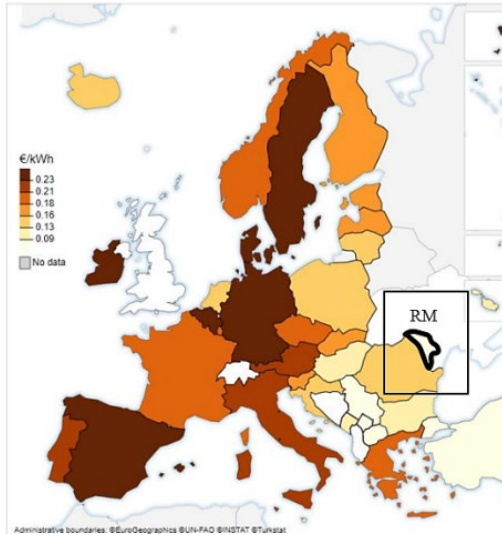


Figure 16. Map of Household electricity prices map in 2021

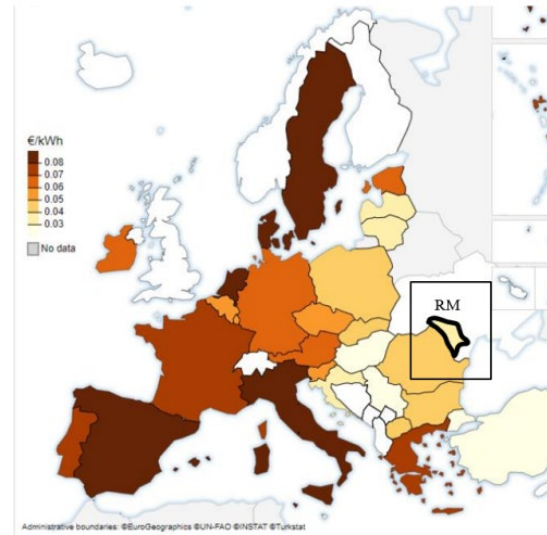


Figure 17. Map of Household natural gas prices map in 2021

## 2.5. Dimension Research, innovation and competitiveness

i. *National objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union, including, where appropriate, a timeframe for when the objectives are to be met*

Through its policies, the Government prioritizes the fields of research and innovation and considers them as the basis for socioeconomic development and creating premises for increasing the country's competitiveness. It also promotes research and innovation that increase the competitiveness of products, technologies, processes, resulting in obtaining, promoting and acquiring new knowledge through the development and implementation of the National Program, sectoral strategies, action plans and other projects in the fields of research and innovation, as well as by applying the tools to stimulate the respective activities.

National objectives are established usually in the National Program for Research and Innovation being updated each 4 years, including its Action Plan. Currently the National Program for Research and Innovation 2024 – 2027 is under development and should be approved in the autumn of 2023. The Program is the main policy document through which priorities and strategic directions are established, as well as development objectives in the fields of research and innovation, for a duration of 4 years. Responding to global trends, the coherence between policy programs takes place, including, through investments in the fields of research and innovation, so that the results of research and innovation contribute to solving the problems facing society through synergy. Main objectives of current National Program for Research and Innovation 2020 – 2023 is focused on 5 areas presented below on Figure 18.



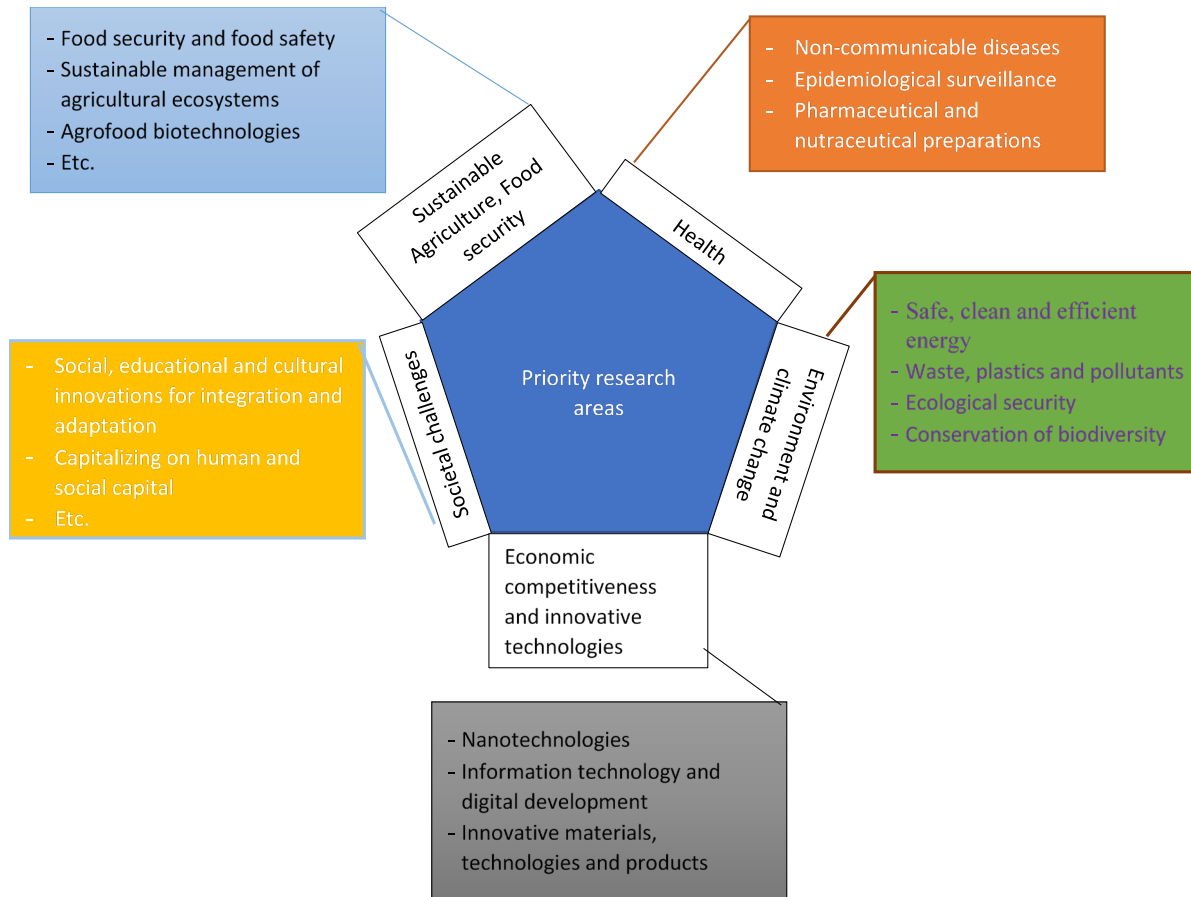


Figure 18. Priority research areas of Republic Moldova

The Republic of Moldova is a partner country within the Eastern Partnership (EaP) initiative as well as the Eastern dimension within the European Neighborhood Policy (ENP). From January 2012, the Republic of Moldova became an associated member of the 7<sup>th</sup> Framework Program. In July 2014, Moldova was the first Eastern Partnership country to become associated to Horizon 2020 (H2020).

On October 27<sup>th</sup>, 2021, the Republic of Moldova signed the Agreement on the participation in Horizon Europe, the Framework Program for Research and Innovation 2021 – 2027. The Republic of Moldova enjoys the status of an Associated Country under Horizon Europe. This status gives Moldovan research entities the possibility to participate in Horizon Europe as any other research entities from EU Member States.

Research in the Republic of Moldova is mainly financed from the state budget, and constitutes around **0.23% of GDP**, or approximately 25 Mln EUR. In Moldova both state and private companies are eligible to perform research if such activity is stated in their Statute. The scientists from Moldova actively participate in EU-funded research programs. 91 projects were applied only

to the framework program H2020 and attracted funding in the amount of 7.42 Mln EUR<sup>140</sup> (Figure 19).

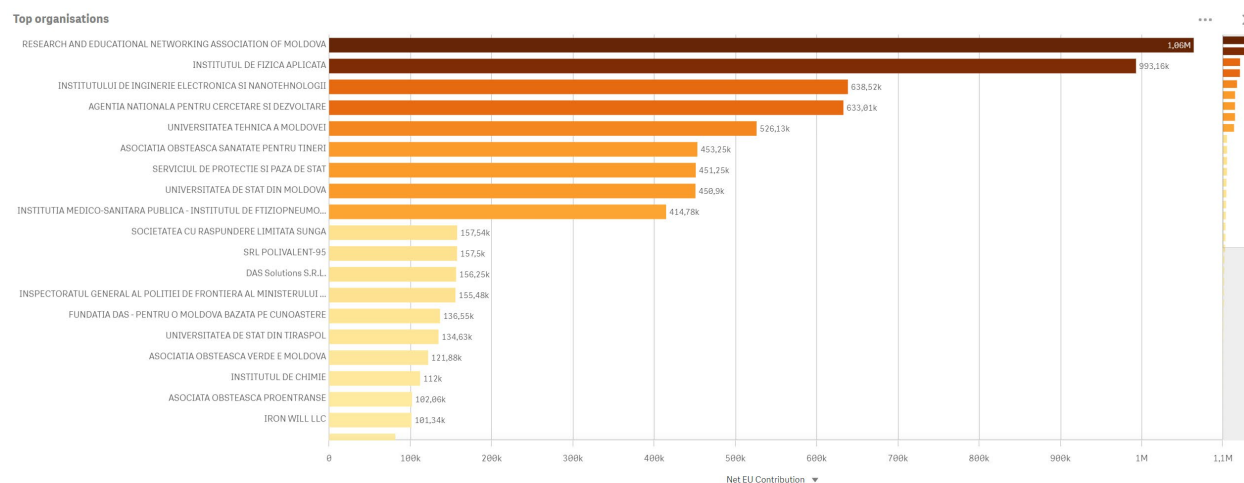


Figure 19. EU contribution for research projects in frame of H2020 Program

Moldova is also promoting research within bilateral programs (with Romania, Ukraine, Italy, – Turkey, etc.), in order to solve efficient stringent problems and increase competitiveness of companies.

Moldova is also involved in the Cross Border Cooperation (CBC) instrument intended to promote cooperation between EU countries and neighborhood countries sharing a land border or sea crossing. Funding can also be provided for a program between several EU and neighborhood countries which, for example, are part of the same sea basin.

Moldova companies mostly applied to the Cross Border Program Romania – Moldova 2014 – 2020 and implemented numerous infrastructure projects dedicated to face climate change and reduce energy consumption.

According to the Law 315/2022 “European Moldova 2030”<sup>141</sup> the budget for research is planned to increase by 0.1% of GDP each year.

ii. *Where available, national 2050 objectives related to the promotion of clean energy technologies and, where appropriate, national objectives, including long-term targets (2050) for deployment of low-carbon technologies, including for decarbonising energy and carbon-intensive industrial sectors and, where applicable, for related carbon transport and storage infrastructure*

The Republic of Moldova has assumed ambitious objectives regarding the achievement of climate neutrality by 2050. The energy sector is responsible for around 70% of total national GHG emissions. For these reasons, research and innovation in the energy sector is a priority for the country.

<sup>140</sup> [https://dashboard.tech.ec.europa.eu/qs\\_digit\\_dashboard\\_mt/public/sense/app/1213b8cd-3ebe-4730-b0f5-fa4e326df2e2/sheet/0c8af38b-b73c-4da2-ba41-73ea34ab7ac4/state/analysis/select/Country/Moldova%20\(Republic%20of\)](https://dashboard.tech.ec.europa.eu/qs_digit_dashboard_mt/public/sense/app/1213b8cd-3ebe-4730-b0f5-fa4e326df2e2/sheet/0c8af38b-b73c-4da2-ba41-73ea34ab7ac4/state/analysis/select/Country/Moldova%20(Republic%20of))

<sup>141</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134582&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134582&lang=ro)

To meet climate neutrality in energy sector it is planned to reach 47.5% of RES share in total energy consumption by 2050, including 84.5% for electricity, 32.2% for H&C and 35.9% in transport sector.

In order to fulfill this trend in energy sector the Government is amending current Law on promotion of renewable energy (no.10/2016) in terms of increasing the attractiveness for investors and local population.

Research and innovation are the main drivers to deploy clean energy technologies and specific instruments for supporting and promoting research in energy sector is need. In this regards Moldova is planning to adopt Smart Specialization Strategy until 2030, that will strengthen the links between the research environment and the business environment, as well as increasing the relevance of scientific research to the needs of the business sector. The Strategy is to be developed by the Ministry of Education and Research.

Main objectives of Smart Specialization Strategy related to energy sector are presented below:

- facilitate raising of the local energy autonomy level through the use of renewable energy resources;
- strengthening the centralized thermal energy supply systems in cities in order to increase the overall efficiency of generation and supply of heat and domestic hot water,
- promotion of projects for the efficiency of the consumption of energy resources and the valorization of renewable energy sources in the public and residential sector, with the development of financing instruments accessible to the subjects of the respective sectors, as the case may be, with an emphasis on vulnerable consumers;
- development of “green” energy. Stimulating interest in the production and consumption of “green” energy by harnessing renewable energy sources, including the use of efficient and clean biomass burning technologies, as well as facilitating the connection of production facilities to existing distribution capacities.

The National Development Strategy “European Moldova 2030” contains commitments to install 410 MW of RES in 2030, to accelerate investment in storage capacities for electricity produced from RES, to promote ecological enterprises, etc. All these efforts need strong support of research and innovation. Additionally, recently was adopted Low Emission Development Program until 2030<sup>142</sup> and the Action Plan for its implementation, which includes commitments for installing 400 MW of wind power and 200 MW of solar energy until 2030.

*iii. Where applicable, national objectives with regard to competitiveness*

In accordance with the provisions of the Law no. 182 of 07/15/2010, starting with 2011 ten industrial parks (IP) were established in the Republic of Moldova:

- IP “Tracom” and IP “FAIP” (Chisinau municipality),

<sup>142</sup> GD No. 624 from 30 August 2023. [https://www.legis.md/cautare/getResults?doc\\_id=140163&lang=ro](https://www.legis.md/cautare/getResults?doc_id=140163&lang=ro)

- IP “Raut” (Balti municipality),
- IP “Cimislia” (Cimislia town),
- IP “Edinet” (Edinet town),
- IP “Comrat” (Comrat town),
- IP “CAAN” and IP “Triveneta Cavi Dvelopment” (Straseni town),
- IP “Bioenergagro” (Drochia town) and IP “Cahul” (Cahul town).

Industrial parks have technical and production infrastructure in which economic activities are carried out, mainly industrial production, service provision, capitalization of scientific research and/ or technological development as specific facilities aimed at capitalizing on the human and material potential of the region. These entities comprise more than 60 businesses that have created almost 4,300 jobs, and in nine years of activity the investments made amount to almost 2.4 billion MDL in infrastructure development, the amount of taxes and fees paid by resident businesses being over 1.8 billion MDL.

Industrial platforms that offer attractive conditions for investors, such as Industrial Parks or Free Economic Zones, have recently ensured the industrial development of the regions in which they are located.

At the same time, it is found that the uneven diversification of these industrial platforms contributes to deepening inequalities in relation to the territorial-administrative units where such entities do not exist.

In this context, in order to increase the **competitiveness**, productivity and employment in the industrial sector, in 2020 the Government decided to create Multifunctional Industrial Platforms (MIP’s) in regions that do not have IP type platforms or Free Economic Zones (FEZ). The pilot program for the creation of Multifunctional Industrial Platforms was approved by Government Decision no. 748 of 10/13/2020. It provides for creation of 18 MIP’s in various districts of the country. Fully equipped from the point of view of access to utilities, the designated locations for the establishment of the MIP will become true centers of excellence for industrial development at local level. Unlike IP or FEZ, the operating model of the Multifunctional Industrial Platforms is based on ensuring easier access for investors rather than on providing tax incentives; this is intended to boost the efficiency of industrial projects implementation in a short timeframe.

The Organization for the Development of the Entrepreneurship (ODA) was created for the promotion of competitiveness and has a series of competences in the field:

- ✓ Elaboration and implementation of programs and projects for the development of the SME sector;
- ✓ Administration of the State Credit Guarantee Fund (FGC);
- ✓ Providing consulting and training services to SME managers and employees;
- ✓ Creation and development of a network of Business Incubators in Moldova;
- ✓ Supporting the formation of innovative clusters and networks;
- ✓ Supporting the development of associates and business support institutes;
- ✓ Cooperation with similar national and international organizations.

### ***Technology Transfer Projects***

Technological transfer of scientific results from the research environment to the business environment is the main method of stimulating economic growth, which is being applied all over

the world. Moldova also has put in place mechanisms of technology transfer implemented by NARD.

Project duration is 12 months and state budget is 50% but not more than 1.0 Mln MDL. This instrument is very attractive to increase competitiveness. The area covered by technological transfer projects is the same as National Program for research and development.

### 3. POLICIES AND MEASURES

#### 3.1. Dimension Decarbonization

3.1.1. GHG emissions and removals (for the plan covering the period from 2021 to 2030, the 2030 Framework target)

*i. Policies and measures to achieve the target set under Regulation [ ] [ESR] as referred to in 2.1.1 and policies and measures to comply with Regulation [ ] [LULUCF], covering all key emitting sectors and sectors for the enhancement of removals, with an outlook to the long-term vision and goal to become a low-carbon economy with a 50 years perspective and achieving a balance between emissions and removals in accordance with the Paris Agreement*

The NECP includes a number of decarbonization-related policy measures in terms of energy and non-energy related GHG emissions. The existing and planned policy measures in the energy field, which generates about 70% of GHG emissions in the Republic of Moldova, will have a major contribution to the decarbonization process. Some existing measures for decarbonization will be extended until 2030 and others will be launched in order to support development of RES sector and other dimensions of the Energy Union, including energy efficiency, the internal energy market and energy security.

The EnC Ministerial Council adopted the Decision 2022/05/MC-EnC, requiring Contracting Parties to transpose the EU regulation for the ETS (Directive 2003/87/EC) by the end of 2023. As precursor to establishing the reporting and information systems that enable carbon pricing, the EnC Ministerial Council adopted the Decision 2021/14/MC-EnC, which requires the transposition of relevant monitoring, reporting, verification, and accreditation systems, aligned with EU regulations by 2023, with full implementation by 2026.

To align with the EU climate agenda, and under the directives set forth by the EnC, Moldova is in the process of putting in place structures for carbon pricing akin to the EU ETS. The EU has also recently adopted new regulations for the Carbon Border Adjustment Mechanism (CBAM), which aims to address the issue of “carbon leakage,” the risk that industrial processes in the EU might transition to countries with less stringent environmental and carbon reduction policies, by setting a fee structure on imports to the EU.

Moldova is planning to implement the above-mentioned Decisions through the Law on Climate Actions that is currently under development and will be in force starting from 2024. The Republic of Moldova needs to strengthen its administrative and technical capacity at all levels and further increase investments towards green energy transition.

#### **Regulatory Measures**

Apart from proposed policy measures regarding energy and non-energy related GHG emission reduction targets, policy measures are also proposed in order to improve the existing regulatory framework and raise public awareness regarding the environmental impact of energy consumption with the aim of motivating, stimulating and informing them to change their behavior and continue to engage.

Policy measure code:	PM_DC1	Title:	<b>Carbon Border Adjustment Mechanism (WPM)</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels		
Description:	<p>CBAM is the transition mechanism, considering that Moldova will be subject to it in the near future and because the country is currently working on an ETS system through ongoing discussions with the EnC. Under the CBAM, Moldova may start to receive requests for emission information from EU importers beginning in October 2023, with the first reports on 2023 emissions due by January 31<sup>st</sup>, 2024. CBAM certificates and impacts on trade prices will go into effect in 2026. Moldova may be able to offset CBAM impacts by instituting carbon pricing, which can be deducted from its obligations under the CBAM. To enable all aspects of carbon pricing and reporting under the CBAM or a future carbon pricing mechanism, Moldova needs to establish systems for accurate, timely, and verifiable emission reporting and accounting from installations and operators that fall under the CBAM or future carbon pricing mechanisms, and these systems must be fully aligned with the EU ETS. The CBAM covers, initially, carbon-intensive sectors deemed most at risk for carbon leakage, including cement/lime, electricity, iron and steel, aluminum, fertilizer, and hydrogen. Similar to existing intentions to expand the list of sectors under the EU ETS, the scope of the CBAM may extend to cover more sectors, with an option to include organic polymers and chemicals in the future. Implications for businesses that export CBAM-covered goods to the EU are expected, as they will have to track and report the carbon intensity of their products, whilst import partners are likely to offset some of their CBAM liabilities on the price paid for goods from non-EU trade partners due to the cost of certificates. The European Commission has proposed a transition period from October 2023 to December 2025. This is intended to facilitate a smooth rollout and allow for an open dialogue between reporting companies and EU officials. At the end of the transition period, the European Commission will reassess whether to extend the scope. After January 2026, the importers would be required to comply and start paying the carbon price in order to import into the EU. EU's hope is that European trading partners will use the transition period to help their firms comply or install their own climate policies, thus avoiding the border adjustment and accelerating the fight against climate change.</p>		
Implementation Timeframe	2023 – 2030, including the preparation period		
Type of measure	Reform		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment</li> <li>• Environmental Agency;</li> <li>• Ministry of Energy r</li> <li>• Agency for Energy Efficiency</li> <li>• Donors</li> </ul>		
Monitoring Entity	Ministry of Environment		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Fit for 55 package		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions		



Implementation cost	10.1 Mln EUR <sup>143</sup>
Financing source(s)	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM DC2	Title:	<b>Emissions Trading System</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels		
Description:	<p>By 2030, the EU Green Deal will come into force, making energy costs equivalent across the EU market. Moldova should strive to integrate with the EU market by that time and work closely with the EnC on instituting an ETS for at least the energy sector to limit the impacts of the CBAM. Moldova is developing the Law on Climate Actions, which will serve as the legal basis for all climate-related activities in the country, including work to achieve climate neutrality by 2050<sup>144</sup>.</p> <p>Moldova is preparing for an ETS in line with its obligations under the Association Agreement EU–Moldova and the EnC Treaty. Sectors covered under the ETS include energy production (power and heat generation), energy-intensive industries (including oil refineries, steel works, and production of iron, aluminum, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, and bulk organic chemicals), and aviation. Smaller emitters can opt out if they produce less than 2,500 tons of CO<sub>2</sub> eq. per year, though they are required to report emissions annually through a simplified process. In the case of Moldova, a national ETS is currently under consideration through ongoing consultations via the EnC. The country will need to actively participate in shaping ETS decisions, including the process for determining cap setting, allowance allocations, and free allowance allocation.</p> <p>Only eight sectors in Moldova would fall under an ETS comparable with that of the EU. In total, there are potentially 21 installations and 6 aircraft operators that would fall under emission reporting requirements and a potential ETS.</p> <p>The assessments provided in 2012<sup>145</sup> estimated that roughly 3.5–5.5 Mt CO<sub>2</sub> eq. would fall under an ETS comparable to the EU system, covering the power, metal, and cement and to a lesser extent glass and brick industries. Based on EU allowance prices at the time, the total revenue potential from emission reductions in the sector was estimated to be in the range of \$63 million over a ten-year period. Conversely, the total cost to all installations falling under the proposed ETS ranged from €30 million to €40 million per year.</p> <p>The ETS trading procedure will be applied when the country joins the EU.</p> <p>At the same time, the Republic of Moldova will develop domestic mechanisms for the commercialization of emission reductions based on Art. 6 of the Paris Agreement and the proposals of the Energy Community.</p>		
Implementation Timeframe	2024 – 2030 (only preparation of legislation)		
Type of measure	Reform		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment</li> <li>• Environmental Agency</li> <li>• Ministry of Energy</li> <li>• Agency for Energy Efficiency</li> <li>• Donors</li> </ul>		

<sup>143</sup> The carbon price for period 2026-2030 was considered EUR110,0/ton of CO<sub>2</sub>

<sup>144</sup>UNDP, “A climate framework law will help Moldova to reduce more effectively greenhouse gas emissions,” August 18, 2022. <https://www.undp.org/moldova/news/climate-framework-law-will-help-moldova-reduce-more-effectively-greenhouse-gas-emissions>.

<sup>145</sup> Radeke, Jorg and Georg Zachmann, Emission Trading as a Catalyst for Energy Efficiency Improvements: Options and Potential for Moldova. German Economic Team Moldova, 2012, and Maaskant, Willem and Pavel Gavrilita, Feasibility Study: On Introducing the Emission Trading System in Moldova. UNDP, 2012. <https://www.undp.org/moldova/publications/feasibility-study-introducing-emission-trading-system-moldova>.

Monitoring Entity	Ministry of Environment Environmental Agency
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	ETS Directive – Directive 2003/87/EC establishing a system for GHG emission allowance trading within the Union MRR – Commission Implementing Regulation (EU) 2018/2066 on the monitoring and reporting of GHG emissions amended by Commission Implementing Regulation (EU) 2020/2085 Accreditation and Verification Regulation (AVR) – Regulation (EU) 2018/2067 on the verification of data and on the accreditation of verifiers amended by Commission Implementing Regulation (EU) 2020/2084 Accreditation Regulation – Regulation (EC) no. 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products Governance Regulation - Regulation (EU) 2018/1999 on the governance of the Energy Union and climate action
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions Law no. 227/2022 on Industrial Emissions Law no. 235/2011 on Accreditation and Conformity Assessment GD no. 1277/2018 on establishment and functioning of the national system for monitoring and reporting (NSMR) GHG emissions and other climate related information GD no. 444 on the establishment of a mechanism for coordinating climate change activities (establishing the National Climate Change Commission). GD no. 373/2018 on National Pollutant Release and Transfer Register Draft GD on monitoring, reporting, and verification of GHG emissions from stationary installations and aircraft operators Draft GD on establishment and operation of CORSIA  Energy Strategy of the Republic of Moldova until 2050
Implementation cost	0.5 Mln EUR (only development and adoption of necessary documents)
Financing source(s)	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_DC3	Title:	<b>Climate Change Coordination Mechanism</b>
Main objective:	Ensuring the institutional framework for coordination in the area of monitoring, reporting and verification, as well as facilitating the integration of climate change aspects into national and sectoral programs and plans		
Quantified objective:	Number of documents implemented under coordination of Commission		
Description:	Climate Change Coordination Mechanism is an implementing entity (National Commission) created in accordance with GD no. 444 from July 1 <sup>st</sup> , 2020. The National Commission has next obligations: 1) promotes and coordinates policy implementation tools in the field of climate change in the Republic of Moldova; 2) coordinates the integration of climate change mitigation and adaptation aspects in national and sectoral policy documents; 3) examines and approves reports on the implementation of strategies in the field of climate change; 4) examines and endorses the methodologies, operational manuals, guidelines and eligibility criteria of projects regarding adaptation to climate change and mitigating the phenomenon of climate change;		

	<p>5) monitors the implementation of projects and programs in the field of climate change at the national and sectoral level in the context of the sustainable development of the country;</p> <p>6) monitors the implementation of national and sectoral climate change adaptation plans;</p> <p>7) examine projects and programs in the field of climate change and recommend their financing by development partners and international funds in the field, in accordance with national and sectoral sustainable development priorities;</p> <p>8) facilitates the process of international collaboration in the field of climate change;</p> <p>9) coordinates the reports related to the implementation of the provisions of the international treaties in the field of reference to which the Republic of Moldova is a party;</p> <p>10) creates technical committees of experts, which assist the National Commission in the exercise of its duties, within the limits of competence;</p> <p>11) elaborates, in order to prevent and overcome the negative effects related to climate change, proposals and recommendations to be included in the strategies and programs in the respective field;</p> <p>12) evaluates the results of the implementation of the recommendations of the National Commission and puts forward proposals for improving government policies in the field of climate change in accordance with the commitments assumed within the Association Agreement between the Republic of Moldova and the European Union;</p> <p>13) informs the public about the activity of the National Commission.</p> <ul style="list-style-type: none"> <li>- All above mentioned activities of National Commission will contribute indirectly to the reduction of GHG emissions,</li> </ul>
Implementation Timeframe	2024 – 2030
Type of measure	Coordination Mechanism
Sectors covered/affected	All NECP subject fields
Implementing Entity	<ul style="list-style-type: none"> <li>• Climate Coordination Commission at Government level</li> </ul>
Monitoring Entity	Ministry of Environment
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Governance Regulation - Regulation (EU) 2018/1999 on the governance of the Energy Union and climate action
Relevant National Planning Document (Legal, Regulatory Acts etc.)	GD no. 444 from July 1 <sup>st</sup> , 2020 on the establishment of a mechanism for coordinating climate change activities (establishing the National Climate Change Commission).
Implementation cost	0.5 Mln EUR (only staff cost)
Financing source(s)	State

Policy measure code:	PM_DC4	Title:	<b>Development of the projects of the Joint Credit Mechanism with Japan (JCM)</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels		
Description:	<p>Following the signing of the Memorandum with Japan on the Common Credit Mechanism (MCC) on September 6, 2022, MCC projects will be developed and promoted that will generate emission reductions, these being monitored, reported and verified will become "registration credits" and shared between both states to achieve NDC commitments. The measure PM_DC4 aims to facilitate diffusion of, among others, leading decarbonizing technologies, products, systems, services and infrastructure as well as implementation of mitigation actions, thereby contributing to greenhouse gas emissions reductions or removals and sustainable development in the Republic of Moldova.</p>		

Implementation Timeframe	2024 – 2030
Type of measure	Investment
Sectors covered/affected	All NECP subject fields
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment</li> <li>• Ministry of Energy</li> <li>• Donors</li> </ul>
Monitoring Entity	Ministry of Environment
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Governance Regulation - Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions GD 659/2023 on approving the Low Emission Development Program until 2030 and the Action Plan for its implementation
Implementation cost	140 Mln EUR
Financing source(s)	Japan

Policy measure code:	PM_DC5	Title:	<b>The National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation</b>
Main objective:	<p>The general objective of the NCCAP until 2030 is to reduce vulnerability and increase resilience to the impact of climate change through systemic transformations in all priority sectors</p> <p>The specific objective 5 “Increasing the resilience of priority sectors by financing activities in the field of adaptation to climate change and reducing the risks and negative impacts of climate hazards” is specifically referring also to the energy sector.</p> <p>Priority action 5.2 “Increasing the energy efficiency and resilience of the energy sector infrastructure by adjusting to forecasted hydro-meteorological parameters”.</p>		
Quantified objective:	Number of implemented projects for increasing resilience to climate change		
Description:	<p>The measure PM_DC5 sets a strategic vision for the adaptation of six priority sectors (<i>agriculture, water resource management, health, forestry, energy and transport sectors</i>) to the impacts of climate change. Additionally, it aims to develop the needed institutional capacities, increase public awareness on the adaptation process, expand climate change adaptation budgeting, mainstream disaster risks reduction in sectorial strategic planning and increase the resilience of priority sectors through investments and reducing the risk of climate hazards and ensuring the integration of adaptation measures in sectoral policies, in synergy with policy documents in the field.</p>		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment</li> <li>• Ministry of Energy</li> <li>• Donors</li> </ul>		
Monitoring Entity	Ministry of Environment		
Progress indicators	Number of annual implemented projects for increasing resilience to climate change		

Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	EU Strategy on Adaptation to Climate Change
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 624 as of August 30 <sup>th</sup> , 2023 on approving the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation
Implementation cost	95.6 Mln EUR
Financing source(s)	State, EU donors, Green Climate Fund, external assistance, SIDA, UNDP-ADA, EIB, EBRD, WB, etc.

Policy measure code:	PM_DC6	Title:	<b>The Low Emission Development Program of the Republic of Moldova until 2030 and the Action Plan for its implementation</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Attracted external financing to achieve the conditional objectives		
Description:	<p>The measure PM_DC6 aims to implement GHG reduction actions in the 7 sectors of interest (<i>energy, transport, buildings, industry, agriculture, land use, land use change and forestry (LULUCF), waste management</i>). These consist of the implementation of the principles of green economy, which contribute to the efficient use of resources and energy, the application of cleaner technologies in the economic sector, with low carbon emissions and pollution, and the minimization of environmental risks).</p> <p>The Program has specific objectives per each sector unconditionally/conditionally:</p> <ul style="list-style-type: none"> <li>- Energy sector, reduction of GHG by 81% / 87% in 2030 compared to 1990;</li> <li>- Transport sector, reduction of GHG by 52% / 55% in 2030 compared to 1990;</li> <li>- Building sector, reduction of GHG by 74% / 77% in 2030 compared to 1990;</li> <li>- Industry sector, reduction of GHG by 27% / 31% in 2030 compared to 1990;</li> <li>- Agriculture sector, reduction of GHG by 44% / 47% in 2030 compared to 1990;</li> <li>- LULUCF, increasing of GHG removals by 10% / 391 % in 2030 compared to 1990;</li> <li>- Waste sector, reduction of GHG by 14%/18% in 2030 compared to 1990.</li> </ul> <p>In terms of quantitative values, the measure expected to reach the following results:</p> <ul style="list-style-type: none"> <li>- <b>Energy sector:</b> construction of 400 MW of wind sources and 200 MW of photovoltaic sources; the use of generator sets (50 MW) on biogas for the production of electricity and thermal energy; implementation of distributed electricity generation (20 MW); the installation of 8,100 natural gas condensing boilers, with a power of 24 kW each; reduction of energy losses in the thermal energy transport and distribution system and in its production (by 27.9 ktoe), etc.;</li> <li>- <b>Transport sector:</b> 2,491 TJ of biodiesel and 1127 TJ of bioethanol sold annually; 9,344 km of public roads with improved quality built; the amount of fuel used by rail transport reduced by 20% or 16 TJ; fuel consumption used in the road transport sector reduced by 1% or 311 TJ.</li> <li>- <b>Buildings sector:</b> 5.86 million m<sup>2</sup> of usable area of rehabilitated buildings; 9.02 million m<sup>2</sup> of living area with rehabilitated heating systems from the urban housing stock; 720 thousand thermostatic taps installed in public buildings with rehabilitated heating systems; 6.5 million incandescent bulbs replaced; 250 MW installed power of biomass thermal power plants; ≈ 2.7% of the thermal energy requirement until 2030 produced by heat pumps; 389,111 solar packs with 20 vacuum tubes per panel (intended for 2-3 people) installed;</li> </ul>		

	<p>– <b>The industrial sector:</b> The energy management system and the SM ISO 50001:2012 National Standard implemented at over 40 enterprises; over 76,260 toe of reduced energy and fuel; the intensity of CO<sub>2</sub> emissions during cement production will reach 475 tCO<sub>2</sub>/t cement by 2030 compared to 800 tCO<sub>2</sub>/t cement in 1990; the total quantities of glass produced: in 2030 – about 85 thousand tons of glass; share of glass shards in the batch: in 2030 – up to 50% or 42.5 thousand tons/year; the total consumption of fuel used in the production of glass, in 2030 – about 430.1 TJ/year; The approved fluorinated gases law, together with the respective amendment of HG no. 483/2019 and the Criminal Code of the Republic of Moldova no. 218/2008;</p> <p>– <b>Agricultural sector:</b> Implementation of sustainable management practices on 150 thousand ha/year in the period 2021 – 2025 and 300 thousand ha/year in the period 2026 – 2030; implementation of the "mini-till" and "no-till" soil processing system on 50 thousand ha/year in the period 2021 – 2025 and 100 thousand ha/year in the period 2026 – 2030 each; by 2030: 6,234 thousand tons of manure stored annually in platforms; 32% of the bull stock in the country fed with optimal rations; 13% of the cattle in the country fed with rations containing feed additives, able to reduce the level of methane formation in the digestion process; 17% of the cattle in the country are fed with apple pomace in ruminant rations to reduce greenhouse gas emissions;</p> <p>– <b>LULUCF Sector:</b> The extension of forested land up to 15% of the country's surface, which means the planting of about 120 thousand ha by 2030; the planting of forest crops on the surface of 45,000 ha of degraded land; the creation of riparian strips on an area of 15,000 hectares; creation of protective curtains of agricultural fields on an area of 1,500 hectares; conversion of heavily and moderately degraded lands into grasslands;</p> <p><b>Waste sector:</b> Construction of warehouses for regional solid household waste and transfer stations in 6 regions; construction of mechanical-biological treatment centers for Chisinau and Balti municipalities; biogas recovery from the solid household waste deposit in Tîntăreni; equipping the technological scheme for the treatment of waste water related to water-canal stations in the municipalities of Chisinau with sludge treatment technologies under anaerobic conditions.</p>
Implementation Timeframe	2023 – 2030
Type of measure	Investment
Sectors covered/affected	All NECP subject fields
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment</li> <li>• Ministry of Energy</li> <li>• Donors</li> </ul>
Monitoring Entity	Ministry of Environment
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	, UE Regulation 2021/1119
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions Government Decision No. 659 as of September 6 <sup>th</sup> , 2023 on approving the Low Emission Development Program of the Republic of Moldova until 2030 and the Action Plan for its implementation
Implementation cost	8.56 Bln EUR (this cost including all measures for all sectors to achieve all targets for 2030)
Financing source(s)	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions



Policy measure code:	PM_DC7	Title:	<b>Preparation for and introduction of carbon tax</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels Achieving climate neutrality by 2050		
Description:	<p>PM_DC7 will facilitate the introduction of a CO<sub>2</sub> tax in order to speed up the phasing-out of conventional fuels and at the same time stimulate the investments in RES and increase the penetration of energy efficiency measures. Moldova Energy Security Activity (MESA) has developed recently the Case Study “Carbon Pricing and Carbon Border Adjustment Mechanism Impacts and Implications in Moldova”.</p> <p>The case study assessed the implications for Moldova’s power and heat generation, manufacturing industry, metal industry and aviation sector when joining the EU ETS, as well as identified the impacts of the CBAM on Moldova’s impacted sectors. The document is assessing also the introduction of a carbon tax. In the case of Moldova, carbon pricing is an important consideration to first internalize revenues from carbon emissions as well as to reduce the obligations and impacts of the CBAM mechanism. While an ETS is under consideration, and as alignment and linkage with the EU ETS are envisioned in the longer term, intermediate carbon pricing through taxes is an important option for Moldova to consider as a way to reduce the near-term impacts of the CBAM, which will begin requiring certificate purchases in 2026,</p>		
Implementation Timeframe	2024 – 2030, including the preparation period		
Type of measure	Reform		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Finance;</li> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Finance; Ministry of Environment; Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected	Renewable Energy		
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions (it will regulate the carbon pricing; it is expected being approved by April 2024) Law No. 227/2022 on Industrial Emissions Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency		
Implementation cost	0.5 Mln EUR (adoption of necessary documents) Implementation cost can be cumulated with PM_DC2.		
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions		

Policy measure code:	PM_DC8	Title:	<b>Implementation and monitoring of the Low-Carbon Development Program until 2030 and of the Action Plan for its implementation and of the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation</b>
Main objective:	Carbon emissions reduction		



Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels
Description:	PM_DC8 will facilitate the process of implementing and monitoring the adopted Low-Carbon Development Program until 2030 together with the action plan for its implementation, as foreseen in the draft Law on Climate Actions. More specifically, measures needed to adapt to climate change have to be taken into consideration, aiming at conserving biodiversity, more efficient use of water resources, improved forest management, etc., as well as a range of actions in areas such as agriculture, fisheries, energy, tourism and health. The implementation of these measures and actions are determined in the context of the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation.
Implementation Timeframe	2024 – 2030
Type of measure	Reform
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment; Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	Renewable Energy
Union policy which resulted in the implementation of the PaM	Regulation 2018/842
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions Government Decision No. 659 as of 09/06/2023 on approving Low Emissions Development Program until 2030 and of the Action Plan for its implementation Government Decision No. 624 as of 08/30/2023 on approving the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation Government Decision No. 1277 as of 12/26/2018 on setting up and functioning of the National System for Monitoring and Reporting GHG emissions and other climate related information
Implementation cost	0.2 Mln EUR (development of documents and staff costs)
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_DC9	Title:	<b>The program for the promotion of the green and circular economy for the years 2024 – 2028</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels		
Description:	PM_DC9 will contribute to the creation of business stimulation mechanisms that promote the green economy, to the promotion of fiscal policy to support it, and will stimulate ecological innovations. The program is a medium-term public policy document (5 years), which derives from the “European Moldova 2030” National Development Strategy, the draft Environmental Strategy until 2033, the objectives of the European Green Deal.		
Implementation Timeframe	2024 – 2028		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> </ul>		

	<ul style="list-style-type: none"> <li>Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment; Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	European Green Deal Regulation 2018/842 A new Circular Economy Action Plan For a cleaner and more competitive Europe COM/2020/98
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision on approving the Program for the promotion of the green and circular economy for the 2024 – 2028 periods
Implementation cost	Under examination
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_DC10	Title:	<b>Law on Climate Actions</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels Achieving climate neutrality by 2050		
Description:	PM_DC10 will establish an effective system for planning, monitoring, improving and reporting relevant policies and measures to reduce GHG emissions and adapt to climate change. The law will include references to the achievement of the objective of climate neutrality in 2050 (reducing as much as possible GHG emissions and offsetting those that are produced) and the intermediate objective of reducing net GHG emissions by sector in 2030. The law should set the legal target for carbon sequestration in 2030 as a significant contribution to the path to climate neutrality. In addition, it will contribute to climate impact quantification and adaptation planning, to increase the resilience of Moldova's community and economy.		
Implementation Timeframe	2024 – 2050		
Type of measure	Reform		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Environment;</li> <li>Ministry of Energy;</li> <li>Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment; Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected	EnC Ministerial Council Decision 2021/14/MC-EnC/Regulation (EU) 2018/1999 Regulation (EU) 2021/1119 – EU Climate Law		
Union policy which resulted in the implementation of the PaM	Paris Agreement		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 78/2017 on ratifying the Paris Agreement Law No. 43/2023 on fluorinated greenhouse gases Governmental Decision 1277/2018 on setting up and functioning of the National System for Monitoring and Reporting the greenhouse gas emissions and other climate relevant information		

Implementation cost	0.5 Mln EUR (cost for preparation of necessary documents and their adoption)
Financing source(s)	State

### **Energy Sector**

GHG emissions in the energy sector (generation of electricity and heat, petroleum processing) are determined by the quantity of energy used in processes and the unit emission factor of energy sources. GHG emissions can be reduced by decreasing the quantity of consumed energy, by increasing the use of renewable energy sources, and by replacing fossil fuels.

The majority of the policy measures with an impact on decarbonization intended for the energy sector are included, among others, in the dimensions of renewable energy sources, energy efficiency, the internal energy market and energy security, as the changes in these dimensions lead to overall GHG emissions reduction.

### **Industrial sector**

As regards industrial pollution and risk management, alignment with most of the Energy Community *acquis* is regulated in Moldova by Law no. 227 “Law on Industrial Emissions” from 09/30/2022<sup>146</sup>. The purpose of this law is to establish the normative framework regarding the prevention of pollution caused by industrial and economic activities, in order to reduce emissions in the air, water and soil, including the generation of waste, as well as environmental control, promotion and application of the best available techniques to achieve a high level of environmental protection.

The Republic of Moldova needs to develop clean industry, to create regional centers for resource efficiency and competitive industrial production, to develop competitive industry, to stimulate the development of industrial enterprises with a high potential for innovation and growth, implicitly in the electronic, pharmaceutical and creative industries<sup>147</sup>.

Furthermore, regarding buildings in the industrial and service sectors, demand for cooling during the summer needs to be reduced (thermal renovation and efficiency standards for new buildings). Support will be possible under the funding policy in place for phasing out the use of fluorinated gases with a high global warming potential (GWP) (e.g. refrigeration and air-conditioning units) at an earlier stage. It will also be ensured (e.g. through contact with trade associations in the refrigeration and air-conditioning industry and providing information about new refrigerants) that Moldovan companies or persons working in such companies have the necessary knowledge regarding alternative refrigerants and skills for working with such refrigerants.

Policy measure code:	PM_DC11	Title:	<b>Development of the secondary regulatory framework for the implementation of the Industrial Emissions Law no. 227/2022<sup>148</sup></b>
Main objective:	Reduction of Pollution and GHG emissions		
Quantified objective:	Number of companies that reduced their level of pollution		
Description:	Elaboration of normative acts for establishment of emission limit values for polluting substances in air, water and soil, as well as their measurement methods, taking into account the admissible limit values established in national legislation and international treaties and		

<sup>146</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133705&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro)

<sup>147</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134582&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134582&lang=ro)

<sup>148</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133705&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro)

	<p>monitoring impact of companies in industrial sector is crucial for prevention and reduction of pollution and of GHG emissions. The companies also have obligation to re-engineer the production processes in order to reduce the volume of produced waste by using raw materials as efficiently as possible; to reduce the use of toxic, flammable substances and to replace them with inert alternative materials, which ensure the achievement of a finished production which is as durable as possible; to produce, use and put in circulation recoverable, reusable, recyclable and easily degradable packaging;</p> <p>PM DC11 will accelerate clean industry development.</p>
Implementation Timeframe	2024 – 2030
Type of measure	Reform
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment; Ministry of Energy
Progress indicators	Number of documents adopted
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law no. 227 as of 09/30/2022 on Industrial Emissions
Implementation cost	0.5 Mln EUR (cost of documents elaboration)
Financing source(s)	State

Policy measure code:	PM DC12	Title:	<b>Law on fluorinated greenhouse gases</b>
Main objective:	F-gases emissions reduction		
Quantified objective:	<p>The purpose of the F-gases law is to regulate precautionary measures at the national level regarding:</p> <p>a) use, recovery and disposal of fluorinated greenhouse gases, as well as related auxiliary measures;</p> <p>b) the introduction on the market of specific products and equipment that contain or whose operation is based on fluorinated gases with a greenhouse effect, with the exception of refrigeration and/or air conditioning equipment, which, at the time of import, does not contain such gases;</p> <p>c) the specific use of fluorinated gases with a greenhouse effect;</p> <p>d) the application of quantitative limits for the introduction of hydrofluorocarbons on the market.</p>		
Description:	<p>Fluorinated gases, also known as F-gases, are used as refrigerants in refrigeration and air conditioning, including in road transport, and have a global warming potential over 14 thousand times greater than CO<sub>2</sub>. Their use registers the fastest growth in recent years, in the Republic of Moldova being imported annually between 100 and 242 tons of refrigerants containing F-gases. Emissions due to HFC's increased between 1995 and 2021 by 230 times (from 0.94 kt CO<sub>2</sub> equivalent to 214.95 kt CO<sub>2</sub>), especially from expandable</p>		

	foams, by 302 times (from 0.25 kt CO <sub>2</sub> equivalent to 75.95 kt CO <sub>2</sub> equivalent), as well as fugitive emissions from the refrigeration and air conditioning sector, by 196 times (from 0.69 kt CO <sub>2</sub> equivalent to 133.98 kt CO <sub>2</sub> equivalent). PM_DC12 will accelerate the greening of refrigeration and air conditioning systems operating on HFC's. Alternative refrigerants, such as CO <sub>2</sub> , isobutane, propane, ammonia, etc., in addition to environmental protection benefits, also have great energy-saving potential. At the same time, the replacement of F-gases creates new business opportunities for Moldovan economic agents. The main objective of the law is to implement the phased reduction system of HFC's.
Implementation Timeframe	2024 – 2048
Type of measure	Reform
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Environment;</li> <li>Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment;
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Regulation (EU) No 517/2014 of the European Parliament and of the Council Kigali Amendment to the Montreal Protocol on progressive reduction of the use of hydrofluorocarbons worldwide Paris Agreement
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 43 on Fluorinated Greenhouse Gas Emissions as of 03/03/2023
Implementation cost	0.5 Mln EUR
Financing source(s)	State

Policy measure code:	PM_DC13	Title:	<b>Implementation of the energy management system according to the Moldovan Standard SM EN ISO 50001: 2019</b>
Main objective:	To manage usage, identify energy saving opportunities, conserve consumption and reduce carbon emissions		
Quantified objective:	Contribution of energy efficiency in reduction of final energy consumption		
Description:	The energy management system, introduced through the ISO 50001 standard, approved as a national standard in 2012, includes the collection, processing and analysis of data on the consumption of all forms of energy and different energy carriers by energy consumption points (electricity, heat, cooling, compressed air, natural gas, other fuels, etc.) and informing top management about the collected data and proposing measures to eliminate energy waste, implementing the adopted measures, including monitoring the results obtained. PM_DC12 will accelerate reduction of energy consumption in industrial sector and implementation of circular economy.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Economic Development and Digitalization</li> <li>Ministry of Environment;</li> </ul>		

	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment; Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	The TS EN ISO 50001 Standard adopted in July 2011 for Energy Management System
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659 as of 09/06/2023 on approving the Low Emissions Development Strategy and the Action Plan for its implementation
Implementation cost	1.1 Mln EUR
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_DC14	Title:	<b>Substitution of clinker in the cement production</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	CO <sub>2</sub> emissions per ton of cement		
Description:	<p>PM_DC14 will accelerate implementation of the best technologies on the market and contribute to reduce the use of clinker by up to 4%. At the same time it will accelerate replacement of clinker with other components and reduce it by up to 40%. Coal ash, calcined clay, slag, etc. can be used as substitute materials.</p> <p>As for instance:  “Zero Net Carbon Emissions, Science-Based Target” Commitment signed by LafargeHolcim Group (Lafarge Cement Moldova is part of the group) on September 21<sup>st</sup>, 2020 at the New York Climate Conference</p> <p>Objective: aiming at implementation of the “Zero net carbon emissions, science-based objective” commitment towards 2030, according to the LafargeHolcim Group Investment Roadmap, launched in 2019, the LafargeHolcim Group states its ambition to increase the CO<sub>2</sub> mitigation targets by reducing the intensity of emissions from cement production, up to 475 kg CO<sub>2</sub> net emissions per ton of cement produced, compared to the level of 800 kg CO<sub>2</sub> net emissions per ton of cement in 1990.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Environment;</li> <li>Ministry of Energy;</li> <li>Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment; Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the			



implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	27.1 Mln EUR
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

### ***Waste Management Sector***

The Waste Management Sector in Moldova is regulated by law nr. 209 “Law on waste” from 07/29/2016<sup>149</sup>. At the present time, in the Republic of Moldova, approximately 1.136 waste deposits are operated, occupying a total area of 1,276.67 ha. Landfills are organized by local public authorities and, in general, do not comply with environmental protection standards. According to statistical data, the amount of solid household waste is constantly increasing, from 2,172.8 thousand m<sup>3</sup> in 2008 to 3311.4 thousand m<sup>3</sup> in 2021. About 90% of the amount of municipal waste collected by sanitation services was disposed of through storage, selective collection being partially organized in the municipality of Chisinau and some district centers. Recycling and waste recovery rates are still very low.

Inefficient waste management is even more acute in Moldova, generating in 2021 about 10.2% of GHG emissions, compared to the global average of about 3% of world emissions. At the same time, the effects of climate change manifested in the waste management sector can negatively affect other sectors, especially agriculture, water resources and health, and less directly energy, transport and forestry.

According to the updated National Determined Contribution (2020) of the Republic of Moldova to the Paris Agreement and the Low Emissions Development Program until 2030 and the Action Plan for its implementation, the Republic of Moldova aims to reduce by 2030 the GHG emissions from the waste sector by 14% accordance with the unconditional scenario, and by 18% under the conditional scenario, as compared to 1990 year level.

Annually, through sanitation services, around 1.1 – 2.2 Mt of waste are transported from urban areas to solid household waste dumps. A total amount of approximately 2.8 Mt of waste is generated from the activity of the enterprises. In rural areas of Moldova, between 0.3 – 0.4 kg of waste per capita is generated daily and, respectively, 0.9 kg/capita/day or more in urban areas.

According to the provisions of the Waste Management Strategy in the Republic of Moldova<sup>150</sup> for the years 2013 – 2027, the generation of municipal waste per capita varied in rural areas between 0.3-0.4 kg/person/day, and for urban areas it was 0.9 kg/person/day (during 2010 – 2012). In the period 2016 – 2020, at the stage of perfecting the feasibility studies for the development of waste management systems at the regional level, the waste generation indicators were revised, the following values being proposed for rural localities: 0.5-0.7 kg/person/day, respectively 0.9 kg/person/day for small urban localities and district centers, and between 1.3-1.5 kg/person/day for the municipalities of Balti and Chisinau.

Currently, only between 60 and 90% of urban household waste is covered by specialized waste collection services, while in most rural localities it is being stored without authorization.

<sup>149</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135894&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=135894&lang=ro#)

<sup>150</sup> [https://www.legis.md/cautare/getResults?doc\\_id=114412&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=114412&lang=ru#)



The Ministry of Environmental started to develop the Strategy of Environment until 2033<sup>151</sup>, in order to overcome mentioned problems.

Policy measure code:	PM_DC15	Title:	<b>Environment Strategy until 2033</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% (with LULUCF) in 2030 compared to 1990 levels		
Description:	<p>Environmental protection became a national priority for the Republic of Moldova. PM_DC15 will facilitate the transition of the country to a green/circular and sustainable economy, which does not affect the environment, without pollutants, with low carbon emissions and with the efficient use of natural resources, thus the principles of environmental protection and green economic development will gradually integrate into all sectors of the national economy. For this purpose, long-term vision documents such as the National Development Strategy, which includes environmental objectives and the Environmental Strategy until 2033, were developed.</p> <p>According to the Concept regarding the development of the Environmental Strategy until 2033, the specific objective 7 states: Reducing greenhouse gas emissions by 2030 by 70% compared to 1990 according to the unconditional scenario (or by 88% according to the conditional one) ensuring the Republic of Moldova's contribution to achieving climate neutrality by 2050 at the European level and increasing resilience of economic sectors to climate change</p>		
Implementation Timeframe	2024 – 2033		
Type of measure	Reform		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment; Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	The European Green Deal		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Climate Actions Government Decision on approving the Environmental Strategy until 2033		
Implementation cost	0.5 Mln EUR		
Financing source(s)	State		

Policy measure code:	PM_DC16	Title:	<b>Waste Management Strategy 2013-2027</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Normative documents elaborated for increasing quantity of recycled and reused waste; to improve waste management processes		
Description:	PM_DC16 will develop integrated municipal waste management systems by harmonizing the legislative, institutional and regulatory framework with European Union standards based on a regional approach (geographical location, economic development, availability of access roads, soil and hydrogeological conditions, population, etc.) and territorial		

<sup>151</sup> <https://mediu.gov.md/ro/content/3709>

	division into 8 regions for waste management. According to Low Emission Development Program until 2030 and the Action Plan for its implementation, approved through GD No. 659/2023 the Republic of Moldova aims to reduce by 2030 the GHG emissions from the waste sector by 14%, in accordance with the unconditional scenario, and by 18% under the conditional scenario, as compared to 1990 year level.
Implementation Timeframe	2023 – 2027
Type of measure	Regulatory
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Environmental Agency;</li> <li>• Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment; Environmental Agency
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Directive 2008/98/EC on waste
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	0.5 Mln EUR
Financing source(s)	State

Policy measure code:	PM_DC17	Title:	<b>Moldova Solid Waste Project<sup>152</sup></b>
Main objective:	Carbon emissions reduction		
Quantified objective:	The project aims to improve and increase solid waste management services in the participating Waste Management Zones, and address environmental challenges		
Description:	PM_DC17 will finance priority investments for the improvement of solid waste management services throughout the country, the establishment of integrated solid waste management systems in three participating Waste Management Areas, in accordance with the National Waste Management Strategy of Moldova (“SNMD”) and the country's commitments under the Association Agreement with the EU. The project is an important step towards sustainable solid waste management services in Moldova.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment;		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			

<sup>152</sup> <https://www.ebrd.com/work-with-us/projects/psd/52512.html>

Union policy which resulted in the implementation of the PaM	Directive 2008/98/EC on waste
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	68.1 Mln EUR
Financing source(s)	State, EBRD, EIB, E5P,

## Agriculture Sector

### (i) Agriculture

N<sub>2</sub>O is the main GHG emitted by the sector, mainly from agricultural soils and manure management Methane is the second placed greenhouse gas emitted by the sector, it is originating mainly from enteric fermentation and manure management. Various policies and measures are being implemented as agricultural practices, which reduce the GHG emissions profile of the local agricultural sector. N<sub>2</sub>O emissions from the use of fertilizer are expected to decrease over time as improved cultivation practices are adopted.

In the Republic of Moldova, the policies approved and expressly oriented towards the reduction of greenhouse gas emissions from the agricultural sector (includes both the field of plant engineering and soil resources, as well as that of animal husbandry) are included in the in the Low Emission Development Strategy of the Republic of Moldova until 2030 and in the Action Plan for its implementation.

Policy measure code:	PM_DC18	Title:	<b>Implementation of the “no-till” and mini-till conservative tillage system</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44% and conditional greenhouse gas reduction of up to 47% compared to 1990		
Description:	PM_DC18 planning implementation of the “mini-till” and “no-till” soil processing system on 50 thousand ha/year in the period 2021 – 2025 and 100 thousand ha/year in the period 2026 – 2030. These measures are assumed in the Low Emissions Development Program until 2030 and the Action Plan for its implementation, approved through the GD No. 659 as of 09/06/2023.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Agriculture and Food Industry;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Agriculture and Food Industry; Ministry of Environment;		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the	Regulation (EU) 2019/1009 – the Fertilizing Products		

implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	660,0 of soils Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC19	Title:	<b>Implementation of sustainable agricultural land management practices</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44% and conditional greenhouse gas reduction of up to 47% compared to 1990		
Description:	PM_DC19 is related to implementation of sustainable agricultural land management practices within the conventional tillage system, in the five-soil crop rotation, where one soil is used under autumn and spring peas, with the incorporation of two crops as sidereal fertilizer for accumulation in soil of biological nitrogen and the reduction of the application of nitrogenous chemical fertilizers, coupled with the annual incorporation of vegetable residues into the soil and the application of organic fertilizers. This measure will concern 450 thousands ha in case of unconditional scenario and 600 ha in case of conditional scenario (WPM).		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Agriculture and Food Industry;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Agriculture and Food Industry; Ministry of Environment;		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2019/1009 – the Fertilizing Products		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659 as of 09/06/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation		
Implementation cost	490.0 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

Policy measure code:	PM_DC20	Title:	<b>Manure storage in communal platforms or individual warehouses</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44% and conditional greenhouse gas reduction of up to 47% compared to 1990		
Description:	PM_DC20 will contribute to the storage of 623.4 thousand tons of manure annually in communal platforms. Additional, 207.5 thousand tons of manure can be stored annually if external support will be available.		

Implementation Timeframe	2024 – 2030
Type of measure	Investment
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Agriculture and Food Industry;</li> <li>Private investors.</li> </ul>
Monitoring Entity	Ministry of Agriculture and Food Industry; Ministry of Environment;
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2019/1009 – the Fertilizing Products
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659 as of 09/06/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	105.5 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC21	Title:	<b>Promotion of cattle feeding technologies by using feed in the form of unique mixtures (monorotation) without or with small amounts of green fodder</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990		
Description:	PM_DC21 will be applied by 2030 on 77 thousand dairy cattle for milk and another 58 thousand non-dairy cattle, in case of unconditional scenario, respectively on another 43 thousand dairy cattle and another 32 thousand non-dairy cattle. While in the LEDP 2030 (2023), it is stipulated that this action will be applied on 3.8% of the cattle population in case of unconditional scenario and to another 2.2% of the cattle population under the conditional scenario.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Agriculture and Food Industry;</li> <li>Private investors.</li> </ul>		
Monitoring Entity	Ministry of Agriculture and Food Industry; Ministry of Environment;		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Commission Regulation (EU) 2019/1871		

Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659 as of 09/06/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	18.6 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC22	Title:	<b>Promoting the use of grape marc in ruminant rations with the aim of reducing greenhouse gas emissions</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44% and conditional greenhouse gas reduction of up to 47% compared to 1990		
Description:	PM_DC22 will be applied by 2030 on a population of 52 thousand dairy cattle for milk and another 41 thousand non-dairy cattle, in case of unconditional scenario, respectively on 37 thousand dairy cattle and another 29 thousand non-dairy cattle in the case of the conditional scenario. While in the LEDP 2030, it is stipulated that this action will be applied on 1.7% of the cattle population in case of unconditional scenario and on another 1.3% of the cattle population under the conditional scenario		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Agriculture and Food Industry;</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Agriculture and Food Industry; Ministry of Environment;		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Commission Regulation (EU) 2019/1871		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659 as of 09/06/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation		
Implementation cost	4.85 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

### *(ii) Land Use, Land Use Change and Forestry*

During the period 1990 – 2020, the LULUCF sector was a source of net carbon removals in the Republic of Moldova. In 2021, this sector became a net source of emissions at national level (+0.0494 Mt CO<sub>2</sub> eq). During the period 1990 – 2020, the dynamics of CO<sub>2</sub> removals showed a decreasing trend, dropping by 98.7%, from -1.6760 Mt CO<sub>2</sub> eq in 1990, to -0.0220 Mt CO<sub>2</sub> eq in 2020.

In 2021, the main sink of CO<sub>2</sub> removals in the LULUCF sector was the category 4A “Forest Land” (forest vegetation – forests, protection forest belts, etc.) - -1.9195 Mt CO<sub>2</sub> eq., followed by the

category 4C “Grassland” -0.1387 Mt CO<sub>2</sub> eq., and the category 4D “Wetlands” -0.08281 Mt CO<sub>2</sub> eq. The category 4B “Cropland” is a net source of emissions in LULUCF sector, with +1.7138 Mt CO<sub>2</sub> eq., followed by the category 4F “Other Land” with +0.2851 Mt CO<sub>2</sub> eq., the category “Settlements” with +0.1836 Mt CO<sub>2</sub> eq. and the category 4G “Harvested Wood Products” with +0.0077 Mt CO<sub>2</sub> eq.<sup>153</sup>.

In the next 10 years, the areas of forested land is expected to be expanded by approximately 145 thousand ha, both on new land and on heavily degraded forest land, publicly owned or, for the first time, on privately owned land. These provisions are contained in the National Forest Extension and Rehabilitation Program 2023 – 2032, that was approved by the Government on February 17<sup>th</sup>, 2023. This Program is a response to the objectives established in the “European Moldova 2030” National Development Strategy, stating:

- *Taking urgent measures to combat climate change and its impact – emission reductions in volume of about 1,272 kt CO<sub>2</sub>eq/year or an increase of about 56 % of current capacities; the reconstruction/rehabilitation of 35 thousand ha of inadequate and vulnerable forests to climate change; planting of new forestry crops (100 thousand ha, including 15 thousand ha in riparian strips) adapted to the climate; adaptation of the field of production of seeds and seedling forest material to the evolution of climate changes, etc.;*
- *Protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainable forest management, combating desertification, stopping and repairing soil degradation and stopping biodiversity loss - improving forest management by improving the related regulatory framework; strengthening institutional and personnel capacities through training and technical equipment; planting/replanting over 85 species; protecting about 350 thousand ha of agricultural land by planting 10 thousand ha of forest curtains, etc.*

The total area covered by forests is estimated at 371.0 thousand ha.

Policy measure code:	PM_DC23	Title:	Land afforestation
Main objective:	Increase of carbon removals		
Quantified objective:	Removals increased target for LULUCF sector, as that specified in the LEDP 2030 and the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario		
Description:	<p>PM_DC23 will ensure:</p> <ul style="list-style-type: none"> <li>- <b>expansion (through afforestation)</b> – activities to create new forestry crops, with the primary objective of social (energy, economic) and ecological safety (forest habitats, biodiversity shelter) by creating forests with production functions (energy, industrial), on an estimated area of <b>approximately 110 thousand ha</b>;</li> <li>- <b>rehabilitation (mainly through reforestation)</b> – restoration or reconstruction of lands with forest vegetation heavily affected by various forms of degradation, where forest vegetation is practically absent or in an unfavorable condition, with the primary objective of restoring natural forests and ensuring predominantly ecological functions (carbon sequestration, hydrological case, biodiversity conservation, etc.); will also be considered young trees and/or forest crops until the state of massif is achieved, which have not achieved the optimal parameters established in the establishment projects and/or according to seasonal conditions (composition; consistency; success, etc.). Estimated on <b>about 35 thousand ha</b>.</li> </ul>		

<sup>153</sup> <https://am.gov.md/ro/node/421>



Implementation Timeframe	2024 – 2032
Type of measure	Investment
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>• Agency Moldsilva</li> <li>• Private investors.</li> </ul>
Monitoring Entity	Ministry of Environment;
Progress indicators	Annual CO <sub>2</sub> removals (kt CO <sub>2</sub> )
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2023/1115 of the European Parliament and of the Council of May 31 <sup>st</sup> , 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 55 as of February 17 <sup>th</sup> , 2023 on approving the National Forest Extension and Rehabilitation Program for the 2023 – 2032 period and the Action Plan for its implementation for the 2023 – 2027 period
Implementation cost	233.75 Mln EUR
Financing source(s)	State, Climate Green Fund, EBRD, BEI, private sector, donors

Policy measure code:	PM_DC24	Title:	<b>Creation of forest protection curtains</b>
Main objective:	Increase of carbon removals		
Quantified objective:	Increased removals target for the LULUCF sector, similar to the one specified in the LEDP 2030 and in the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario		
Description:	PM_DC23 will create protection forest belts to protect agricultural fields – 10,000 ha instead of 12,000 ha, as provided here, which is based on LEDP 2030 and the Action Plan for its implementation, Specific Objective 6, Action 6.4 ‘Creation of protection forest belts’		
Implementation Timeframe	2024 – 2032		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Agency Moldsilva</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment;		
Progress indicators	Annual increase of carbon removals (kt CO <sub>2</sub> )		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2023/1115 of the European Parliament and of the Council of May 31 <sup>st</sup> , 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 55 as of February 17 <sup>th</sup> , 2023 on approving the National Forest Extension and Rehabilitation Program for the 2023 – 2032 period and the Action Plan for its implementation for the 2023 – 2027 period		
Implementation cost	5.0 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

Policy measure code:	PM_DC25	Title:	<b>Planting of energy forestry crops</b>
Main objective:	Increase of carbon removals		
Quantified objective:	Increased removals target for the LULUCF sector, similar to the one specified in the LEDP 2030 and the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario		
Description:	The proposed action in frame of PM_DC24 is based on LEDP 2030 and the Action Plan for its implementation, Objective 6, Action 6.5 - Planting fast growing forest species, managed in short production cycles (10 – 15 years) on 10,000 ha. Concomitantly, the LEDP 2030 and the Action Plan for its implementation stipulates in Objective 6, Action 6.5 - planting fast growing forest species only on 500 ha during the 2024 – 2026 period.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Agency Moldsilva;</li> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Local Public Authorities,</li> <li>• Private investors.</li> </ul>		
Monitoring Entity	Ministry of Environment; Ministry of Energy		
Progress indicators	Annual increase of carbon removals (kt CO <sub>2</sub> )		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2023/1115 of the European Parliament and of the Council of May 31 <sup>st</sup> , 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Government Decision No. 659/2023 on approving the Low Emissions Development Program until 2030 and the Action Plan for its implementation		
Implementation cost	8.5 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

#### ii. Regional cooperation in this area

A number of measures described above can be strengthened with regional cooperation. In particular, sharing of lessons learnt and harmonizing policy approaches could be highly relevant and will be carried out with Energy Community Contracting Parties. Currently, Moldova is engaged with various regional working groups including those convened within the Energy Community related to climate change, energy efficiency, renewable energy, and other topics

*iii. If applicable, without prejudice to the applicability of State aid rules, financing measures, including EU support and the use of EU funds, in this area at national level*

A significant part of the funding for the implementation of the aforementioned proposed policy measures, especially in the areas of waste, rural development and forestry, is expected to come from EU funds.

### 3.1.2. Renewable energy (2030 Framework target)

*i. Policies and measures to achieve the national contribution to the binding Energy Community 2030 target for renewable energy and trajectories as presented in 2.1.2 including sector- and technology-specific measures*

The renewable energy sector is governed primarily by the Law on Promoting the Use of Energy from Renewable Sources No.10 of 02/26/2016 (RES Law) that transposes the Directive 2009/28/EC and the EC Guidelines on State Aid for Environmental Protection and Energy 2014 - 2020.

Secondary legislation dedicated to implementation of primary legislation is:

- Government Decision no. 1070 of 12/27/2013 for the approval of the Regulation on solid biofuel;
- Government Decision no. 401 of 12/08/2021 regarding the approval of capacity limits, maximum quotas and capacity categories in the field of electricity from renewable sources until 2025;
- Decision of ANRE No. 201 of 05/19/2017 on the approval of the Regulation on the guarantee of origin for electricity produced under high-efficiency cogeneration;
- Decision of ANRE No. 375 of 09/28/2017 regarding the approval of the Methodology for determining fixed tariffs and prices for electricity produced by eligible producers from renewable energy sources;
- Regulation on guarantees of origin for electricity produced from renewable energy sources, ANRE Decision no. 376/2017 of 09/28/2017;
- Regulation regarding the confirmation of the status of eligible producer, approved by ANRE Decision no. 251 of 05/07/2019;
- GD no. 690/2018 on approving the regulation on auctions organization for providing the status of eligible producer;
- GD no. 885/2017 on assignment of the electricity central supplier, reassigned in 2020;
- Decision regarding fixed tariffs and ceiling prices for electricity produced from renewable energy sources by producers who will obtain eligible producer status in 2020;
- Some provisions of the Electricity Law No. 107 of 05/27/2017 and the relevant sub-laws that also apply to renewable energy, particularly as regards to integration of RES in the power system.

In February 2013, Moldova introduced its updated Energy Strategy (ES) 2030, setting energy sector objectives for 2020 with an outlook to 2030. The updated ES 2030 targets are closely aligned with Energy Community Treaty requirements, even exceeding them in some cases: for instance, the Treaty's binding target for renewables in total final consumption (TFC) is 17 %, whereas the NES sets a 20 % goal. The main ES targets for 2020 were modified in 2022 by the Government for electricity from renewable energy sources in terms of extension of capacity limits up to 410 MW until 2025<sup>154</sup>:

- Wind installations – 120 MW;
- PV installations – 130 MW;
- Biogas cogeneration units – 100 MW;
- Syngas based cogeneration units – 15 MW;
- Solid biomass cogeneration units – 30 MW;
- Hydro power units – 5 MW

Policy measure code:	PM_DC26	Title:	<b>Amended Law on promotion and use of renewable energy sources</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of energy from RES to 27% in 2030		
Description:	<p>PM_DC26 will create the regulatory framework to provide tenders for large capacities of renewable energy. The first tenders refer to a total capacity of 60 MW in the case of photovoltaic energy, 105 MW in the case of wind energy, the construction of biogas/biomass power plants with a total power of 65 MW, of which waste-to-energy plants with a total power of 20 MW, the establishment of energy crop plantations.</p> <p>Also, it will aim to remove barriers for development of the renewable energy sector both for the electricity component and for the use of renewable energy in transport, and for the development of the heating and cooling sector. The measure will extend guarantees of origin to gas/biogas, including hydrogen, as well as for renewable energy used in the heating and cooling sector. The guarantees of origin certify that the energy is produced in a certain locality in the Republic of Moldova, utilizing the existing resources in the country.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Regulatory		
Sectors covered/affected	Energy sector		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document	Law no.10 of 02/26/2016 on promotion and use of renewable energy sources		

<sup>154</sup> [https://www.legis.md/cautare/getResults?doc\\_id=128987&lang=ro](https://www.legis.md/cautare/getResults?doc_id=128987&lang=ro)

(Legal, Regulatory Acts etc.)	
Implementation cost	Under estimation
Financing source(s)	State, external assistance, private sector, donors

### *Electricity*

**According to the updated Law no.10/2016 on promotion and use of renewable energy sources**, in 2030 Moldova aims to have a 27% share of energy from renewable sources in the final energy consumption (target committed with Energy Community). In this context, the Ministry of Energy proposed the amendment of Law no. 10/2016 on the promotion and use of renewable energy sources, which aims to stimulate investments in large green energy plants and to solve some of the problems that prevent the development of the sector<sup>155</sup>.

The amendments to the law aim to create the regulatory framework to provide tenders for large capacities of renewable energy. The first tenders refer to a total capacity of 60 MW in the case of photovoltaic energy, 105 MW in the case of wind energy, the construction of biogas/biomass power plants with a total power of 65 MW, of which waste-to-energy plants with a total power of 20 MW, the establishment of energy crop plantations.

Another amendment aims to create a predictable regulatory framework and to remove some critical issues that impede the development of the renewable energy sector both for the electricity component and for the use of renewable energy in transport, and for the development of the heating and cooling sector.

Also, amendments to the law concern the clarification of balancing responsibility for eligible producers and the distribution of costs related to balancing. Changes were also proposed regarding guarantees of origin. These will be extended - in addition to electricity - to gas/biogas, including hydrogen, as well as for renewable energy used in the heating and cooling sector. The guarantees of origin certify that the energy is produced in a certain locality in the Republic of Moldova, utilizing the existing resources in the country.

The support schemes, which are foreseen within the Law on Promotion of Energy from Renewable Sources, will be continued for remunerating the produced electricity from the most cost-competitive renewable energy technologies.

Policy measure code:	PM_DC27	Title:	<b>Support scheme based on fixed prices</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in electricity generation		
Description:	<p>PM_DC27 will stimulate producers that hold or will hold power plants with a power greater than the cumulative capacity limit set by Government. Eligible producers are determined/ identified in frame of a tendering procedure, according to art. 35 of the Law 10/2016 and to the Regulation on tendering procedures for RES producers.</p> <p>The fixed price scheme is also intending to promote the use of renewable energy in commercial purpose. The difference is in installed capacity per generation unit. For wind installations the limit is set to 4 MW per generation unit and for PV installation the limit</p>		

<sup>155</sup> <https://tvr Moldova.md/article/d9dc06e1e53dc9e4/ministerul-energiei-a-propus-modificarea-legii-privind-promovarea-utilizarii-energiei-din-surse-regenerabile.html>

	is set to 1 MW per generation unit. The total capacity planned by Government to be covered until 2025 under this scheme is 165 MW: 105 MW of wind turbines and 60 MW of photovoltaic installations.
Implementation Timeframe	2024 – 2030
Type of measure	Investment
Sectors covered/affected	Electricity
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Agency for Energy Efficiency.</li> </ul>
Monitoring Entity	Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law no.10 of 2016 on promotion and use of renewable energy sources
Implementation cost	185.5 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC28	Title:	<b>Support scheme based on fixed tariff</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in electricity generation		
Description:	<p>PM_DC28 will stimulate producers that hold or will hold power plants with cumulative power capacity not exceeding the limit set by the Government, but not less than 10 kW. Eligible producers are determined/ identified in frame of a tendering procedure, according to art. 36 of the Law 10/2016 and to the Regulation on tendering procedures for RES producers.</p> <p>The fixed tariff scheme is intending to promote the use of renewable energy in commercial purpose. The total capacity planned by Government to be covered until 2025 under this scheme is 220 MW: wind installations – 15 MW; PV installations – 140 MW and Biogas cogeneration installations – 65 MW.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Electricity		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		

Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law no.10/2016 on promotion and use of renewable energy sources
Implementation cost	335.5 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC29	Title:	<b>Support scheme based on net metering</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in electricity generation		
Description:	<p>PM_DC29 will stimulate small RES investors oriented on covering their own electricity consumption. Eligible producers are determined / identified in frame of a tendering procedure, according to art. 39 of the Law 10/2016 and to the Regulation on tendering procedures for RES producers.</p> <p>The net metering support scheme is planning to cover a capacity of 5% of the value of the maximum load recorded during the previous year by the network distribution system operator to which the respective power plants are connected. The net metering mechanism is based on the “first come, first served” principle. The 5% limit can be revised and modified by the National Agency for Energy Regulation (ANRE). The net metering mechanism is planned for consumers that cover their own needs consumption.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Electricity		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law no.10/2016 on promotion and use of renewable energy sources		
Implementation cost	45.5 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

### *Heating and Cooling*

Renewable energy technologies for heating and cooling will be implemented through the integration of specific provisions and requirements into the amended law 10/2016 and law 139/2018. In order to increase consumption of renewable energy in the national economy, for the purpose of heating and cooling, the share of RES in the heating and cooling sector will be increased by 1.1 percentage points, as an annual average.



Policy measure code:	PM_DC30	Title:	<b>Fostering deployment of RES in district heating</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in H&C by 1.1% annually		
Description:	<p>District heating and district cooling systems contribute to increasing the share of RES in the heating and cooling sector, by increasing the share of energy from renewable sources, waste heat and cold used.</p> <p>Thermal energy units connect heat energy producers from RES and waste heat suppliers to the heat network and purchase heat or cold from RES and waste heat or cold from those producers or suppliers.</p> <p>All district heating systems must become “effective systems” (in the sense of Law 139/2018) by December 31<sup>st</sup>, 2025 and ensure increasing of RES share in H&amp;C by 1.1 percentage points annually.</p>		
Implementation Timeframe	2025 – 2030		
Type of measure	Investment		
Sectors covered/affected	H&C		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	<p>Law no.10/2016 on promotion and use of renewable energy sources and Law no.139/2018 on energy efficiency</p> <p>GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation</p>		
Implementation cost	100.0 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

Policy measure code:	PM_DC31	Title:	<b>Promotion of heat pumps for H&amp;C</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	36.3 ktoe produced by heat pumps in H&C sector		
Description:	<p>PM_DC31 will foster implementation of heat pumps in H&amp;C sector. Both industrial and residential sectors are expected to install heat pumps air-to-water. According to the The Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Specific Objective 3, Action 3.5 stipulates – installation of small, medium and large capacity heat pumps, which would cover around 0.27% of the demanded thermal energy by 2026 under unconditional scenario, and another 0.43% of the required thermal energy under the conditional scenario.</p>		
Implementation Timeframe	2025 – 2030		
Type of measure	Investment		
Sectors covered/affected	H&C		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		

Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law no.10/2016 on promotion and use of renewable energy sources and Law no.130/2018 on energy efficiency GD No. 659/2023 on approval of the Low Emission Development program until 2030 and the Action Plan for its implementation
Implementation cost	27.2 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

### *Transport sector*

In 2022, there were around 2,000 electric cars and 25,500 hybrid cars in the Republic of Moldova, and the number of electric cars registered in Moldova is constantly increasing. The Government of Moldova is promoting both biofuel and electric vehicles. The production of domestic biofuels (mainly advanced) will be promoted through the provision of subsidies and fiscal incentives. Mandatory quota for the suppliers and blending thresholds for the case of biodiesel and bio-gasoline will be imposed in order to foster further consumption of biofuels. The increase of the number of electrical vehicles will be stimulated through fiscal tax incentives. All these provisions will be included in the new updated Energy Strategy 2050.

Policy measure code:	PM_DC32	Title:	<b>Promotion of sustainable green cities for Moldova</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in transport up to 7.6% in 2030 <sup>156</sup>		
Description:	<p>PM_DC32 will catalyze investments in sustainable green cities in the Republic of Moldova. Moldova has around 120 AC charging stations<sup>157</sup>. 20 AC charging stations for electric cars were installed with the contribution of the Energy Efficiency Agency, based on the financing agreement with the United Nations Development Program (UNDP). Lack of chargers is currently an issue for the promotion of electrical vehicles. Minimum 50 AC chargers per year are to be installed.</p> <p>The Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Objective 2, Action 2.6 contains similar targets – promotion of the means of transport with hybrid propulsion, e-mobility and other environmentally friendly mobility options – fuel consumption used by registered vehicles reduced by 0.1% or with 31.1 TJ by 2026.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Transport		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Infrastructure and Regional Development;</li> </ul>		

<sup>156</sup> According to results of modelling in TIMES

<sup>157</sup> <https://piataauto.md/Stiri/2022/08/Cate-prize-publice-pentru-masini-electrice-exista-in-Moldova-in-2022-cate-din-ele-sunt-fast-charge-si-cate-de-uniform-sunt-raspadite/>

	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Agency for Energy Efficiency.</li> </ul>
Monitoring Entity	Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC) Regulation (EU) 2019/631 of the European Parliament and of the Council of April 17 <sup>th</sup> , 2019
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Draft Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	1.8 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC33	Title:	<b>Promotion of biofuels and bioliquids</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase share of RES in transport up to 7.6% in 2030 (43.86 ktoe)		
Description:	<p>PM_DC33 will promote increasing in the share of biofuels and bioliquids, as well as biomass fuels consumed in transport, produced from food and fodder crops up to 2%; biofuels and biogas produced from used cooking oil and animal fats up to 1.7%; advanced biofuels and biogas produced from specific feedstock – to at least 1% in 2025 and to 3.5% in 2030.</p> <p>The Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Objective 2, Actions 2.1 and 2.2 contains similar targets – promotion of biodiesel use – 249.1 TJ of biodiesel sold annually, respectively promotion of bioethanol production – 11.37 TJ – sold annually.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Transport		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC) Regulation (EU) 2019/631 of the European Parliament and of the Council of April 17 <sup>th</sup> , 2019		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation		
Implementation cost	24.3 Mln EUR <sup>158</sup>		
Financing source(s)	State, external assistance, private sector, donors		

<sup>158</sup> GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation

Policy measure code:	PM_DC34	Title:	<b>Promotion of the electrification of road and rail transport</b>
Main objective:	Carbon emissions reduction		
Quantified objective:			
Description:	PM_DC34 will provide measures to increase the electrification of road and rail transport infrastructure (possibly coupled with subsidies or reduced excise duties and/or VAT for electric and hybrid cars), as well as to increase the use of biofuels that meet sustainability criteria. Domestic production of biofuels from waste, residues and biomass as well as green hydrogen will be encouraged.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Transport		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Infrastructure and Regional Development;</li> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC) Regulation (EU) 2019/631 of the European Parliament and of the Council of April 17 <sup>th</sup> , 2019		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation		
Implementation cost	Under estimation		
Financing source(s)	State, external assistance, private sector, donors		

*ii. Specific measures for regional cooperation, as well as the estimated excess production of energy from renewable sources which could be transferred to other Member States in order to achieve the national contribution and trajectories presented in 2.1.2*

The National Agency for Energy Regulation (ANRE) canceled the ban on the export of electricity adopted by itself on October 13<sup>th</sup>, 2022, after Ukraine halted power supplies to the European Union and the Republic of Moldova as a consequence of Russian attacks on its infrastructure. This restriction removal will encourage the renewable electricity producers to increase their capacities and export on regional/UE market.

*iii. Specific measures on financial support, including EU support and the use of EU funds, for the promotion of the production and use of energy from renewable sources in electricity, heating and cooling, and transport*

All three support schemes for electricity production from RES mentioned before are considered financial supports of the Government. A set of projects aiming to promote renewable energy and energy efficiency are implemented with the support of international donors, as follows:

Policy measure code:	PM_DC35	Title:	<b>Promotion of green technologies in private sector</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reducing GHG emissions by 70% in 2030 compared to base year 1990		
Description:	PM_DC35 promotes implementation of the best technologies with minimal impact on the environment. The program uses Green Technology Selector (GTS) to promote the best technologies in extension of renewable energy in Moldova.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Economic Development and Digitalization ;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Renewable energy promotion (Law no.10/2016) and Law on energy efficiency (no.139/2018). GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation.		
Implementation cost	45.0 Mln EUR		
Financing source(s)	External donors, EIB		

Policy measure code:	PM_DC36	Title:	<b>Promotion of energy efficiency in SME</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reducing GHG emissions by 70 % in 2030 compared to base year 1990		
Description:	PM_DC36 helps Small and Medium-sized Enterprises (SME's) to increase their energy efficiency and install renewable energy plants. It started in 2018 and provided financing for SME's of 25 Mln EUR by 2023. In 2023, the EBRD extended financing support with another 10 Mln EUR <sup>159</sup> . The program is planned to be pursued into its next phase (4 years). The result of projects will contribute to implementation of the Specific Objective 4, Action 4.2 – promotion of energy efficiency in the industrial sector of the Low Emission Development Program until 2030 and the Action Plan for its implementation – it is stipulated reducing the energy and fuels consumption by 7.627 kt of coal equivalent by 2026 under the unconditional scenario and with another 3.748 kt of coal equivalent by 2026 under the conditional scenario.		
Implementation Timeframe	2024 – 2030		

<sup>159</sup> <https://www.ebrd.com/news/2023/ebrd-and-eu-back-procredit-bank-moldova-in-boosting-finance-for-moldovan-businesses.html>

Type of measure	Investment
Sectors covered/affected	All sectors
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Energy;</li> <li>Agency for Energy Efficiency.</li> </ul>
Monitoring Entity	Ministry of Energy
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Renewable energy promotion (Law no.10/2016) and Law on energy efficiency (no.139/2018). GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation.
Implementation cost	75.0 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

Policy measure code:	PM_DC37	Title:	<b>Promotion of innovative technologies in SME</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reducing GHG emissions by 70% in 2030 compared to base year 1990		
Description:	PM_DC37 helps Small and Medium-sized Enterprises (SME's) to increase efficiency of machinery, equipment and installations for the production of renewable energy, which will ensure the reduction of electricity consumption by at least 15% compared to the existing consumption. The non-refundable financial resources will be used for: solar panels with heating systems; photovoltaic panels for the production of electric current; mini wind installations for the production of electricity; machinery and technological equipment for the production of biogas; machinery and installations for thermal heating <sup>160</sup> .		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>Ministry of Economic Development and Digitalization;</li> <li>Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Renewable energy promotion (Law no.10/2016) and Law on energy efficiency (no.139/2018). GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation.		
Implementation cost	4.4 Mln EUR		
Financing source(s)	State, external assistance, private sector, donors		

<sup>160</sup> <https://odimm.md/ro/presa/comunicate-de-presa/5563-granturi-pentru-retehnologizare-si-eficienta-energetica>

Policy measure code:	PM_DC38	Title:	<b>Promotion of Rural Competitiveness and Resilience</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reducing GHG emissions by 70% in 2030 compared to base year 1990		
Description:	PM_DC38 enables through grant schemes the Irrigation Water Users Associations (AUAI) to invest in the production and use of renewable energy in the process of pumping and distributing water for the irrigation of agricultural plantations.		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> <li>• Ministry of EnvironmentMinistry of Agriculture and Food Industry</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the implementation of the PaM	Renewable Energy Directive (2009/28/EC)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Renewable energy promotion (Law no.10/2016) and Law on energy efficiency (no.139/2018).		
Implementation cost	4.4 Mln EUR		
Financing source(s)	USAID		

*iv. Specific measures to introduce a one-stop-shop, streamline administrative procedures, provide information and training, and empower renewable self-consumers and energy communities*

Energy Efficiency Agency (EEA) is responsible for implementation of state policy in field of renewable energy. In this respect, EEA collects, informs and provides trainings for the consumers in order to facilitate deployment of renewable energy sources.

Moldova will encourage initiatives that ensure the local consumption of electricity. In this regard the support for development of renewable energy communities is a priority and currently in the updated law no. 10/2016 on promotion of renewable energy, which is under public discussions, they are defined as:

- The National Agency for Energy Regulation, in coordination with the central specialized body of the public administration in the field of energy elaborates and approves the Regulation on the organization and operation of renewable energy communities.



- The Government develops and makes available to final consumers financial instruments and programs that facilitate access to financing and information for the development of renewable energy communities.
- The Government, with the support of the central specialized body of the public administration in the field of energy, the National Agency for Energy Regulation, offers local public administration authorities support in matters related to the regulation of the activity of renewable energy communities, aiming to strengthen their capacities, support in facilitating the establishment of communities and the direct participation of localities within them.

Policy measure code:	PM_DC39	Title:	<b>Promotion of energy communities</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase the share of RES in both electricity generation and H&C		
Description:	<p>PM_DC39 will strengthen the role and operation of both the renewable energy communities and the citizen energy communities through the design and implementation of specialized financial instruments. Specifically, dedicated fiscal and economic incentives will be provided so as to foster the further deployment of renewable energy sources, such as wind parks and photovoltaic stations.</p> <p>The Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Specific Objective 1, Actions 1.3, 1.4 and 1.5 promote construction of grid connected wind farms (total installed capacity – 120 MW under unconditional scenario plus another 100 MW under conditional scenario), photovoltaic plants (total installed capacity – 200 MW under unconditional scenario and another 200 MW under conditional scenario) and use of biogas for generating electricity and heat productions (total installed capacity – 65 MW under unconditional scenario and another 25 MW under conditional scenario) by 2026.</p>		
Implementation Timeframe	2025 – 2030		
Type of measure	Investment		
Sectors covered/affected	Energy, Heating and Cooling		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the implementation of the PaM	Directive 2018/2001/EU		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation.		
Implementation cost	Be integrated in PM_DC26, PM_DC27, PM_DC28 and PM_DC29.		
Financing source(s)	State, external assistance, private sector, donors		

v. *Assessment of the necessity to build new infrastructure for district heating and cooling produced from renewable energy sources*

Further penetration of renewable energy technologies into the existing and planned district heating networks will be supported through the provision of specific financial aid to meet the required investment costs. Furthermore, the potential imposition of a mandatory quota in the utilization of renewable energy sources as fuel in the district heating networks will be 1.1 percentage points per year. For specific measure, see PM\_DC30.

vi. *Specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilization taking into account: - biomass availability: both domestic potential and imports from third countries - other biomass uses by other sectors (agriculture and forest-based sectors); as well as measures for the sustainability of biomass production and use*

Government of Moldova will promote domestic production of biofuels from waste, residues and biomass as well as green hydrogen will be encouraged (according to Energy Strategy Concept 2050 of Moldova). Through established support schemes for electricity generation from RES and based on GD 401/2021, the Government will promote use of cogeneration plants based on biogas (100 MW), cogeneration plants based on syngas (on solid biofuel, agricultural waste, including energy crops/plants, except forestry products) – (15 MW), cogeneration plants using direct combustion (on solid biofuel, agricultural waste including energy crops/plants, solid household waste except forestry products) – (30 MW).

Policy measure code:	PM_DC40	Title:	<b>Promotion of biomass for electricity production</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Increase the share of RES in both electricity		
Description:	<p>PM_DC40 will promote the use of cogeneration plants based on biogas (100 MW), cogeneration plants based on syngas (on solid biofuel, agricultural waste, including energy crops/plants, except forestry products) – (15 MW) and cogeneration plants using direct combustion solid biofuel, agricultural waste including energy crops/plants, solid household waste (30 MW).</p> <p>The Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Specific Objective 1, Action 1.5 - use of biogas for generating electricity and heat productions (total installed capacity – 65 MW under unconditional scenario and another 25 MW under conditional scenario) by 2026; under Specific Objective 3, Action 3.4 - use of biomass for energy purposes – total installed capacity of 25 MW under unconditional scenario and another 30 MW under conditional scenario,</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Energy, Heating and Cooling		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Energy		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the	Renewable Energy Directive (2009/28/EC)		

implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation.
Implementation cost	362.0 Mln EUR
Financing source(s)	State, external assistance, private sector, donors

### 3.1.3. Other elements of the dimension

*i. If applicable, national policies and measures affecting the EU ETS sector and assessment of the complementarity and impacts on the EU ETS*

The EU4Climate Project has been assisting the Republic of Moldova in alignment with the EU climate *acquis*, including the EU ETS. The project has assisted in preparing the Action Plan for implementing the Roadmap for Moldova’s alignment with climate *acquis* which anticipates the full transposition of the ETS Directive.

The Case Study “Carbon Pricing and Carbon Border Adjustment Mechanism Impacts and Implications in Moldova”, elaborated by USAID’s Moldova Energy Security Activity (MESA), assessed the implications for Moldova’s power and heat generation, manufacturing industry, metal industry and aviation sector when joining the EU ETS, as well as identified the impacts of the CBAM on Moldova’s concerned sectors. The study provides an overview of the Moldovan context for carbon pricing mechanisms, and identifies the impacts they will have on the industrial sector, the national economy, and on attaining GHG emission reduction targets under the Paris Agreement. As result of activities undertaken by MESA, there were:

- identified entities that would be impacted by the ETS and CBAM, including public, private, and non-state actors;
- determined the potential impact of the carbon pricing system, including effects on trade competitiveness and GHG emissions;
- outlined the basic actions and tentative time schedule on meeting the requirements for integration with an ETS;
- assessed the potential impact of the CBAM on exports and competitiveness of the affected goods; and
- formulated an indicative roadmap for carbon pricing in Moldova and provided recommendations aimed at addressing impacts of joining an ETS and measures to limit CBAM liability.

The introduction of the carbon border adjustment mechanism (CBAM) with reporting obligations from 2023, will make the alignment with the EU ETS even more timely and justified<sup>161</sup>.

<sup>161</sup> <https://eu4climate.eu/2022/09/06/eu4climate-assists-armenia-moldova-ets/>

For the Republic of Moldova, the following provisions of the Association Agreement (AA), Chapter 17, Article 92-97, Annex XII on the EU ETS Directive should apply:

— establishment of a system for identifying relevant installations and for identifying greenhouse gases (Annexes I and II);

— establishment of monitoring, reporting, verification and enforcement systems and public consultations procedures (Articles 9, 14 – 17, 19 and 21).

Moldova planning to transpose the ETS Directive by the end of 2025, as it is presented in PM\_DC2.

Policy measure code:	PM_DC41	Title:	<b>Action Plan for implementing the Roadmap for preparing and instituting carbon pricing in the Republic of Moldova</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% in 2030 compared to base year 1990		
Description:	<p>PM_DC41 will promote partial transposition of the ETS Directive – In the first phase, the provisions by art.4-7 from Directive 2003/87/EC on greenhouse gas emissions permits have been transposed in the draft of the Industrial Emissions Law and the completed draft of the Regulation on monitoring, reporting, and verification of greenhouse gas emissions from stationary installations and aviation operators (art.14 from Directive 2003/87/EC). Annexes I and II of the Directive 2003/87/EC (establishment of a system for identifying relevant installations and for identifying greenhouse gases) have been also transposed in the draft of the Regulation.</p> <p>Full transposition of the ETS Directive and provisions on carbon pricing will be performed by the end of 2025. The document also provides recommendations to amend the Law on Industrial Emissions (introduction on integrated environmental permits) and the Regulation on MRV from the stationary installations and aviation operators, as well as full transposition of the MRR – Commission Implementing Regulation (EU) 2018/2066 on the monitoring and reporting of GHG emissions amended by Commission Implementing Regulation (EU) 2020/2085, on Accreditation and Verification Regulation (AVR) – Regulation (EU) 2018/2067 on the verification of data and on the accreditation of verifiers amended by Commission Implementing Regulation (EU) 2020/2084 and on Accreditation Regulation – Regulation (EC) no. 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Regulatory		
Sectors covered/affected	All sectors		
Implementing Entity	<ul style="list-style-type: none"> <li>• Ministry of Environment;</li> <li>• Ministry of Energy;</li> <li>• Agency for Energy Efficiency.</li> </ul>		
Monitoring Entity	Ministry of Environment Environmental Agency		
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	ETS Directive – Directive 2003/87/EC establishing a system for GHG emission allowance trading within the Union		

	<p>MRR – Commission Implementing Regulation (EU) 2018/2066 on the monitoring and reporting of GHG emissions amended by Commission Implementing Regulation (EU) 2020/2085</p> <p>Accreditation and Verification Regulation (AVR) – Regulation (EU) 2018/2067 on the verification of data and on the accreditation of verifiers amended by Commission Implementing Regulation (EU) 2020/2084</p> <p>Accreditation Regulation – Regulation (EC) no. 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products</p>
Relevant National Planning Document (Legal, Regulatory Acts etc.)	<p>Law on Climate Actions</p> <p>Law no. 227/2022 on Industrial Emissions</p> <p>Law no. 235/2011 on Accreditation and Conformity Assessment</p> <p>GD no. 1277/2018 on establishment and functioning of the national system for monitoring and reporting (NSMR) GHG emissions and other climate related information</p> <p>GD no. 444/2020 on the establishment of a mechanism for coordinating climate change activities (establishing the National Climate Change Commission).</p> <p>GD no. 373/2018 on National Pollutant Release and Transfer Register</p> <p>Draft GD on monitoring, reporting, and verification of GHG emissions from stationary installations and aircraft operators</p> <p>Draft GD on establishment and operation of CORSIA</p> <p>Energy Strategy of the Republic of Moldova until 2050</p>
Implementation cost	0.5 Mln EUR
Financing source(s)	State, external assistance

### ii. Strategies, plans and measures on adaptation to climate change

Climate change has a profound impact on the availability of resources and agricultural activities. Over the past decade, the country has experienced a series of extreme events such as droughts and major floods, along with the incremental effects of rising average temperatures and uneven distribution of rainfall throughout the year, which have had negative consequences for the country's economy, the well-being and health of the population. Severe droughts are recurring more frequently, causing significant economic losses.

The Government considers that the National Climate Change Adaptation Planning Process (NAP) is the key to achieving the adaptation objectives outlined in the Climate Change Adaptation Strategy of the Republic of Moldova from 2014<sup>162</sup> and the updated National Determined Contribution (2020), as well as the continuous integration of climate change in its policies and budget processes.

In this context, the Government is supporting implementation of different projects aiming at adaptation at climate change, including the long-term action plan.

Policy measure code:	PM_DC42	Title:	<b>Promotion of the national process of planning the adaptation of the Republic of Moldova to climate change (Stage 2)</b> <sup>163</sup>
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<sup>162</sup> [https://www.legis.md/cautare/getResults?doc\\_id=114739&lang=ro](https://www.legis.md/cautare/getResults?doc_id=114739&lang=ro)

<sup>163</sup> <https://www.undp.org/ro/moldova/projects/promovarea-procesului-national-de-planificare-adaptarii-republicii-moldova-la-schimbarile-climatice-etapa-2>

Main objective:	Carbon emissions reduction
Quantified objective:	Reduction of GHG emissions by 70% in 2030 compared to base year 1990
Description:	PM_DC42 will promote the review of the national climate change adaptation strategy, and of sector-specific adaptation objectives, articulated in the action plans for Climate Change Adaptation in the health and forestry sectors and action plans in the transport, energy and constructions sectors; will elaborate a monitoring and evaluation system with improved data analysis to support the decision-making process; will update and adopt the climate change adaptation capacity development plan in five key sectors; will develop the climate change information and knowledge management portal; will draw up adaptation plans for seven cities; will develop technology roadmap for each key sector (transport, energy, water, forestry and health) based on technology needs assessment; will develop 5 investment project ideas to be presented to GCF.
Implementation Timeframe	2024 – 2030
Type of measure	Investment
Sectors covered/affected	Environment and energy
Implementing Entity	State Chancellery, Ministry of Environment, Ministry of Infrastructure and Regional Development, Ministry of Energy, Ministry of Health, Ministry of Finance and subordinate institutions and agencies, FAO, etc.
Monitoring Entity	Ministry of Environment
Progress indicators	Adopted documents and increased capacities
Other relevant Energy Union dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality, Regulations (EC) No 401/2009 (EU) 2018/1999 ('European Climate Law')
Relevant National Planning Document (Legal, Regulatory Acts etc.)	GD No. 624/2023 on approval of the National Climate Change Adaptation Program until 2030 and the Action Plan for its implementation
Implementation cost	1.1 Mln EUR
Financing source(s)	Green Climate Fund

Different policies and measures will also contribute to face negative consequences of climate change: PM\_DC3, PM\_DC5, PM\_DC6, PM\_DC8, PM\_DC9, PM\_DC10, PM\_DC13, PM\_DC15, PM\_DC23, PM\_DC24 and PM\_DC25.

The National Climate Change Adaptation Program (NCCAP) until 2030 and its Action Plan was approved through the Government Decision No. 624 as of 08/30/2023<sup>164</sup>.

The program aims to develop an adaptation mechanism to the impact of real and potential climate change, integrated in all sectors of the national economy, so as to ensure the reduction of vulnerability and increase their resistance to the adverse effects of climate change.

The need to develop the Program emerges from the commitment assumed within the Association Agreement to the EU, which in art. 95 of Chapter 17 "Climate Policies" provides for the

<sup>164</sup> <https://gov.md/sites/default/files/document/attachments/subiect-06-nu-242-mm-2023.pdf>.



development and approval of some measures for long-term mitigation of the effects of climate change and adaptation to them.

The Republic of Moldova's climate change adaptation vision, presented in the updated Nationally Determined Contribution (2020), incorporates the concept of integrating climate adaptation into medium- and long-term development planning to foster adaptation action, including climate risks into investment decision-making and business planning with the aim of increasing the resilience of economic sectors, land use and ecosystems and accelerating country's transition towards low carbon and resilient development. A further advance in medium- and long-term adaptation planning in a coherent and strategic manner is seen through an iterative socially inclusive and gender-sensitive National Adaptation Planning (NAP) process. This commitment was reinforced via the approval of the above-mentioned NCCAP 2030, which institutionalizes the coordination and oversight of both adaptation planning and implementation through the cross-sectorial multi-stakeholder Climate Change Coordination Mechanism<sup>165</sup>.

*iii. Policies and measures to achieve other national targets, if applicable*

Not applicable.

*iv. Policies and measures to achieve low-emission mobility (including electrification of transport)*

The Republic of Moldova has been a partner of the Climate and Clean Air Coalition (CCAC) since 2016<sup>166</sup> and has leveraged the partnership to raise the ambitions of its international climate targets in its on-road transportation. This strategy paves the way for Moldova to help achieve considerable reductions in fine particle emissions and black carbon from roads, globally set out in the Strategy.

In 2019, Moldova adopted a fuel quality law<sup>167</sup> that aims to eliminate toxic exhaust fumes, a ground-breaking achievement given that Moldova did not previously have an air quality law. This law partially transposes the European Union (EU) fuel quality directive 98/70/EC.

In 2022 Moldova adopted the Law No. 98<sup>168</sup> of 04/14/2022 on atmospheric air quality, which partially transposes Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe and Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air, as last amended by Commission Directive (EU) 2015/1480 of 28 August 2015.

Moreover, Moldova promotes the low-emission mobility by applying a number of benefits, especially of fiscal nature, which are offered to the owners of electric vehicles:

- import excise duties are not paid when importing electric cars,
- owners of electric cars do not pay the tax for using the roads. Based on Annex no. 1 to Title IX of the Fiscal Code, the tax for using the roads is currently calculated

<sup>165</sup> GD no. 444 on the establishment of a mechanism for coordinating climate change activities (establishing the National Climate Change Commission).

<sup>166</sup> <https://www.ccacoalition.org/partners/moldova>

<sup>167</sup> [https://www.legis.md/cautare/getResults?doc\\_id=112876&lang=ro](https://www.legis.md/cautare/getResults?doc_id=112876&lang=ro)

<sup>168</sup> [https://www.legis.md/cautare/getResults?doc\\_id=137491&lang=ro](https://www.legis.md/cautare/getResults?doc_id=137491&lang=ro)



based on the volume of the car's engine. At the same time, in the case of trucks, regardless of the mode of propulsion (electric or internal combustion engine), the road use fee is calculated based on their weight.

Policy measure code:	PM_DC43	Title:	<b>Promotion of considerable reductions in fine particle emissions and black carbon from roads</b>
Main objective:	Pollutant emissions reduction		
Quantified objective:	Reduction of pollutant emissions, including indirect GHG emissions		
Description:	<p>PM_DC43 will accelerate elimination of toxic exhaust fumes. Additionally, along with eight other countries, Moldova joined the “Breathe Life Campaign” in 2019 by approving fuel quality standards for petrol and diesel to match those of the European Union and adopting vehicle standards. Moldova also performs regular air pollutant inventory and reports to the Convention on Long-Range Transboundary Air Pollution (CLRTAP).</p> <p>By adopting the Regulation regarding the reduction of sulfur content in certain liquid fuels (GD 414<sup>169</sup> from April 8ty, 2016), Moldova transposed the Council Directive 1999/32/EC of April 26, 1999 on reducing the sulfur content of certain liquid fuels and amending Directive 93/12/EEC published in the Official Journal of the European Communities L121 of May 11, 1999.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Regulatory		
Sectors covered/affected	Environment and energy		
Implementing Entity	Ministry of Environment Ministry of Infrastructure and Regional Development		
Monitoring Entity	Ministry of Environment Environmental Agency		
Progress indicators	Annual emissions reduction (kt)		
Other relevant Energy Union dimension(s) affected			
Union policy which resulted in the Implementation of the PaM	Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on fuel quality Law No. 98/2022 on ambient air quality Low No. 227 on industrial emissions GD No. 414/2016 on the Reduction of the Sulphur Content of Certain Liquid Fuels		
Implementation cost	0.5 Mln EUR		
Financing source(s)	State		

Policy measure code:	PM_DC44	Title:	<b>Promotion of fiscal incentives for electrical vehicles</b>
Main objective:	Carbon emissions reduction		
Quantified objective:	Reduction of GHG emissions by 70% in 2030 compared to base year 1990		

<sup>169</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134771&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=134771&lang=ro#)

Description:	PM_DC44 complementing PM_DC32 and will accelerate deployment of electrical vehicles. The Government is supporting green transport through different fiscal incentives like exemption of the tax for using the roads, customs tax etc. According to the Low Emissions Development Program until 2030 and the Action Plan for its implementation, under Objective 2, Action 2.6 there are similar targets - promotion of the means of transport with hybrid propulsion, e-mobility and other environmentally friendly mobility options - fuel consumption used by registered vehicles reduced by 0.1% or with 31.1 TJ by 2026.
Implementation Timeframe	2024 – 2030
Type of measure	Regulatory
Sectors covered/affected	Environment and energy
Implementing Entity	Ministry of Infrastructure and Regional Development Ministry of Energy
Monitoring Entity	Ministry of Infrastructure and Regional Development Ministry of Energy Agency for Energy Efficiency
Progress indicators	Annual emissions reduction (kt CO <sub>2</sub> eq)
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Updated Fiscal code Energy Strategy of the Republic of Moldova until 2050 GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	0.2 Mln EUR
Financing source(s)	State

### 3.2. Dimension Energy efficiency (2030 Framework target)

Planned policies, measures and programs to achieve national energy efficiency targets for 2030 as well as other objectives referred to in point 2.2, include instruments (also of financial nature) to promote the energy performance of buildings, in particular with regard to the following.

A characteristic feature of the energy sector of the Republic of Moldova is the acquisition of significant volumes of imported energy from a single source, without recourse or the possibility of using tools to diversify supply routes, providing in such conditions about three-quarters of the primary consumption of energy resources. However, due to the country's relatively low energy consumption and the availability of fossil fuels, the energy conversion sector has not been developed to date.

The Energy Strategy until 2030 defines as a priority the construction of new and re-equipment of existing generating capacities to strengthen and fully commercialize the internal potential for the production of electrical energy.

The Energy Strategy 2050 will also aim to upgrade, modernize or replace these capacities, as well as to introduce and use new and advanced technologies with high efficiency and low environmental pollution. The basis of the new Energy Strategy until 2050 will be the principle of “energy efficiency above all else”.

Increasing energy efficiency by promoting high-efficiency cogeneration (rehabilitation of urban thermal power plants), taking measures to reduce energy losses and improve energy efficiency in buildings, as well as promoting efficient technologies and increasing the use of renewable energy sources, will help reduce dependence on natural gas imports and increase national energy security.

However, since the transformation sector is almost non-existent and the potential for savings is limited (only some interventions are economically justified, with reasonable payback periods), the bulk of the energy savings can be achieved in the end-use sectors.

The potential for energy efficiency improvements in buildings (heating, cooling and hot water) and in the transport sector is very high.

So far, energy efficiency improvements have been focused either on public institutions or on small, low-risk, low-cost projects funded mainly by subsidies or energy consumers’ own sources.

However, the potential of large national energy efficiency projects has not been fully realized.

The Energy Strategy 2050 will include energy efficiency measures for sectors with high potential:

- Promotion of energy efficiency in buildings and of the Near Zero Energy Building (NZEB) concept;
- Consolidation of the use of RES in constructions;
- Implementation of rules for certification of energy performance of buildings;
- Implementation of energy audit standards;
- Setting and achieving targets for the annual rate of renovation of public buildings, supported by increased awareness and participation of end users;
- Promoting energy efficiency in the transport sector.

In addition, the new Energy Strategy 2050 will aim to create financial initiatives and ensure access to finance for both the public and private sectors.

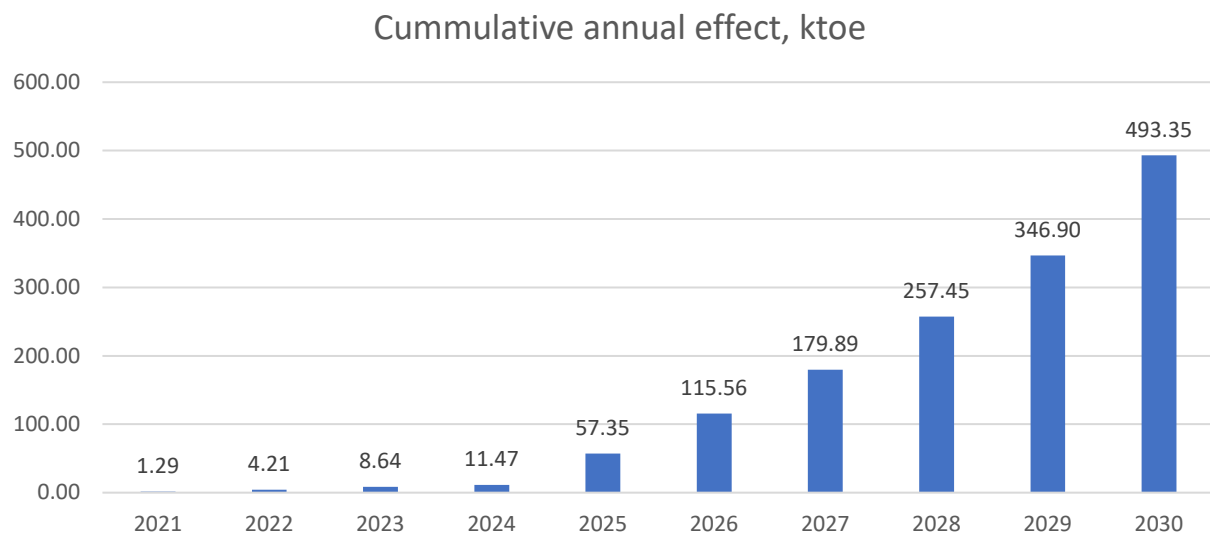
*i. Energy efficiency obligation schemes and alternative measures under Article 7a and 7b of Directive 2012/27/EU [version as amended in accordance with proposal COM(2016)761] (to be prepared in accordance with Annex II)*

The target under Article 7 of Directive (EU) 2012/27, as amended by Directive (EU) 2018/2002, will be attained through the implementation of additional measures and policies that can be implemented in accordance with national objectives. The planned additional measures should deliver 1,476.12 ktoe of cumulative final energy savings in the period 2021 – 2030. The calculation of the energy saving target was estimated taking into account final energy consumption of the year 2020 (2,550 ktoe) which corresponds to 0.51% / year under comparable conditions.

The cumulative value of energy savings in the period 2021-2030 are presented in Table 29 on annual basis.

*Table 29. Projections of cumulative energy savings for the period 2021 – 2030, in ktoe*

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
2021	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29
2022		2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	5.50
2023			4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	14.14
2024				2.84	2.84	2.84	2.84	2.84	2.84	2.84	25.61
2025					45.88	45.88	45.88	45.88	45.88	45.88	82.96
2026						58.21	58.21	58.21	58.21	58.21	198.52
2027							64.33	64.33	64.33	64.33	378.42
2028								77.55	77.55	77.55	635.87
2029									89.45	89.45	982.77
2030										146.45	1476.12
<b>Total</b>	<b>1.29</b>	<b>4.21</b>	<b>8.64</b>	<b>11.47</b>	<b>57.35</b>	<b>115.56</b>	<b>179.89</b>	<b>257.45</b>	<b>346.90</b>	<b>493.35</b>	

*Figure 20. Projections of cumulative energy savings for the period 2021 – 2030, in ktoe*

### ***Consumer protection and preventing energy poverty***

In times of energy vulnerability, the protection of end-users is especially important due to the large proportion of vulnerable population. In the long term, it is necessary to develop and implement effective policies that ensure the protection of end-users, their supply with energy sources, and the prevention of energy poverty. Sharp rise in energy prices since 2021, coupled with low levels of residential energy efficiency, is jeopardizing living standards and public support for current and future energy sector reforms. Therefore, it is critical that the risks faced by vulnerable consumers are addressed through a range of policies, from subsidies and price caps to social transfers and energy efficiency measures.

With the approval of Law no. 241/2022 on the Energy Vulnerability Reduction Fund was introduced the concept of “vulnerable consumer” and initial proposals on how the government committed itself to supporting this category of consumers.

Supporting vulnerable consumers and combating energy poverty consists in:

- Identifying the places of consumption and individuals who pose the greatest risk;
- Creating databases and connecting through them various institutions (social insurance, distribution companies, energy efficiency databases, etc.) in order to extract relevant data;
- Assessing qualitative and quantitative aspects of energy vulnerability, necessary for the development of specific measures to reduce energy poverty.

In this context, the use of smart meters that allow payment in advance, as well as clear rules for disconnecting from the grid, are important.

*ii. Long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, including policies, measures and actions to stimulate cost-effective deep renovation and policies and actions to target the worst performing segments of the national building stock, in accordance with Article 2a of Directive 2010/31/EU as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC*

The Long-Term Energy Efficiency Strategy will include a mix of policy measures, financing, fiscal and regulatory, to support the energy renovation of the national building stock and achieve the desired renovation rate. The strategy will cover residential and non-residential buildings, both public and private.

Financial incentives will be offered to improve the energy performance and modernization of the buildings. The incentives will aim to achieve cost-effective deep energy renovation of the residential buildings and increase the leverage level. The most efficient heating and cooling technologies will also be promoted. Additional financial and fiscal measures, such as tax deductions, credit lines and low-interest loans, will be considered if the subsidies are not enough. For the non-residential buildings, the programs will target specific sectors with high energy saving potential. Special measures will be taken to increase the use of solar thermal systems in new and renovated buildings.

The legal framework will be completely aligned with the Directive 2018/844/E. The inspections of the heating and air-conditioning systems will follow the respective provisions. The possibility of adopting specific regulatory measures to exceed the minimum energy requirements will be explored.

The Energy Performance Certificates will be improved to serve as renovation passports that guide the most cost-effective interventions. The energy management systems will also play a key role in achieving the energy efficiency targets.

Policy measure code:	PM EE1	Title:	<b>Residential Building Refurbishment</b>
Main objective:	Implementation of the Directive (EU) 2012/27, as amended by Directive (EU) 2018/2002, Law on Energy Performance of Buildings		
Quantified objective:	Cumulative effect 409.06 ktoe Average annual effect 51.13 ktoe Average Efficiency in Residential Space Heating 65%		

Description:	<p>This measure will provide ways for extensive energy renovation of the residential buildings through the rehabilitation of the building envelope attaining the optimum cost-effectiveness ratio and increasing the share of the own funds, which will be utilized. Furthermore, RES will be promoted through specialized actions, including Energy Efficiency Fund in residential sector.</p> <p>According to Low Emissions Development Program until 2030 and the Action Plan for its implementation, Specific Objective 3, Action 3.1 - Increasing the thermal resistance of the buildings' envelope - 0.6 million m<sup>2</sup> of habitable surface of rehabilitated buildings by 2026 under the unconditional scenario and another 0.2 million m<sup>2</sup> of habitable surface of rehabilitated buildings under the conditional scenario.</p> <p>According to Specific Objective 3, Action 3.4 - Use of biomass for energy purposes- 25 MW by 2026 under the unconditional scenario and another 30 MW under the conditional scenario; Action 3.5 - Installation of small, medium and large capacity heat pumps ≈ 0.27% of the needed thermal energy by 2026 under unconditional scenario and another 0.43% of the needed thermal energy under conditional scenario; Action 3.6 - Use of solar energy for domestic hot water production in urban and rural areas and at enterprises – 3,891 solar systems installed by 2026 under the unconditional scenario and another 1,681 solar systems installed under conditional scenario.</p>
Implementation Timeframe	2023 – 2030
Type of measure	Investment
Sectors covered/affected	Residential
Implementing Entity	Ministry of Energy Donors
Monitoring Entity	MIRD
Progress indicators	Number of energy renovated buildings Installed capacity of RES
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Energy Strategy of the Republic of Moldova until 2050 GD. No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	63 Mln EUR
Financing source(s)	Subsides (48 Mln EUR), state, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_EE2	Title:	<b>Public Sector Building Refurbishment</b>
Main objective:	Implementation of the Directive (EU) 2012/2, as amended by Directive (EU) 2018/2002, Law on Energy Performance of Buildings		
Quantified objective:	Cumulative effect 89.85 ktoe Average annual effect 11.231 ktoe		
Description:	This measure will provide ways for extensive energy renovation of the public sector buildings through the rehabilitation of the building envelope attaining the optimum cost-effectiveness ratio and increasing the share of the own funds, which will be utilized. Furthermore, RES will be promoted through specialized actions.		
Implementation Timeframe	2023 – 2030		

Type of measure	Investment
Sectors covered/affected	Public
Implementing Entity	Ministry of Energy Donors
Monitoring Entity	MIRD
Progress indicators	Number of Energy Renovated buildings Installed capacity of RES
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings
Implementation cost	32 Mln EUR
Financing source(s)	Subsidies (25 Mln EUR), state, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_EE3	Title:	<b>Creation of databases (inventories) on the stock of buildings</b>
Main objective:	Assessment of the implementation of Law No. 139/2018 on Energy Efficiency		
Quantified objective:	Contribution to PM_EE1-PM_EE6		
Description:	This measure will help to collect and analyze data on the characteristics, conditions, and performance of the existing building stock. This can help to identify the potential for energy efficiency improvements, greenhouse gas emissions reductions		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Residential, public		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Number of residential and public building included in database		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency		
Implementation cost	Budget incorporated into PM_EE2		
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions		



Policy measure code:	PM_EE4	Title:	<b>Conducting a market assessment for the cost-optimal level of refurbishment</b>
Main objective:	Implementation of Law No. 139/2018 on Energy Efficiency		
Quantified objective:	Contribution to PM EE1-PM EE2		
Description:	This measure will provide conducting a market assessment for the cost-optimal level of refurbishment. This means evaluating the feasibility and attractiveness of different renovation options for improving the energy performance of buildings, based on their costs and benefits. A market assessment can help to identify the barriers and drivers for implementing cost-optimal solutions, such as the availability of technologies, materials, and skills, the costs and benefits for building owners and occupants, the regulatory and financial frameworks, and the consumer preferences. A market assessment can also provide insights into the potential market size and growth		
Implementation Timeframe	2023 – 2030		
Type of measure	Research		
Sectors covered/affected	Residential, public		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	List of technologies and materials for building refurbishment		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency		
Implementation cost	Budget incorporated into PM EE2		
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions		

Policy measure code:	PM_EE5	Title:	<b>Development of the missing parts for the calculation methodology and minimum energy efficiency requirements for new and rehabilitated buildings</b>
Main objective:	Implementation of La Law No. 139/2018 on Energy Efficiency		
Quantified objective:	Contribution to PM EE1-PM EE2		
Description:	The measure provides developing the missing parts for the calculation methodology and minimum energy performance requirements for new and rehabilitated buildings is to ensure a consistent and harmonized approach across EU for assessing the energy efficiency of buildings and setting minimum standards that promote cost-optimal solutions. This objective is in line with the EU's goals of reducing greenhouse gas emissions, increasing the share of renewable energy sources, and improving energy security and competitiveness. The methodology framework will take into account various factors, such as climatic conditions, indoor air quality, comfort levels, technical feasibility, and environmental impacts.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Residential, public		
Implementing Entity	Ministry of Energy		

Monitoring Entity	Ministry of Energy
Progress indicators	Developed part of methodology
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844 EU Directive (EU) 2010/31
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency
Implementation cost	0.5 Mln EUR
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_EE6	Title:	<b>Creating a National Energy Efficiency Information System</b>
Main objective:	Implementation of Law No. 139/2018 on Energy Efficiency		
Quantified objective:	Unified data monitoring system in the field of energy efficiency in various sectors of the economy		
Description:	This measure will provide one state Information System to collect, manage, and analyze data on the energy performance of buildings, appliances, vehicles, and other end-use sectors. The system can help to monitor and evaluate the impacts and benefits of energy efficiency policies and programs, such as energy savings, greenhouse gas emissions reductions, cost-effectiveness, and social outcomes, identify the potential and opportunities for improving energy efficiency across different sectors and regions, and prioritize the most cost-optimal solutions, support the design and implementation of effective and tailored energy efficiency policies and programs, such as minimum energy performance standards, labeling schemes, incentives, and awareness campaigns, provide reliable and transparent information to various stakeholders, such as policy makers, regulators, utilities, consumers, investors, and researchers, to facilitate decision making and market development.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Residential, public, industry, forestry, agriculture		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Number of units		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency		
Implementation cost	0.5 Mln EUR		

Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
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Policy measure code:	PM_EE7	Title:	<b>Introducing energy efficiency certification of buildings (for inspection of heating/ventilation and air conditioning systems), adopt a plan for practically zero-energy buildings, etc.</b>
Main objective:	Implementation of Law No. 139/2018 on Energy Efficiency and Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002,		
Quantified objective:	Contribution to PM_EE1-PM_EE2		
Description:	This measure will include improvement of the existing and, if necessary, establishment of new qualification, accreditation, or certification schemes for all energy efficiency professional (providers of energy services, energy advisors, energy managers and installers of energy related building elements that are related to the improvement of the energy performance of a building, developers of design and technical documentation). Specialized training programs will be organized, tools will be developed and technical support will be provided within the framework of the current measure.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Residential, public		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Number of certified buildings		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844 Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002 Directive (EU) 2010/31		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency		
Implementation cost	22.1 Mln EUR		
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions		

Policy measure code:	PM_EE8	Title:	<b>Fully transpose the provisions of the EU's Energy Performance of Buildings Directive (EPBD)</b>
Main objective:	Implementation of Law No. 139/2018 on Energy Efficiency and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to PM_EE1-PM_EE2		
Description:	The following new regulations are expected to be adopted: <ul style="list-style-type: none"> <li>- Methodology for calculating optimal cost levels;</li> <li>- Minimum requirements for the energy performance of buildings and their components;</li> <li>- Methodology for calculating the energy performance of buildings, allowing the application of the Building Energy Performance Certificate tool and promoting buildings with low energy consumption;</li> </ul>		

	<ul style="list-style-type: none"> <li>- Methodology to calculate the minimum amount of energy from renewable sources (RES) in buildings. Some specific requirements for RES use in buildings were developed as part of the activity on revision of the minimal energy performance requirements;</li> <li>- Additional requirements for the use of RES in buildings are to be developed and included in the National Plan for increasing the number of Nearly Zero Energy Consumption Buildings (NZEB). The Energy Efficiency Agency launched the procurement procedure for the elaboration of the NZEB National Plan.</li> </ul>
Implementation Timeframe	2023 – 2030
Type of measure	Reform
Sectors covered/affected	Residential, Public
Implementing Entity	Ministry of Energy
Monitoring Entity	Ministry of Energy
Progress indicators	Number of adopted regulations
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency
Implementation cost	1.5 Mln EUR
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_EE9	Title:	<b>Creation of financial mechanisms to support the environmental repair of apartment buildings and individual residential buildings, including with the integration of renewable energy sources</b>
Main objective:	Reduce greenhouse gas emissions and enhance climate resilience in the buildings sector, increase share of RES in electricity, increase share of RES in heating and Cooling		
Quantified objective:	Contribution to PM_EE1		
Description:	This measure will provide ways of use finance and fiscal measures (such as green bonds, green loans, green mortgages, targeted tax deductions, etc.) for the energy renovation of the existing residential buildings. The design and provision of the dedicated financial incentives will facilitate the more extensive energy renovation of the residential buildings through the rehabilitation of the building envelope attaining the optimum cost-effectiveness ratio and increasing the share of the own funds, which will be utilized. Also, RES electricity, RES heat and RES cool will be promoted.		
Implementation Timeframe	2025 – 2030		
Type of measure	Investment		
Sectors covered/affected	Residential		
Implementing Entity	Ministry of Energy Donors		
Monitoring Entity	Ministry of Energy		

Progress indicators	Energy Renovated buildings Installed capacity of heat pumps
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	EU Directive (EU) 2018/844
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Performance of Buildings Law No. 139/2018 on Energy Efficiency
Implementation cost	1.561 Mln EUR
Financing source(s)	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions

Policy measure code:	PM_EE10	Title:	<b>Implementation of smart metering systems and other advanced metering technologies to better respond to demand, remote metering and real-time consumption-based energy/gas billing</b>
Main objective:	Consumer protection and improvement of competition, enable EE at the supply side (i.e. through the reduction of losses)		
Quantified objective:	Cumulative effect 53.9 ktoe Average annual effect 6.732 ktoe Decision to proceed with electricity/gas smart meters deployment at distribution level		
Description:	Smart metering systems will help consumers save money and energy by providing them with more information and feedback on their energy consumption patterns, and by allowing them to choose the best tariff or contract for their needs. Moreover, they will facilitate the integration of renewable energy sources, such as solar panels, into the grid, by enabling consumers to sell their excess energy back to the grid or to other consumers, and by providing incentives for demand response and load shifting.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform, gas, electricity		
Sectors covered/affected	Residential		
Implementing Entity	Distribution system operators		
Monitoring Entity	MIRD		
Progress indicators	Number of consumers equipped with smart metering		
Other relevant Energy Union dimension(s) affected	Energy Security		
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law on Energy Efficiency No. 139/2018 Law on electricity 106/2016 Law on gas no.108/2016		
Implementation cost	43.7 Mln EUR		
Financing source(s)	own funds		

*iii. Description of policy and measures to promote energy services in the public sector and measures to remove regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models<sup>170</sup>*

An energy service company (ESCO) is a company that provides a broad range of energy solutions including designs and implementation of energy savings projects, retrofitting, energy conservation, energy infrastructure outsourcing, power generation, energy supply, and risk management.

There are no active ESCO's in Moldova. However, ESCO's can perform the important role of middlemen between banks, equipment producers and clients. The potential of an ESCO market should be considerable in and the Republic of Moldova.

The promotion of energy services will be supported by a holistic framework that removes the potential barriers. The existing standard contracts and guidelines will be used to facilitate the design and implementation of energy efficiency projects through Energy Performance Contracts.

Targeted pilot projects will be launched for the renovation of public buildings and the upgrade of street-lighting through energy performance contracts. This will also create the necessary conditions for the promotion of energy services in the public sector. The public procurement procedures will comply with the Law on EE and Rational Use of Energy, which incorporates the developed contracts and guidelines.

Moreover, targeted financing programs will be initiated in specific sectors, such as industrial and commercial, based on the results of the pilot projects. Additional financing instruments, such as low-interest loans or guarantees, will be provided to energy saving service providers to facilitate their access to financing and implementation of energy efficiency projects in the tertiary and industrial sectors.

Finally, different authorities will be appointed to monitor the legislation on energy performance contracts and ensure the elimination of market barriers. They will also act as an independent mechanism for handling complaints and disputes arising from energy service contracts and as an independent market intermediary for stimulating the market development on both demand and supply sides.

Policy measure code:	PM_EE11	Title:	<b>Promotion of energy services and energy performance contracts</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 34.4 ktoe Average annual effect 4.296 ktoe Contribution to all final energy consumption measures		
Description:	In frames of this measure government will promote energy services through:		

<sup>170</sup> In accordance with Article 18 of Directive 2012/27/EU

	<p>- Leverage of private investment in energy efficiency by: enhancing the capacity of local banks to facilitate the financing of energy efficiency and renewable energy projects; developing financing instruments and dedicated credit lines for energy efficiency projects with financial institutions; supporting the Energy-Service Company (ESCO) industry by improving the legislation, standardizing the contractual frameworks and streamlining accreditation procedures; implementing tax incentives for some energy efficient products.</p> <p>- Encourage modernization of district heating networks through enforcement of full cost-reflective tariffs, energy measurement and reporting, investment and advice from ESCO's and replication of successful pilot projects already implemented.</p>
Implementation Timeframe	2025 – 2030
Type of measure	Reform
Sectors covered/affected	Residential, Public, Industrial
Implementing Entity	Ministry of Energy
Monitoring Entity	Ministry of Energy
Progress indicators	Number of energy service contract
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002 Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	535.5 Mln EUR
Financing source(s)	State, EU and other funds, public funds and own funds

Policy measure code:	PM_EE12	Title:	<b>Creation and development of the field of energy services, financial instruments and energy audit</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to PM_EE11		
Description:	<p>In frames of this measure, the following is planned:</p> <ul style="list-style-type: none"> <li>- Amendments of the roadmap for the provision of energy services in public buildings, developed by the Agency for Energy Efficiency.</li> <li>- Amending the Government Decree on the provision of energy services.</li> <li>- Review of existing financial programs (EU4Business, GEFF, RECP).</li> </ul> <p>Design and implementation of financial instruments for energy efficiency (providing a bank guarantee, exempting VAT on thermal insulation products) and creating a functional framework for companies providing energy services, as well as for engineering, purchasing and construction firms</p>		
Implementation Timeframe	2025 – 2030		
Type of measure	Reform		
Sectors covered/affected	Residential, Public, Industrial		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Number of energy service contract		



Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	Budget incorporated into PM EE11
Financing source(s)	State, EU and other funds, public funds and own funds

*iv. Other planned policies, measures and programs to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2 (for example measures to promote the exemplary role of public buildings and energy-efficient public procurement, measures to promote energy audits and energy management systems, consumer information and training measures, and other measures to promote energy efficiency)*

## Transport

The transport sector in Moldova has a high energy savings potential. The priority direction is promotion of energy efficiency specifically in the field of transport. The main instrument for promoting energy efficient vehicles will be specific tax advantages to encourage the purchase of such vehicles. If the fiscal measures are not enough to meet the targets, financial incentives will be given to end-users to foster the replacement of conventional vehicles with new energy efficient ones.

Moreover, stricter minimum requirements will be applied to the emission standards of imported used passenger cars to ensure acceptable energy efficiency levels compared to the new ones.

Priority will be given to the promotion of energy efficiency of the freight transport with initiatives such as replacing the vehicle fleets and facilitating the modal shift to other transport modes. A holistic framework will be developed for the promotion of modal shift for both passenger and freight transport, enabling ‘Mobility as a Service’ (MaaS) with the use of data, information and communication technologies and artificial intelligence for smarter mobility.

Furthermore, the promotion of alternative fuels will be supported with the development of the required infrastructure for all types of alternative fuels, maximizing the synergies with the policy measures in the RES dimension. Emphasis will be put on the targeted deployment of electromobility to achieve the target for electric vehicles.

Continuous improvement and expansion of the public transport infrastructure will be ensured, while the exemplary role of the public sector will be reinforced with measures such as setting a compulsory quota of vehicles with higher energy efficiency in public agencies and organizations.

Development of sustainable regional or municipal mobility plans will facilitate the implementation of these measures at local and regional level, while existing measures for the promotion of energy efficient tires for all types of vehicles will be continued, such as promoting energy efficient tires and lubricants, conducting regular technical inspections of vehicles, promoting fuel additives, establishing a framework for fuel labelling and fuel quality monitoring.

Finally, targeted measures will be implemented to promote energy efficiency in rail transport for both freight (mostly) and passenger transport through financial, fiscal or regulatory measures.

Although worldwide rail transport costs are lower than other modes, official statistics show that there is a downward trend in rail use at national level. Development of this mode of transport (one of the most efficient) can also improve the competition of companies.

For the period up to 2050, the following measures and policies are expected to be implemented:

- Ban (or demotivation through fiscal instruments) on import of non-hybrid cars starting in 2030 (or in 2035)
- Electrification of the railway (30% by 2040)
- Standards to ban the purchase of old vehicles (older than 10 years)
- Ban on pure-diesel vehicles starting in 2040
- Switch of urban public transport to hybrid, by 2030
- Switch of urban public transport to electric, by 2040
- Switch of urban transport of freight to electric, by 2035
- Switch of road freight transport to rail freight transport (30% in 2030, 60% in 2050)
- Promotion of fuel-efficient driving
- Modal-shifting in urban areas.

Policy measure code:	PM_EE13	Title:	<b>Development of a national program for the renewal of the vehicle fleet by introducing a differentiated environmental fee depending on the level of pollution</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 5.0 ktoe Average annual effect 0.625 ktoe Final energy savings		
Description:	The measure will impose stricter minimum requirements regarding the applied emission standards in imported passenger cars, which are used, ensuring the achievement of acceptable energy efficiency levels compared to the new energy efficient one.		
Implementation Timeframe	2023 – 2028		
Type of measure	Reform		
Sectors covered/affected	Transport		
Implementing Entity	Ministry of Infrastructure and Regional Development		
Monitoring Entity	Ministry of Infrastructure and Regional Development Ministry of Environment		
Progress indicators	Number of renewed vehicles		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	798 Mln EUR		
Financing source(s)	own funds		

Policy measure code:	PM_EE14	Title:	<b>Supporting the development of incentives for the import of electric and hybrid vehicles, as well as the development of national infrastructure required for electric vehicles, charging points and parking infrastructure</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 20.2 ktoe Average annual effect 2.524 ktoe 2025 – 11 thousand units of EV's 2030 – 46 thousand units of EV's		
Description:	Within the framework of this measure, economic and fiscal incentives for the purchase of electric vehicles of hybrid vehicles will be developed, charging infrastructure will be developed and non-material incentives will be developed (creation of parking spaces, etc.)		
Implementation Timeframe	2023 – 2028		
Type of measure	Investment		
Sectors covered/affected	Transport		
Implementing Entity	Ministry of Infrastructure and Regional Development		
Monitoring Entity	Ministry of Infrastructure and Regional Development		
Progress indicators	Number of passenger vehicles		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	1,166 Mln EUR including 16 Mln EUR for 1,000 charging stations		
Financing source(s)	State, EU and other funds, grants, public funds and own funds		

Policy measure code:	PM_EE15	Title:	<b>Create initiatives to support the transition of residential and urban public transport or freight transport to hybrid or electric vehicles</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to PM_EE13-PM_EE14		
Description:	The measure will target to the promotion of energy efficiency in transport sector through setting emission performance standards for new passenger cars and new light commercial vehicles respectively. Moreover, the promotion of energy efficient vehicles will be achieved also through the provision of specific tax advantages for mobilizing the purchase of EV's and hybrid vehicles. The taxation framework of the transport sector will be streamlined by selecting the most effective forms of taxes in order to balance the total cost of ownership and promoting the energy efficiency of vehicles and the use of low-emission fuels.		
Implementation Timeframe	2023 – 2028		
Type of measure	Investment		
Sectors covered/affected	Transport		

Implementing Entity	Ministry of Infrastructure and Regional Development
Monitoring Entity	Ministry of Infrastructure and Regional Development
Progress indicators	Number of energy efficient vehicles
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	450 Mln EUR
Financing source(s)	Own funds

Policy measure code:	PM EE16	Title:	<b>Increase in the share of rail transport</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 85.3 ktoe Average annual effect 10.66 ktoe Transition of 30% of road freight transport to rail freight		
Description:	The measure will target to the modernization and extension of the existing railway infrastructure through the provision of either financial, fiscal or regulatory measures. New energy-efficient trains will be purchased substituting the conventional ones. Smart digital systems for rail traffic management will be installed.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	Transport		
Implementing Entity	Ministry of Infrastructure and Regional Development		
Monitoring Entity	Ministry of Infrastructure and Regional Development		
Progress indicators	Freight traffic		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	Under examination		
Financing source(s)	State, EU and other funds, public funds		

Policy measure code:	PM EE17	Title:	<b>Promoting sustainable mobility</b>
Main objective:	Implementation of Law No. 139/2018 and the Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 59.2 ktoe		

	Average annual effect 7.402 ktoe
Description:	This policy will be implemented through the following measures: <ul style="list-style-type: none"> <li>- Regulation of the entry of polluting vehicles into certain areas of urban centers;</li> <li>- Campaigning/providing subsidies and systems for the use of new or rented bicycles and electric scooters;</li> <li>- Promoting walking and introducing a parking policy that reduces car traffic in urban areas.</li> </ul>
Implementation Timeframe	2023 – 2030
Type of measure	Investment
Sectors covered/affected	Transport
Implementing Entity	Ministry of Infrastructure and Regional Development
Monitoring Entity	Ministry of Infrastructure and Regional Development
Progress indicators	Local level
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	488.5 Mln EUR
Financing source(s)	State, EU and other funds, public funds

## Industry

Implementation of energy efficiency projects in the industrial sector will be supported by various financial instruments, such as direct financial support, low-interest loans, tax deductions, credit lines and guarantees.

The best available technologies and practices that reduce energy consumption and emissions, such as efficient motors, pumps, boilers, furnaces, lighting, and insulation will be further deployed according to the relevant legislation, and a monitoring and surveillance mechanism will be developed to ensure this target.

Eco-design requirements will also ensure the penetration of energy efficient technologies and equipment, such as variable speed drives, heat recovery systems, and smart sensors.

In line with the above mentioned, elements of circular economy will be promoted, such as exploitation of waste heat and materials, using waste heat for district heating or industrial processes, or using biomass residues for power generation or biofuels and extending digitalization of the industrial processes that optimize energy management and performance. Also, use of smart meters, data analytics, artificial intelligence, and automation, exploiting renewable energy sources for electricity, heating and cooling production and using alternative fuels, such as solar, wind, biogas, hydrogen, or biofuels will be enhanced.

Policy measure code:	PM_EE18	Title:	<b>Implementation of a mandatory energy audit and ISO 50001 certification according to the Moldovan Standard SM EN ISO 50001: 2019</b>
Main objective:	Implementation of Law No. 139/2018		
Quantified objective:	Contribution to all end-use measures Final energy savings		
Description:	<p>This measure will include:</p> <ul style="list-style-type: none"> <li>• Revision of the regulation on statutory energy audits by large enterprises (according to law no.139-2018);</li> <li>• Providing practical training courses for energy auditors for buildings, industry and transport (in accordance with the Regulation approved by the Government (GD no.676 from 10.09.2020));</li> <li>• Training of energy appraisers for buildings;</li> <li>• Training of inspectors of heating, ventilation and air conditioning systems;</li> <li>• Providing continuous training for energy managers.</li> </ul>		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Industry		
Implementing Entity	Ministry of Energy Ministry of Economy and Digitization		
Monitoring Entity	Ministry of Energy Agency for Energy Efficiency		
Progress indicators	Final energy savings		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	35.3 Mln EUR		
Financing source(s)	State, EU and other funds, own funds		

Policy measure code:	PM_EE19	Title:	<b>Implementation of requirements for energy labeling for products of energy impact</b>
Main objective:	Implementation of Law No. 139/2018		
Quantified objective:	Contribution to all end-use measures		
Description:	<p>The following measures are planned:</p> <ul style="list-style-type: none"> <li>• Transposition of Regulation (EU) 2017/1369;</li> <li>• Improving state control and the ability of authorities to verify the conformity of product parameters with declared requirements;</li> <li>• Creating grants for the purchase of electrical equipment with maximum efficiency.</li> </ul>		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Industry		
Implementing Entity	Ministry of Energy		

Monitoring Entity	Ministry of Energy
Progress indicators	Final energy savings
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	4.7 Mln EUR
Financing source(s)	State, EU and other funds, own funds

Policy measure code:	PM_EE20	Title:	<b>Introduction of obligations on environmental procurement</b>
Main objective:	Implementation of Law No. 139/2018		
Quantified objective:	Contribution to PM_EE2		
Description:	This measure presumes that intensive efforts are expected to be launched to ensure that public sector organizations have the legal and technical knowledge and competencies that are necessary to incorporate and evaluate energy efficiency requirements in public procurement procedures, applying the criterion of the most cost-effective proposal.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Industry, Public		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Final energy savings		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	4.2 Mln EUR		
Financing source(s)	State, EU and other funds, own funds		

*v. Description of measures to utilize energy efficiency potentials of gas and electricity infrastructure*

The installed RES capacity required to achieve climate goals and impact on the energy consumption pattern and energy security will be determined taking into account the results of modeling the evolution of GHG emissions in accordance with the expected actions and mitigation measures. At the same time, the need to strengthen the power grid for the integration of new renewable energy production will be determined. By Government Decision no. 401/2021, the



Republic of Moldova has already committed to support the construction of 410 MW of new RES capacity, with a focus on wind, solar and non-variable RES (biomass, biogas and small hydro). Promotion of energy efficiency on gas and electricity infrastructure can release certain capacities to be used for RES.

Since the Republic of Moldova does not have other sources of primary energy, additional development of RES will be analyzed in the forecast period.

In order to support own energy production, decentralized electricity generation from RES should be granted preferential treatment, whether it be on industrial site, individual households or consumers communities.

Government will promote the creation of regional green energy centers to increase the self-sufficiency of local energy through the use of renewable energy.

Policy will ensure that consumers play a more active role in the energy market. As required by the Law on Energy Performance of Buildings and the Renewable Energy Directive (RED II), the creation of energy communities and possibly peer-to-peer trading will be facilitated.

The gradual introduction of RES is likely to be less dependent on government support mechanisms. The government will make efforts to stimulate investment in renewable energy by organizing auctions, and the income of renewable energy producers can be increased through income from guarantees of origin. It is expected that the planning and authorization phases of the RES installation will be accelerated to eliminate some of the bottlenecks that are already visible, all of which should be carried out in parallel with the implementation of the requirements of EU legislation.

The expanded and balanced use of RES in the Republic of Moldova should give equal importance to RES in the heating/cooling and transport sectors. There is a large untapped RES potential in the heating and cooling sector.

The consolidation of the use of renewable energy in construction will be one of the priority areas. The Republic of Moldova will take measures to support the transition of households from stoves to efficient boilers or heat pumps, combined with their own production. The legal framework will be aligned with the objectives of RED I and RED II for the transport sector; to this end, measures will be envisaged to increase the electrification of the road and rail transport infrastructure (possibly combined with subsidies or reductions in excise duties and/or VAT for cars, electric and hybrid), as well as to increase the use of sustainable biofuels. Domestic production of biofuels from waste, residues and biomass, as well as green hydrogen, will be encouraged.

Policy measure code:	PM_EE21	Title:	<b>Promoting of universal street lighting with a priority based on the supply from RES</b>
Main objective:	Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to PM_DC29		
Description:	This measure will facilitate the energy efficiency improvement of the street lighting through public funds and specialized financial support schemes, such as low-interest loans and guarantees in conjunction with the activities for the promotion of energy performance contracts		
Implementation Timeframe	2024 – 2030		
Type of measure	Investment		
Sectors covered/affected	Public		

Implementing Entity	Ministry of Energy Local self-governments ESCO's
Monitoring Entity	Ministry of Energy
Progress indicators	Number of renovated street lighting systems
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency The National Development Strategy "European Moldova 2030" GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	Budget incorporated into PM DC29
Financing source(s)	State, EU and other funds, own funds, providers of energy services

Most of the existing capacities for the production of electricity and heat in the Republic of Moldova are inefficient, pollute the environment and are characterized by a high degree of wear and tear. Therefore, considerable efforts should be focused on the renewal, modernization or replacement of these capacities, as well as the introduction and use of new and advanced technologies, characterized by high efficiency and low environmental pollution.

Increasing energy efficiency by promoting high-efficiency cogeneration (rehabilitation of thermal power plants), taking measures to reduce energy losses and improve energy efficiency in buildings, and promoting efficient technologies and those that benefit from RES will help reduce dependence on natural gas imports and enhancing national energy security.

In order to promote a district heating and cogeneration system, the entire heat and power system will be re-evaluated from a technical and economic point of view in order to identify and implement opportunities to reduce energy losses and fuel consumption through the use of modern and efficient technologies, as well as a significant increase in the variety of services offered to consumers.

In the period up to 2030, it is planned to modernize the distribution and transmission networks of energy. The used transmission and distribution networks were built mainly during the Soviet period and have a high degree of physical deterioration, their technical characteristics were calculated in accordance with the loads of that time.

Policy measure code:	PM_EE22	Title:	<b>Promoting/modernizing highly efficient CHP units</b>
Main objective:	Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Cumulative effect 611.14 ktoe Average annual effect 76.392 ktoe		

Description:	The measure will launch financial programs for the installation of new and the modernization of existing highly efficient CHP. For the case of the new highly efficient CHP units, planned incentives will be carried out in alignment with the Law No. 139/2018. Furthermore, energy plants which are being built or refurbished, must fulfil prescribed minimal energy efficiency requirements according of the Law No. 139/2018.
Implementation Timeframe	2023-2030
Type of measure	Reform and Investment Implementation
Sectors covered/affected	All final energy consumption sectors
Implementing Entity	Ministry of Energy Local self-governments Heating plants
Monitoring Entity	Ministry of Energy
Progress indicators	Installed capacity of new highly efficient CHP units Installed capacity of modernized CHP units
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	624.7 Mln EUR
Financing source(s)	State, EU and other funds, own funds, providers of energy services

Policy measure code:	PM EE23	Title:	<b>Modernizing of district heating networks</b>
Main objective:	Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU		
Quantified objective:	Cumulative effect 12.121 ktoe Average annual effect 1.515 ktoe District Heating Losses as a % of total heat transferred: 18.1% (1.1% reduction compared to 2020)		
Description:	The measure will launch financial programs for modernization of existing district heating networks.		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform and Investment Implementation		
Sectors covered/affected	All final energy consumption sectors		
Implementing Entity	Ministry of Energy Local self-governments Heating plants		
Monitoring Entity	Ministry of Energy		
Progress indicators	Installed capacity of new highly efficient CHP units Installed capacity of modernized CHP units		
Other relevant Energy Union dimension(s) affected	Decarbonization		

Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency GD No. 659/2023 on approval of the Low Emissions Development Program until 2030 and the Action Plan for its implementation
Implementation cost	639 Mln EUR
Financing source(s)	State, EU and other funds, own funds, providers of energy services

Policy measure code:	PM_EE24	Title:	<b>Promotion of measures for improving energy efficiency in electricity infrastructure</b>
Main objective:	Cumulative effect 68.60 ktoe Average annual effect 8.575 ktoe Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Electricity losses Transmission Network as a % of total Generation plus Net Imports: 2.15% (0.86% reduction compared to 2020); Electricity losses Distribution Network as a % of total Generation plus Net Imports: 4.51% (1.77% reduction compared to 2020)		
Description:	<p>This measure will increase the energy efficiency of electricity infrastructures, which will be conducted by the respective operators within the framework of their development programs.</p> <p>Targeted technical measures will be initiated to reduce losses in transmission and distribution networks, load management, improve network interoperability and facilitate the penetration of decentralized electricity generation installations. Electricity infrastructure operators will be obliged to prepare reports on annual basis describing analytically the performed actions, while the required measures and investments will be specified for the materialization of the most cost-effective energy efficiency interventions in the network infrastructure including a timetable for their implementation. Moreover, incentives will be given on electricity transmission and distribution network operators in order to have a higher return on the invested capital if they attain specific energy efficiency targets. Obviously, in case energy efficiency targets are not achieved, a reduction to the return on the invested capital must be foreseen. Moreover, the “energy efficiency first” principle will be used for taking the most effective decisions in regards to the design and operation of the energy transmission and distribution networks contributing meaningfully to the fulfilment of the established energy efficiency targets.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Reform and Investment Implementation		
Sectors covered/affected	All final energy consumption sectors		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Modernized electricity network		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document	Law No. 139/2018 on Energy Efficiency		

(Legal, Regulatory Acts etc.)	
Implementation cost	2,917 Mln EUR
Financing source(s)	State, EU and other funds, own funds, providers of energy services

Policy measure code:	PM_EE25	Title:	<b>Promotion of measures for improving energy efficiency in natural gas infrastructure</b>
Main objective:	Cumulative effect 27.47 ktoe Average annual effect 3.434 ktoe Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Natural gas losses Transportation Network as a % of total gas transferred: 2.83% (3.72% reduction compared to 2020)		
Description:	The measure will promote increase of energy efficiency of the gas infrastructures, which will be conducted by the respective operators within the framework of their development programs. Targeted technical measures will be initiated to reduce losses in transmission and distribution networks and improve the load management. Gas infrastructure operators will be obliged to prepare annual reports describing analytically the performed actions, while the required measures and investments will be specified for the materialization of the most cost-effective energy efficiency interventions in the network infrastructure, including a timetable for their implementation. Moreover, incentives will be granted to natural gas transmission and distribution network operators in order for them to have a higher return on the invested capital if they attain specific energy efficiency targets. The proposed measures will facilitate also the reduction of emissions of other greenhouse gases (for example, methane), while new technologies for the identification of emissions will be promoted during their implementation.		
Implementation Timeframe	2024 – 2030		
Type of measure	Reform and Investment Implementation		
Sectors covered/affected	All final energy consumption sectors		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Modernized natural gas network		
Other relevant Energy Union dimension(s) affected	Decarbonization		
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency		
Implementation cost	522 Mln EUR		
Financing source(s)	State, EU and other funds, own funds, providers of energy services		

*vi. Regional cooperation in this area, where applicable*

Integration with the EU market and increased cooperation with regional partners will increase competition in the national sectors of the Republic of Moldova in the field of electricity and gas and lead to an increase in energy efficiency.

Moldova has been engaged in regional cooperation in energy efficiency through its participation in several initiatives and partnerships with neighboring countries and international organizations. One such initiative is the Eastern Partnership, a platform for cooperation between the European Union (EU) and six Eastern European countries, including Moldova. Through this partnership, Moldova has been able to access technical assistance and funding for a range of energy efficiency projects.

Moldova is also a member of the Energy Community, a regional organization established to extend the EU's energy policy to countries in South-East Europe, including itself. As a member of the Energy Community, Moldova is required to implement EU energy laws and regulations, including those related to energy efficiency.

Moldova has also participated in several energy efficiency projects under the Central European Initiative (CEI), a regional organization that promotes cooperation between countries in Central, Eastern and South-Eastern Europe. These projects have focused on a range of areas, including energy efficiency in buildings, industrial processes, and transport.

In addition to these initiatives, Moldova has worked closely with the United Nations Development Program (UNDP) on energy efficiency projects. For example, the UNDP has provided technical assistance to the Moldovan government to develop and implement energy efficiency policies and programs.

Overall, regional cooperation has been an important aspect of Moldova's efforts to improve energy efficiency. Through its participation in various initiatives and partnerships, Moldova has been able to access technical assistance, funding, and best practices to support the development and implementation of energy efficiency policies and programs.

*vii. Financing measures, including EU support and the use of EU funds, in the area at national level*

The main challenges, which are derived by the design and implementation of the envisaged financial measures will be addressed, such as maximization of the expected leverage, most cost-effective exploitation of the available funds, exploitation of additional financing tools and active mobilization of the domestic financial sector.

In the following years, Moldova should provide support for the implementation of innovative pilot energy efficiency projects for the promotion of sustainable green financing mechanisms for residential and public buildings.

The bankability of the energy efficiency projects will be increased with the utilization of specialized tools and methodologies so as to minimize the existing levels of risk. The mobilization of the banking sector will be encouraged, while the conduction of specialized training will enhance the current level of knowledge and skills of the employees in the banking sector.

Policy measure code:	PM_EE26	Title:	<b>Development of sustainable and innovative financing of energy efficiency projects</b>
Main objective:	Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to all end-use measures		
Description:	This measure will address the main challenges that are derived by the design and implementation of the envisaged financial measures such as the maximization of the expected leverage, the most cost-effective exploitation of the available fund, the adoption of innovative financing tools and the active mobilization of the domestic financial sector.		



	<p>All available funds will be mobilized at national and EU levels including funds from other donors. The effective coordination of the available financial stream is essential for the effective implementation of the planned financial measures. The measure will provide a wide availability of incentives for the realization of energy efficiency measures in all segments of energy consumption. The provision of technical assistance will be foreseen for facilitating the financing of the energy efficiency projects.</p> <p>With the aim of improving cost-effectiveness of the implemented energy efficiency projects, other mechanisms that can contribute to the financing of energy efficiency will be considered, as well as how to avoid the potential overlaps of various energy efficiency subsidies schemes. The provided subsidies must be aligned with the regulation on state aid.</p>
Implementation Timeframe	2024 – 2030
Type of measure	Reform and Investment
Sectors covered/affected	All final energy consumption sectors
Implementing Entity	Ministry of Energy
Monitoring Entity	Ministry of Energy
Progress indicators	Financed energy efficiency projects
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	Budget incorporated into all end-use measures
Financing source(s)	EU and other funds (e.g., World Bank, EBRD, IFI's etc.), public funds and own funds

Policy measure code:	PM_EE27	Title:	<b>Improve the bankability of energy efficiency projects</b>
Main objective:	Implementation of Law No. 139/2018, Directive (EU) 2012/27/EU as amended by Directive (EU) 2018/2002		
Quantified objective:	Contribution to all end-use measures		
Description:	<p>This measure will improve the bankability of the energy efficiency projects with the utilization of specialized tools and methodologies in order to minimize the existing levels of risk. Moreover, implementation of a quality assurance scheme and establishment of a methodological approach for standardization of different steps during the evaluation of energy efficiency projects will facilitate the de-risking of energy efficiency investments. Involvement of the banking sector is essential for the design of new financial products specifically dedicated to financing of energy efficient projects. Specialized training will be organized in order to achieved the above-mentioned objectives.</p>		
Implementation Timeframe	2024 – 2030		
Type of measure	Reform and Investment		
Sectors covered/affected	All final energy consumption sectors		
Implementing Entity	Ministry of Energy		
Monitoring Entity	Ministry of Energy		
Progress indicators	Affected energy efficiency projects and employees in the banking sector		
Other relevant Energy Union	Decarbonization		



dimension(s) affected	
Union policy which resulted in the implementation of the PaM	Directive (EU) 2012/27 as amended by Directive (EU) 2018/2002
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Law No. 139/2018 on Energy Efficiency
Implementation cost	Budget incorporated into all end-use measures
Financing source(s)	EU and other funds, public funds and own funds

Data on the total amount of investments required to achieve the goals in the field of thermal renovation of buildings is presented in Table 30.

**Table 30. Projected investment costs in building refurbishment in the period 2025 – 2050, in Mln EUR**

Indicator	2025	2030	2035	2040	2045	2050
Total cumulative investment costs of building refurbishment	81	95	475	547	484	482
Cumulative residential building refurbishment investment costs	67	63	306	382	377	384
of which: cumulative residential building refurbishment subsidies	48	48	235	296	296	296
Cumulative commercial/services/public buildings refurbishment investment costs	14	32	168	165	108	98
of which: cumulative commercial/services/public buildings refurbishment subsidies	11	25	145	159	108	98

### 3.3. Dimension Energy security

#### *i. Policies and measures to achieve the objectives set out in 2.3*

To improve the level of energy security and achieve the goals given in Section 2.3, it is proposed to implement the following policies and measures:

Policy measure code:	PM_ES1	Title:	<b>Line 400 kV Vulcanesti-Chisinau</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		
Description:	This transmission line will be built as part of the Moldova-Romania interconnection project worth over 260 million euros, which aims to ensure the country's energy security by connecting Moldova to the EU internal energy market through power lines, and also strengthening the internal electricity transmission networks.		
Implementation Timeframe	2023 – 2024		
Type of measure	Investment		
Sectors covered/affected	Electricity		
Implementing Entity	SE “Moldelectrica”		
Monitoring Entity	Ministry of Energy National Energy Regulatory Agency		
Progress indicators	Interconnector capacities		

Other relevant Energy Union dimension(s) affected	Internal energy market
Union policy which resulted in the implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft) Electricity transmission network development plan for 2018-2027 period <sup>171</sup>
Implementation cost	260 Mln EUR
Financing source(s)	public funds and own funds

Policy measure code:	PM ES2	Title:	<b>Line 400 kV Balti-Suceava</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		
Description:	The project involves the construction of a power line with a rated voltage of 400 kV with a length of 138 km, of which 90 km - through the territory of Romania and 48 km – in Moldova, along the route Suceava (Romania) – Balti (Moldova), as well as the expansion of the Suceava station with the construction of a new station 400 kV in Balti.		
Implementation Timeframe	2023 – 2026		
Type of measure	Investment		
Sectors covered/affected	Electricity		
Implementing Entity	SE “Moldelectrica”		
Monitoring Entity	Ministry of Energy National Energy Regulatory Agency		
Progress indicators	Interconnector capacities		
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the implementation of the PaM			
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft) Electricity transmission network development plan for 2018-2027 period <sup>172</sup>		
Implementation cost	40 Mln EUR		
Financing source(s)	public funds and own funds		

Policy measure code:	PM_ES3	Title:	<b>A feasibility study for interconnector capacity extension</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		

<sup>171</sup> [https://moldelectrica.md/files/docs/TYNDP\\_EN.pdf](https://moldelectrica.md/files/docs/TYNDP_EN.pdf)

<sup>172</sup> [https://moldelectrica.md/files/docs/TYNDP\\_EN.pdf](https://moldelectrica.md/files/docs/TYNDP_EN.pdf)

Description:	A feasibility study will be developed for the implementation of interconnection projects (RO-MD) Smyrdan-Vulcanesti and Balti-Dnestrovsk (second stage, MD-UA). Based on the results of the analysis of the feasibility study and the expected profitability, decisions will be made on their implementation.
Implementation Timeframe	2022 – 2030
Type of measure	Research
Sectors covered/affected	Electricity
Implementing Entity	SE “Moldelectrica”
Monitoring Entity	Ministry of Energy
Progress indicators	
Other relevant Energy Union dimension(s) affected	Research
Union policy which resulted in the implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft) Electricity transmission network development plan for 2018-2027 period
Implementation cost	Under examination
Financing source(s)	State, EU and other funds, public funds and own funds

Policy measure code:	PM ES4	Title:	<b>Main gas pipeline Ungheni-Chisinau</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		
Description:	Implementation of an investment project for the development and commissioning of the Ungheni-Chisinau gas pipeline and diversification of natural gas supply sources/routes by interconnecting the existing natural gas transmission and distribution networks on the territory of the Republic of Moldova		
Implementation Timeframe	2022 – 2030		
Type of measure	Investment		
Sectors covered/affected	Gas		
Implementing Entity	LLC “VestMoldTransgaz”		
Monitoring Entity	Ministry of Energy		
Progress indicators	Interconnector capacities		
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the implementation of the PaM			
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)		
Implementation cost	92 Mln EUR		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM_ES5	Title:	<b>Development of the natural gas transmission network and the possibility of two-way connection; diversification of routes and sources of natural gas supplies</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		
Description:	An assessment of measures that could lead to better utilization of the available capacity of the Trans-Balkan Corridor, together with options for covering peaks in natural gas consumption using various routes and sources, including liquefied natural gas.		
Implementation Timeframe	2022 – 2030		
Type of measure	Research		
Sectors covered/affected	Gas		
Implementing Entity	LLC “Vestmoldtransgaz” ”		
Monitoring Entity	Ministry of Energy		
Progress indicators			
Other relevant Energy Union dimension(s) affected	Internal energy market, Research		
Union policy which resulted in the implementation of the PaM			
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)		
Implementation cost	Under examination		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM_ES6	Title:	<b>Elimination of internal restrictions in the natural gas transportation system</b>
Main objective:	Diversification of routes, reduce import dependency from a single route, and single source, increase flexibility of the national energy system		
Quantified objective:	Increased interconnection capacities		
Description:	Two options are being considered for expanding domestic capacity: the construction of the Ungheni-Balti/Drochia gas pipeline or the expansion of the Iasi-Ungheni gas transmission network in the direction of Balti/Drochia. Depending on the results of the cost-benefit analysis, one of the proposed options will be selected. Eliminating internal congestion to diversify supply sources and import routes will allow access to additional storage facilities in both Ukraine and Romania.		
Implementation Timeframe	2022 – 2030		
Type of measure	Research		
Sectors covered/affected	Gas		
Implementing Entity	LLC “Vestmoldtransgaz” ”		
Monitoring Entity	Ministry of Energy		
Progress indicators			
Other relevant Energy Union	Internal energy market, Research		

dimension(s) affected	
Union policy which resulted in the implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)
Implementation cost	Under examination
Financing source(s)	State, EU and other funds, public funds and own funds

Policy measure code:	PM_ES7	Title:	<b>Improving the process of risk assessment and emergency preparedness</b>
Main objective:	Ensure energy security		
Quantified objective:	Report on risk assessment		
Description:	Improving the process of risk assessment and emergency preparedness by updating Preventive and Emergency Action Plans in the field of electricity and gas supply. It is planned to take the necessary measures to adapt and implement Regulation (EU) 2017/1938 in relation to a measure to ensure the safety of natural gas supply and Regulation (EU) 2019/941 in relation to electricity supply.		
Implementation Timeframe	2020 – 2030		
Type of measure	Reform		
Sectors covered/affected	Gas, Electricity		
Implementing Entity	National Energy Regulatory Agency		
Monitoring Entity	Ministry of Energy		
Progress indicators			
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2017/1938 Regulation (EU) 2019/941		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Decree No. 207/2019 Energy Strategy of the Republic of Moldova until 2050 (draft)		
Implementation cost	Under examination		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM_ES8	Title:	<b>Creation of minimum reserves of natural gas</b>
Main objective:	Ability to cope with constrained or interrupted supply of an energy source, increase the flexibility of the national energy system		
Quantified objective:	Level of operational reserves by supplier and type of energy product		
Description:	Adaptation and adoption of Regulation (EU) 2022/1032 on storage requirements and minimum gas storage volumes in the part that concerns the Moldovan gas supply system.		
Implementation Timeframe	2022 – 2030		
Type of measure	Investment		
Sectors covered/affected	Gas		

Implementing Entity	JSC "Energoecom"
Monitoring Entity	National Energy Regulatory Agency
Progress indicators	Storage capacity
Other relevant Energy Union dimension(s) affected	Internal energy market
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2022/1032
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)
Implementation cost	Under examination
Financing source(s)	State, EU and other funds, public funds and own funds

Policy measure code:	PM ES9	Title:	<b>Creation of minimum oil products reserves</b>
Main objective:	Ability to cope with constrained or interrupted supply of an energy source, increase the flexibility of the national energy system		
Quantified objective:	Level of operational reserves by supplier and type of energy product		
Description:	Take the necessary measures to adapt and implement Directive 2009/119/EC of 14 September 2009 regarding the obligation of Member States to maintain a minimum level of stocks of crude oil and/or oil products.		
Implementation Timeframe	2022 – 2030		
Type of measure	Investment		
Sectors covered/affected	Oil products		
Implementing Entity			
Monitoring Entity			
Progress indicators	Storage capacity		
Other relevant Energy Union dimension(s) affected	Internal energy market		
Union policy which resulted in the implementation of the PaM	Directive 2009/119/EC		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)		
Implementation cost	Under examination		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM ES10	Title:	<b>Energy mix diversification</b>
Main objective:	Increasing domestic capacity for energy production and diversifying the energy mix		
Quantified objective:			
Description:	Installation of new renewable energy capacities, modernization of existing cogeneration plants (CHP), as well as assessment of the potential for converting waste into energy.		
Implementation Timeframe	2024 – 2030		

Type of measure	Investment
Sectors covered/affected	Gas, heat, electricity, oil products, renewables
Implementing Entity	Ministry of Energy
Monitoring Entity	Ministry of Energy
Progress indicators	Main fuel king share
Other relevant Energy Union dimension(s) affected	RES, Internal energy market,
Union policy which resulted in the implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Energy Strategy of the Republic of Moldova until 2050 (draft)
Implementation cost	Under examination
Financing source(s)	State, EU and other funds, public funds and own funds

#### *ii. Regional cooperation in this area*

Progressive development of the energy market is negatively affected by the lack of providers of balancing and system services, as well as the cross-border process of capacity allocation in accordance with European practice. Several fundamental market segments (day ahead, intraday, balancing and ancillary services) are missing and will have to be developed from scratch in the next several years. The future integration of these market segments (especially the day-ahead market) with neighboring states is another process that needs to be implemented and will significantly increase the energy security and flexibility of the Moldovan energy system.

Moreover, the Republic of Moldova also faces a separate category of challenges due to the lack of feasible long-term solutions for the integration of market participants operating in the Transnistrian region.

By joining the TCE in 2010 and becoming an EU candidate in 2022, the Republic of Moldova has clearly expressed its desire to put its energy market on an equal footing with other EU countries. Closer integration into the European electricity and gas markets would benefit by offsetting the relatively small size of the Moldovan economy and making the national energy market attractive to foreign investors. Belonging to a larger market will also reduce the cost of the capital investments required to achieve an adequate level of security. In the future, the Republic of Moldova may become part of a common EU platform for gas purchases, which will be created within the framework of the REPowerEU initiative.

The process of unbundling gas and electricity transmission system operators and applying measures and practices to ensure their independence is the cornerstone for initiating and securing market liberalization and competitive conditions, and should therefore be completed as soon as possible. In parallel, conditions will be created for TSO's to continue to comply with the requirements of EU legislation and network codes, such as the adaptation of technical rules that effectively manage cross-border flows, both predicted and emergency.



Integration with the EU market and increased cooperation with regional partners will increase competition in the national sectors of the Republic of Moldova in the field of electricity and natural gas. Currently, separation of TSOs was achieved (SE Moldelectrica and JSC Moldovagaz).

*iii. If applicable, financing measures in this area at national level, including EU support and the use of EU funds*

To implement those measures that are also part of the Energy Strategy 2050 (draft), the following budget programs/subprograms are considered<sup>173</sup>:

Policy and management in the energy sector;

Gas networks and pipelines;

Electrical networks;

Energy Efficiency and Renewable Energy;

Heating networks.

All these actions are included in the Energy Strategy of the Republic of Moldova 2050, but the list of measures and planned costs is under development.

Additionally, in order to achieve national goals and projects set in the Concept of Energy Strategy 2050, the Government will assess the possibility of attracting donors and obtaining support from development partners and investors to finance projects.

### 3.4. Dimension Internal energy market

#### 3.4.1. Electricity infrastructure

*i. Policies and measures to achieve the targeted level of **interconnectivity** as set out in point (d) of Article 4*

Some of the measures for the development of interconnectors are already described in the section “Energy security”. They also apply to this chapter. Other measures are described in the tables below.

Policy measure code:	PM_IEM1	Title:	<b>Transposition and implementation of Network Codes and EU guidelines for the electricity sector</b>
Main objective:	Maintaining security of energy supply, increasing competitiveness and ensuring that all consumers can buy energy at affordable prices		
Quantified objective:	Infrastructure, policies and measures related to market-based price formation, market integration aimed at increasing the tradeable capacity, Consumer protection and improvement of competition, regional integration.		
Description:	Being an associated party of the Energy Community, Moldova is gradually transposing		

<sup>173</sup> Energy Strategy of the Republic of Moldova until 2050 (draft)

	<p>EU documents and regulations into national legislative documents. This process has not yet been completed and is being gradually carried out.</p> <p>This measure is planned to achieve the transposition and implementation of EU network codes and guidelines for the electricity and natural gas sectors. It also includes:</p> <ul style="list-style-type: none"> <li>• Implementation of coordinated capacity calculation, cross-border capacity allocation and congestion management in accordance with applicable rules (FCA and CACM).</li> <li>• Implementation of the balancing and imbalance settlement mechanism in accordance with the applicable rules of the EU (SOGL and EBGL).</li> <li>• Ensuring the non-discriminatory access of third parties to the electricity networks. The TSO is to decide on the adoption of the Market and System Management Network Codes.</li> </ul> <p>These measures involve the development of <i>regional cooperation</i> in electricity area</p>
Implementation Timeframe	2023 – 2030
Type of measure	Reform
Sectors covered/affected	Electricity
Implementing Entity	SE “Moldelectrica”
Monitoring Entity	SE “Moldelectrica”, National Energy Regulatory Agency
Progress indicators	Developed legislative documents, agreements
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	FCA and CACM SOGL and EBGL
Relevant National Planning Document (Legal, Regulatory Acts etc.)	<ul style="list-style-type: none"> <li>• Concept of Energy Strategy until 2050 Table 2, p. 2</li> <li>• Electricity transmission network development plan for the 2018 – 2027 period</li> <li>• Law on electricity No107/2016</li> <li>• Rules of the electricity market, approved by DANRE <u>No. 283, 08/07/2020</u><sup>174</sup>;</li> <li>• Regulations on connection to power transmission networks and provision of services for the transportation and distribution of electricity, approved <u>by DANRE No. 168, 05/31/2019</u><sup>175</sup></li> <li>• Regulation on access to power transmission networks for cross-border exchange and management of congestion in the power system, approved <u>DANRE No. 424, 11/22/2019</u><sup>176</sup>;</li> </ul> <p>Capacity Allocation Agreements with TSOs of neighboring countries; TSO procedures and instructions.</p>
Implementation cost	2.5 Mln EUR
Financing source(s)	Public funds and own funds

### 3.4.2. Energy transmission infrastructure

*i. Policies and measures related to the elements set out in point 2.4.2, including, where applicable, specific measures to enable the delivery of Projects of Energy Community Interest (PECI), Projects of Mutual Interest and other key infrastructure projects*

Policy measure code:	PM_IEM2	Title:	<b>Obtaining ENTSO-E observer status SE “Moldelectrica” and then full member status</b>
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<sup>174</sup> [https://www.legis.md/cautare/getResults?doc\\_id=131508&lang=ro](https://www.legis.md/cautare/getResults?doc_id=131508&lang=ro)

<sup>175</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

<sup>176</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130369&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130369&lang=ro)

Main objective:	Implementation of the Synchronous Space Framework Agreement, Ensuring compliance with ENTSO-E requirements by TSO. Development of opportunities for participation in the European electricity market to increase the flexibility of the national power system, diversification of supply electricity
Quantified objective:	Development of opportunities for participation in the European electricity market to increase the flexibility of the national power system, diversification of supply electricity
Description:	Implementation of the section Concept of Energy Strategy of 2020, which concerns obtaining the SE “Moldelectrica” status: - SE “Moldelectrica” receives ENTSO-E observer status and then full member status. - Signing and implementation of the Synchronous Space Framework Agreement. Ensuring compliance with ENTSO-E requirements by TSO. EM2 is a precondition for the market coupling activity which is further detailed in EM6. It corresponds to a legal/regulatory action which implements of the Capacity Allocation and Congestion Management (CACM) Regulation.
Implementation Timeframe	2023 – 2030
Type of measure	Reform
Sectors covered/affected	Electricity
Implementing Entity	SE “Moldelectrica”
Monitoring Entity	SE “Moldelectrica”, ANRE
Progress indicators	Signed official documents and agreements
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	ENTSO-E requirements by TSO
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy of 2020 Table 1, p. 10. Electricity transmission network development plan for the 2018 – 2027 period Law on Electricity No. 107/2016 Rules of the electricity market, approved by DANRE No. 283, 08/07/2020 TSO procedures and instructions SE “Moldelectrica”
Implementation cost	0.5 Mln EUR
Financing source(s)	Public funds and own funds

Policy measure code:	PM IEM3	Title:	Modernization of existing networks
Main objective:	Increased system flexibility and quality of electricity supply, market integration and coupling, aiming to increase the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, increasing the volume of electricity transmitted, the implementation of intra-day and day ahead electricity transactions.		
Quantified objective:	Increased quality of supply indicators, deployment smart grids, aggregation, demand response services and distributed generation, RES connections.		
Description:	EM3 involves a set of infrastructure measures noted in the TYNDP for 2018 – 2027, as well as in the investment projects of the SE “Moldelectrica” for the development of interconnectors and the necessary internal infrastructure and networks. This measure is directed at increasing the length of electrical networks, increasing power capacity, increasing power flows, increasing operational dispatching, peak and backup capabilities, and increasing access to electrical networks. It is also planned to introduce smart grids (where it is economically feasible) and distributed generation; the development of automatic accounting systems, as well as the improvement of data management and use.		

Implementation Timeframe	2023 – 2030
Type of measure	Investment
Sectors covered/affected	Energy Security
Implementing Entity	SE”Moldelectrica” , Electricity distribution companies, renewable energy facilities
Monitoring Entity	ANRE, SE”Moldelectrica”, Electricity distribution companies
Progress indicators	The length of electrical networks, electrical capacity values, power flows values, peak and backup capacity values; number of distribution network connections with a smart meter
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC Directive (EU) 2019/944 Regulation (EU) 2019/943
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy of 2020 Table 1, p. 9, Table.3, p. 4 Electricity transmission network development plan for 2018 – 2027 period, Law on Electricity No. 107/2016 Law on RES No. 10/2016, Law on energy efficiency No. 139/2018
Implementation cost	100.0 Mln EUR <sup>177</sup>
Financing source(s)	EIB

Policy measure code:	PM_IEM4	Title:	<b>Development of the natural gas transport network and bidirectional interconnection capabilities</b>
Main objective:	Diversification of natural gas supply routes and sources		
Quantified objective:	Increased quality of supply indicators, demand response services		
Description:	This measure could lead to wider use of the available capacity of the Trans-Balkan Corridor, as well as options to cover the peaks of natural gas consumption using various routes and sources, including liquefied natural gas.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	Energy Security		
Implementing Entity	LLC “Moldovatransgaz”, LLC “VestMoldtransgaz”		
Monitoring Entity	ANRE, LLC “Moldovatransgaz”, LLC “VestMoldtransgaz”, Ministry of Energy		
Progress indicators	Increased length of gas pipelines, gas capacity values, volumes of transported gas		
Other relevant Energy Union dimension(s) affected	Energy Security		
Union policy which resulted in the implementation of the PaM	Directive 2009/73/EC Regulation (EU) 715/2009		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050 Table 1, p. 2 Natural Gas Law 108/2016 Development Plan for natural gas transport networks of LLC “VestMoldtransgaz” for the period 2022 – 2031		
Implementation cost	300.0 Mln EUR		
Financing source(s)	Own and credit funds		

<sup>177</sup> <https://www.eib.org/en/press/all/2023-145-eib-global-invests-usd30-million-to-modernise-moldova-s-electricity-distribution-grid>

Policy measure code:	PM_IEM5	Title:	<b>Creation of minimum reserves of natural gas. Exploring the possibility of building gas storage facilities (underground or terrestrial) in the Republic of Moldova</b>
Main objective:	Transposition and implementation of the proposal of the European Commission on the Decision of the Council of Ministers to integrate Regulation (EU) 2022/1032 on gas storage into TCE legislation.		
Quantified objective:	Review of previous feasibility studies, taking into account the geological and technical conditions for the construction of underground storage facilities.		
Description:	The creation of natural gas reserves makes it possible to ensure a stable gas supply to the country's enterprises and the residential sector, and to cover demand at peak loads in the event of a cold winter. The study of possible locations for gas storage facilities can be a continuation of the studies that were carried out by the Institute of Geology and the Institute of Power Engineering in previous years.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment, Research		
Sectors covered/affected	Energy Security		
Implementing Entity	"Energoecom" JSC		
Monitoring Entity	ANRE,, Ministry of Energy		
Progress indicators	Determining the location of gas storage facilities in the country, determining the available volumes of gas for storage		
Other relevant Energy Union dimension(s) affected	Energy Security		
Union policy which resulted in the implementation of the PaM	Regulation (EU) 2022/1032		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050 Table 1, p. 5 and 11 Natural Gas Law No. 108/2016 Government Decision No. 668/2022		
Implementation cost	490.0 Mln EUR		
Financing source(s)	Own and credit funds		

### 3.4.3. Market integration

Policy measure code:	PM_IEM6	Title:	<b>Increasing the transparency of energy markets</b>
Main objective:	Increase the transparency of energy markets, improve monitoring and data availability for market participants, increase system flexibility and quality of the supply of electricity and natural gas, develop market integration and coupling, increase the tradeable capacity of existing interconnectors, demand response, distributed generation, mechanisms for dispatching		
Quantified objective:	Increasing the availability of operational data regarding volumes of electricity and natural gas for transactions for market participants		
Description:	This measure is directed to increasing the transparency of energy markets and ensuring the functionality of reporting on data transparency in accordance with Decree 543/2013 on the extent of their monitoring by ANRE (Regulation on transparency) and Regulation 1227/2011 on the integrity and transparency of the wholesale energy market (REMIT) together with the adoption ANRE rules regarding the requirements for the provision of data by market participants.		
Implementation Timeframe	2023 – 2030		

Type of measure	Reform
Sectors covered/affected	Electricity, Natural Gas
Implementing Entity	Transmission system operator SE “Moldelectrica”, “Vestmoldtransgaz” LLC
Monitoring Entity	ANRE , SE “Moldelectrica”, LLC “Vestmoldtransgaz”, Ministry of Energy
Progress indicators	Increase in the number of market participants and the number of bilateral contracts for electricity and gas transactions
Other relevant Energy Union dimension(s) affected	Energy security
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC; Directive 2009/73/EC Directive (EU) 2019/944 Regulation (EU) 2019/943 Regulation (EU) 1227/2011
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050, Table 2, p. 7 DNAER No. 283, 08/07/2020 <sup>178</sup> – Rules of the electricity market; DNAER No. 168, 05/31/2019 <sup>179</sup> - Regulations on connection to power transmission networks and provision of services for the transportation and distribution of electricity; DNAER No. 424, 11/22/2019 – Regulation on access to power transmission networks for cross-border exchange and management of congestion in the power system; DNAER No. 534 <sup>180</sup> (12/27/2019) – Natural Gas Market Rules; DNAER No. 112 <sup>181</sup> (04/19/2019) (No. 673/2022); (No. 8/2023) – Regulation regarding connection to natural gas networks and the provision of natural gas transport and distribution services; DNAER No. 26 <sup>182</sup> (01/31/2023) Regulation regarding the Register of participants in the wholesale natural gas market. Law on Electricity No. 107/2016 Natural Gas Law No. 108/2016
Implementation cost	1.5 Mln EUR
Financing source(s)	EU and other funds, public funds, own funds

Policy measure code:	PM IEM7	Title:	<b>Appointment of an electricity market operator</b>
Main objective:	Appointment of a market operator to administer centralized markets that are being launched		
Quantified objective:	Increasing the volume of electricity transmitted, the growth in the number of market participants, the implementation of intra-day and day ahead electricity transactions and growth of the number of bilateral contracts		
Description:	<p>-Appointment of a market operator to administer centralized markets that are being launched, as well as perform other duties.</p> <p>-Implementation of one-day market processes: day-ahead and intraday market (according to CACM recommendations).</p> <p>EM5 is a precondition for the market coupling activity which is further detailed in EM6. It corresponds to a legal/regulatory action which implements the Capacity Allocation and Congestion Management (CACM) Regulation.</p> <p>The CACM articles in concern determine the designation of Nominated Electricity Market Operators (NEMO’s). At least one NEMO is designated in order to perform the single day-ahead and single intraday coupling.</p>		

<sup>178</sup> [https://www.legis.md/cautare/getResults?doc\\_id=131508&lang=ro](https://www.legis.md/cautare/getResults?doc_id=131508&lang=ro)

<sup>179</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

<sup>180</sup> [https://www.legis.md/cautare/getResults?doc\\_id=120439&lang=ro](https://www.legis.md/cautare/getResults?doc_id=120439&lang=ro)

<sup>181</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135447&lang=ro](https://www.legis.md/cautare/getResults?doc_id=135447&lang=ro)

<sup>182</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135727&lang=ro](https://www.legis.md/cautare/getResults?doc_id=135727&lang=ro)



Implementation Timeframe	2022 – 2030
Type of measure	Reform
Sectors covered/affected	Electricity
Implementing Entity	SE “Moldelectrica”, ANRE
Monitoring Entity	Reform
Progress indicators	Issuing of a relevant decision by ANRE, agreements and MoU’s with neighboring stakeholders
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC Directive (EU) 2019/944 Regulation (EU) 2019/943
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050 Table 2, p. 8 Law on Electricity No. 107/2016 Regulations on connection to power transmission networks and provision of services for the transportation and distribution of electricity, approved <a href="#">DANRE No. 168, 05/31/2019</a> <sup>183</sup> Regulation on access to power transmission networks for cross-border exchange and management of congestion in the power system, approved <a href="#">DANRE No. 424, 11/22/2019</a> <sup>184</sup> ; Capacity Allocation Agreements with TSO’s of neighboring countries; TSO procedures and instructions.
Implementation cost	0.5 Mln EUR
Financing source(s)	EU and other funds, public funds, own funds

Policy measure code:	PM IEM8	Title:	<b>Launch of day-ahead and intraday markets</b>
Main objective:	Integrate the market with neighboring markets, increase competition in the wholesale market, develop motivation and opportunities for market participants in electricity transactions; increase system flexibility and quality of electricity supply, market integration and coupling, increase the tradeable capacity of existing interconnectors, demand response, distributed generation, mechanisms for dispatching.		
Quantified objective:	Increase market use of the interconnectors, increase in the number of market participants, increase in the number of electricity transactions, deployment smart grids, aggregation, demand response services as well as storage and distributed generation		
Description:	Launch of day-ahead and intra-day markets in the Republic of Moldova, assuming that market integration with neighboring markets, will increase competition and provide numerous opportunities for electricity transactions, and will send positive signals and foster corresponding initiatives for market participants. This measure is aimed at participation in a single interzonal intra-day electricity market to connect the market interconnection of the energy systems of Moldova, Romania and Ukraine market coupling by introducing Net Transmission Capacity (NTC) based on capacity allocation on borders: RO-MD, MD-UA		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Electricity		
Implementing Entity	Transmission system operator SE “Moldelectrica”		

<sup>183</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

<sup>184</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130369&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130369&lang=ro)



Monitoring Entity	ANRE, SE “Moldelectrica”
Progress indicators	Day ahead market coupling go-live date
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC Directive (EU) 2019/944 Regulation (EU) 2019/943
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050, Table 2, p. 9 Regulations on connection to power transmission networks and provision of services for the transportation and distribution of electricity, approved <a href="#">DANRE No. 168, 05/31/2019</a> <sup>185</sup> Regulation on access to power transmission networks for cross-border exchange and management of congestion in the power system, approved <a href="#">DANRE No. 424, 11/22/2019</a> <sup>186</sup> ; Capacity Allocation Agreements with TSO’s of neighboring countries; Law of electricity No. 107/2016
Implementation cost	1.5 Mln EUR
Financing source(s)	EU and other funds, public funds, own funds

Policy measure code:	PM_IEM9	Title:	<b>Continued market opening and gradual liberalization of electricity and natural gas markets</b>
Main objective:	Increase the transparency of energy markets, improve monitoring and data availability for market participants, develop market integration and coupling, increase the tradeable capacity of existing interconnectors, demand response, distributed generation, mechanisms for dispatching, increase system flexibility and quality of electricity supply.		
Quantified objective:	Increased quality of supply indicators, deployment smart grids, aggregation, demand response services as well as storage and distributed generation.		
Description:	<p>This measure aims to align consumption patterns of electricity end-users in order to enable wider flexibility and optimal use of the electricity system. This measure is associated with the use of smart-meters and Internet technologies in order to send real-time price signals to end-users for demand response.</p> <p>Gradual removal of regulated prices over a reasonable period of time to be determined by ANRE after a thorough assessment of market competition and social impacts includes:</p> <ul style="list-style-type: none"> <li>• Gradual removal of regulated prices over a reasonable period of time to be determined by ANRE after assessing market competition and social impacts;</li> <li>• Assessment of conditions every two years until 2030;</li> <li>• Implementation of measures aimed at combating energy poverty.</li> </ul>		
Implementation Timeframe	2023 – 2030		
Type of measure	Reform		
Sectors covered/affected	Electricity/Natural gas		
Implementing Entity	ANRE		
Monitoring Entity	ANRE		
Progress indicators	Share of annual peak demand shifted to off-peak hours		
Other relevant Energy Union dimension(s) affected	Energy Security		

<sup>185</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

<sup>186</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130369&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130369&lang=ro)

Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC Directive (EU) 2019/944 Regulation (EU) 2019/943
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy of 2020, Table 2, p. 10 Law on Electricity No. 107/2016 Natural Gas Law No. 108/2016
Implementation cost	1.5 Mln EUR
Financing source(s)	EU and other funds, public funds, own funds

Policy measure code:	PM_IEM10	Title:	<b>Facilitating the process of changing the supplier</b>
Main objective:	Develop motivation and opportunities for market participants in electricity transactions; increase system flexibility and quality of electricity supply, market integration and the coupling, increase the tradeable capacity of existing interconnectors, demand response, distributed generation.		
Quantified objective:	Improved quality of electricity supply indicators, increased system flexibility, increased number of suppliers, increased number of contracts		
Description:	Facilitating the process of changing the supplier and creating a single data center where consumer and technical data will be stored will allow a quick change of supplier and aggregator to operate efficiently. The measure should aim at the promotion of computerization, digitalization of the collection of information about consumers and their technical data, including the designation of sensing points and forecasting tools for demand and RES, smart grids, the monitoring of quality of supply parameters.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	Electricity		
Implementing Entity	SE “Moldelectrica”, Distribution electricity Companies		
Monitoring Entity	SE “Moldelectrica”, Distribution electricity Companies, ANRE		
Progress indicators	Quality of supply indicators (e.g. SAIDI, SAIFI, ENS), the number of suppliers, the number of contracts Number of distribution network connections with a smart meter		
Other relevant Energy Union dimension(s) affected	Energy Security		
Union policy which resulted in the implementation of the PaM	Directive 2009/72/EC		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050, Table 2., p.11 Law on electricity No. 107/2016		
Implementation cost	0.5 Mln EUR		
Financing source(s)	EU and other funds, public funds and own funds		

Policy measure code:	PM_IEM11	Title:	<b>Creation of natural gas trading platforms and a capacity allocation process at interconnection points. Establishment of a compensation mechanism between TSO’s. Introduction of balancing responsibility of users of natural gas</b>
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Main objective:	Develop a common methodology with neighboring states for determining the grouped capacity at the gas interconnection points. Use of a platform for capacity reservation and trading of natural gas.
Quantified objective:	Implementation of the methodology for compensating the costs incurred and ensuring the transfer of revenues for the use of the natural gas network between the TSO's in the country.
Description:	Implementation of the methodology for calculating imbalances and of a settlement system, as well as the establishment of a proper central balancing entity. Establishing a system for sharing balancing data between TSO's.
Implementation Timeframe	2023 – 2030
Type of measure	Investment
Sectors covered/affected	Natural Gas
Implementing Entity	LLC “Vestmoldtransgaz”
Monitoring Entity	ANRE, Ministry of Energy
Progress indicators	Quality of supply indicators, the number of suppliers and contracts
Other relevant Energy Union dimension(s) affected	Energy Security
Union policy which resulted in the implementation of the PaM	Directive 2009/73/EC Regulation (EU) 2017/459 Regulation (EU) 312/2014 Regulation (EU) 2015/703
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy 2050, Table 1., p. 4,5,6 Natural Gas Law No. 108/2016 NAER decision No. 420/2019 NAER decision No. 442/2020 NAER decision No. 214/2021
Implementation cost	3.5 Mln EUR
Financing source(s)	EU and other funds, public funds and own funds

#### 3.4.4. Energy poverty

Policy measure code:	PM_IEM12	Title:	<b>Identification of appropriate social aids, adapted to the needs of vulnerable consumers</b>
Main objective:	Reducing the impact of energy crises and energy poverty		
Quantified objective:	Protecting vulnerable consumers through appropriate social aids, such as compensation for the consumption of natural gas, heat and electricity		
Description:	Further development of currently applicable measures to combat energy poverty (legal references, beneficiaries of support, brief description of measures, estimated budget used). Introducing the definition of energy poverty, identifying vulnerable consumers and designing mechanisms to actively contribute to reducing energy poverty. Establishment of public programs for thermal insulation of buildings for communities affected by energy poverty, etc.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	Residential sector		
Implementing Entity	Government		
Monitoring Entity	ANRE		
Progress indicators	Share of population's expenses for paying for fuel and energy resources from the average per capita income		
Other relevant Energy Union	Energy Security, Energy poverty		

dimension(s) affected	
Union policy which resulted in the implementation of the PaM	
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Concept of Energy Strategy of 2020, Table 5., p. 1 and 2 Law on electricity No. 107/2016, art.25 Law on consumer protection, No. 105/2013, art.28-2(e) Law on Energy Vulnerability Reduction Fund No. 241/2022, Government Decision No. 606/2022, Annex 2.
Implementation cost	2.3 Bln EUR
Financing source(s)	EU and other funds, public funds and own funds

### 3.5. Dimension Research, innovation and competitiveness

#### *i. Policies and measures including those to achieve the objectives set out in 2.5*

The functioning of the current institutional framework of the Republic of Moldova in the field of research, innovation and competitiveness is based on a series of public policy documents that ensure a clearly defined distribution of roles and responsibilities and provide tools for the implementation of the objectives set out in the strategic documents.

The national innovation system of the Republic of Moldova is regulated by several normative acts (some of which have been recently repealed, and the replacement normative acts are in the process of being drawn up):

- Code on Science and Innovation, approved in 2004 and updated in 2018 (currently the document is in process of updating and amendments should be approved by the end of 2023);
- The 2014 Education Code, updated in 2020;
- The Innovation Strategy for 2013-2020 “Innovations for competitiveness”, approved in 2013, updated in 2016 and repealed in 2019;
- Research and Development Strategy until 2020, approved in 2014 and repealed in 2019;
- The National Program in Research and Innovation for 2020 – 2023 (GD 381/2019) and Methodology for financing research and innovation projects (GD 382/2019).

In 2017 the Government initiated a vast reform of the sector, based on the reallocation of financial resources, and on the restructuring of the entire architecture of the research, development and innovation field. Thus, on February 20<sup>th</sup>, 2018, a series of amendments to the Code on Science and Innovation came into force.

According to the new version of the Code, all scientific research institutes of the Academy of Sciences of Moldova (ASM) were subordinated to the Ministry of Education and Research (MER).

The ASM was deprived of the right to be the founder of these institutes: starting with 2018, the ASM’s role became rather symbolic, its responsibility being reduced to drafting an annual report on the state of the R&D and innovation field in the country and to symbolic or consultative duties in evaluating projects or in formulating management proposals.

The Supreme Council for Science and Technological Development was dissolved, while the responsibility for developing the state policy in research and development – including formulation

of priority research and development themes or management of state programs – was transferred to the Ministry of Economy. At the same time, the Ministry of Economy was vested with the responsibility to develop state policies in innovation and technology transfer.

On theoretical level, the purpose of this institutional transfer was to ensure more efficient ways of administering and financing research and innovation, activities which are the responsibility of the MER. As a result, at the time of reform implementation, a substantial increase in allocations for financing research projects was foreseen. Other major developments stemming from the recent R&D and innovation reform included:

- transmitting the policy development functions from the ASM to the central specialized body of the state that ensures development of the national policy in research and innovation (MER);
- creation of the National Agency for Research and Development (NARD) according to the provisions of GD no. 196 of 02/28/2018, as an entity subordinated to the Government, responsible for implementing the policies;
- creation of the National Agency for Quality Assurance in Education and Research (ANACEC), according to the provisions of GD no. 201 of 02/28/2018;
- transferring the status of the founder of all public law organizations in research and innovation to the central specialized body of the state.

In order to strengthen the network of universities on a national and international level by absorbing smaller institutions, merging research institutes with universities – with the separate preservation of funding for the research field, as well as directing public spending on higher education and research towards increasing the salaries of academics and researchers, the Government implemented a new reform in 2022 in the education and research field<sup>187</sup>. According to this reform, all research institutes of the Ministry of Education and Research were merged to the different universities: Moldova State University, Technical University of Moldova, etc.

Competitions for research projects funding are organized by the National Agency for Research and Development. The proportion of institutional funding (amount of financial resources allocated from the national public budget directly to R&D and innovation institutions, i.e. higher education institutions, line ministries, etc.) in the R&D and innovation sector is currently around 40%, with the remaining 60% being allocated on the basis of competitive mechanisms for research projects.

Despite the difficulties and bottlenecks characteristic of the initial implementation period, the 2017 reform and after reform from 2022 brought the institutional and organizational architecture of the R&D and innovation closer to that of the member states of the European Union. The current system ensures separation of the duties for development and coordination of the state policy in this field, of the institutional and project-based financing, of research evaluation, selection, supervision and monitoring processes. At the theory level, the generalized conflict of interest, characteristic of the previous way of operation of this field, is avoided.

Currently, research activities are being performed in several public organizations, including:

- Technical University of Moldova, which absorbed 3 research institutions and the State Agrarian University;
- Moldova State University, which absorbed 13 research institutions and the Public Administration Academy;

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<sup>187</sup> Government Decision no.485/2022. Available at [https://www.legis.md/cautare/getResults?doc\\_id=132127&lang=ro](https://www.legis.md/cautare/getResults?doc_id=132127&lang=ro)

- Academy of Economic Studies which absorbed one research institute;
- “Ion Creangă” State Pedagogical University, which absorbed 2 research organizations and the Tiraspol State University;
- Ministry of Agriculture and Food Industry (5 institutions).

Policy measure code:	PM_RIC1	Title:	<b>Competition of Innovation and Technology Transfer Projects including the field “Environment and Climate Change”</b>
Main objective:	Promotion of Research and Innovation		
Quantified objective:	Increase the level of technological readiness in the field of energy (Qualitative objective)		
Description:	The measure will promote innovative products, elaboration and assimilation in practice of new or upgraded technologies and services within the 5 Strategic Directions including the Strategic Direction “Secure, Clean and Efficient Energy”		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All sectors		
Implementing Entity	NARD		
Monitoring Entity	Academy of science of Moldova		
Progress indicators	Number of projects		
Other relevant Energy Union dimension(s) affected	Decarbonization, Internal Energy Market		
Union policy which resulted in the implementation of the PaM	European Strategic Energy Technology Plan (SET Plan)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation		
Implementation cost	7.4 Mln EUR		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM_RIC2	Title:	<b>Improvement R&amp;D and innovation management</b>
Main objective:	Promotion of Research and Innovation		
Quantified objective:	Increase the level of technological readiness in the field of energy (Qualitative objective)		
Description:	The measure will promote development of institutional and human capacities, caused by the endemic lack of financial resources.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	The Government of Moldova Academy of Sciences of Moldova (ASM) Ministry of Education and Research (MER) National Agency for Research and Development (NARD)		
Monitoring Entity	Ministry of Education and Research		

Progress indicators	Number of PhDs, Project managers, mobilities, trainings, capacity buildings etc.
Other relevant Energy Union dimension(s) affected	Decarbonization
Union policy which resulted in the implementation of the PaM	-
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation
Implementation cost	4.6 Mln EUR
Financing source(s)	State, EU and other funds, public funds and own funds

Policy measure code:	PM_RIC3	Title:	<b>Promotion creation and operation of science and technology parks and innovation incubators</b>
Main objective:	Implementation of the Law no. 226 of 11/01/2018		
Quantified objective:	Increase the level of technological readiness in the field of energy (Qualitative objective)		
Description:	The measure will promote of innovative products, elaboration and assimilation in practice of new or upgraded technologies and services better than those used in the previous country by innovation organizations established on the basis of an association contract between legal entities and individuals, intended to develop the potential for development and implementation of innovations by small and medium-sized enterprises, as well as researchers and private inventors whose activity is carried out under a state provided facilities regime.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	The Government of Moldova The State Agency for Intellectual Property (AGEPI) The Organization for the Development of the Entrepreneurship (ODA)		
Monitoring Entity	-		
Progress indicators	Number of science and technology parks and innovation incubators		
Other relevant Energy Union dimension(s) affected	Decarbonization, Internal Energy Market		
Union policy which resulted in the implementation of the PaM	European Strategic Energy Technology Plan (SET Plan)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation		
Implementation cost	210.0 Mln EUR <sup>188</sup>		
Financing source(s)	State, EU and other funds, public funds and own funds		

<sup>188</sup> <https://www.mold-street.com/?go=news&n=14978>



Policy measure code:	PM_RIC4	Title:	<b>Establishment, involving and networking of intermediate bodies associated with the flow of information, management, technology and funding for technologies transfer</b>
Main objective:	Promotion of Research and Innovation		
Quantified objective:	Increase the level of technological readiness in the field of energy (Qualitative objective)		
Description:	The measure will encourage the (further) establishment of intermediate bodies associated with the flow of information, management, technology and funding that will provide infrastructural and professional services to the subjects of the innovation activity, in terms of networking, as well as development, designing and fast utilization of new technologies.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	The Government of Moldova The State Agency for Intellectual Property (AGEPI) The Organization for the Development of the Entrepreneurship (ODA)		
Monitoring Entity	-		
Progress indicators	Number of new joint projects		
Other relevant Energy Union dimension(s) affected	Decarbonization, Internal Energy Market		
Union policy which resulted in the implementation of the PaM	European Strategic Energy Technology Plan (SET Plan)		
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation		
Implementation cost	1.8 Mln EUR		
Financing source(s)	State, EU and other funds, public funds and own funds		

Policy measure code:	PM_RIC5	Title:	<b>Promotion of Smart Specialization</b>
Main objective:	Promotion of Research and Innovation		
Quantified objective:	Development of innovative products		
Description:	This measure will encourage private business to develop their activities on innovative basis and become more competitive on the market. The connection between business, scientists, Government and civil society is expected to be stronger. In Moldova 4 sectors were identified with high potential to apply for smart specialization: IT, energy, health and agricultural sectors.		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		
Sectors covered/affected	All NECP subject fields		
Implementing Entity	The Government of Moldova NARD Ministry of Education and Research		
Monitoring Entity	Ministry of Education and Research		

Progress indicators	Number of new joint projects
Other relevant Energy Union dimension(s) affected	Decarbonization, Internal Energy Market
Union policy which resulted in the implementation of the PaM	European Strategic Energy Technology Plan (SET Plan)
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation
Implementation cost	18.4 Mln EUR
Financing source(s)	State, EU and other funds, public funds and own funds

*ii. Cooperation with other Member States in this area, including information on how the SET Plan objectives and policies are being translated to a national context*

The following cooperation mechanisms with other Member States will be implemented to support research and development in the energy sector of the Republic of Moldova.

Policy measure code:	PM_RIC6	Title:	<b>Support the cooperation between other Member States in the technology transfer and exploitation of research results</b>
Main objective:	Promotion of Research and Innovation		
Quantified objective:	Increase the level of technological readiness in the field of energy (Qualitative objective)		
Description:	<p>The following cooperation mechanisms will be implemented to support research and development in the energy sector of the Republic of Moldova.</p> <ul style="list-style-type: none"> <li>– Creation of Advanced Electricity Storage Technologies R&amp;D Program;</li> <li>– Creation of Advancing Renewables R&amp;D Program;</li> <li>– Establishment of Better Buildings Initiatives, Accelerators and Support Programs;</li> <li>– Establishment of Bioenergy Research Centers;</li> <li>– Implementation of Deep Retrofit Pilot Programs;</li> <li>– Implementation of Electric Vehicles R&amp;D Programs;</li> <li>– Development of Energy Efficiency Grants Mechanisms;</li> <li>– Co-funding for business-led research partnerships for new technologies;</li> <li>– Funding for low GHG vehicle technologies research, development, demonstration and deployment;</li> <li>– Support of Green Aviation R&amp;D;</li> <li>– Heat Pump Support Programs;</li> <li>– Participation in Horizon Europe Program;</li> <li>– Development of the National Hydrogen Strategy;</li> <li>– Joint Research Programs with Tertiary Institutions;</li> <li>– Adoption of National Strategy/Program for Energy Research;</li> <li>– Promotion of Education, Research and Innovation for Energy Technologies;</li> <li>– Public Funding for Innovative Renewable R&amp;D projects;</li> <li>– Public-Private Partnership Mechanisms in Energy R&amp;D;</li> <li>– Establishment of Technology Commercialization Fund</li> </ul>		
Implementation Timeframe	2023 – 2030		
Type of measure	Investment		

Sectors covered/affected	All NECP subject fields
Implementing Entity	The Government of Moldova Ministry of Energy Academy of Sciences of Moldova (ASM) Ministry of Education and Research (MER) National Agency for Research and Development (NARD)
Monitoring Entity	-
Progress indicators	Number of new joint projects
Other relevant Energy Union dimension(s) affected	Decarbonization, Internal Energy Market
Union policy which resulted in the implementation of the PaM	European Strategic Energy Technology Plan (SET Plan)
Relevant National Planning Document (Legal, Regulatory Acts etc.)	Code of the Republic of Moldova on Science and Innovation
Implementation cost	5.5 Mln EUR
Financing source(s)	State, EU and other funds, public funds and own funds

*iii. If applicable, financing measures in this area at national level, including EU support and the use of EU funds*

The Republic of Moldova fully supports participation in joint research programs and has assumed by law<sup>189</sup> the obligation to allocate the financial contribution in accordance with Article 7 of Regulation no. 1291/2013/EU.

### **Horizon Europe Programme**

The Republic Moldova recognizes as of high importance its participation in the Horizon Europe research Program. In this regard, Moldova signed an Agreement with UE regarding its participation in this research and innovation framework program and expressed its readiness to pay a contribution calculated in accordance with the rules of this program.

### **Horizon 2020**

The Republic of Moldova is the first state within the Eastern Partnership, which signed on July 1<sup>st</sup>, 2014 the agreement on participation in the European Union Framework Program for Research and Innovation – Horizon 2020. This program opens new opportunities for the scientific and research environment in Moldova, which brings it closer to EU standards on the path towards economic development through innovation.

In order to capitalize on the status of a country associated with the Horizon 2020 Program, the institutional capacities were developed by establishing the Network of National Contact Points, the functioning of the Office for Science and Technology was ensured alongside the European

<sup>189</sup> Law no.142-2014, [https://www.legis.md/cautare/getResults?doc\\_id=21502&lang=ro](https://www.legis.md/cautare/getResults?doc_id=21502&lang=ro)

Union, the promotion of the EURACCESS program and the organization of the information campaign regarding the opportunities to participate in the Horizon 2020 program.

### **Erasmus+**

Erasmus+ brings together seven EU programs in the field of education, training and youth. Being an integrated program, Erasmus+ offers more possibilities for intersectoral cooperation in these fields. In the first call for applications of the new Erasmus + Program (launched in March 2014), the Republic of Moldova, as well as the Eastern Partnership countries, was eligible to participate in certain actions of the new Program, namely: the Jean Monnet Program and the Joint Master's Program.

In 2015, educational institutions in the Republic of Moldova had access to 2 other new actions of the Erasmus + Program, these being Credit Mobility (KA1) and Capacity building (KA2).

In 2015, the implementation of 4 Jean Monnet projects and 17 TEMPUS projects from previous calls continued, for a total amount of 17.5 Mln EUR.

The implementation of the e-Twinning program has expanded both quantitatively and qualitatively: 89 registered schools (including 13 registered in 2015), 170 registered teachers (38 registered in 2015) and 242 active projects.

In order to facilitate the establishment of the Free Trade Zone and the development and increase of the competitiveness of the entrepreneurial sector, on September 29<sup>th</sup>, 2014, in Brussels, an Agreement was signed on the participation of the Republic of Moldova in the Program for the Competitiveness of Small and Medium-sized Enterprises 2014-2020 (COSME), Moldova becoming the first country from the Eastern Partnership to join this EU Program. Thus, Moldovan entrepreneurs benefit from support in facilitating access to European markets, as well as from support for business promotion.

### **The Romania – Republic of Moldova ENI CBC Program 2014-2020**

The Romania – Republic of Moldova ENI CBC Program 2014-2020 aims to enhance economic development and to improve the quality of life of the people in the program area through joint investments in education, economic development, culture, cross border infrastructure and health while ensuring the safety and security of the citizens in the two countries.

#### ***The Program focuses on the following priorities:***

- Support to education, research, technological development and innovation
- Institutional cooperation in the educational field for increasing access to education and quality of education
- Promotion and support for research and innovation
- Promotion of local culture and preservation of historical heritage
- Improvement of accessibility to the regions, development of sustainable and climate-proof transport and communication networks and systems

- Development of cross border transportation infrastructure and ICT infrastructure
- Common challenges in the field of safety and security
- Support to the development of health services and access to health
- Support to joint activities for the prevention of natural and man-made disasters as well as joint actions during emergency situations
- Prevention and fight against organized crime and police cooperation

Most of funding priorities mentioned above are supporting researches and innovation. The organizations applying to this program need to ensure co-financing of 10% of project costs.

## SECTION B: ANALYTICAL BASIS

### 4. CURRENT SITUATION AND PROJECTIONS WITH EXISTING POLICIES AND MEASURES

#### 4.1. Projected evolution of main exogenous factors influencing energy system and GHG emission developments

##### *i. Macroeconomic forecasts (GDP and population growth)*

##### **Population growth**

The of average annual population in the Republic of Moldova is represented in Table 31. It shows that overall population numbers have decreased from 2015 to 2019 with average annual reduction rate of minus 1.48%. There is a slightly lower decrease of population from 2021 with average annual reduction rate of minus 0.37%. Using negative growth rates for population over a 5-year period, simulations performed in TIMES-Moldova yield to an annual decrease rate of 0.52% in 2030 and an annual decrease rate of 0.85% in 2050.

*Table 31. Projections of population evolution in the Republic of Moldova until 2050*

YEAR	POPULATION (THOUSAND)	ANNUAL GROWTH (%)
2015	2845	0.00%
2016	2804	-1.45%
2017	2763	-1.47%
2018	2721	-1.49%
2019	2680	-1.52%
2020	2680	0.00%
2021	2670	-0.37%
2022	2660	-0.37%
2023	2650	-0.37%
2024	2640	-0.38%
2025	2630	-0.38%
2026	2617	-0.51%
2027	2604	-0.51%
2028	2590	-0.51%
2029	2577	-0.51%
2030	2564	-0.52%
2035	2482	-0.65%
2040	2386	-0.79%
2045	2290	-0.81%
2050	2194	-0.85%

Following a decrease of population, the number of households is also decreasing and the number of persons per household is decreasing. The Moldovan National Statistics Bureau provides statistical yearbooks containing complete data on population per household and number of dwellings. Table 32 below shows the values of persons per household projected until 2050:

*Table 32. Projections of number of persons per household in the Republic of Moldova until 2050*

YEAR	URBANISATION (% OF POPULATION IN URBAN AREAS)	NUMBER OF PERSONS PER HOUSEHOLD	NUMBER OF DWELLINGS (000)
2015	0.42	2.90	981
2016	0.43	2.90	967
2017	0.43	2.90	953
2018	0.43	2.88	944
2019	0.43	2.87	935
2020	0.43	2.85	940
2021	0.44	2.84	939
2022	0.44	2.83	939
2023	0.44	2.82	939
2024	0.44	2.81	939
2025	0.44	2.80	938
2026	0.45	2.79	937
2027	0.45	2.78	936
2028	0.45	2.77	934
2029	0.45	2.76	933
2030	0.45	2.75	932
2035	0.46	2.70	919
2040	0.48	2.65	900
2045	0.49	2.60	881
2050	0.50	2.55	860

## GDP Growth

Projections of the annual GDP in the Republic of Moldova until 2050 are shown in the Table 33 here below.

The average annual GDP growth has been of 6.5% during the 2015 – 2020 period; the value of 4% annual growth has been used in TIMES-Moldova to project the economic growth by 2050.



Table 33. Projections of GDP in constant and current prices for the period 2015 – 2050

YEAR	REAL GDP (MLN USD)	REAL GDP (USD) PER CAPITA	GDP, %	GDP PER CAPITA, %
2015	7,948	2,794		
2016	8,465	3,019	6.50%	8.07%
2017	9,015	3,263	6.50%	8.09%
2018	9,601	3,528	6.50%	8.11%
2019	10,225	3,815	6.50%	8.14%
2020	9,990	3,727	-2.30%	-2.30%
2021	10,879	4,074	8.90%	9.31%
2022	11,314	4,253	4.00%	4.39%
2023	11,766	4,440	4.00%	4.39%
2024	12,237	4,635	4.00%	4.39%
2025	12,727	4,838	4.00%	4.39%
2026	13,236	5,058	4.00%	4.53%
2027	13,765	5,287	4.00%	4.53%
2028	14,316	5,527	4.00%	4.53%
2029	14,888	5,777	4.00%	4.54%
2030	15,484	6,040	4.00%	4.54%
2035	18,838	7,590	4.00%	4.68%
2040	22,920	9,607	4.00%	4.83%
2045	27,886	12,175	4.00%	4.85%
2050	33,927	15,462	4.00%	4.90%

ii. Sectorial changes expected to impact the energy system and GHG emissions

Table 34 here below shows the historic and forecasted Value added per sector of economic activity in Moldova. Cement production has the highest contribution to value added of GDP of Moldova, of 1200 Bln MDL in 2015, and it is expected to have the same value until 2050. The sectors “Food, drinks and tobacco” and “Non-metallic minerals” are the second and third *ex-aequo* largest sectors contributing with a Value added to the GDP of Moldova with about 100 Bln MDL in 2015, their forecasted increased values in 2050 are of 123 and, respectively, 142 Bln MDL. The Transport sector has a modest contribution to the GDP, however it is the sector with the highest growth, from 12 Bln MDL in 2015 to 54 Bln MDL in 2050.

**Table 34. Projections of Value Added of GDP per sector in the Republic of Moldova for the period 2015 – 2050**

YEAR	VA AGRICULTURE (BILLION MDL)	000 M2 OF BUILDINGS	VA TRANSPORT SECTOR (BILLION MDL)	VA INDUSTRY (BILLION MDL)	VOLUME INDICES OF INDUSTRIAL PRODUCTION: NON METALLIC MINERALS	VOLUME INDICES OF INDUSTRIAL PRODUCTION: FOOD, DRINK AND TOBACCO	CEMENT PRODUCTION, BLN MDL
2015	30	13,435	12	17	100	100	1,200
2016	31	13,469	12	17	101	101	1,200
2017	34	13,504	12	17	101	102	1,200
2018	33	13,538	14	18	102	103	1,200
2019	32.5	13,572	16.2	18.9	102	104	1,200
2020	31.8	13,607	15.8	18.5	103	105	1,200
2021	34.6	13,619	17.2	20.1	104	106	1,200
2022	35	13,630	18	22	104	107	1,200
2023	36	13,641	19	23	105	108	1,200
2024	37	13,653	19	24	106	109	1,200
2025	38	13,664	20	26	106	110	1,200
2026	39	13,670	21	27	107	112	1,200
2027	40	13,676	22	28	107	113	1,200
2028	42	13,682	23	29	108	114	1,200
2029	43	13,687	24	30	109	115	1,200
2030	44	13,693	24	31	109	116	1,200
2035	51	13,722	30	38	113	122	1,200
2040	59	13,751	36	46	116	128	1,200
2045	69	13,779	44	56	120	135	1,200
2050	80	13,808	54	68	123	142	1,200

Table 35 below represents a summary of projections of key drivers of the energy system up to the year 2050.

Table 35. Projections of drivers used in the scenarios up to the year 2050

Driver	2015	2020	2025	2030	2035	2040	2045	2050	Comments
Population (000)	2,845	2,680	2,630	2,564	2,482	2,386	2,290	2,194	Medium Projection for the Right Bank of the Dniester River from the United Nations Department of Economic and Social Affairs/Population Division -World Population Prospects: The 2017 Revision, Key Findings and Advance Tables
Urbanisation (% of population in urban areas)	0.42	0.43	0.44	0.45	0.46	0.48	0.49	0.50	Statistics Yearbook 2017
Number of Persons per household	2.90	2.85	2.80	2.75	2.70	2.65	2.60	2.55	<a href="http://statistica.gov.md/newsview.php?l=en&amp;id=5583&amp;idc=168">http://statistica.gov.md/newsview.php?l=en&amp;id=5583&amp;idc=168</a>
Number of Dwellings (000)	981	940	938	932	919	900	881	860	
Real GDP (mil USD)	7,948	9,990	12,727	15,484	18,838	22,920	27,886	33,927	Updated in 2020 for the short term (until 2023)
Real GDP (USD) per Capita	2,794	3,727	4,838	6,040	7,590	9,607	12,175	15,462	
Value Added Agriculture (billion MDL)	30	31.8	38	44	51	59	69	80	Updated in 2020. Growing at 3% per year after 2025
Area (000 m2) of Buildings	13,435	13,607	13,664	13,693	13,722	13,751	13,779	13,808	This is for commercial and public buildings.
Value Added Transport Sector (billion MDL)	12	15.8	20	24	30	36	44	54	
Value Added Industry (billion MDL)	17	18.5	26	31	38	46	56	68	Last update: 2020
Volume index of industrial production: Non metallic minerals	100	103	106	109	113	116	120	123	Index
Volume index of industrial production: Food, drink and tobacco	100	105	110	116	122	128	135	142	Index
Cement Production (ktons)	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	Physical output

Projections of the transport sector activity per scenario is represented in Table 36 below. Activity of both scenarios WEM and WPM are considered the same for all transport sector activities, except for two. The “Rail freight” sector is projected to increase from 990 Million tons-kilometers (Mtnkm) in 2020 to 2634 Mtnkm in 2050 in the WEM scenario, and to 7521 Mtnkm in the WPM scenario. The “Road Freight HDV” sector is projected to increase from 1530 Mtnkm in 2020 to 8144 Mtnkm in 2050 in the WEM scenario, and to 3257 Mtnkm in the WPM scenario. These increases are expected to be caused by the shift from road to railway transport of goods.

*Table 36.* Projections of activities of transport sectors per scenario for the period 2020 – 2050

	<b>unit</b>	<b>Scenario</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>Rail freight</b>	Mtnkm	WEM	990.7101	1202.4737	1406.7241	1645.6682	1925.1991	2252.2106	2634.7679
<b>Rail freight</b>	Mtnkm	WPM	990.7101	1202.4737	2874.0611	3967.7829	5102.0914	6283.8807	7521.2156
<b>Rail passenger</b>	Mpgkm	WEM	120.5748	122.7005	124.3262	125.3235	125.5895	125.7618	125.7618
<b>Rail passenger</b>	Mpgkm	WPM	120.5748	122.7005	124.3262	125.3235	125.5895	125.7618	125.7618
<b>Road Freight HDV</b>	Mtnkm	WEM	3678.7091	4305.7642	4891.1232	5556.0603	6311.3942	7169.4140	8144.0796
<b>Road Freight HDV</b>	Mtnkm	WPM	3678.7091	4305.7642	3423.7862	3233.9457	3134.5018	3137.7439	3257.6318
<b>Road Freight LDV</b>	Mtnkm	WEM	1530.2273	1748.2141	1947.3154	2169.0921	2416.1265	2691.2953	2997.8026
<b>Road Freight LDV</b>	Mtnkm	WPM	1530.2273	1748.2141	1947.3154	2169.0921	2416.1265	2691.2953	2997.8026
<b>Road Busses</b>	Mpgkm	WEM	3833.7238	3916.6802	3973.8111	4005.6887	4013.1273	4017.9444	4017.9428
<b>Road Busses</b>	Mpgkm	WPM	3833.7238	3916.6802	3973.8111	4005.6887	4013.1273	4017.9444	4017.9428
<b>Road Moto</b>	Mpgkm	WEM	223.8394	246.6045	266.7274	288.4924	312.0334	337.4953	365.0349
<b>Road Moto</b>	Mpgkm	WPM	223.8394	246.6045	266.7274	288.4924	312.0334	337.4953	365.0349
<b>Road Private Car</b>	Mpgkm	WEM	9863.0777	10976.9919	11849.4545	12691.3172	13592.9915	14558.7265	15593.0737
<b>Road Private Car</b>	Mpgkm	WPM	9863.0777	10976.9919	11849.4545	12691.3172	13592.9915	14558.7265	15593.0737

## iii. Global energy trends, international fossil fuel prices, EU ETS carbon price

Table 37. Projected evolutions of fuel prices up to the year 2050 (EUR2020)

EUR2020	Oil			Gas (NCV)		Coal	
	€/GJ	€/toe	€/boe	€/GJ	€/toe	€/GJ	€/toe
2018*	10,9	454	62	7,8	325	3,0	126
2019*	10,2	425	58	4,5	189	2,1	87
2020*	6,4	268	37	3,1	130	1,6	67
2021*	10,5	438	60	15,1	634	3,8	157
2022	15,4	643	88	33,2	1391	5,3	220
2023	15,4	643	88	24,0	1005	4,2	176
2024	15,4	643	88	14,6	611	3,2	132
2025	15,4	643	88	13,2	554	3,1	128
2030	15,4	643	88	11,3	473	3,1	130
2035	15,4	643	88	11,3	473	3,1	131
2040	16,3	680	93	11,3	473	3,3	139
2045	17,6	738	101	11,3	473	3,5	146
2050	19,7	824	112	11,8	494	3,7	153

Source: Recommended parameters for reporting on GHG projections in 2023 (EC)

\* - historical data

Based on the above, the electricity import prices are estimated in the Figure 21 below, (EUR/kWh)

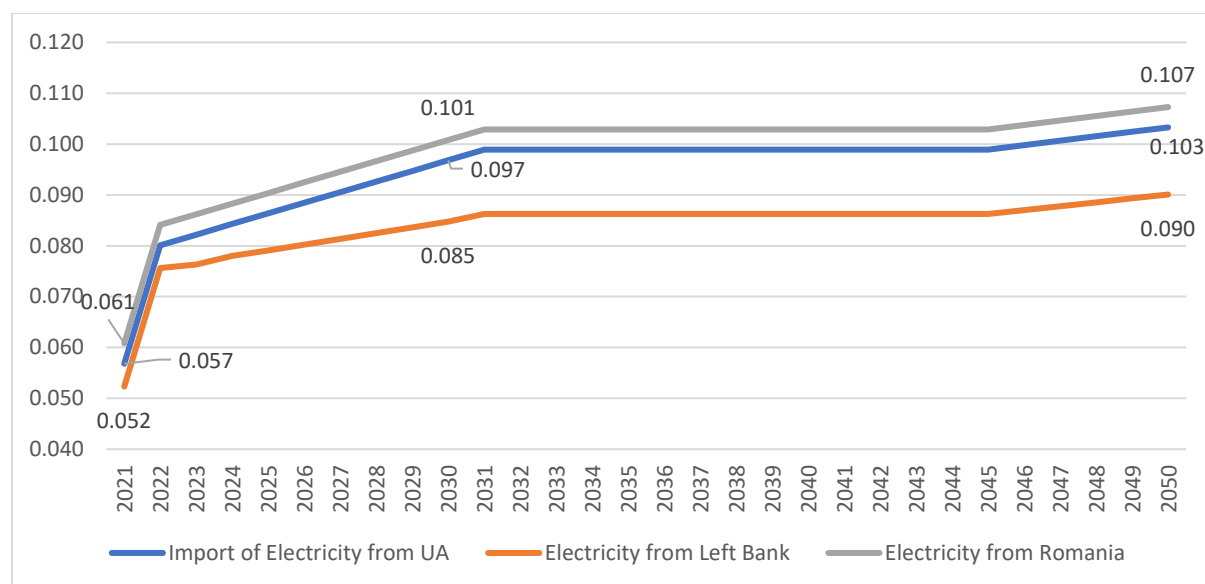


Figure 21. Projections of import electricity prices by sources up to the year 2050

#### iv. Technology cost developments

TIMES-Moldova contains a database of new technology options for each demand that represent a set of data based on IEA data. Advanced technology options are restricted in the baseline scenario, then CO<sub>2</sub> mitigation measures incentivize use of new technologies.

## 4.2. Dimension Decarbonization

### 4.2.1. GHG emissions and removals

#### i. Trends in current GHG emissions and removals in the EU ETS, Effort Sharing Regulation and LULUCF sectors and different energy sectors

The Republic of Moldova is not part of the EU ETS, yet. For the time being, there are no shared activities related to GHG emissions and removals.

The 5<sup>th</sup> National Communication<sup>190</sup> of Moldova to the UNFCCC (submitted in 2023) provides an overview of GHG emission trends for the period 1990 – 2020. Data provided shows that 1990 level emissions were of 45.591 Mt CO<sub>2</sub>eq. Due to the breakup of the economic system of the Soviet period, emissions started to fall sharply. In 2020, GHG emissions amounted to 13.662 Mt CO<sub>2</sub>eq (excluding the LULUCF sector). However, the trend of emissions is increasing on a yearly basis which is shown in the following table. The following table presents the GHG emission trends disaggregated by sector for the period 1990 – 2020. Data are presented for the Scenario with existing measures (WEM) and for the Scenario with additional measures (WPM).

It is noteworthy that LULUCF emissions have been consistently negative (i.e. this sector is a GHG sink), and that emissions associated with energy have risen steeply since 2005.

**Table 38. GHG emission trends per sector including LULUCF for the period 1990 – 2020, in kt CO<sub>2</sub>eq**

	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035
<b>WEM</b>										
<b>Energy</b>	36,992.90	12,391.30	6,940.90	8,836.50	9,496.40	9,119.60	9,549.90	8,502.60	8,490.30	9,083.20
<b>IPPU</b>	1,605.20	456.7	315.8	573.1	561.2	765.1	998.8	1,134.90	1,173.00	1,205.70
<b>Agriculture</b>	5,076.70	3,173.40	2,136.20	2,063.20	1,803.70	1,701.20	1,546.40	1,784.00	1,806.50	1,829.10
<b>LULUCF (Net removals)</b>	-1,657.50	-2,031.10	-2,123.30	-1,667.50	-1,228.20	-1,181.90	-3.5	-886.2	-1,779.70	-3,291.90
<b>Waste</b>	1,573.50	1,637.30	1,573.90	1,478.50	1,501.50	1,423.20	1,566.60	1,504.40	1,473.70	1,434.50
<b>Total (including LULUCF)</b>	<b>43,590.90</b>	<b>15,627.60</b>	<b>8,843.40</b>	<b>11,283.70</b>	<b>12,134.70</b>	<b>11,827.30</b>	<b>13,658.20</b>	<b>12,039.70</b>	<b>11,163.80</b>	<b>10,260.70</b>
<b>Total (excluding LULUCF)</b>	<b>45,248.40</b>	<b>17,658.70</b>	<b>10,966.70</b>	<b>12,951.30</b>	<b>13,362.80</b>	<b>13,009.20</b>	<b>13,661.70</b>	<b>12,925.90</b>	<b>12,943.50</b>	<b>13,552.50</b>
<b>WPM</b>										
<b>Energy</b>	36,992.90	12,391.30	6,940.90	8,836.50	9,496.40	9,119.60	9,549.90	8,109.10	7,724.50	8,476.30
<b>IPPU</b>	1,605.20	456.7	315.8	573.1	561.2	765.1	998.8	1,053.10	1,063.40	1,064.70

<sup>190</sup> The 5<sup>th</sup> National Communication of the Republic of Moldova to UNFCCC, submitted on March 1<sup>st</sup>, 2023<sup>190</sup>. Available at: <https://unfccc.int/documents/627100>.

	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035
<b>Agriculture</b>	5,076.70	3,173.40	2,136.20	2,063.20	1,803.70	1,701.20	1,546.40	1,743.10	1,754.60	1,762.30
<b>LULUCF (Net removals)</b>	-1,657.50	-2,031.10	-2,123.30	-1,667.50	-1,228.20	-1,181.90	-3.5	-921.1	-2,793.50	-5,540.40
<b>Waste</b>	1,573.50	1,637.30	1,573.90	1,478.50	1,501.50	1,423.20	1,566.60	1,464.80	1,129.30	939.4
<b>Total (including LULUCF)</b>	<b>43,590.90</b>	<b>15,627.60</b>	<b>8,843.40</b>	<b>11,283.70</b>	<b>12,134.70</b>	<b>11,827.30</b>	<b>13,658.20</b>	<b>11,449.10</b>	<b>8,878.40</b>	<b>6,702.40</b>
<b>Total (excluding LULUCF)</b>	<b>45,248.40</b>	<b>17,658.70</b>	<b>10,966.70</b>	<b>12,951.30</b>	<b>13,362.80</b>	<b>13,009.20</b>	<b>13,661.70</b>	<b>12,370.20</b>	<b>11,671.80</b>	<b>12,242.80</b>

Source: Republic of Moldova's Fifth National Communication to the UNFCCC, submitted on March 1<sup>st</sup>, 2023.

ii. Projections of sectorial developments with existing national and EU policies and measures at least until 2040 (including for the year 2030)

The Republic of Moldova has developed the TIMES model in order to forecast future GHG emissions from the energy sector. Emission projections from the ATULBD have been incorporated to provide the table below outlining projected emissions in the WEM scenario versus the WPM scenario. Projections for non-energy related sectors for 2030 were established as part of the 5<sup>th</sup> National Communication of Moldova to UNFCCC. Projections for the year 2050 are a result of extension of trends for non-energy sectors. For the energy sector, modelling using TIMES was carried out through 2050 using assumptions as described in Section 4.1 and in the measure descriptions in Annex II.

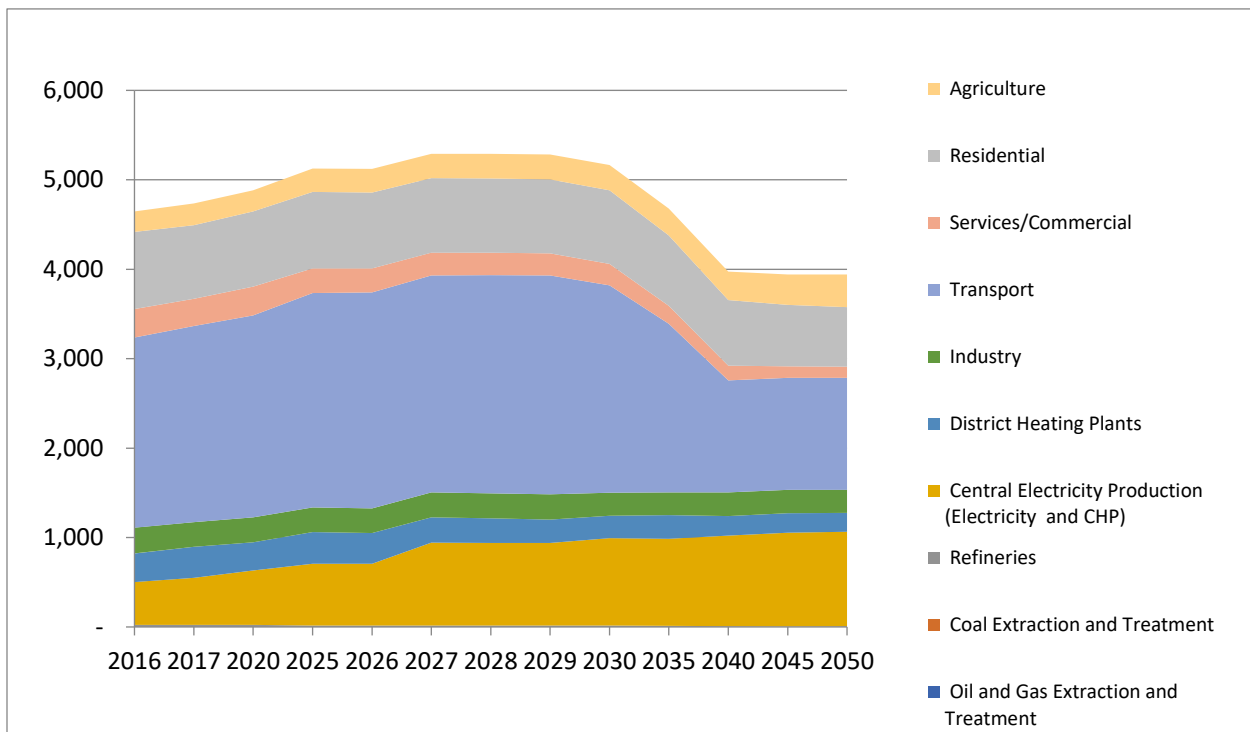


Figure 22. Projections of GHG emissions in the WPM scenario up to the year 2050, in kt CO<sub>2</sub>eq



Absolute and relative values of projected GHG emissions are included in the tables below.

**Table 39. GHG emissions for the period 2020 – 2050 in both scenarios, in kt CO<sub>2</sub>eq**

GHG Emissions – kt CO <sub>2</sub> eq	2020	2025	2030	2035	2040	2045	2050
WEM	4,896	5,115	5,185	4,965	4,894	4,955	4,990
WPM	4,896	5,139	5,179	4,692	3,988	3,956	3,955

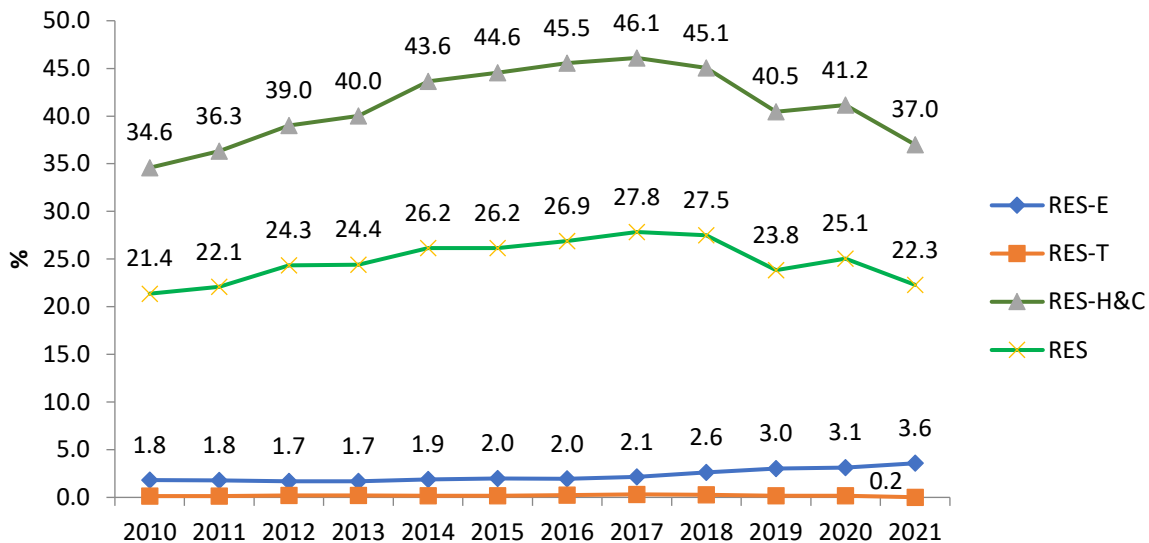
**Table 40. Projections of GHG emissions change compared to 2016, in %**

GHG Emissions, in % Change, compared to 2016	2020	2025	2030	2035	2040	2045	2050
WEM	5%	10%	11%	7%	5%	6%	7%
WPM	5%	10%	11%	1%	-14%	-15%	-15%

#### 4.2.2. Renewable energy

*i. Current share of renewable energy in gross final energy consumption and in different sectors (heating and cooling, electricity and transport) as well as per technology in each of these sectors*

According to the latest public information available, Moldova recorded in 2021 a 22.3% share of renewable energy in the gross final consumption, this indicator recording a maximum of 27.8% in 2017. This trend was also recorded in the heat sector, the maximum share of 46.1% was recorded in 2017 and decreased to 37% in 2021. The share of electricity from RES continuously increased from 1.8% in 2010 to 3.6% in 2021. The share of RES in the transport sector is less than 0.1% (Figure 23).



*Figure 23. Current share and trends in the renewable energy, by sector*

Source: Energy Efficiency Agency ([www.aee.md](http://www.aee.md))

## Renewable electricity

Internal sources of electricity production are urban heating power plants of S.A. "Termoelectrica" and S.A. "CET Nord", which provided 71.8% (611.6 Mln kWh) of the total amount of electricity generated by domestic producers. Wind power plants provide 16.8% (143 Mln kWh) of the domestically generated electricity, photovoltaic power plants provide 3.6% (30.3 Mln kWh), the biogas-based power plants provide 2.8% (23.6 Mln kWh), and the heating power plants of the sugar factories provide 0.2% of the amount of electricity produced locally. SE "Costești Hydropower Node" generates 4.8% of the amount of electricity produced internally (Figure 24).

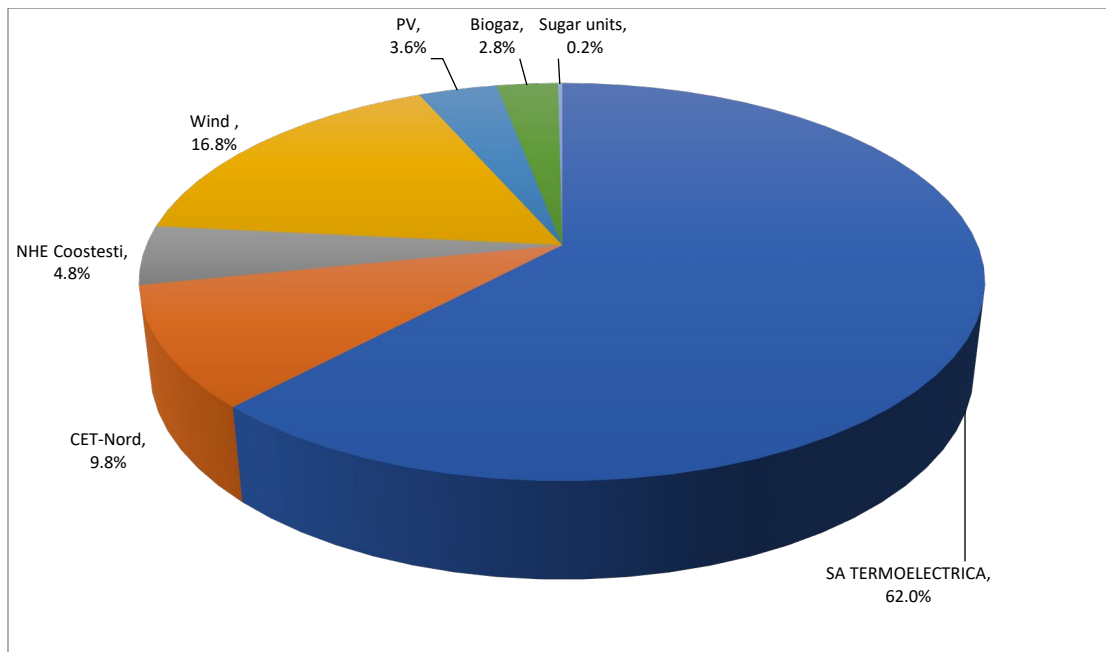


Figure 24. Structure of electricity production in the Republic of Moldova, in 2022, %

The total amount of electricity generated by installations using renewable sources, the owners of which benefit from the support scheme, except for the SE "Costești Hydro-Energy Node" and the producers who sell electricity at negotiated prices, in 2022 constituted 196.3 million kWh (Table 41), which represents an increase of about 68.5% compared to 2021<sup>191</sup>.

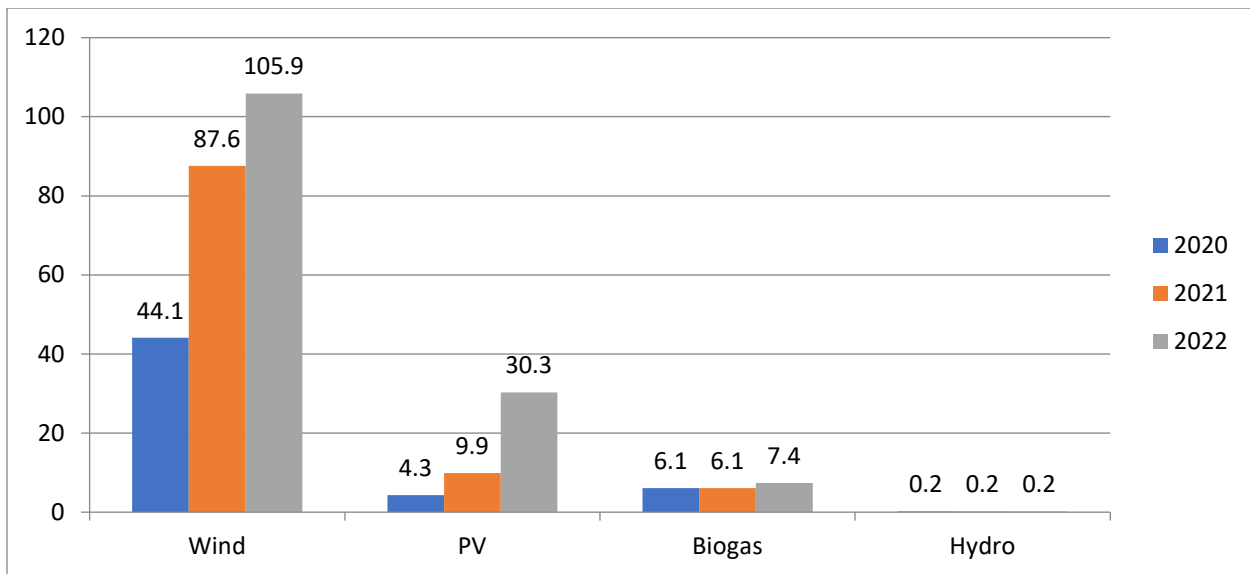
<sup>191</sup> ANRE Activity Report 2022. Available at <https://anre.md/raport-de-activitate-3-10>

**Table 41. Production of electricity from renewable energy sources in the period 2016 – 2022**

	Production of renewable electricity, thousand kWh						
	2016	2017	2018	2019	2020	2021	2022
PV installations	1,311	1,509	1,457	1,437	3,275	7,764	30,297
Biogas installation	14,030	21,576	27,961	28,748	27,793	32,239	23,567
Wind installations	2,477	7,066	21,968	36,915	50,138	76,310	142,373
Small hydro		38	279	330	147	239	96
<b>TOTAL</b>	<b>17,818</b>	<b>30,189</b>	<b>51,665</b>	<b>67,430</b>	<b>81,353</b>	<b>116,552</b>	<b>196,333</b>

Of the total amount of electricity generated from renewable sources, the largest share is electricity generated using wind potential (72.5%), followed by electricity produced from solar energy (15.4%), electricity produced from biogas (12.0%), the lowest share being that of electricity produced by hydropower plants<sup>192</sup>: less than one percent.

The total installed power of RES generation capacities in 2022 was 143.8 MW, which is an increase of about 40 MW or 38.5% more than in 2021 (Figure 25). Thus, the dynamics of installed capacities taking into account the applied technology indicates that in 2022 the capacity of installations using solar potential has practically tripled. At the same time, the power of installations operating on the basis of hydropower potential remained unchanged.

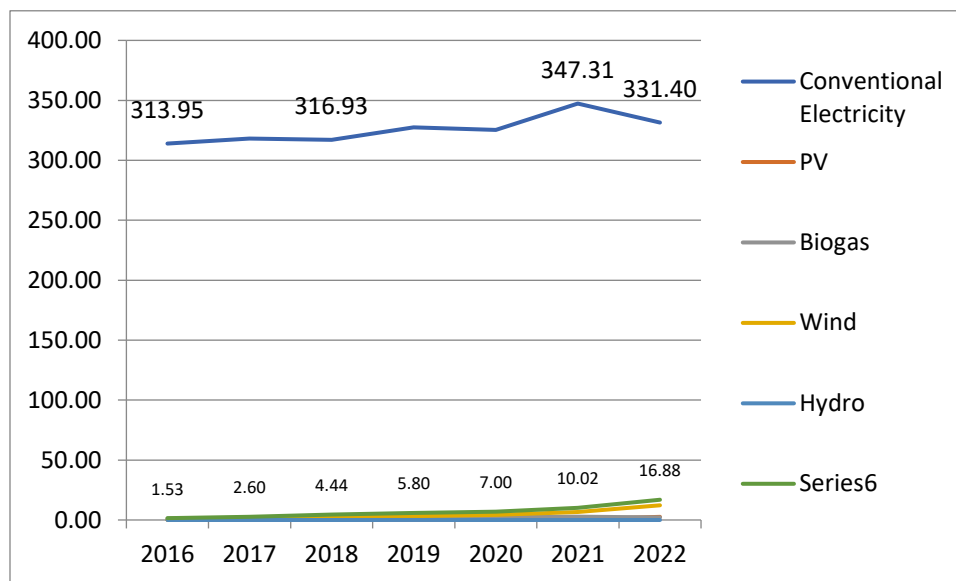
*Figure 25. Dynamics of the installed capacities of power plants operating on RES 2020 – 2022, MW*

<sup>192</sup> The energy generated by hydroelectric sources in this paragraph does not include the electricity generated by SE NHE Costesti

Table 42 and Figure 26 below shows the structure of renewable energy production and gross final consumption of electricity, both indicators being taken into account in the calculation of the renewable energy share presented above.

*Table 42. Electricity generation from RES in the period 2016 - 2022, in ktoe*

	2016	2017	2018	2019	2020	2021	2022
Total Electricity consumption, ktoe	315.49	320.72	321.38	333.20	332.42	357.33	348.28
Electricity production from PV, ktoe	0.11	0.13	0.13	0.12	0.28	0.67	2.61
Electricity production from Biogas, ktoe	1.21	1.86	2.40	2.47	2.39	2.77	2.03
Electricity production from Wind, ktoe	0.21	0.61	1.89	3.17	4.31	6.56	12.24
Electricity production from Hydro, ktoe	0.00	0.00	0.02	0.03	0.01	0.02	0.01
<b>Total electricity production from RES, ktoe</b>	<b>1.53</b>	<b>2.60</b>	<b>4.44</b>	<b>5.80</b>	<b>7.00</b>	<b>10.02</b>	<b>16.88</b>
<b>Total electricity production from RES, %</b>	<b>0.49%</b>	<b>0.81%</b>	<b>1.38%</b>	<b>1.74%</b>	<b>2.10%</b>	<b>2.80%</b>	<b>4.85%</b>



*Figure 26. Production of electricity by technologies, ktoe*

## Renewable heat

Biomass is one of the most developed renewables sectors. In the form of agricultural residues and direct and indirect wood fuel, biomass is used almost entirely for heating purposes. According to Moldova's NBS, 609 ktoe of biomass were used in 2021 (mostly by residential sector), which represents approximately 10% of the biomass potential. According to the EEA, more than 100 MW of biomass heating capacity was built in the public and residential sector in 2011 – 2017 with EU support, and more than 300 boiler units were installed countrywide. At the same time, more than 3,000 small boilers (20 kW to 25 kW each) were installed in the residential sector, demonstrating rising public interest in this technology, stimulated in part by higher tariffs for fossil fuel-based energy. This increased market demand for solid biofuels amounts to 7 – 10 Mln EUR, being met by 100 local producers. During the 2019 – 2021 period there was a reduction in the use of biomass

boilers due to low gas prices. As a consequence of the energy crisis of 2021, public demand for biomass boilers has significantly increased. However, data is not yet available to quantify this increase.

Figure 27 below shows the evolution of biomass use for heating.

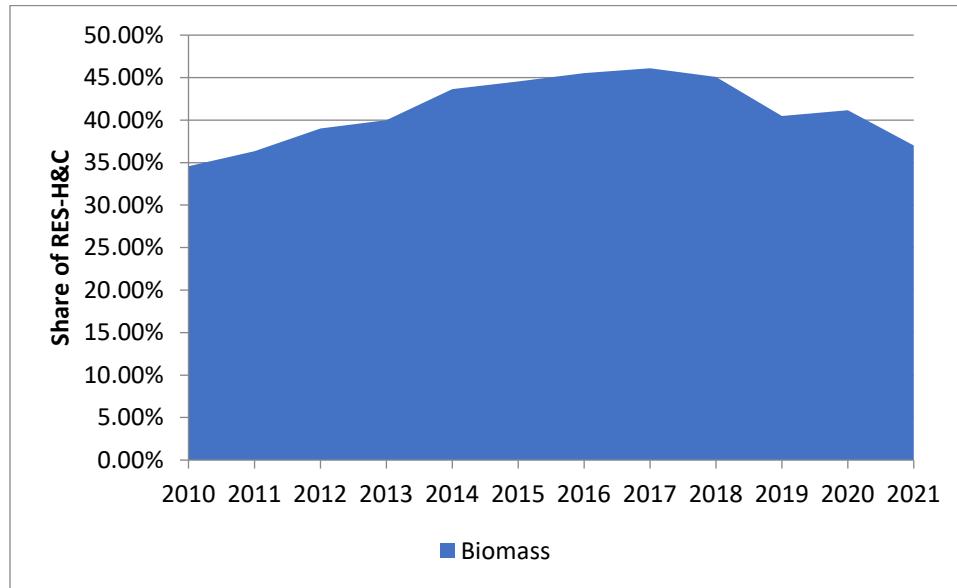


Figure 27. Share of Biomass in the RES-H&C energy

### Renewable transport

Figure 28 below shows the trend of share in the gross final consumption of energy from renewable sources in transport, no multiplication factor being applied, as in the calculation of the RES-T share<sup>193</sup>.

In the period 2010 – 2021 the renewable energy consumption in this sector was very small and having a decreasing trend from 0.32% in 2017 to 0.02% in 2021. Renewable energy in transport sector mainly originates from the use of blended fuel imported in the country.

<sup>193</sup> Data provided on the web site of AEE: <https://aee.md/ro/page/surse-de-energie-regenerabila>

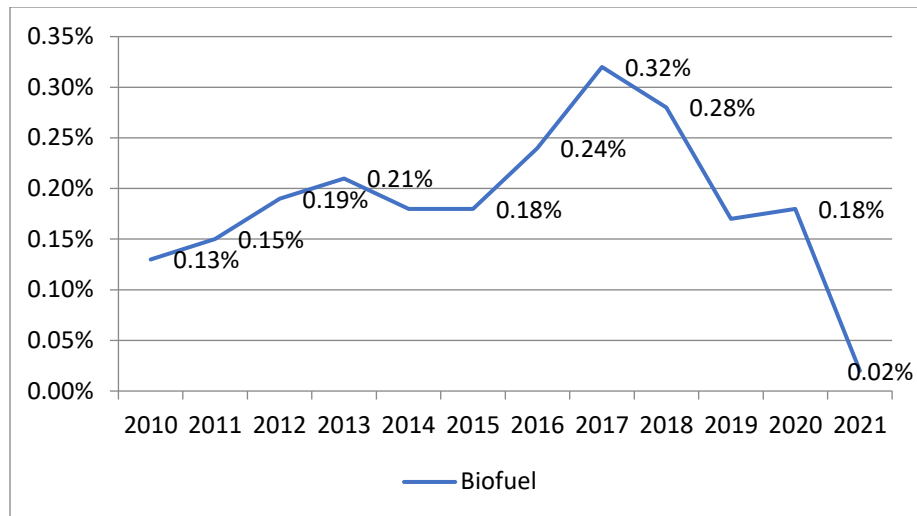


Figure 28. Share of RES-T in the period 2010 – 2021

ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

The share of RES in the gross final energy consumption of the Republic of Moldova (according to the Decision No. 2022/02/MC-EnC of the EnC Ministerial Council on amending the EnC Ministerial Council Decision No 2021/14/MC) is expected to be 27% in 2030. This target is committed only for the Right bank of the Dniester River (data for the ATULBD will be addressed in the next updating of NECP). According to modeling results that are based only on existing measures adopted by the end of 2022, the share of RES in final energy consumption is expected to be 25,6% in 2030 and will grow up to 25,3% in 2050 (Figure 29).

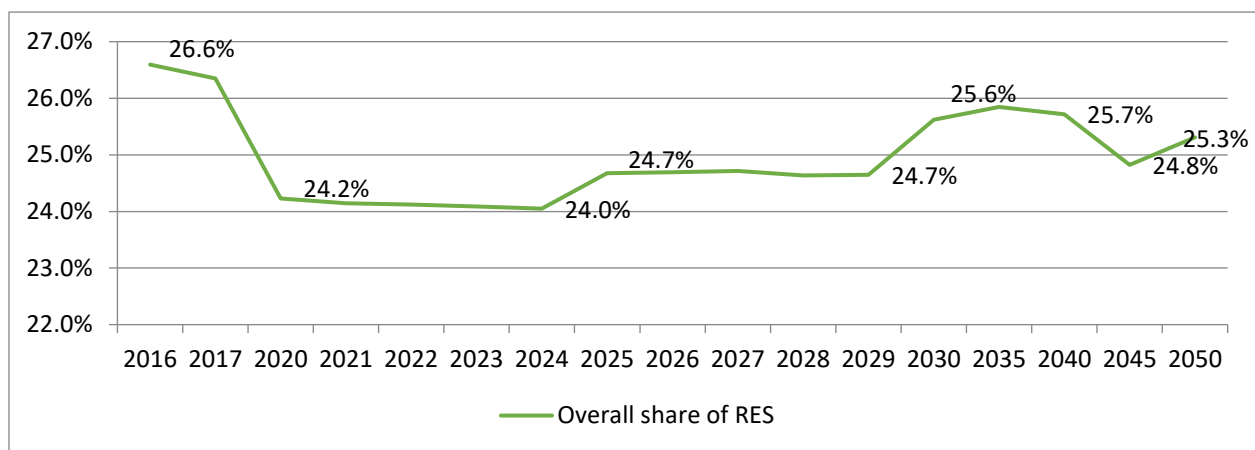


Figure 29. Overall share of RES and projections in the WEM Scenario in the 2016 – 2050 period

As a result, from data presented on Figure 29, the committed target will not be reached if Moldova will implement only existing measures. Additional measures are necessary to be adopted and implemented in order to achieve the committed target of 27%. If Moldova will implement additional measures, in 2030 the share of RES can be of 31.4%.

Table 43 illustrates the annual trajectories for the WEM scenario assumptions. It is evident that there is a shortfall on the deployment trajectory committed with Energy Community.

**Table 43. Modelled trajectories of RES by technologies (WEM), data and projections for the period 2016 – 2050**

Renewable trajectories	2016	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
RES-H&C (%)	44.3%	44.5%	41.7%	41.8%	41.7%	41.7%	41.7%	41.8%	42.0%	42.2%	42.2%	42.4%	42.7%	42.7%	41.3%	39.7%	38.4%
RES-E (%)	1.6%	2.1%	2.4%	2.9%	2.8%	2.8%	2.7%	6.1%	6.1%	6.1%	6.1%	6.1%	10.6%	10.8%	14.4%	14.5%	17.6%
RES-T (%) (without multipliers)	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.9%	1.1%	1.2%	1.3%	1.4%	1.6%	1.7%	2.6%	3.1%	3.8%	4.8%
RES-T (%) (with multipliers)	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.9%	1.1%	1.3%	1.4%	1.5%	1.7%	1.8%	2.9%	3.4%	4.2%	5.3%
Overall RES share (%)	26.6%	26.4%	24.2%	24.1%	24.1%	24.1%	24.0%	24.7%	24.7%	24.7%	24.6%	24.7%	25.6%	25.8%	25.7%	24.8%	25.3%

### 4.3. Dimension Energy Efficiency

#### *i. Current primary and final energy consumption in the economy and per sector (including industry, residential, service and transport)*

In 2020, the total primary energy consumption (TES) was of 2.7 Mtoe. Oil, natural gas and bioenergy had fairly similar shares in the TES, amounting together to almost 90%.

In 2020, oil accounted for 34% of TES, natural gas for 28% and bioenergy for 24%. Electricity imports including electricity procured from the Moldavskaya GRES power station in Transnistria accounted for over 10% of the TES, a share that is among the highest in the world.

The share of fossil fuels used for electricity generation decreased slightly from around 70% in 2010 to 65% in 2020.

Renewable electricity generation is expected to increase in the future. By international comparison, Moldova's share of fossil fuels is well below the world average (65% vs. 81% of the TES in 2019 (Figures 30 and 31).

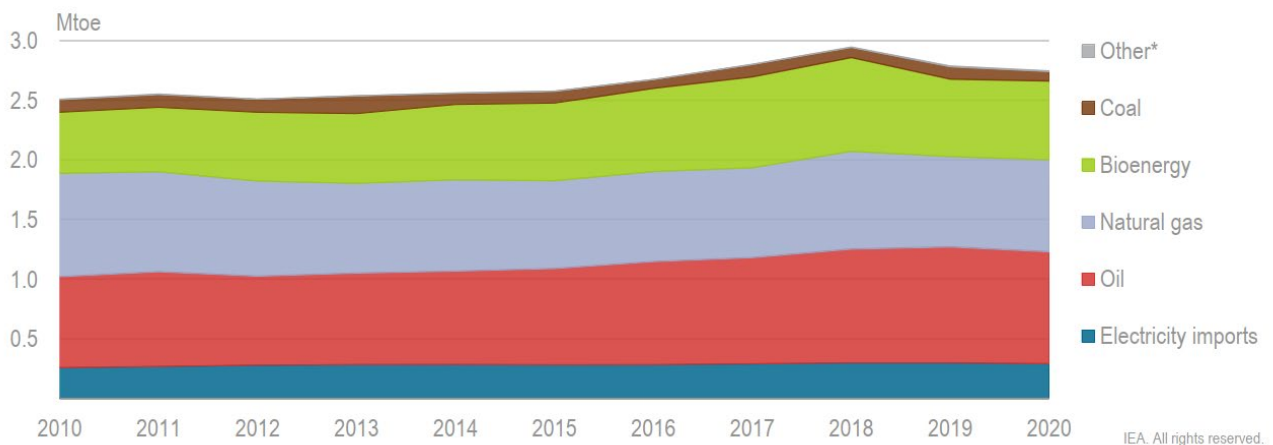


Figure 30. Total primary consumption by source, in the period 2010 – 2020



\* Includes hydro, wind and solar; not visible on this scale.

Source: IEA (2022). World Energy Statistics and Balances (database), <https://www.iea.org/data-and-statistics>.

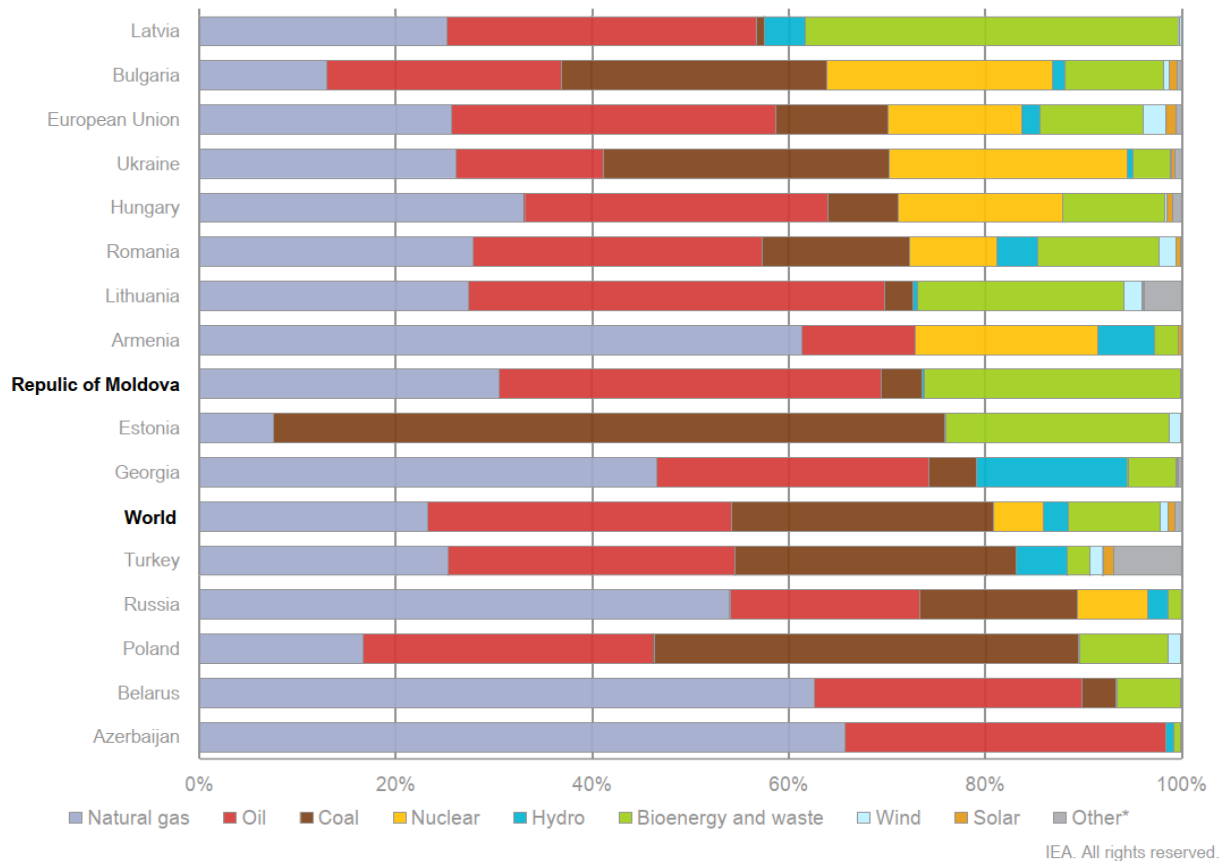


Figure 31. Breakdown of TPS in selected countries, 2019

\* Includes geothermal and primary heat.

Note: Electricity trade not included.

Source: IEA (2022). World Energy Statistics and Balances (database), <https://www.iea.org/data-and-statistics>

Moldova's total final energy consumption (TFC) was of 2.6 Mtoe in 2020 (+14% since 2010, Figure 32). Fossil fuels account for 56% of TFC in 2020 (Figure 33). Oil is the largest energy source with a 36% share in 2020. It dominates transport sector's energy consumption, but is also notably consumed by industries, service sectors and agriculture. Bioenergy is the second largest energy source (25%), and is used mostly in the residential sector. Natural gas, electricity, district heat and coal cover the remaining 40% of the TFC. With the exception of the transport sector, they are consumed across all sectors of the economy.

Moldova's energy intensity has declined in the last decade. While gross domestic product (GDP) has grown over 30% since 2010, total final consumption (TFC) has increased by only 14% over the same period. As a result, energy intensity (TFC/GDP) improved by 14% between 2010 and 2020. In contrast, energy consumption per capita has increased by 24%.

In 2020, Moldova's energy intensity per unit of GDP at PPP was 90 tons of oil equivalent (toe) per million USD, 15% above the 2019 world average of 78 toe per million USD. In contrast, its per capita TFC was 0.99 toe, which is 24% below the 2019 world average of 1.30 toe.

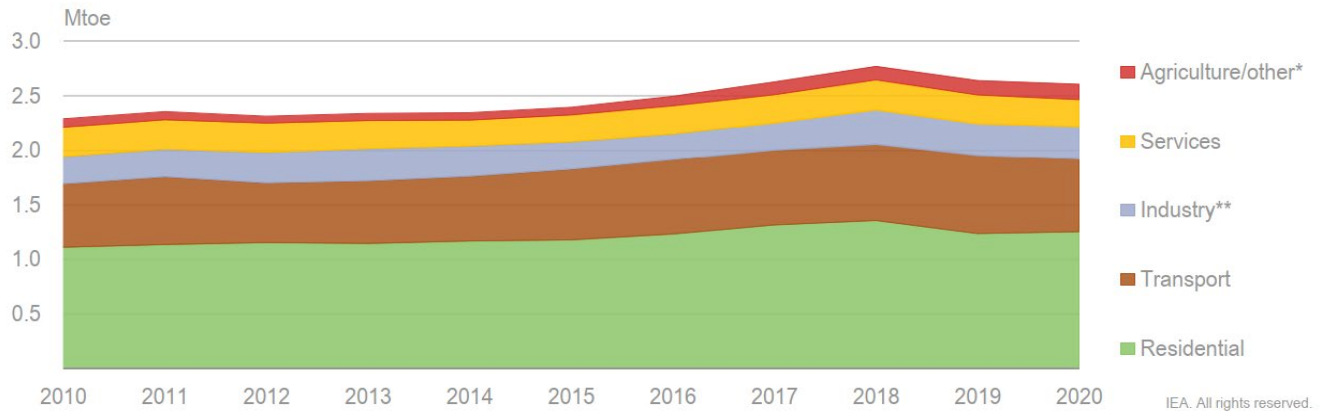


Figure 32. Total final consumption by sector, 2010-2020

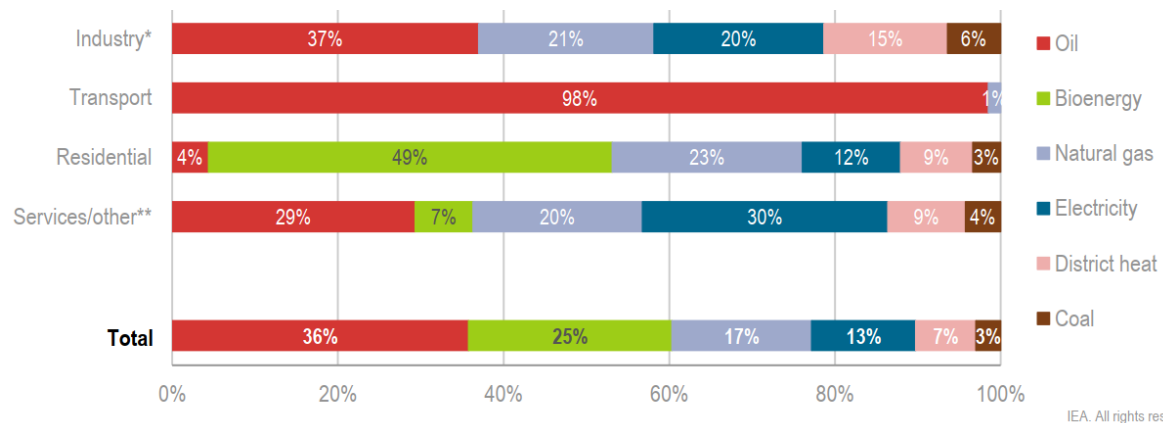


Figure 33. Total final consumption by source and sector, 2020

Solid biofuels are the main source for interior heating and water heating, accounting for 49% of total consumption. The share of natural gas is 23%, electricity - 12%. The energy intensity of residential space heating per floor area decreased by 5% between 2015 and 2019.

In 2020, the transport sector consumed 0.67 Mtoe, or 26% of TFC. Transport consumption increased by 15% compared to the 2010 level.

Oil fuels dominate transport energy consumption, accounting for 98% in 2020. Most of this is diesel fuels, which accounted for over 70% of total transport energy use in 2020, followed by around 25% for gasoline. Diesel engines are more energy-efficient than gasoline, but contribute to higher emissions of particulates and other pollutants. The high share of diesel used in road transport has been a major contributor to air pollution in many Moldovan cities. Natural gas consumption has accounted for 1-3% of energy consumption in the transport sector in the 2010's. Since 2015, NG consumption has more than doubled compared to 2010, but a major decrease occurred in 2020, likely driven by the Covid-19 pandemic and its associated price volatility.

Electricity consumption remains marginal (<1%).

The industry sector is a modest energy consumer in Moldova, with 0.30 Mtoe in 2020, equivalent to 11% of TFC. Industry's contribution to the economy is relatively low, and energy consumption has fluctuated in recent years. In 2018, after years of decline, consumption increased over 25% yearly due to increased economic activity in mining and construction. The energy sources used by

the industrial sector are diverse. In 2020, oil accounted for 37%, natural gas 21% and electricity 20% of this sector's energy demand. Non-metallic minerals and the food and tobacco industries were the largest industrial energy consumers with 32% and 30% of total industry consumption in 2020. The former used mostly natural gas, oil and coal for its needs, while the latter relied primarily on heat and electricity.

*ii. Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling*<sup>23</sup> *iii. Projections considering existing energy efficiency policies, measures and programs as described under 1.2.*

Moldova has significant potential for the application of high-efficiency cogeneration and efficient district heating and cooling systems.<sup>194</sup>

According to the International Energy Agency (IEA), Moldova's district heating infrastructure covers over 60% of the country's urban population, with around 1,200 km of district heating pipelines in operation.

However, a significant portion of the existing district heating systems in Moldova are old and inefficient, leading to high energy losses, frequent breakdowns, and poor quality of heat supply.

To address this problem, the Moldovan government has launched several initiatives to improve the efficiency and reliability of the country's district heating systems.

For example, in 2015, the government launched a comprehensive modernization program for district heating systems, with the support of international donors such as the European Union and the World Bank.

The program includes the replacement of old pipelines, installation of new heat substations, and the introduction of energy-efficient technologies such as cogeneration and waste heat recovery systems.

Furthermore, the IEA has estimated that the technical potential for high-efficiency cogeneration in Moldova is around 2,600 GWh per year. The implementation of cogeneration technologies in the country could lead to significant energy savings, reduced emissions, and improved energy security.

In summary, Moldova has significant potential for the application of high-efficiency cogeneration and efficient district heating and cooling systems, and the government has launched several initiatives to improve the efficiency and reliability of the country's district heating systems.

*iii. Projections considering existing energy efficiency policies, measures and programs as described under 1.2. ii) for primary and final energy consumption for each sector at least until 2040 (including for the year 2030)*

Forecasts of consumption of primary and final energy, including by sector, taking into account existing policies, measures and programs in the field of energy efficiency until 2050 are presented in Table 44 and figures below, a detailed breakdown - in Annex 2.

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<sup>194</sup> National Assessment of Potential for Efficiency in Heating and the Heating Roadmap will be done by the World Bank

*Table 44. Projections considering existing energy efficiency policies, measures and programs as described in point 1.2. for primary and final energy consumption for each sector until 2050, in ktoe*

Indicator	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Primary energy consumption	2,863	2,903	2,879	2,916	2,953	2,898	2,896	2,916	2,917	2,919	2,868	2,740	2,573	2,568	2,561
Final energy consumption, including:	2,550	2,593	2,616	2,639	2,660	2,624	2,626	2,634	2,636	2,638	2,580	2,427	2,206	2,113	2,093
Industry	207	210	213	215	217	209	211	217	219	221	209	209	220	229	241
Transport	755	780	789	800	807	812	820	827	833	839	803	710	576	609	646
Services	275	279	280	281	281	280	277	277	276	275	274	270	269	269	273
Residential	1,242	1,249	1,256	1,262	1,270	1,234	1,226	1,221	1,212	1,206	1,195	1,134	1,029	886	805
Agriculture / Forestry	81	85	86	87	89	90	92	93	95	97	98	105	112	120	128

### Final Energy Consumption

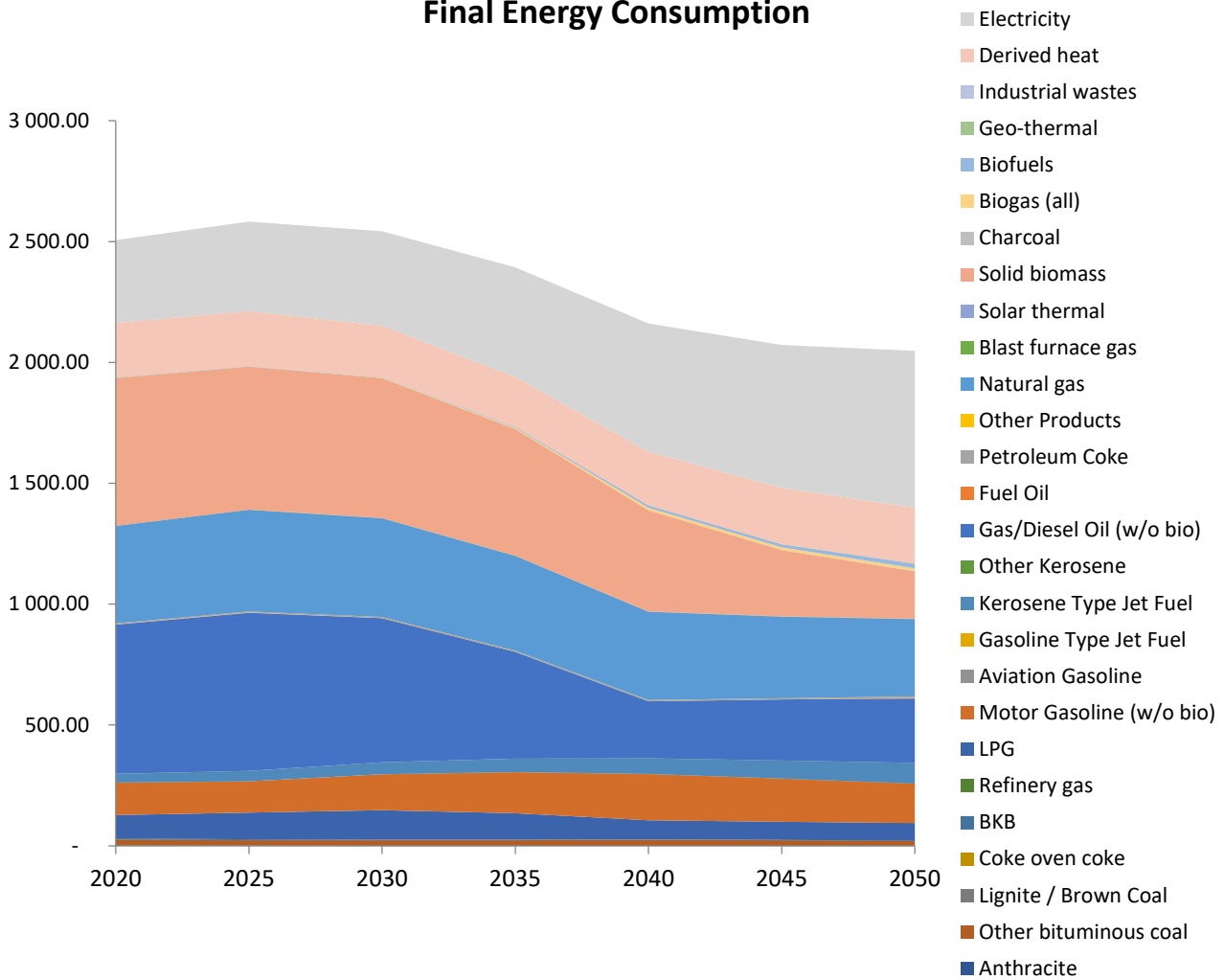


Figure 34. Forecast of final energy consumption until 2050 by fuel, in ktOE

As of 2020, the largest share in final consumption is occupied by gas/diesel oil: 25%. The share of solid biomass: 24%, natural gas: 16%, electricity: 14%. It is predicted that by 2030 the consumption of gas/diesel oil will decrease from 616.84 ktOE to 596.60 ktOE and will amount to 23% of the total final consumption, the consumption of biomass will decrease from 611.83 ktOE to 577.85 ktOE (share of 23%). The share of natural gas will not change, and its consumption will decrease from 402.79 ktOE to 408.56 ktOE. The share of electricity will increase to 15%, and its consumption will increase from 342.38 ktOE to 453.29 ktOE.

## Final energy consumption per Sector-Transport

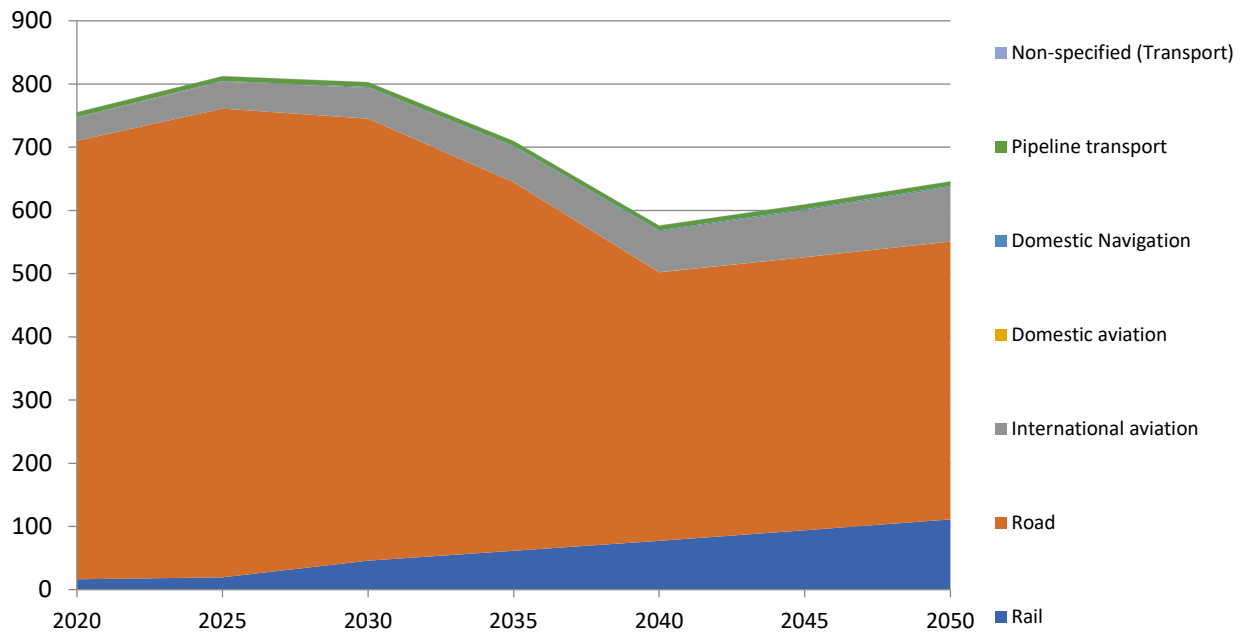


Figure 35. Forecast of final energy consumption in the transport sector until 2050 by mode of transport, in ktoe

In the transport sector, the main consumer of energy resources is road transport – its share in 2020 in sectoral consumption amounted to 92%: 694 ktoe. By 2030, further growth in energy consumption by road transport is expected to reach 699 ktoe, while its share in sectoral consumption will decrease to 87%.

### Transport

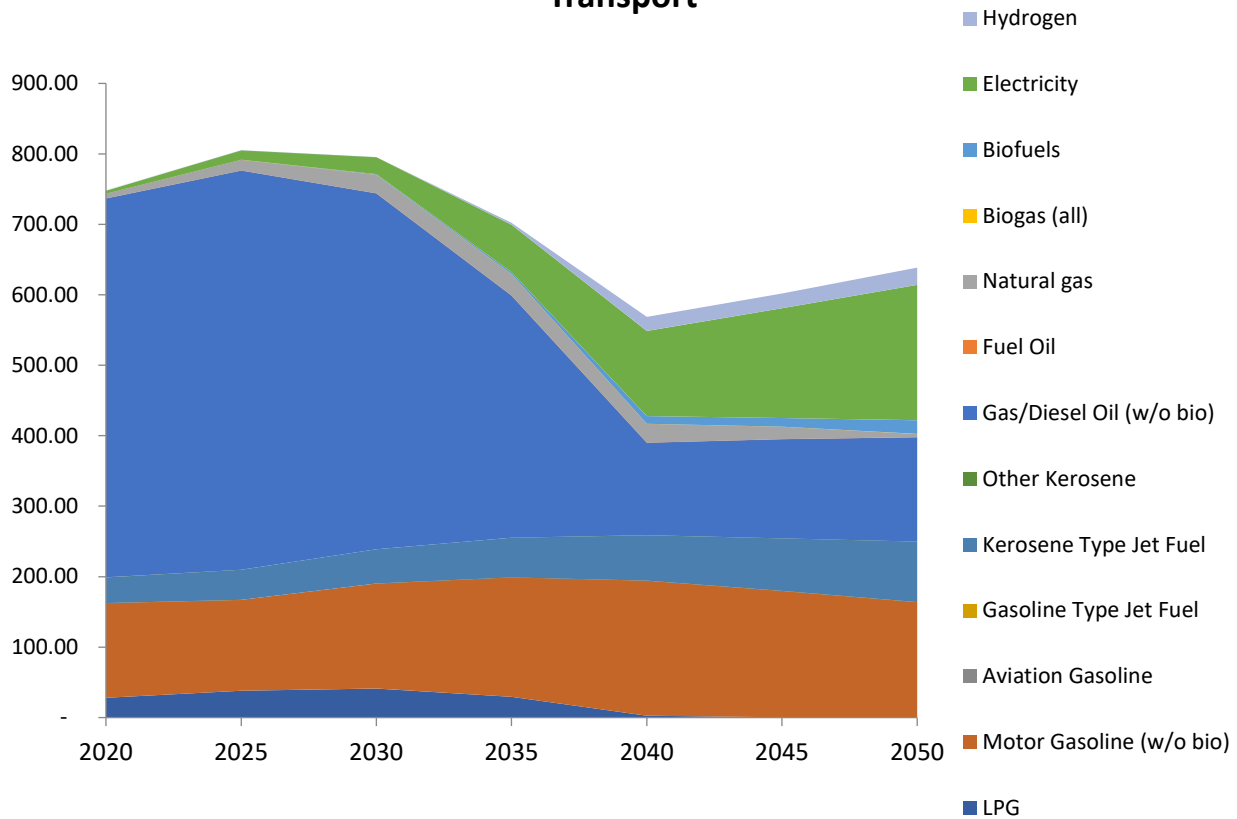


Figure 36. Forecast of energy consumption of Transport sector until 2050 by type of fuel, in ktoe

As of 2020, the main share in the consumption of the transport sector was gas/diesel oil: 72%. The share of motor gasoline (w/o bio) was 18%. By 2030, gas/diesel oil consumption is expected to decrease from 537.80 ktoe to 505.25 ktoe (64% share), and motor gasoline (w/o bio) consumption to increase from 134.57 ktoe to 148.95 ktoe (19% share). Also, an increase in electricity consumption is predicted from 4.19 ktoe to 23.87 ktoe, reaching 3% of the total consumption of the sector.

### Final energy consumption per Sector-Industry

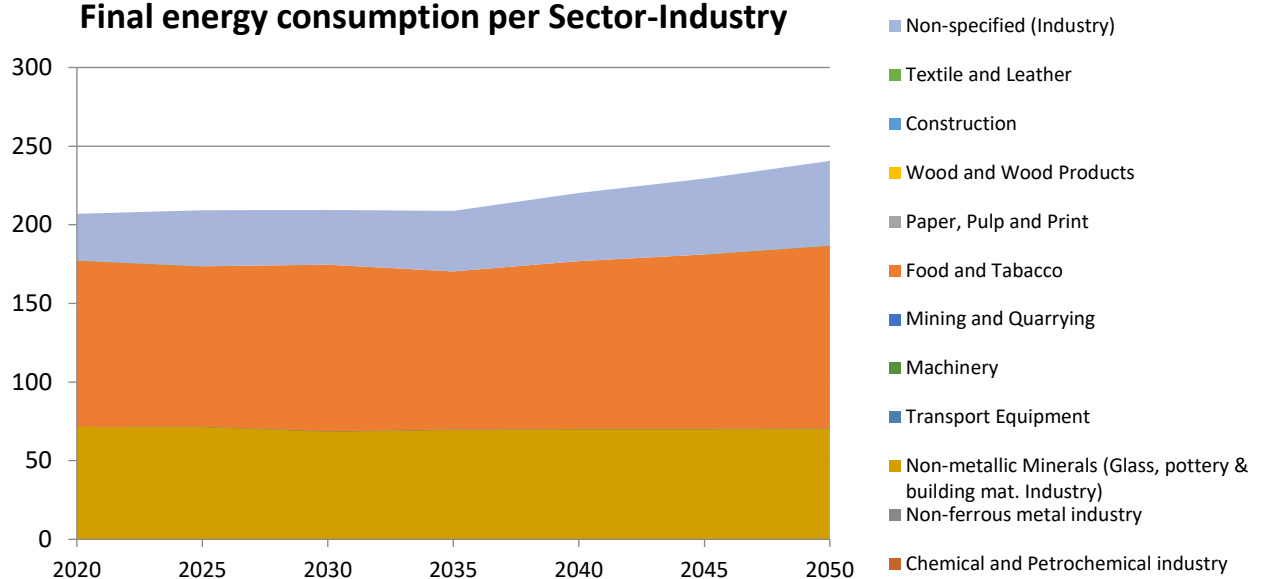


Figure 37. Forecast of final energy consumption of Industry sector until 2050 by branch of industry, in ktoe



In the industrial sector, in 2020, the energy consumption of Food and Tobacco reached 106 ktoe, (which accounted for 51% of the sector as a whole). Consumption of energy of the Non-metallic Minerals (Glass, pottery & building mat. Industry) sub-sector was of 71 ktoe (35%), and of the Non-specified (Industry) sector 30 ktoe (14%). By 2030, the next change in the structure of consumption by the industrial sector is predicted. Energy consumption of Food and Tobacco will remain at 106 ktoe (51%), that Non-metallic Mineral (Glass, pottery & building mat. Industry) will decrease to 69 ktoe (33%), and of Non-specified (Industry) will increase to 35 ktoe (16%).

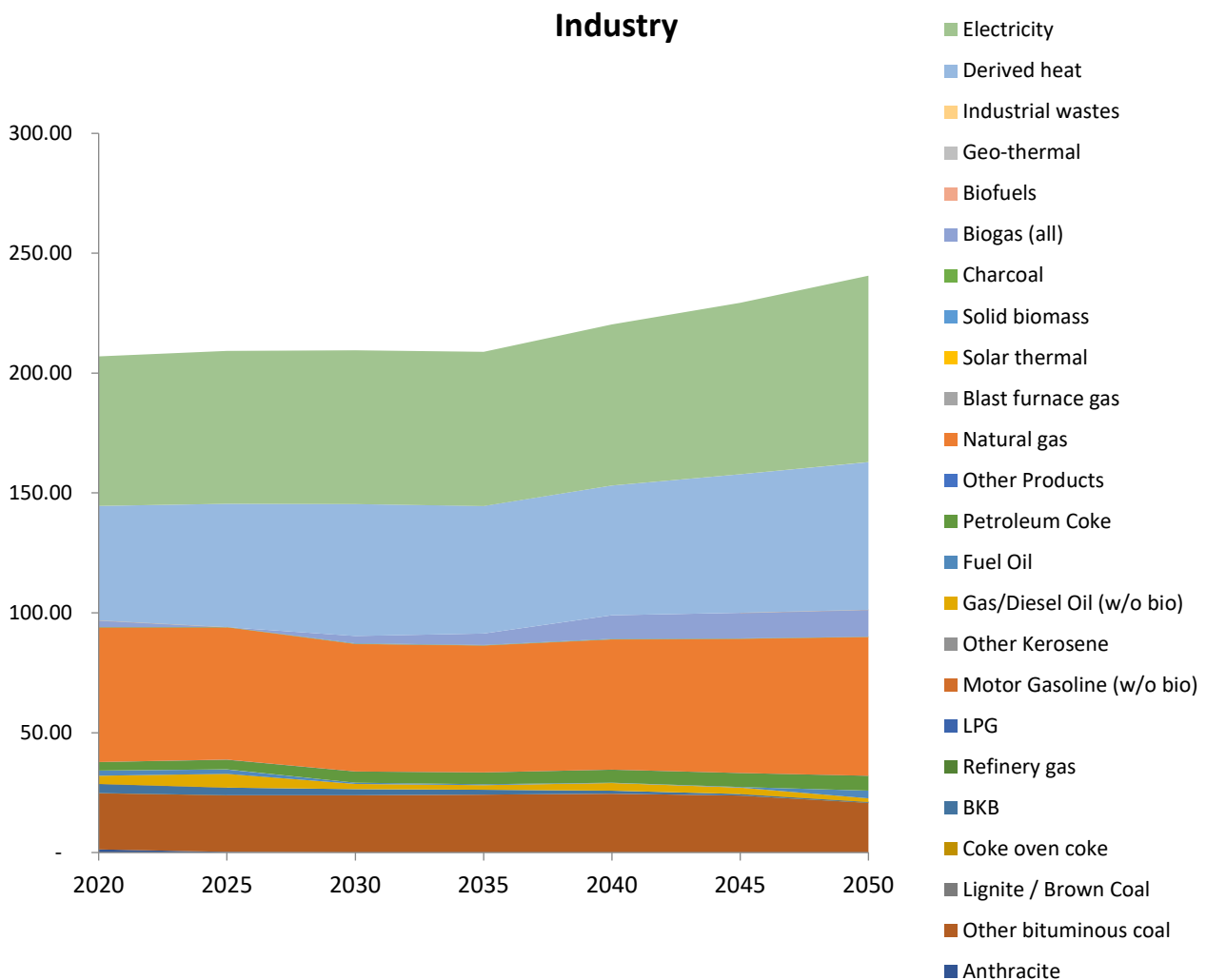


Figure 38. Forecast of energy consumption of Industry sector until 2050 by type of fuel, in ktoe

As of 2020, the share of electricity in consumption by the industrial sector amounted to 30%, that of natural gas to 27%, of derived heat to 23%. By 2030, electricity consumption is expected to increase from 62.40 ktoe to 64.12 ktoe (31% of the energy consumed by the sector), derived heat consumption will grow from 47.80 ktoe to 55.05 ktoe (26% of the energy consumed by the sector) and a reduction of natural gas consumption is forecasted, from 56.22 ktoe to 53.22 ktoe (achieving a share of 25% in energy consumption by the sector).

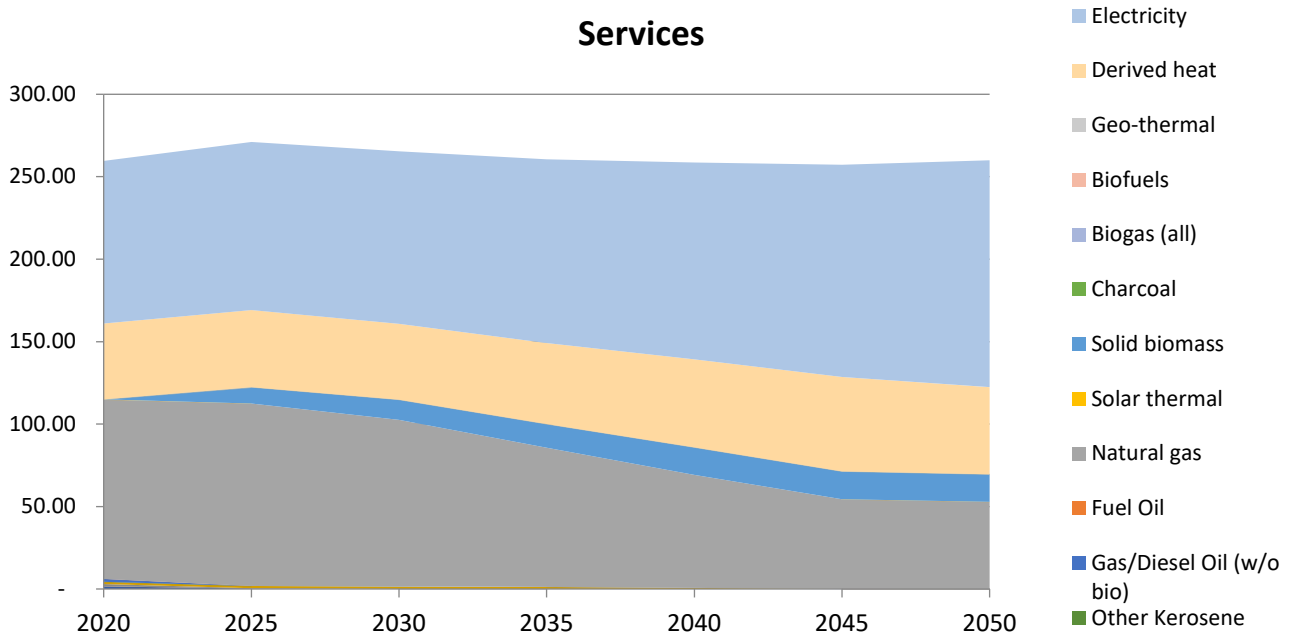


Figure 39. Forecast of energy consumption of Services sector until 2050 by type of fuel, in ktoe

As of 2020, natural gas accounted for the largest share of energy consumption in the Services sector: 42%. Also, a significant share was occupied by electricity: 38% and derived heat: 18%. By 2030, electricity consumption is expected to increase from 98.58 ktoe to 104.59 ktoe (39%), derived heat consumption is expected to decrease from 46.05 ktoe to 46.03 ktoe (17%), as well as natural gas consumption, from 108.75 ktoe to 101.08 ktoe (achieving a share of 38% in energy consumption by the sector).

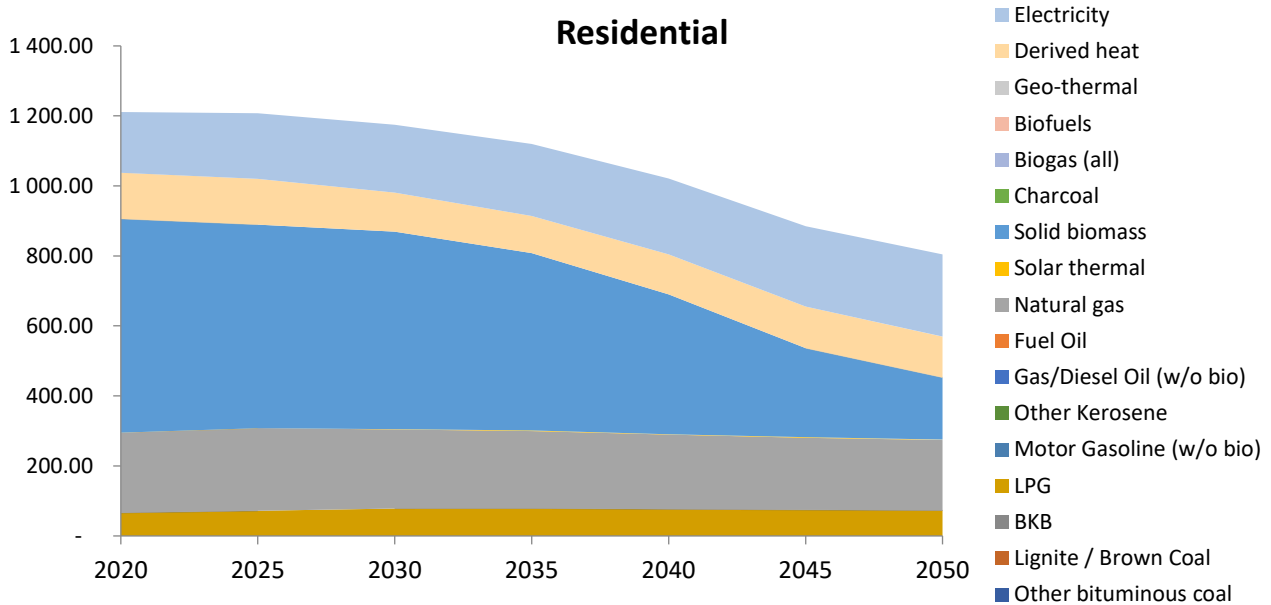


Figure 40. Forecast of energy consumption of Residential sector until 2050 by type of fuel, in ktoe

In the residential sector, solid biomass accounts for the largest share in energy consumption: 49% as of 2020. The share of natural gas in this period was of 18%, that of electricity: 14%, derived heat: 11%. By 2030, it is predicted that solid biomass consumption will decrease from 610.87 ktoe to 564.05 ktoe (its share will reach 47% in the structure of sectoral energy consumption), natural gas consumption will decrease from 228.95 ktoe to 225.57 ktoe (the share will be 19%), derived heat

consumption will decrease from 132.06 ktoe to 111.66 ktoe (9%). At the same time, electricity consumption will increase from 173.14 ktoe to 193.61 ktoe, and its share will reach 16%.

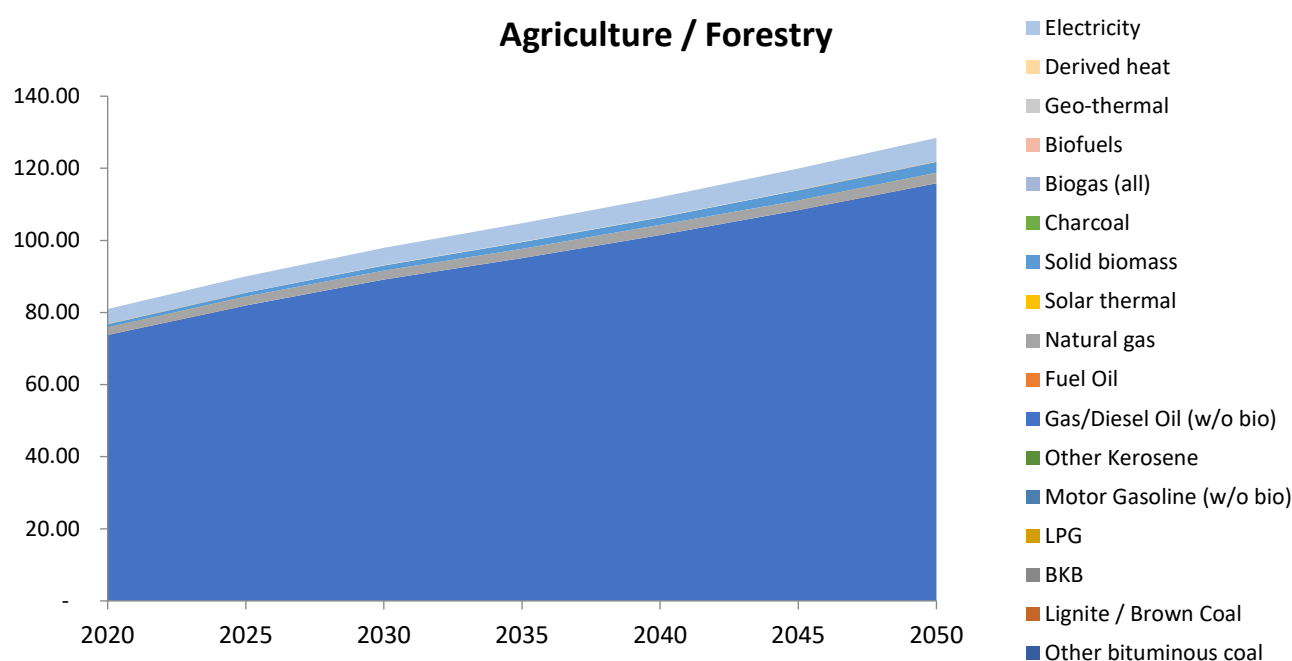


Figure 41. Forecast of energy consumption of Agriculture / Forestry sector until 2050 by type of fuel, in ktoe

In the agricultural sector in 2020, gas/diesel oil (w/o bio) was the main energy resource, its share in consumption by the sector was 91%. By 2030, gas/diesel oil (w/o bio) consumption is projected to increase from 73.79 ktoe to 89.10 ktoe. At the same time, its share in the sectoral consumption of energy resources will remain constant, 91%.

iv. Cost-optimal levels of minimum energy performance requirements resulting from national calculations, according to Article 5 of Directive 2010/31/EU

An apartment with an area of 73 sq. m. and a detached residential building with an area of 136 sq. m were chosen as references for determining the optimal levels of minimum energy efficiency requirements from the point of view of costs. To take into account the representativeness in terms of functionality and geographical location, including indoor and outdoor climatic conditions, reference buildings were selected for the following regions: center (CE), Chisinau (CH), north (NO), south (SO). Standard refurbishment according to LTBS have been adopted as the scope of measures.

Cost-optimal levels of minimum energy performance requirements resulting from national calculations are presented in Table 45.

Table 45. Cost-optimal levels of minimum energy performance requirements resulting from national calculations

	Energy savings, TJ/dwelling	Energy Efficiency Measures Costs		Savings achieved
		Euro/dwelling	Euro/m <sup>2</sup> floor area	
Apartment CE	0.016	3,880	73	45.5%
Apartment CH	0.016	4,302	73	45.5%
Apartment NO	0.016	3,851	73	45.5%
Apartment SO	0.016	4,006	73	45.6%
Detached CE	0.021	9,390	136	40.4%
Detached CH	0.026	15,597	136	40.4%
Detached NO	0.021	9,030	136	40.4%
Detached SO	0.021	10,661	136	40.2%

## 4.4. Dimension Energy Security

*i. Current energy mix, domestic energy resources, import dependency, including relevant risks*

Energy consumption in Moldova is largely dependent on the import of energy resources, which has a negative effect on energy security.

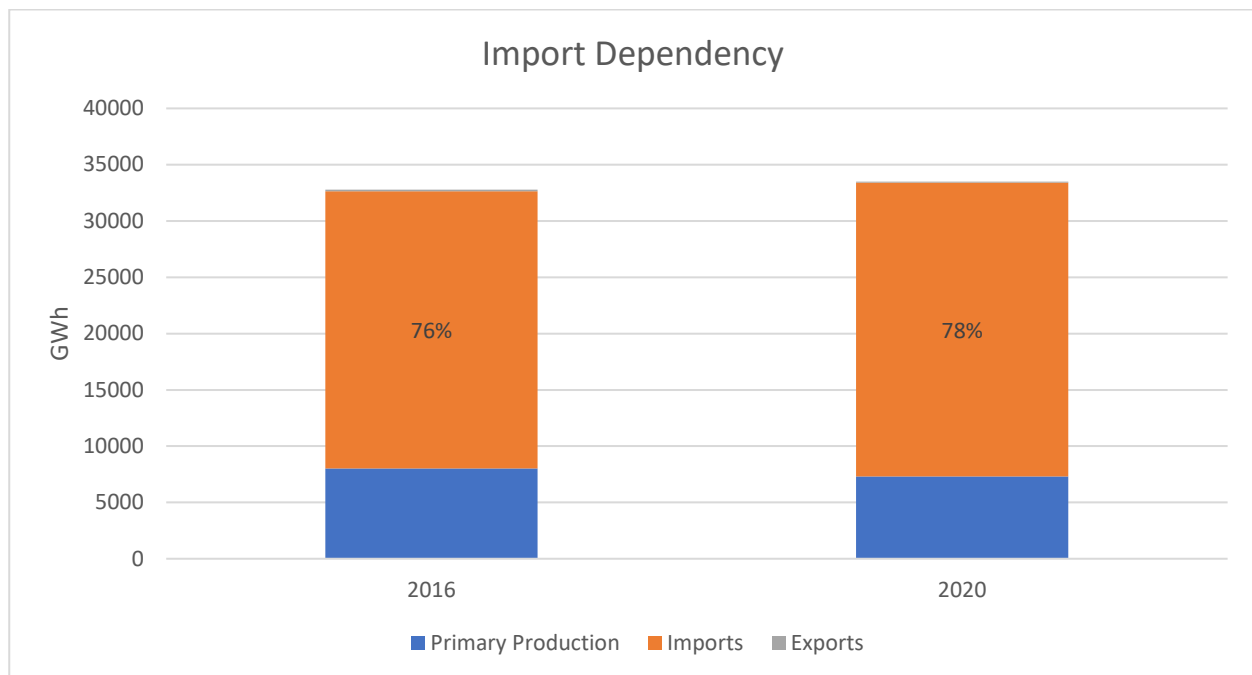


Figure 42. Energy import dependency, 2016 vs. 2020

The Republic of Moldova provides its own needs of energy resources by only 22%. This level decreased over the period from 2016 to 2020 by 2 percentage points. The share of imported energy increased due to the growth of imports resulting from an increase in consumption, but also due to a reduction in the production of local resources.

The main own energy resources are renewable energy sources, the key part of which is biomass (97.5% of the total internally produced energy). The share of solar energy in energy production is of about 0.07%, while the potential for its development is quite large. Hydro energy is produced mostly by NHE Costesti.

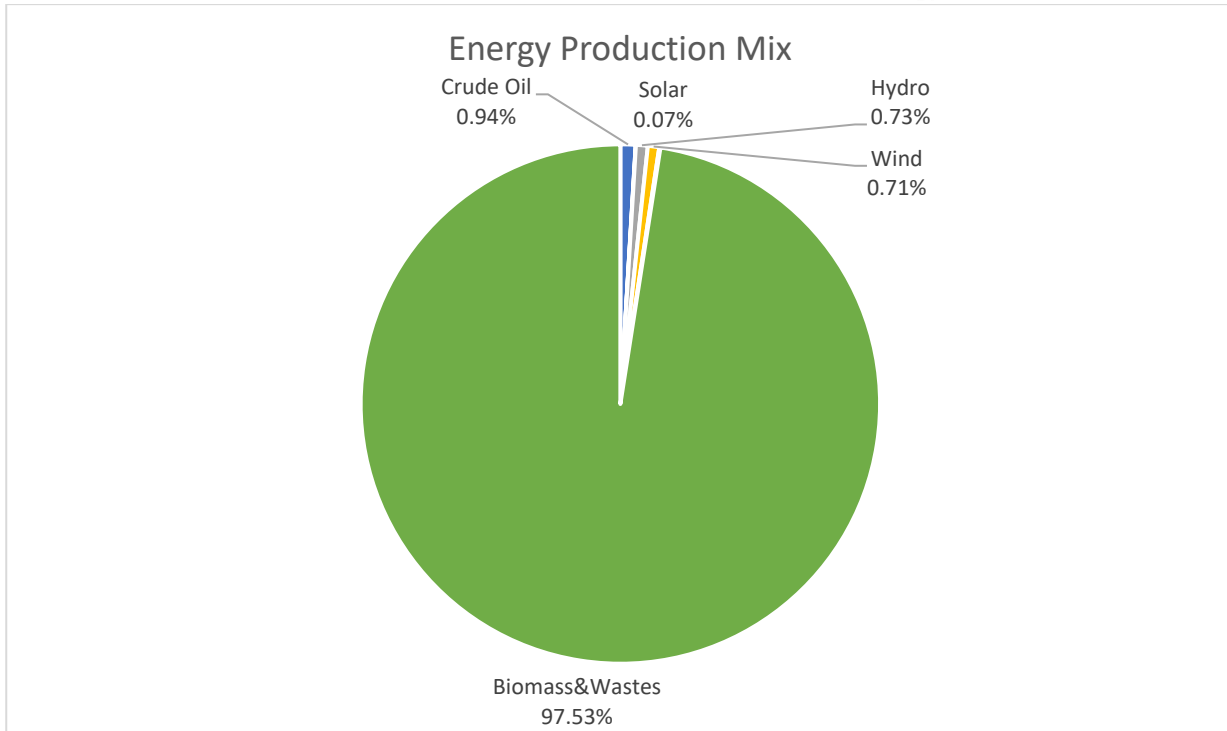


Figure 43. Energy Production Mix

Figure 43 also shows that the main production consists of biomass/waste. The volume of exports is extremely small and consists of the export of petroleum products.

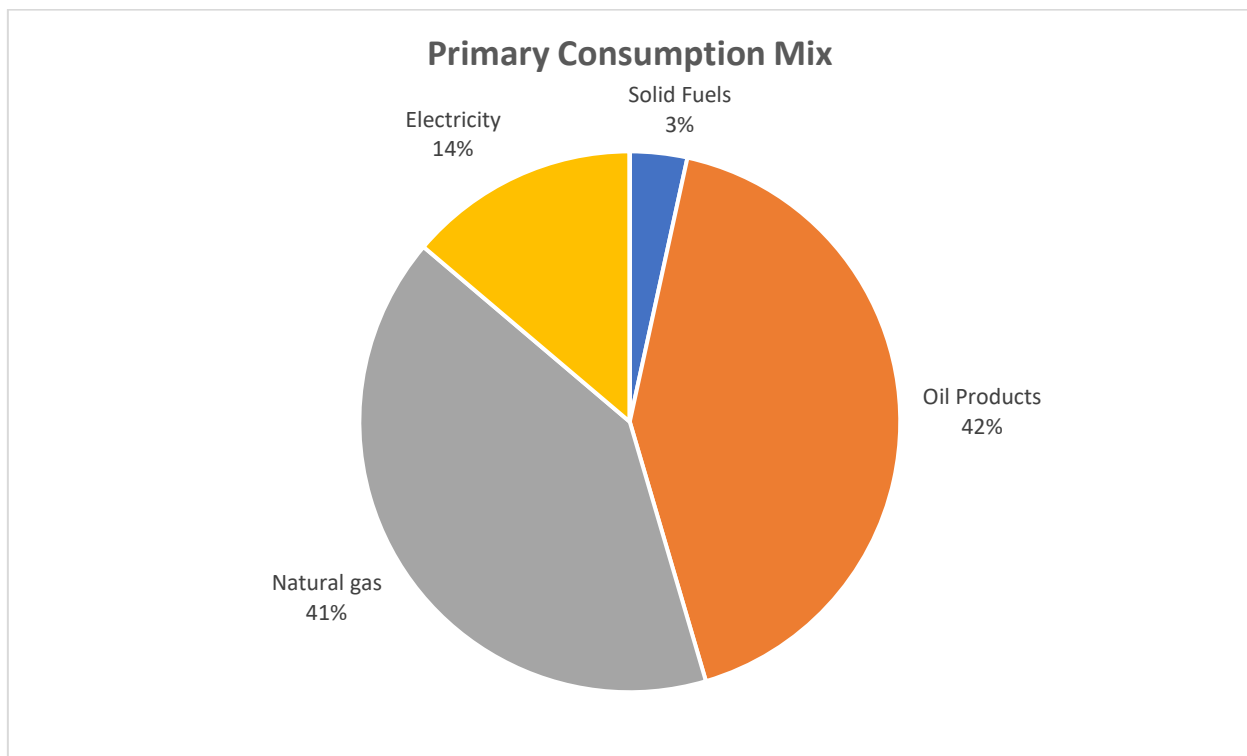


Figure 44. Primary Consumption Mix, by types of energy sources

The most important consumption is that of petroleum products. Oil products are supplied from Russia, Belarus and Romania. Supply of these types of fuel and energy resources is diversified. In addition, the very properties and structure of the petroleum products market make it possible to provide these products from various suppliers from various countries.

The second most important imported fuel is natural gas. In 2020, all imported natural gas was supplied from Russia. This creates a significant and main threat to the energy security of the Republic of Moldova, since for a long time the supply of gas from Russia through Ukraine was the only route. Enabling the supply of natural gas from Romania reduces the impact of this threat.

The third most important type of energy imported to the Republic of Moldova is electricity. Electricity is imported from Romania and Ukraine, which makes it possible to diversify imports. In addition, Moldova has enough capacity to produce its own electricity in the event of a power outage.

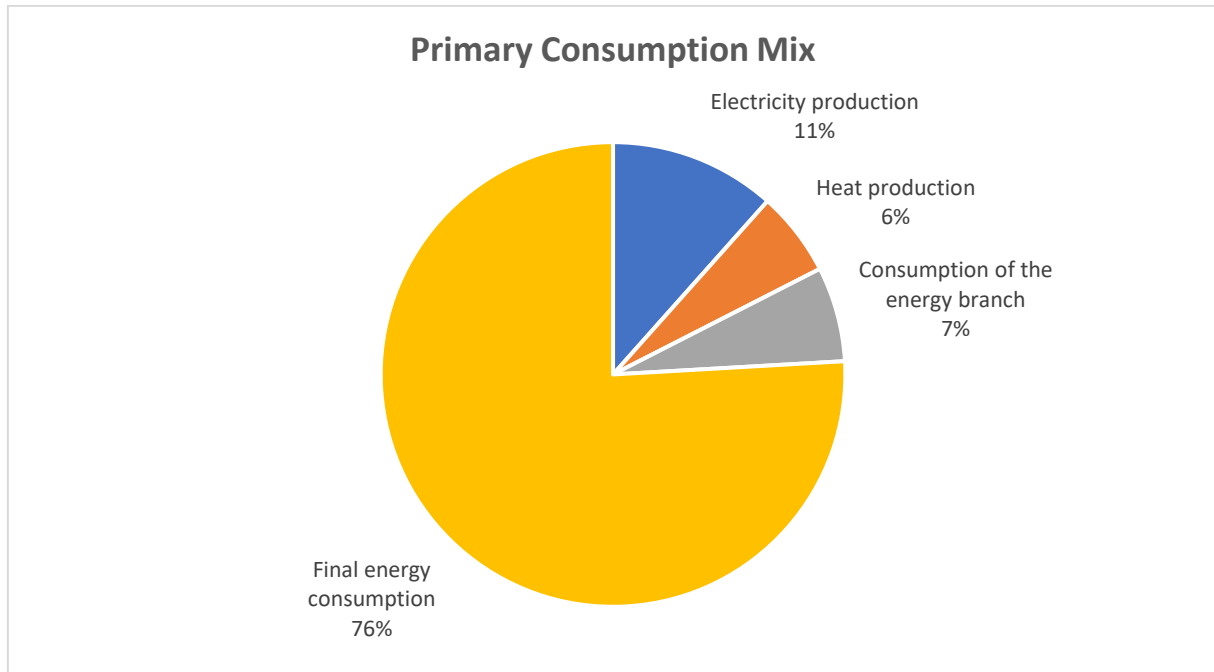
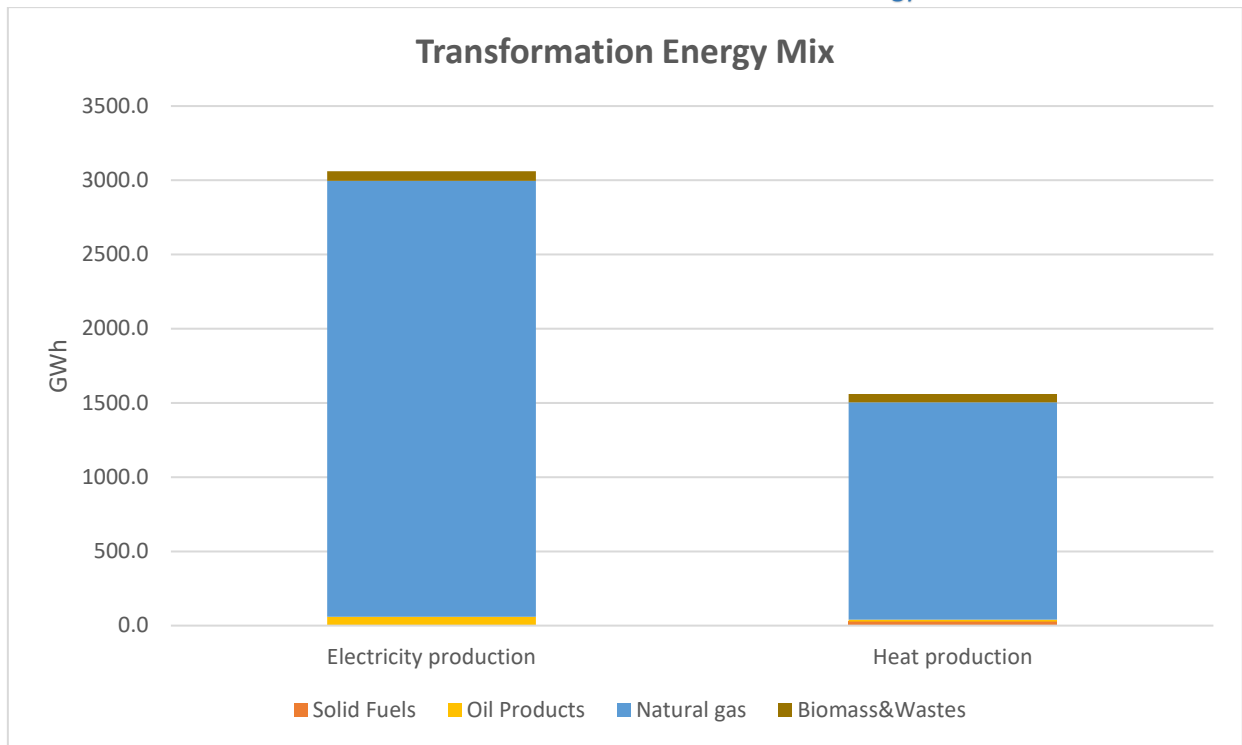


Figure 45. Primary Consumption Mix, by destination of primary energy consumed

The main direction of using own fuel and energy resources is final consumption. More than  $\frac{3}{4}$  dependence on imported energy resources creates significant threats to Moldova's energy security. The best way to reduce the impact of this threat is to develop the country's own energy sources, primarily renewable ones. Where impossible to replace fuel and energy resources with local ones, it is necessary to ensure the diversification of energy importers.



*Figure 46. Transformation Energy Mix*

The most difficult situation with fuel diversification is in the transformation sector, which uses almost exclusively natural gas: 96% in electricity generation and 94% in heat generation.

ii. *Projections of development with existing policies and measures at least until 2040 (including for the year 2030)*

Energy dependence increased between 2016 and 2020, but it is expected to start to decline and reach a minimum in 2035 – 2040. The reduction is achieved by reducing imports while stabilizing consumption. The growth of energy dependence values in subsequent years is associated with the growth of consumption at a higher rate than the growth of own production.



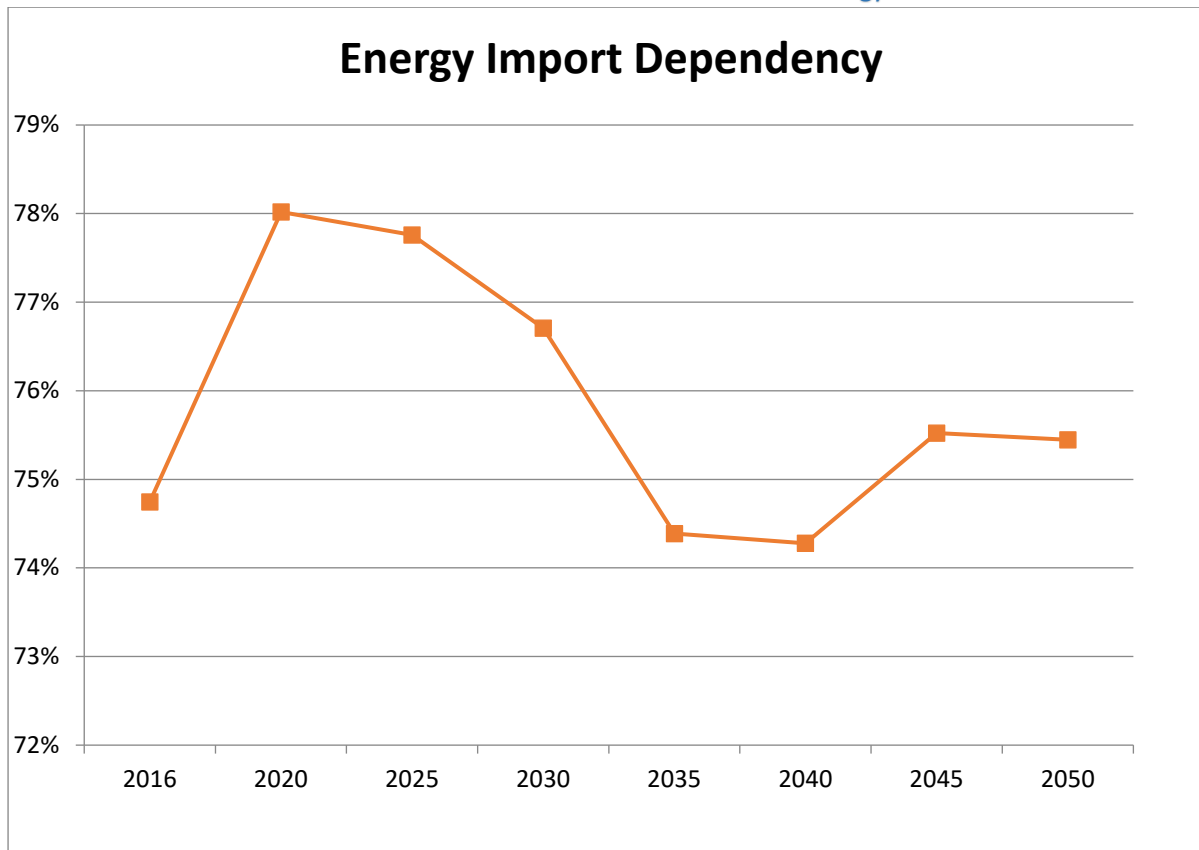


Figure 47. Projections of energy import dependency in the period 2016 – 2050

Since there are no significant oil and gas deposits on the territory of the country, the dependence on these types of fuel remains unchanged and there are no mechanisms for its reduction. Dependence on oil products is associated with the lack of oil refining capacity. In the absence of own oil production and a seaport, it is more economical to import oil products.

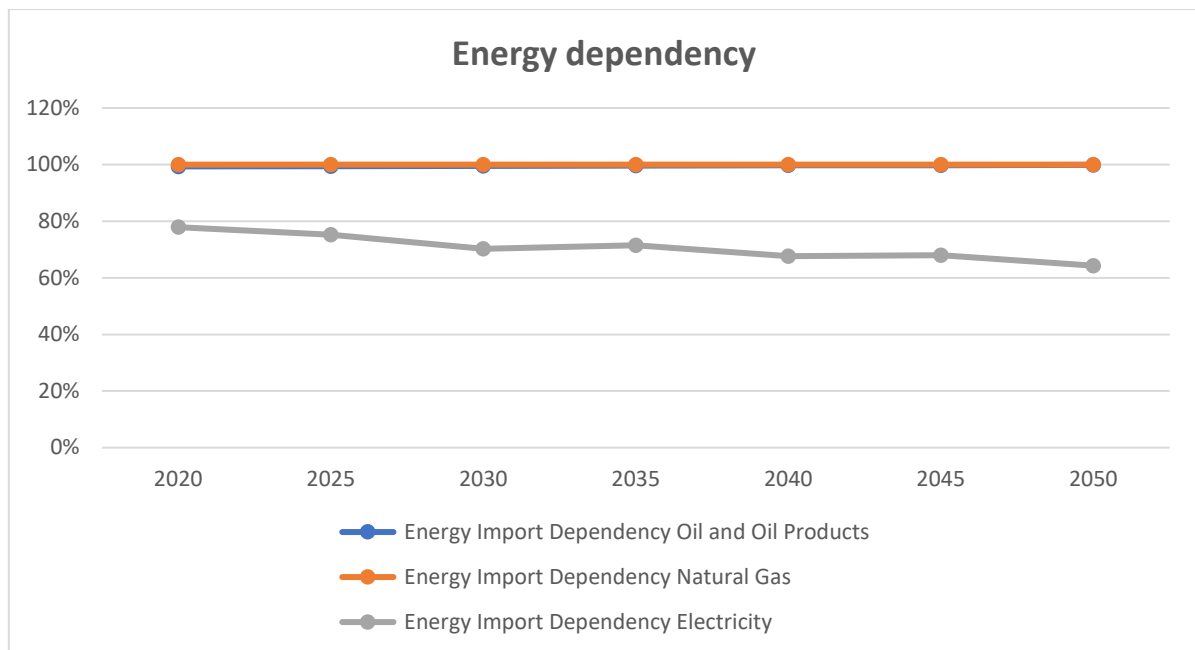


Figure 48. Projections of energy dependency, by types of energy sources, for the period 2020 – 2050

The reduction in dependence on imports of electrical energy is associated with the growth of internal production capacities, the rate of which is expected to exceed the growth in consumption. At the same

time, to a large extent, the growth in production is associated with an increase in the use of renewable energy sources.

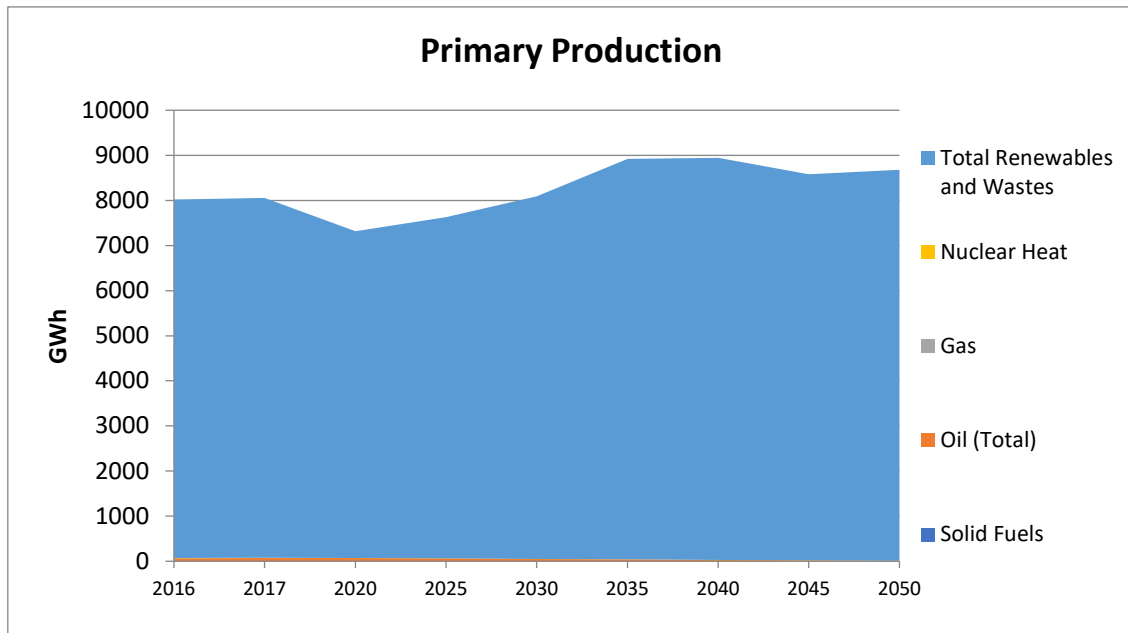


Figure 49. Projections of primary production by types of energy sources, for the period 2016 – 2050

Energy production (mainly biomass and waste) decreased over the period 2016 – 2020, but the measures taken should lead to a recovery in volumes and a further increase in energy production.

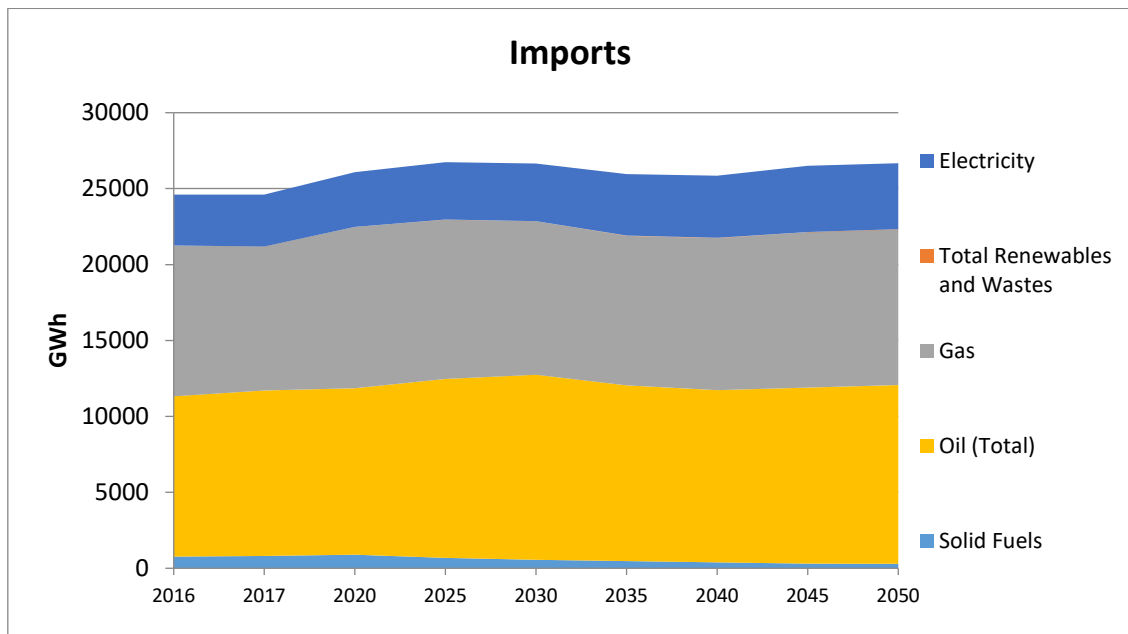


Figure 50. Projections of the import structure, by types of energy sources, for the period 2016 – 2050

The structure and volume of energy imports is expected to change insignificantly. The use of solid fuels should be reduced. Stabilization of imports with an increase in overall consumption should lead to a decrease of the degree of on imported energy.

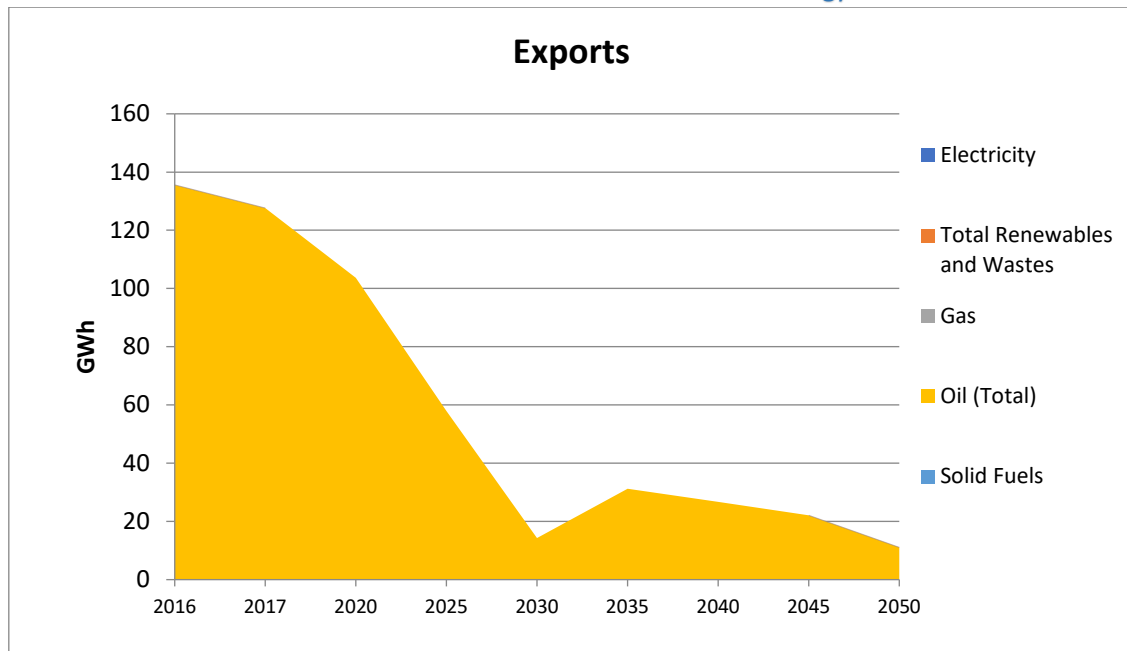


Figure 51. Projected exports, by types of energy sources, for the period 2016 – 2050

The volume of exports of energy resources from the Republic of Moldova has historically been at a low level due to limited production volumes. The forecast is based on a further reduction in exports with the goal of maximizing the use of local resources.

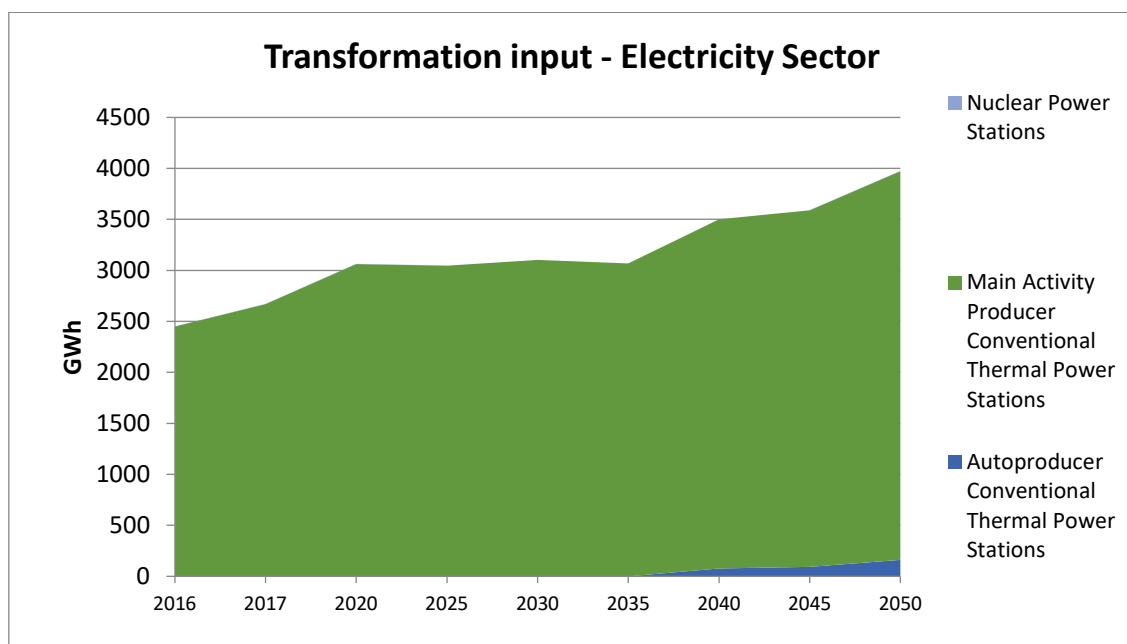


Figure 52. Projected transformation input

The structure of the electricity conversion sector in the 2016 – 2050 period will mainly conserve its existing form, however, after 2035, it is predicted that consumers will develop their own thermal capacities.

## 4.5. Dimension Internal Energy Market

### 4.5.1. Electricity interconnectivity

#### i. Current interconnection level and main interconnectors

Seven Overhead Lines 330 kV (OHL) and twelve OHL 110 kV connect the energy systems of Republic of Moldova and Ukraine. One OHL 400 kV and four OHL 110 kV connect the power systems of Republic of Moldova and Romania<sup>195</sup>.

The capacity of interconnectors in the direction of Moldova-Ukraine is 800 MW, and in the direction of Moldova-Romania 200 MW and Romania-Moldova 425 MW. The throughput level of interconnectors in Moldova (including the ATULBD) and Ukraine amounted to 26.7%, that of MD/RO to 6.7% and that of RO/MD to 14.1% (current limitation, *see p.2.4.1*).

Peak loads in the power system of Moldova were of about 1000 MW (966 MW (2018), 999 MW (2019), 1017 MW (2020)). The installed capacities of the power system of the Republic of Moldova include S.A. “Termoelectrica”’s CET-1 - 66 MW and CET-2 - 240 MW, “CET-Nord” S.A. - 37 MW, HPP Costesti - 16 MW, others 87 MW (Right bank of the Dniester River); MGRES - 2,520 MW and HPP Dubasari - 48 MW (ATULBD) according to data delivered by SE “Moldelectrica” on 01/01/2023<sup>196</sup>.

#### ii. Projections of interconnector expansion requirements (including for the year 2030)

Interconnection capacity will increase from 700 MW to 1320 MW (WEM Scenario), and to 1630 (2025) then to 1930 MW (2030 – 2050) (WPM Scenario), Figure 53.

Peak load is expected to increase from 946 MW to 1635 MW in 2050 (WEM Scenario), up to 1878 MW in 2050 (WPM Scenario), Figure 54.

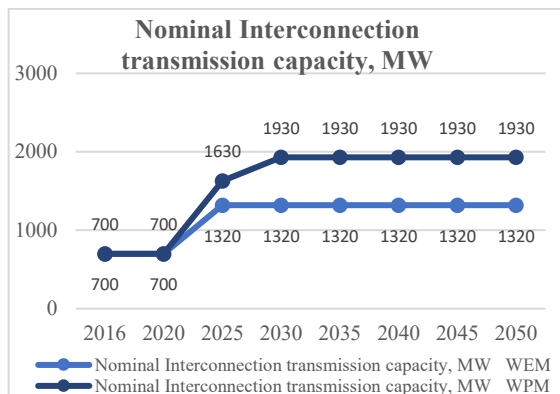


Figure 53. Nominal Interconnection transmission capacity, MW

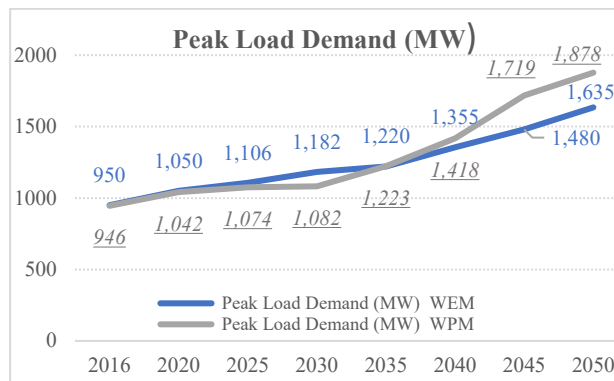


Figure 54. Peak load, MW

Installed renewable generation capacity (hydro, wind and PV) is supposed to increase from 44 MW in 2016 to 579 MW in 2050 (WEM Scenario) and up to 3659 MW (WPM Scenario), Figure 55.

<sup>195</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report)

<sup>196</sup> [https://moldelectrica.md/ru/electricity/energy\\_sources](https://moldelectrica.md/ru/electricity/energy_sources)

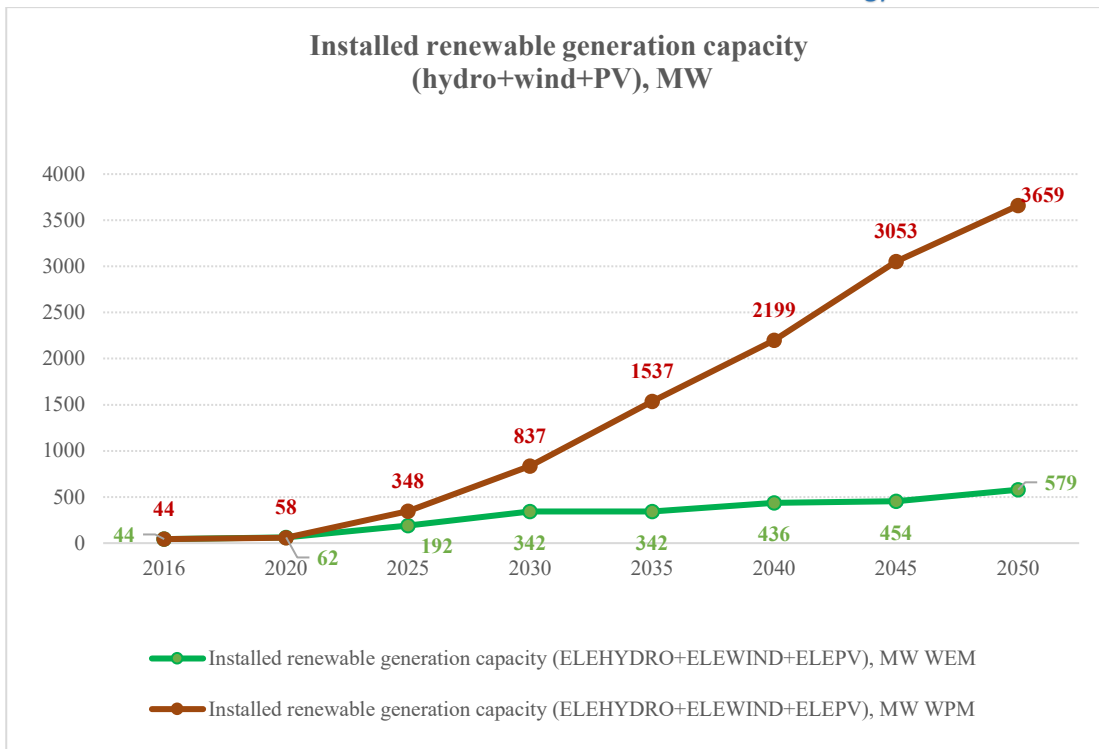


Figure 55. Installed renewable generation capacity (hydro+wind+PV), in MW

#### 4.5.2. Energy transmission infrastructure.

i) Key characteristics of the existing transmission infrastructure for electricity and gas

##### *Electricity*

SE "Moldelectrica" is the Transmission System Operator and carries out activities for the transportation of electrical energy through high-voltage electrical networks, and also those related to the centralized management of the power system, the operation of interconnectors and the transit of electricity in parallel with the power systems of other countries<sup>197</sup>.

<sup>197</sup> <https://moldelectrica.md>, [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ru#)

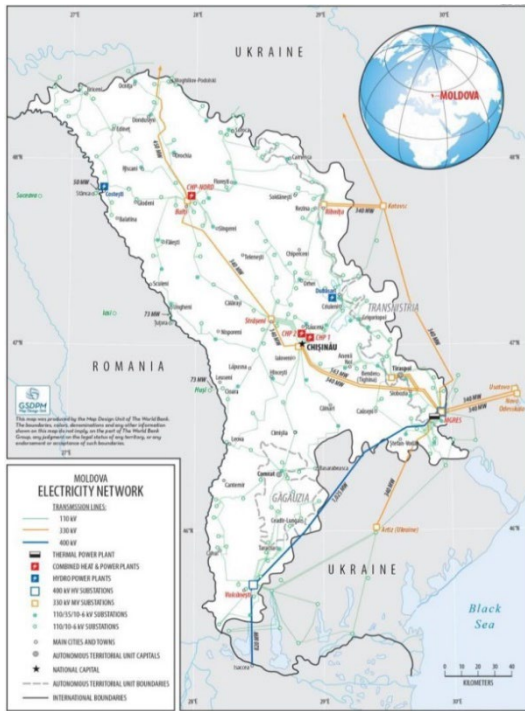


Figure 56. Scheme of electric networks of Moldova

SE "Moldelectrica" has 4 branches and serves 4724.97 km of overhead power lines, including: 35 kV: 807.59 km; 110 kV: 3,337.04 km; 330 kV: 337.34 km; 400 kV: 203 km, Figure 60. The total capacity of power transformers is 4,775.2 MVA<sup>198</sup>.

The total capacity of generating sources is divided by the types of fuel on which they can operate, including:

- for gas: 2,383.4 MW (available capacity: 2,053.4 MW);
- for coal: 1,600 MW (available capacity: 1,000 MW);
- fuel oil: 2,778 MW (available capacity: 2,178 MW);

There are 2 hydroelectric power plants, of 16 MW in Costesti and of 48 MW in Dubasari. Installed capacity of renewable sources connected to the power network of SE "Moldelectrica" is 4 MW<sup>199</sup>.

*Interconnectors Moldova-Ukraine and Moldova-Romania*

The list of 330 and 110 kV overhead lines connecting the electric power systems of Moldova and Ukraine, and Moldova and Romania is given in Table 46.

Table 46. Interconnectors of power systems of Moldova-Ukraine and Moldova-Romania<sup>200</sup>

Interconnectors with Southern Electric Power System of Ukraine (Odesa)		Interconnectors with Southwestern Electric Power System. Ukraine (Vynnitsa)		Interconnectors with the Romanian power system	
330 kV	MGRES – Novo-Odesskaia	330 kV	Balti - Dnestrovskaia HPP	400 kV	Vulcanesti - Isaccea
330 kV	MGRES - Usatovo	110 kV	BSZ- Dnestrovskaia HPP	110 kV	Costesti – Stinca
330 kV	MGRES - Podoliskaia	110 kV	Ocnita – Shahti	110 kV	Ungheni - Tutora
330 kV	MGRES – Artsyz	110 kV	Otaci – Nemia	110 kV	Cioara – Husi
330 kV	Podoliskaia - Ribnita 1	110 kV	Larga – Nelipovtsi	110 kV	Gotesti – Falciu
330 kV	Podoliskaia – Ribnita 2	110 kV	Soroca-Porogi		
110 kV	MGRES - Beleaevka	10 kV	Kriva-Mamaliga		
110 kV	MGRES - Razdelinaia				
110 kV	MGRES - Starokazachie				
110 kV	Vasilievka- Krasnie Okni				
110 kV	Vulcanesti – Bolgrad 1				
110 kV	Vulcanesti – Bolgrad 2				
110 kV	Vulcanesti – Bolgrad 3				
35 kV	Etulia - Nagornaia				

<sup>198</sup> <https://moldelectrica.md/ru/about/fsud> , [https://moldelectrica.md/ru/network/annual\\_report](https://moldelectrica.md/ru/network/annual_report)

<sup>199</sup> [https://www.moldelectrica.md/ru/electricity/energy\\_sources](https://www.moldelectrica.md/ru/electricity/energy_sources) , data 08/02/2023

<sup>200</sup> [https://moldelectrica.md/ru/activity/interstate\\_power\\_lines](https://moldelectrica.md/ru/activity/interstate_power_lines) (on 01.10.2022)

## Gas sector

The natural gas transmission system network of Moldova is connected to the natural gas transmission systems of the two neighboring countries: **Romania** and **Ukraine** through the following interconnection points (February 2023):

- *IP Alexeevca* (EIC Code: 21Z000000000182N)
- *IP Grebeniki* (EIC Code: 21Z000000000178E)
- *IP Limanscoe* (EIC Code: 21Z000000000360P)
- *IP Ananiev* (EIC Code: 21Z000000000176I)
- *IP Causeni* (EIC Code: 21Z000000000179C)
- *IP Ungheni* (EIC Code: 21Z000000000356G)

The largest volumes of gas supplied to the Republic of Moldova is carried out through GMS Grebeniki and GMS Alekseevka.



Figure 57. Regional interconnection points of the gas transport system of the RM

At the beginning of 2023, maintenance and operation of gas transmission networks on the territory of the Republic of Moldova was provided by 3 transport system operators: LLC "Moldovatrangaz", LLC "Tiraspoltrangaz" and LLC "Vestmoldtrangaz". From September 2023 according to the regulatory acts of the National Regulator (ANRE), LLC "Vestmoldtrangaz" operates the entire gas transport infrastructure on the Right bank of the Dniester River and manages all interconnection points. The Republic of Moldova has no LNG facilities and natural gas storage, but it should be mentioned that the it has always been an important transit country for natural gas from Gazprom to European countries (through the Trans-Balkan gas pipelines).

The maximum technical capacity of the 4 main pipelines is:

- In the *South* of the Republic of Moldova:
  - 1) The Ananiev - Tiraspol – Ismail gas pipeline (ATI) - 20 bcm/year;
  - 2) Razdelinaia-Ismail pipeline (RI)- 7.3 bcm/year;
  - 3) Sebelinca-Dnepropetrovsk-Krivoi Rog-Ismail pipeline (SDKRI)– 7.3 bcm/year.
- In the *North* of the Republic of Moldova:
  - 4) Ananiev-Cernauti-Bohorodchany gas pipeline (ACB) – 9.1 bcm/year.

The interconnection of the natural gas system of the Republic of Moldova with the system of Romania (member of the European Union) is ensured by the *Iasi-Ungheni-Chisinau* gas pipeline. LLC "Vestmoldtrangaz" (certified as a TSO under the Third Energy Package in 2021) operates the Moldovan section of the Iasi-Ungheni-Chisinau gas pipeline. The maximum throughput capacity of the gas pipeline is 1.5 bcm/year (or about 4 million m<sup>3</sup>/day).

At present, on the Right bank of the Dniester River there are approximately **1,683** km of transmission pipelines (, **2** gas metering stations (Causeni- 80 mcm/day and Ungheni- 3.75 mcm/day) and **81** Gas Delivery Stations (28 GDS: Drochia production sector; 36 GDS: Chisinau production sector and 17 GDS: Vulcanesti production sector).

There are also **3** gas compression stations with total power of 75.5 MW:

- GCS Drochia (31.5 MW) located on the ACB pipeline ensures gas transport to the Bohorodchany underground storage;



- GCS Vulcanesti (20.0 MW) ensures the transportation of natural gas on the segment of the RI-SDCRI pipeline system;
- GCS Soldanesti (24.0 MW) is conserved due to the lack of projected volumes.

Below is presented the location of Moldova on the ENTSO-G Capacity Map<sup>201</sup>, which allows to see the existing main European gas pipelines at cross-border points, Figure 58.



Figure 58. Gas regional infrastructure, as of April 2023

i) Projections of network expansion requirements at least until 2040 (including for the year 2030)

## Electricity

Electric Transmission Network Development Plan for the period 2018-2027 was developed in the 2017 (published on 01/26/2018)<sup>202</sup> and was approved by ANRE on December 27<sup>th</sup>, 2017.

This plan implements the provisions of the Law on electricity No. 107 of 05/27/2016<sup>203</sup> and includes the construction of a 400 kV Isaccea-Vulcanesti-Chisinau OHL and a 400 kV Balti-Suceava OHL and the necessary substation equipment (projects of mutual interest)<sup>204</sup>.

Numerous documents on the regulation of cross-border capacity have been adopted to implement these projects. The distribution of capacity in the direction of Moldova-Romania, Moldova-Ukraine is reflected in the following documents:

- 1) Law No. 107 as of 27 May 2016 on electricity;
- 2) Electricity market Regulations:
  - DANRE No. 283 of 08/07/2020 regarding the approval of the Rules electricity market<sup>205</sup>,

<sup>201</sup> [https://www.entsog.eu/sites/default/files/2023-01/ENTSOG\\_GIE\\_SYSEV\\_2021-2022\\_1600x1200\\_FULL\\_240\\_clean.pdf](https://www.entsog.eu/sites/default/files/2023-01/ENTSOG_GIE_SYSEV_2021-2022_1600x1200_FULL_240_clean.pdf)

<sup>202</sup> [https://moldelectrica.md/ru/network/perspective\\_plan](https://moldelectrica.md/ru/network/perspective_plan)

<sup>203</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ru#)

<sup>204</sup> [https://www.moldelectrica.md/ru/finances/competitive\\_energy\\_market](https://www.moldelectrica.md/ru/finances/competitive_energy_market)

<sup>205</sup> [https://www.legis.md/cautare/getResults?doc\\_id=131508&lang=ro](https://www.legis.md/cautare/getResults?doc_id=131508&lang=ro)

- DANRE No. 168 of 05/31/2019 regarding the approval of the Regulation on connection to electricity networks and the provision of electricity transport and distribution services<sup>206</sup>,
- DANRE No. 424 of 11/22/2019 regarding the approval of the Regulation on access to electric transmission networks for cross-border exchanges and the management of congestion in the electricity system<sup>207</sup>,
- Capacity Sharing Agreements with TSO's of Neighboring Countries<sup>208</sup>,
- Procedures and instructions of the transmission system operator on the balancing mechanism<sup>209</sup>.

The mechanism for power distribution between power systems of Romania and Moldova has been determined, it involves holding joint annual, monthly and daily auctions based on the Rules for the distribution of transmission capacity (*Rules for the allocation of monthly and annual MD/RO connection capacities and MD/RO daily capacity allocation Rules*)<sup>210</sup>.

Similar documents on the distribution of bandwidth between the energy systems of Ukraine and Moldova are currently being agreed upon.

5

### Natural Gas

The need to expand natural gas networks can be considered after studying all the proposed scenarios, as well as their feasibility study.

All current projects regarding the natural gas transport infrastructure are presented in the TSO Development Plans for the years 2022-2031 referred to in sections 2.4.2 i and 2.4.2.ii.

#### 4.5.3. Electricity and gas markets, energy prices

i) Current situation of electricity and gas markets, including energy prices

### Electricity

#### Licensed manufacturers and suppliers

Licenses have been issued to 5 electricity producers, 1 transmission network operator (SE "Moldelectrica", also holding the license for centralized management of the electric power system), 2 electricity distributors, as well as 62 suppliers with regulated and non-regulated tariffs (data as of 12/02/2022), Table 47.

**Table 47. List of Licensees in the electricity sector of the Republic of Moldova<sup>211</sup>**

Activity	Quantities of Licensees	Name
Electricity Production	5	"TERMOELECTRICA" SA; "CET-Nord" SA;"Picador-Grup" SRL; "Nodul Hidroenergetic Costești" SE; CJSC « MGRES »
Electricity Transmission	1	SE "Moldelectrica"
Centralized Management of the Electric Power System	1	SE "Moldelectrica"
Electricity Distribution	2	"RED Nord" SA ÎCS "PREMIER ENERGY DISTRIBUTION" SA
Electricity Supply, <i>inclusive</i>	62	
mun.Chisinau	51	ÎCS "PREMIER ENERGY" SRL,"Energocom" SA and other

<sup>206</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

<sup>207</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130369&lang=ru](https://www.legis.md/cautare/getResults?doc_id=130369&lang=ru)

<sup>208</sup> [https://moldelectrica.md/ru/network/capacity\\_allocation](https://moldelectrica.md/ru/network/capacity_allocation)

<sup>209</sup> [https://moldelectrica.md/ru/electricity/balancing\\_mechanism\\_docs](https://moldelectrica.md/ru/electricity/balancing_mechanism_docs)

<sup>210</sup> [https://moldelectrica.md/files/docs/market/Reguli\\_alocare\\_termen\\_lung\\_MD-RO.pdf](https://moldelectrica.md/files/docs/market/Reguli_alocare_termen_lung_MD-RO.pdf)

<sup>211</sup> <https://www.anre.md/registru-de-licentiere-3-134-on-02.12.2022>

mun. Bălți	5	SA "Furnizarea Energiei Electrice Nord", "Iuganord Grup" SRL, "Eco Profelectric" SRL, "Energia" SRL, "STROY-CAPITAL" SRL
Ialoveni	1	SD "Energy Engineering Group" SRL
Hîncești	1	"BIO ENERGY FARM" SRL
Rezina	1	"Geocycle" SRL
Strășeni	1	"Technotex Systems" SRL
Edineț	1	"Elenasig" SRL
Călărași	1	"Sadoveanu" SRL

### Electricity Production

Electricity Production from own sources amounted to 836 (2020), 943 (2021), 764 (2022) GWh. Of this, electricity production at thermal power plants prevailed: 621 (2020), 695 (2021), 526 (2022) GWh.

The amount of electricity produced from Renewable Energy Sources (registered in SE "Moldelectrica") for the period 2018-2022 increased by 2.4 times, from 46.7 to 110.47 Mln. kWh, Table 48.

**Table 48. Structure of electricity production in the period 2018-2022, Mln kWh<sup>212</sup>**

	Mln kWh					%				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
S.A. „Termoelectrica”	651	601.3	621	695.5	527.99	81.7	75.8	74.3	73.7	69.1
„CET-Nord” SA	53.8	58.3	100.5	102.4	83.53	6.8	7.3	12.0	10.9	10.9
HPP Costești	43.7	64.1	46.7	67.5	41.19	5.5	8.1	5.6	7.2	5.4
RES (except hydro)	46.7	67.5	65.8	75.5	110.47	5.9	8.5	7.9	8.0	14.4
Other domestic producers	1.7	2.5	1.9	2.7	1.36	0.2	0.3	0.2	0.3	0.2
Total	796.9	793.7	836.0	943.5	764.54	100.0	100.0	100.0	100.0	100.0

In terms of share, production in 2022 did not differ depending on the sources, with the exception of renewable energy, the share of which increased from 8 to 15%: S.A. “Termoelectrica”: 69%, “CET-Nord” SA: 11%, HPP Costesti: 5%; RES: 15%; the rest being less than 1%.

### Wholesale market development

Interconnection of power systems is an important step for the development of the wholesale electricity market. The legal framework for the electricity market in Moldova is described in a number of documents<sup>213</sup>:

- Law on electricity [No. 107, 05/27/2016](#)<sup>214</sup>;
- Rules of the electricity market, approved [DANRE No. 283, 08/07/2020](#)<sup>215</sup>;
- Regulations on connection to power transmission networks and provision of services for the transportation and distribution of electricity, approved [DANRE No. 168, 05/31/2019](#)<sup>216</sup>
- Regulation on access to power transmission networks for cross-border exchange and

<sup>212</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report) (for 2018- 2022)

<sup>213</sup> [https://moldelectrica.md/ru/network/capacity\\_allocation](https://moldelectrica.md/ru/network/capacity_allocation)

<sup>214</sup> [https://www.legis.md/cautare/getResults?doc\\_id=105710&lang=ro](https://www.legis.md/cautare/getResults?doc_id=105710&lang=ro)

<sup>215</sup> [https://www.legis.md/cautare/getResults?doc\\_id=131508&lang=ro](https://www.legis.md/cautare/getResults?doc_id=131508&lang=ro)

<sup>216</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130721&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130721&lang=ro)

management of congestion in the power system, approved [DANRE No. 424, 11/22/2019](#)<sup>217</sup>;

- Capacity Allocation Agreements with TSO's of neighboring countries;
- TSO procedures and instructions.

### *Electricity market rules*

The *electricity market rules* in Moldova<sup>218</sup> aim to:

- create conditions for power supply;
- manage the power system in accordance with the norms and operating procedures;
- ensure stable relations between participants in the electricity market;
- streamline relations between market participants and subjects of external zones of dispatch control;
- implement electricity metering with accurate measurement of the volumes of electricity supplied to the network in accordance with bilateral contracts for the supply of electricity between distribution companies, suppliers and independent consumers.
- ensure non-discriminatory network access to all Electricity Distribution Networks, producers, suppliers and independent consumers.

The Rules define the requirements for *market participants*, the obligations of the TSO, the relationship between Electricity Distribution Networks (EDN), suppliers, independent consumers, producers and TSO's.

The rules streamline the interaction of market participants during: purchasing electricity (1), organizing supply (2), dispatching control (3), electricity metering (4).

1. *Rules for the purchase of electricity* for EDN and independent consumers are based on bilateral contracts for the supply of electricity and capacity, intended to: a) cover the load and technological consumption of electricity transportation; b) backup electricity and capacity; c) for dispatching services.

Bilateral agreements are concluded between EDN, independent consumers and electricity producers, electricity suppliers, TSO. If there are contracts with external sources, then the national TSO (SE "Moldelectrica") and the external TSO administer the supply of electricity and capacity.

Bilateral agreements contain information on the duration of the contract, volumes and schedule for the supply of electricity and capacity, delivery points, conditions for increasing / decreasing / terminating supplies, reserve volumes of electricity, etc.

2. *The rules for organizing the supply of electricity* and power include:

- electricity consumption forecasts for the year and for the month (including peak loads, typical days), which are prepared by EDN, independent consumers and submitted by TSO;
- electricity generation and supply forecasts, minimum and maximum capacity, available capacity, annual repair plans and other parameters of equipment operation, which are prepared by producers and submitted by TSO;
- TSO presents consumption forecasts, annual load curves, peak loads, typical days in EDN, to independent consumers and producers;

<sup>217</sup> [https://www.legis.md/cautare/getResults?doc\\_id=130369&lang=ro](https://www.legis.md/cautare/getResults?doc_id=130369&lang=ro)

<sup>218</sup> Moldova Power market rules

- Electricity supplies from CJSC «MGRES» are carried out on the basis of bilateral agreements between EDN, suppliers, independent consumers and CJSC « MGRES » and agreements signed between TSO and GC «Dnestrenergo».
- Organization of electricity supplies from Ukraine, Romania, Bulgaria is carried out on the basis of bilateral contracts between the TSO of the Republic of Moldova and TSO of Ukraine, Romania, Bulgaria.

3. *Rules for operational and technological interaction in the dispatch control* and transmission of electricity and capacity between EDN, manufacturers, suppliers, independent consumers and TSO's are based on bilateral contracts for the provision of services for dispatch control and transmission of electricity and capacity, norms and operating procedures by TSO and TSO of external dispatch control areas.

4. *Electricity metering rules* include monthly accounting of the balance of electricity flows at external and internal borders for each EDN, independent consumer, supplier, producer, which is carried out at the TSO settlement center. It also determines the actual volume of reserve electricity for each EDN, the technological consumption of electricity for its transportation through the network and the execution of documents for the supply of electricity.

The new *electricity market model* includes the market of bilateral agreements, day ahead market, intraday market, balancing electricity market, system services market. The activities of market participants are carried out using a special information system “Wholesale electricity market” on the special software and Internet platform, Figure 59.

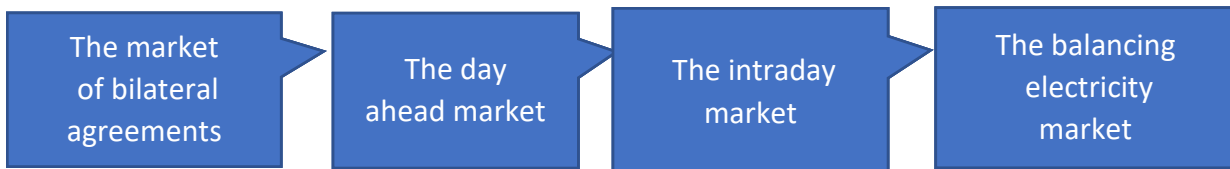


Figure 59. Electricity market model

#### *MD-RO capacity allocation*

The MD-RO joint capacity allocation is held on the “Transelectrica” auction platform in accordance with the approved common “Rules for the distribution of monthly and annual capacity” and the “Rules for the distribution of daily capacity” between SE “Moldelectrica” and CNTEE “Transelectrica” S.A., starting from October 2022<sup>219</sup>.

Currently the available transmission capacity is limited for the control block UA/MD based on Regional Group Continental Europe decision, and this limited capacity is split between the neighboring TSO's borders according to agreed splitting rules. This limitation is subject to change based on system monitoring and is increased gradually.

Daily available transmission capacity for October 2022 is presented in Table 49.

<sup>219</sup> [https://moldelectrica.md/ru/network/md\\_ro\\_allocation](https://moldelectrica.md/ru/network/md_ro_allocation)



Table 49. Daily available transmission capacity for October 2022

Month	Data	Direction	AAC (MW)	ATC (MW)	NTC (MW)
October 2022	13-15 October	RO > MD	0	100	100
		MD > RO	0	100	100
	16-23 October	RO > MD	0	165	165
		MD > RO	0	132	132
	24-25 October	RO > MD	0	500	500
		MD > RO	0	132	132
26-31 October	RO > MD	0	450	450	
	MD > RO	0	132	132	

Daily available transmission capacity on the Romania-Moldova (RO/MD) border for November-December 2022, as well as for the first months of 2023 is presented on SE “Moldelectrica” and CNTEE “Transelectrica” SA<sup>220</sup> websites, Figure 60.

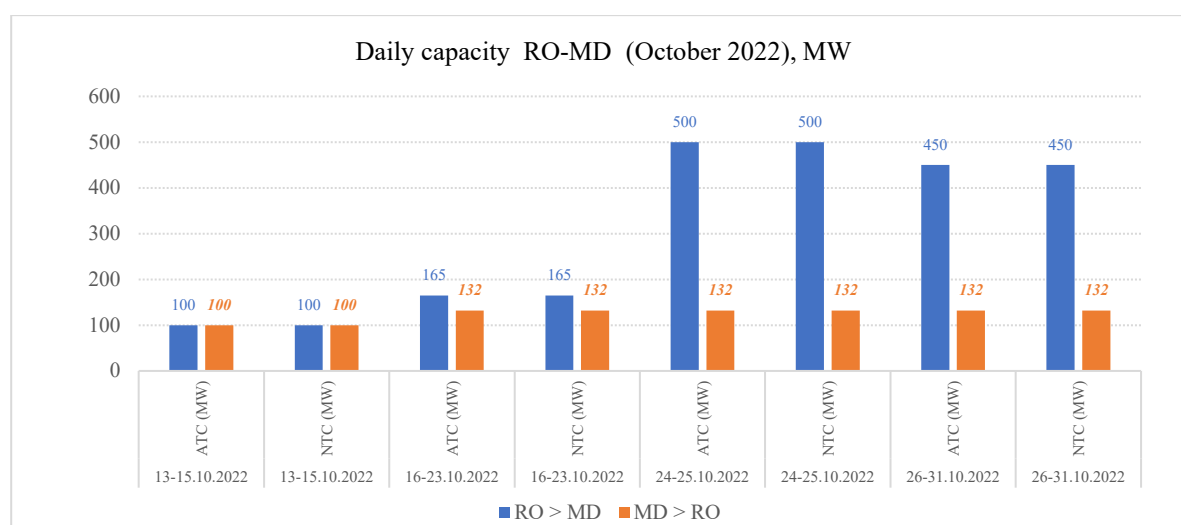


Figure 60. Daily available transmission capacity (RO/MD) for October 2022, in MW

### Electricity Import

Electricity Import from Ukraine, Romania and supply from CJSC «MGRES» are determined on the basis of contractual relations. Electricity imports from Ukraine amounted to 474.32 Mln. kWh (12.9%), from Romania (4<sup>th</sup> quarter of 2022): 480.77 Mln. kWh (13.1%) and supplies from CJSC «MGRES»: 2,708.34 Mln. kWh (73.9%) in 2022, Table 50, Figure 61.

Table 50. Electricity imports from Ukraine, Romania and supply from CJSC «MGRES»<sup>221</sup>

	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Supply from CJSC “MGRES”, Mln kWh	2543.9	2856.8	3251.3	3445.6	2708.34	72.7	81.6	95.1	95.5	73.9
Imports from Ukraine Power System, Mln kWh	955.7	644	167.1	161.5	474.32	27.3	18.4	4.9	4.5	12.9
Imports from Romania Power System, Mln kWh	0	0	0	0	480.77	0.0	0.0	0.0	0.0	13.1

<sup>220</sup> <https://www.transelectrica.ro/en/web/tel/licitatii-atc>

<sup>221</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report)

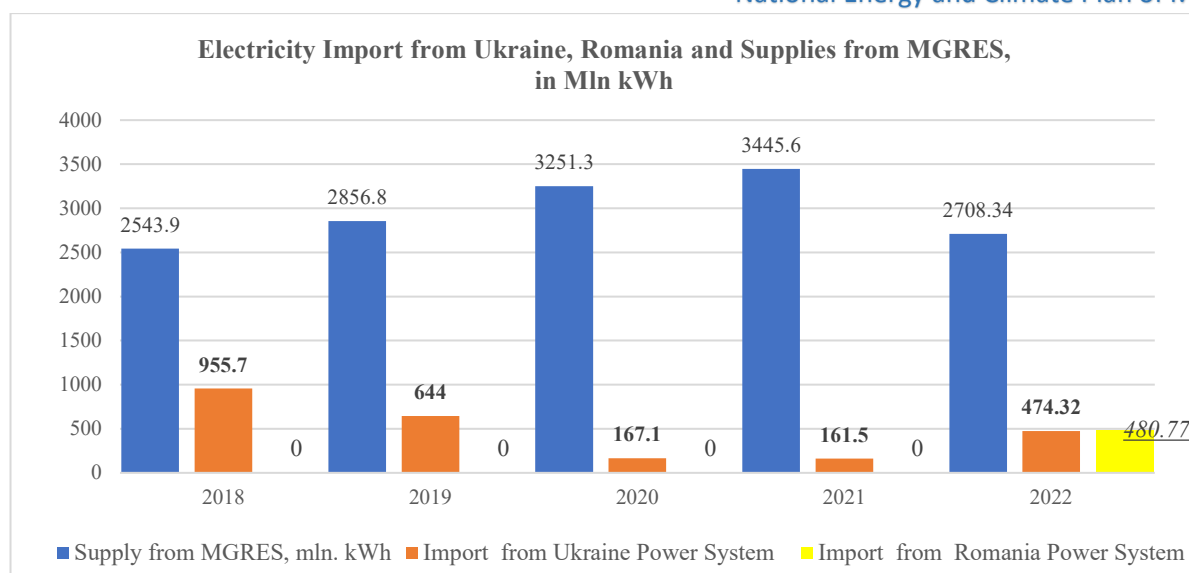


Figure 61. Electricity Import from Ukraine, Romania and Supply from CJSC «MGRES», in Mln. kWh

Electricity Distribution is carried out by licensed companies ÎCS “Premier Energy Distribution” SA and SA “RED Nord”.

Electricity Supply to consumers is carried out by “Premier Energy” SRL, SA “Furnizarea Energiei Electrice Nord” (FEE Nord).

Total electricity supplies in 2021 increased for all companies and amounted to 4,591.7 Mln kWh in 2021 (4,269.80 Mln kWh in 2020).

The amount of purchased electricity to cover technological consumption and losses in transport and distribution electrical networks: in 2021 they amounted to 116.4 (SE “Moldelectrica”) Mln kWh and 319.5 Mln kWh (SA “RED Nord” and ÎCS “Premier Energy Distribution” SA), Table 51.

Table 51. Electricity supplies in the Republic of Moldova in the period 2018 – 2021<sup>222</sup>

	2018	2019	2020	2021
Electricity import – total, Mln kWh, including:	4,303.90	4,301.90	4,269.80	4,591.70
SA „RED Nord”	85	76.4	74.3	78.1
“Premier Energy Distribution” SA	243.2	243.9	226	241.4
“Premier Energy” SRL	2,767.60	2,621.50	2,543.90	2,728.40
SA “Furnizarea Energiei Electrice Nord” (FEE Nord)	970	972.7	949	1,046.10
SE “Moldelectrica”	112.9	106.5	103.4	116.4
Final consumers who used the right of eligible consumer	125.1	280.9	373.3	381.2

Electricity supply to consumers in 2021 amounted to 4,155.8 Mln kWh, including: company “Premier Energy” SRL: 2,728.4 Mln kWh, company SA “Furnizarea Energiei Electrice Nord” (FEE Nord) – 1,046.10 Mln kWh, and final consumers who exercised the right of an eligible consumer: 381.2 Mln kWh, Figures 62 and 63.

<sup>222</sup> <https://anre.md/raport-de-activitate-3-10>, Table 3, page 23, Report ANRE -2021



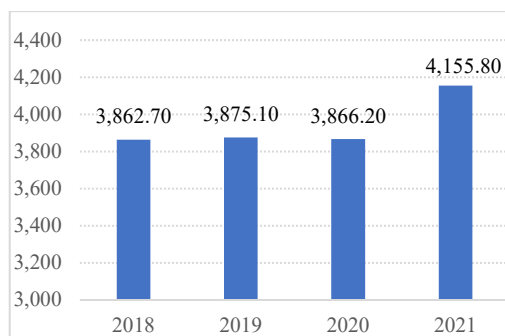


Figure 62. Electricity supply in 2018-2021, in Mln kWh

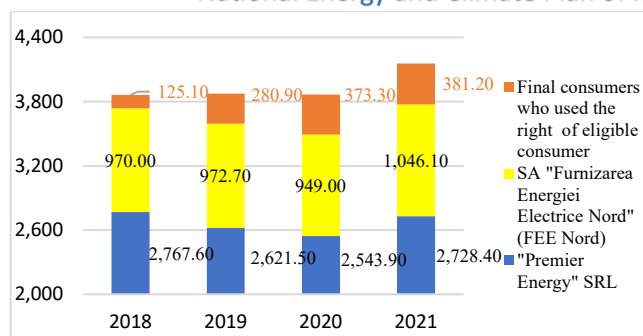


Figure 63. Electricity Supplies in 2018-2021, in Mln kWh

Electricity supply to consumers in 2022 amounted to 4,050.5 Mln kWh, including: company ÎCS “Premier Energy” SRL: 2,973.6 Mln kWh, company SA “Furnizarea Energiei Electrice Nord” (FEE Nord) – 1,067.0 Mln kWh, and final consumers who exercised the right of an eligible consumer: 9.9 Mln kWh.

#### Electricity losses

Electricity losses in transmission networks amounted to 2.4 – 3.66%, Table 52.

Table 52. Technological consumption (Electricity losses in the transmission network)<sup>223</sup>

	2018	2019	2020	2021	2022
Technological consumption (Electricity losses in the transmission network), Mln kWh	112.8	106.5	103.4	116.4	161.89
Technological consumption (Electricity losses in the transmission network), %	2.6	2.48	2.43	2.56	3.66

Electricity losses in distribution networks decreased by company “Premier Energy Distribution” SA from 8.13% to 7.49%, and by company SA “RED Nord” from 8.87% to 7.64% during the period 2018 – 2021, Table 53.

Table 53. Electricity losses by company in the Republic of Moldova in the period 2018 – 2021<sup>224</sup>

Electricity Losses by Company (Electric distribution network operators), %	2018	2019	2020	2021
SA „RED Nord”	8.87	7.95	7.71	7.64
„Premier Energy Distribution" SA	8.13	8.1	7.57	7.49

#### Electricity quality

Analysis of the continuity of electricity supply to consumers is carried out using indicators of the number and duration of planned and emergency breaks in accordance with the Regulations approved by Decision ANRE No. 537/2020 of December 24<sup>th</sup>, 2020<sup>225</sup>:

- for the transmission network operator: ENS (Energy Not Supplied), AIT (Average Interruption Time);
- for the distribution network operators: SAIDI (System Average Interruption Duration Index), SAIFI (System Average Interruption Frequency Index), CAIDI (Customer Average Interruption Duration Index).

#### Transmission network operator

<sup>223</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report)

<sup>224</sup> Report ANRE-2021, table 6, page 24, <https://anre.md/raport-de-activitate-3-10>

<sup>225</sup> [https://www.legis.md/cautare/getResults?doc\\_id=125008&lang=ru](https://www.legis.md/cautare/getResults?doc_id=125008&lang=ru)

Values of ENS decreased by 3 times in the period 2018 – 2021 (from 215.8 MWh to 79.3 MWh), but in 2022 it increased to 987.1 MWh due to encountered blackouts based on current geo-political situation in the region, Table 54.

**Table 54. Values ENS and AIT of TSO (SE “Moldelectrica”) during the period 2018 – 2022<sup>226</sup>**

	2018	2019	2020	2021	2022
ENS – Energy Not Supplied, MWh	215.752	102.088	72.0197	79.2561	987.131
AIT – Average Interruption Time, min	27.1	12.81	9.1444	9.3891	121.669

The situation is similar for the AIT indicator - a decrease from 27.1 to 9.4 minutes (in the period 2018 – 2021) and in 2022 there was a sharp increase to 121.7 minutes. The situation in the energy sector occurred as critical in 2022.

#### *Distribution network operators*

The general indicators of continuity for *Distribution network operators* are calculated according to the *duration of the interruptions*, the *number of final consumers affected by an interruption* and the total number of *consumption places* served by operators of the distribution system.

65% of the total consumer places are served by ICS “Premier Energy Distribution” SA and the remaining 35 % - by the company “RED NORD” SA

#### *SAIDI (System Average Interruption Duration Index)*

The national average for SAIDI in 2021 was 99 minutes, in 2022: 82 minutes. SAIDI by company ICS “Premier Energy Distribution” SA was 101 minutes (from Normative level 151 min), and for the company “RED Nord” SA: 94 min (from Normative level 143 min)<sup>227</sup>.

SAIDI by company ÎCS “Premier Energy Distribution” SA in 2022 was 80.7 minutes (from Normative level 110 min), and for the company “RED Nord” SA - 84 min (from Normative level 107 min).

#### *SAIFI (System Average Interruption Frequency Index)*

Values of SAIFI (System Average Interruption Frequency Index) decreased from 2.44 to 1.97 by company ÎCS “Premier Energy Distribution” SA and from 1.99 to 1.67 by company “RED Nord” SA (2022/2021).

#### *CAIDI (Customer Average Interruption Duration Index)*

Values of CAIDI (Customer Average Interruption Duration Index) is 41 for the company ÎCS “Premier Energy Distribution” SA and increased from 47 to 50 for company “RED Nord” SA (2022/2021).

Limit values of these indicators for the period 2021 – 2025 according Regulation approved by ANRE Decision No. 537/2020 dated December 24<sup>th</sup>, 2020 make up the quantities<sup>228</sup>:

Permissible duration of a scheduled break:

- 8 hours for repair, maintenance, connection and reconnection (480 minutes);

<sup>226</sup> [https://www.moldelectrica.md/ru/network/annual\\_report](https://www.moldelectrica.md/ru/network/annual_report)

<sup>227</sup> [https://premierenergydistribution.md/ru/indicatorii-tehnico-economici\(2022\)](https://premierenergydistribution.md/ru/indicatorii-tehnico-economici(2022)) , [https://www.rednord.md/index.php/ro/indicatorii-tehnico-economici\(2022\)](https://www.rednord.md/index.php/ro/indicatorii-tehnico-economici(2022))

<sup>228</sup> [https://www.legis.md/cautare/getResults?doc\\_id=125008&lang=ru](https://www.legis.md/cautare/getResults?doc_id=125008&lang=ru)

-12 hours in case of removal of busbar systems of transformer substations for repair (720 minutes);

Permissible duration of unplanned (emergency) interruption:

- 12 hours for users of rural distribution networks (720 minutes);
- 6 hours for users of urban distribution systems (360 minutes);

Annual allowable number of unscheduled outages for system consumers:

-urban:

- 6 interruptions if the consumer's installation is connected to medium voltage networks;
- 9 interruptions if the consumer's installation is connected to low voltage networks;

-rural:

- 9 interruptions if the consumer's installation is connected to medium voltage networks;
- 12 interruptions if the consumer's installation is connected to low voltage networks.

### Renewable Energy Sources

Production of Electricity from Renewable Energy Sources in the Republic of Moldova increased from 51.665 Mln kWh (in 2018) to 116.552 Mln kWh (in 2021) and to 196.333 Mln kWh (in 2022), Table 55.

**Table 55. Production of electricity from Renewable Energy Sources in the Republic of Moldova in the period 2018 – 2021<sup>229</sup>**

	th. kWh					MW			
	2018	2019	2020	2021		2018	2019	2020	2021
Photovoltaic	1,457	1,437	3,275	7,764		2.1314	2.1314	4.3	9.9
Biogas	27,961	28,748	27,793	32,239		5.709	5.709	6.1	6.1
Wind	21,968	36,915	50,138	76,310		29.33	33.72	44.1	87.6
Hydro power plant	279	330	147	239		0.254	0.254	0.254	0.254
<b>TOTAL</b>	<b>51,665</b>	<b>67,430</b>	<b>81,353</b>	<b>116,552</b>		<b>37.4244</b>	<b>41.8144</b>	<b>54.754</b>	<b>103.854</b>

The total RES installed capacity increased by 2.8 times, including photovoltaic installations: by 4.6 times, wind; by 3 times, biogas: by 1.1 times<sup>230</sup>.

### Electricity in Final Consumption (Energy Balances)

The *Final Consumption* of electricity in 2018-2021 tends to grow in most sectors of the economy and in 2021 amounted to 4,128 Mln kWh. The exception is the Industry sector, where there is a slight decrease in electricity consumption from 771 to 751 Mln kWh. The highest consumption takes place in the Residential sector: 1,642 Mln kWh (in 2018) and 1,825 Mln kWh (in 2021), Table 56.

<sup>229</sup> <https://anre.md/raport-de-activitate-3-10>, Report ANRE-2021, table7, page 24.

<sup>230</sup> <https://anre.md/raport-de-activitate-3-10>, Report ANRE-2021 (fig.5, page25), Report ANRE-2018(fig.8, page18), 2019 (fig.7, page26).

Table 56. Final consumption of electricity by sectors in the economy in the period 2018 – 2021<sup>231</sup>

Energy Balances	Mln kWh			
	2018	2019	2020	2021
<b>Final Consumption</b>	3,841	3,813	3,807	4,128
<b>Industry</b>	771	740	705	751
<b>Transport</b>	72	45	42	46
<b>Other</b>	2,998	3,028	3,060	3,331
Agriculture/Forestry/Fishing	65	72	77	96
Public services	459	427	429	444
Communal services	832	858	824	966
Residential sector	1,642	1,671	1,730	1,825

### Electricity Prices

Electricity Price generated by CHP of SA “Termoelectrica” was increased from 116 (03/10/2020) to 393 bani<sup>232</sup> / kWh (without VAT) as of 02/28/2023<sup>233</sup>.

Prices for electricity generated by thermal power plants “CET-Nord” SA changed from 162 (12/27/2019) to 611 (12/21/2022) bani / kWh<sup>234</sup>.

The last tariff for the electricity transport service of the operator of the transport and system network is approved in the amount of 20.1 (12/30/2022) (without VAT), compared to 14.5 bani/kWh (07/17/2015)<sup>235</sup>.

The average level of technological consumption and technical losses of electricity is set at 3.0 percent of the volume of electricity entered into the electricity transport networks of SE “Moldelectrica”.

### The tariffs for the electricity distribution service

Tariffs (without VAT) for the electricity distribution service provided by “Premier Energy Distribution” SA differentiated according to the voltage level of the electrical distribution networks, as follows, as of 12/30/2022:

3 bani/kWh – through high voltage distribution networks (35; 110 kV);

22 bani/kWh – through medium voltage distribution networks (6; 10 kV);

74 bani/kWh – through low voltage distribution networks (0.4 kV)<sup>236 237</sup>

Tariffs (without VAT) for the electricity distribution service provided by “RED Nord” SA, differentiated according to the voltage level of the electrical distribution networks, as follows, as of 12/30/2022:

-24 bani/kWh – through medium voltage distribution networks (6; 10 kV);

-114 bani/kWh – through low voltage distribution networks (0.4 kV)<sup>238</sup>

Prices for electricity distribution services provided by “RED Nord” SA have risen to 114 bani/kWh compared to the 2019 tariff (85 bani/kWh) for consumers connected to 0.4 kV networks

Regulated electricity supply prices by “Premier Energy” SRL differentiated according to the demarcation points or places of consumption of final consumers (on 01/01/2023), Table 57.

<sup>231</sup> [www.statistica.gov.md](http://www.statistica.gov.md)

<sup>232</sup> 100 bani = 1 MDL

<sup>233</sup> <https://anre.md/tarif-ului-pentru-energie-termica-livrata-consumatorilor-3-252>

<sup>234</sup> <https://anre.md/tarif-ului-pentru-energie-termica-livrata-consumatorilor-3-252>

<sup>235</sup> <https://anre.md/tarif-ului-pentru-serviciul-de-transport-3-68>

<sup>236</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134149&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134149&lang=ro)

<sup>237</sup> <https://anre.md/tarife-pentru-serviciul-de-distributie-3-69>

<sup>238</sup> <https://anre.md/tarife-pentru-serviciul-de-distributie-3-69>

Table 57. The regulated electricity supply prices by “Premier Energy” SRL, in bani/kWh<sup>239</sup>

Year		Data	ANRE: approved decision	Tariff of Electricity distribution, bani / kWh				
				Networks Transport Input	Networks Transport Output	Consumers of networks distribution 35. 110 kV	Consumers of network s distribution 6, 10 kV	Consumers of network s distribution 0.4 kV
2022	1	12/30/2022	DANRE nr. 1008 of 12/30/2022, M.O 460-462/1512 of 12/31/2022	247	267	270	289	342
	2	12/08/2022	DANRE № 909 of 12/08/2022, MO 402-408/399 of 12/16/2022	396	410	412	426	462
	3	11/30/2022	DANRE № 905 of 11/30/2022, MO 385-391 of 12/02/2022	524	538	541	555	591
	4	11/02/2022	DANRE № 822 of 11/02/2022, MO 343-348 of 11/04/2022	413	428	430	443	477
	5	10/12/2022	DANRE № 799 of 10/12/2022, MO 318-325 of 10/14/2022	251	265	268	281	315
	6	06/08/2022	DANRE №326 of 06/08/2022, MO 170-176/672 of 06/10/2022	200	214	216	230	264
	7	03/18/2022	DANRE №110 of 03/18/2022, MO 80-817/322 of 03/25/2022	157	171	173	186	217
2021	8	01/26/2021	DANRE №42 of 01/26/2021, MO 22-32/92 of 01/29/2021	98	112	114	125	151
2020	9	07/31/2020	DANRE №275 of 07/31/2021, MO 199-204/693 of 08/07/2020	101	116	117	132	168

The regulated electricity supply prices by SA “Furnizarea Energiei Electrice Nord” differentiated according to the demarcation points or places of consumption of final consumers (on 01/01/2023), Table 58.

Table 58. Evolution of electricity supply prices SA “FEE Nord” for the period 2018 – 2022, in bani/kWh

Year	Date	NAER: approved decision <sup>240</sup>	Networks Transport Input	Networks Transport Output	Consumers of distribution networks 6, 10 kV	Consumers of distribution networks 0.4 kV
			bani/ kWh	bani/ kWh	bani/ kWh	bani/ kWh
2022	12/30/2022	DANRE1008/2022, 12/30/2022, MO № 460-462/1512 of 12/31/2022	250	270	295	384
	12/08/2022	DANRE nr.910 of 12/08/2022, MO №402-408/400 12/16/2022	365	380	400	465
	11/30/2022	DANRE nr.906 of 11/30/2022, MO №385-391/351 12/02/2022	461	475	495	560
	11/02/2022	DANRE nr.823 of 11/02/2022, MO №343-348/264 11/14/2022	387	401	420	481
	10/12/2022	DANRE nr.780 of 10/12/2022, MO № 318-325 10/14/2022	227	242	261	321
	06/08/2022	DANRE nr.327 of 06/08/2022, MO № 170-176/672 06/10/2022	190	205	223	286
	03/18/2022	DANRE nr.109 of 03/18/2022, MO № 89/87/321 03/25/2022	157	172	190	251
2021	01/26/2021	DANRE nr.43 of 01/26/2021, MO №22-32/93 01/29/2021	101	115	143	204
2020	07/31/2020	DANRE nr.276/2020 of 07/31/2020, MO № 199-204/694 08/07/2020	114	129	157	214
2019	08/16/2019	DANRE nr.323/2019 of 08/16/2019, MO №261-268/428 08/23/2019	120	135	163	223
2018	06/15/2018	DANRE nr.203/2018 of 06/15/2018, MO № 235-244/1058 06/29/2018	93	107	166	191

### Electricity prices from the Central Electricity Supplier

“Energocon” SA is the central supplier of electricity and concludes contracts for its supply.

Daily electricity demand in the Republic of Moldova is of 13,000 MWh per day (2022), of which local thermal power plants supply 2,500 MWh (20% of demand). Local CHP supplied 2,000 MWh (on workdays in November 2022), 2,500 MWh on weekends, 2,700 MWh (on workdays in December 2022) and 3,200 MWh on weekends<sup>241</sup>.

<sup>239</sup> <https://anre.md/tarife-reglementate-de-furnizare-3-70>

<sup>240</sup> <https://anre.md/tarife-reglementate-de-furnizare-3-70>

<sup>241</sup> <https://energocon.md/ru/press-ru/357-doua-contr-procurare>

“Energoecom” SA received licenses for electricity and natural gas trading in Romania, as well as for their transportation and storage in 2022<sup>242</sup>.

“Energoecom” SA started purchasing on the Romanian stock market through OPCOM SA from 29/10/2022, concludes contracts with suppliers (CJSC “MGRES”, Ukrhydroenergo, OLTENIA, OMV “Petrom”, SN “Nuclearelectrica” SA, etc.)<sup>243</sup>.

The weighted average purchase prices in 2022 year were: CJSC “MGRES”: 1.19 MDL/MWh; CHP of the Right bank of the Dniester River: 3.5 MDL/MWh; companies from Romania - 7.72 MDL/MWh (including purchases on the stock market, but excluding operating costs, customs clearance, delivery, distribution)<sup>244</sup>.

The weighted average electricity purchase prices for each month in 2022 were in the range of 1.27-4.28 MDL/kWh, Figure 64.

The weighted average price of electricity purchased from OPCOM SA (peak) was 188.4 EUR/MWh in January 2023; and for the period 02/01 – 02/27, 2023: 163.5 EUR/MWh<sup>245</sup>.

Prices for electricity supplied by “Energoecom” SA for the period 2021 – 2023 (March) increased from 123 (01/26/2021) to 450 bani/kWh (12/30/2022), Figure 65.<sup>246</sup>

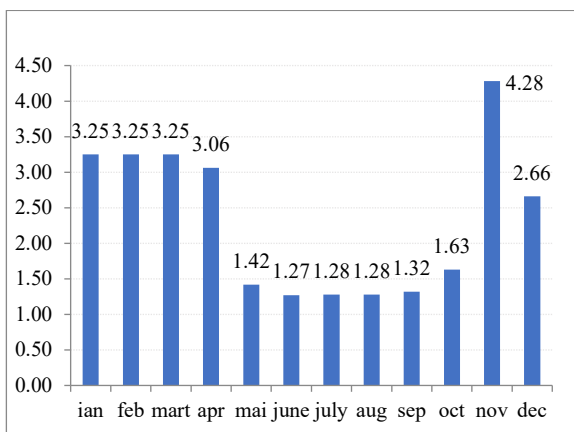


Figure 64. Weighted average purchase prices for electricity of the Central Supplier “Energoecom” SA during the year 2022, MDL/kWh

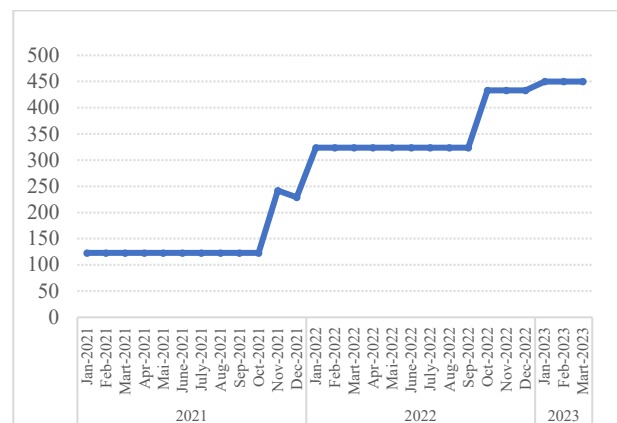


Figure 65. Dynamics of prices for electricity supplied by the Central electricity supplier - “Energoecom” SA during the period 2021 – 2023(March), bani/kWh

### Electricity tariff structure

Methodology for calculating electricity tariffs<sup>247</sup> is designed in accordance with the Law No. 107 of May 27<sup>th</sup>, 2016 on Electricity<sup>248</sup>.

Electricity price components and structure of electricity sources for residents of the capital city of Chisinau according accordingly to the invoice of “Premier Energy” SRL are indicated in Table 59 and in Figures 66 and 67.

<sup>242</sup> <https://energoecom.md/ru/press-ru/342-egc-devenit-trader-2022>

<sup>243</sup> <https://energoecom.md/ru/press-ru/355-opcom-oct-22>, <https://energoecom.md/ru/press-ru/358-opcom>, <https://energoecom.md/ru/press-ru/361-ian2023-mgres>, <https://energoecom.md/ru/press-ru/360-2022contracte-incheiate>

<sup>244</sup> <https://energoecom.md/ru/press-ru/367-eg-proc-2022-cant-pret>

<sup>245</sup> <https://energoecom.md/ru/press-ru/374-mart-en-el-mgres-nucl>

<sup>246</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134855&lang=ru](https://www.legis.md/cautare/getResults?doc_id=134855&lang=ru), <https://anre.md/energie-electrica-3-290>

<sup>247</sup> [https://www.legis.md/cautare/getResults?doc\\_id=103990&lang=ru](https://www.legis.md/cautare/getResults?doc_id=103990&lang=ru)

<sup>248</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135004&lang=ru#](https://www.legis.md/cautare/getResults?doc_id=135004&lang=ru#)

**Table 59. The structure of electricity sources and electricity price components for residents of Chisinau, invoice of “Premier Energy” SRL**

General structure of electricity source, invoice February 2023, "Premier Energy" SRL, %		Electricity price components for residents of Chisinau, February 2023, Invoice of "Premier Energy" SRL, %	
"Energocom" SA (central supplier)	16.2	Purchase price of electricity from MGRES	73.6
"Energocom" SA (CJSC "MGRES")	80.4	Price of electricity transport in SE "Moldelectrica"	6.1
RES	1.6	Price for electricity distribution by ICS "Premier Energy Distribution" SA	17.6
Unbalances	1.8	Price for the supply of electricity by "Premier Energy" SRL	2.7

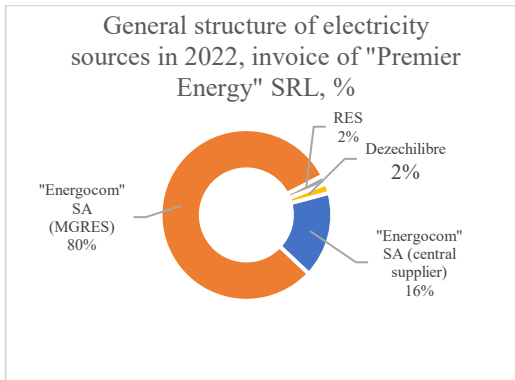


Figure 66. The structure of electricity sources in 2022, %

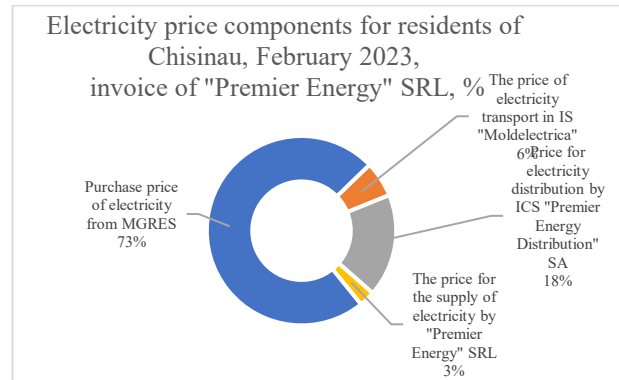


Figure 67. Electricity price components for residents of Chisinau, February 2023, invoice of “Premier Energy” SRL, %

### Natural Gas sector

Natural Gas Law no. 108/2016<sup>249</sup> provides the basic principles and rules that regulate the obligations and rights of participants in the natural gas market in the Republic of Moldova.

The main actors involved in the natural gas sector in the Republic of Moldova are (Figure 68):

- The Government of the Republic of Moldova;
- The National Agency for Energy Regulation (ANRE);
- JSC “Energocom”;
- JSC “Moldovagaz”;
- LLC “Moldovatrangaz”;
- LLC “Vestmoldtrangaz”;
- Customers (~800 thousand final consumers<sup>250</sup>).

According to the Register of Licenses of ANRE<sup>251</sup> at the beginning of 2023, 52 license holders were registered in the natural gas market:

- 1) 2 transmission system operators (TSO), LLC “Moldovatrangaz” and “Vestmoldtrangaz”;
- 2) 25 suppliers (including JSC “Moldovagaz” and JSC “Energocom”);
- 3) 20 distribution system operators (DSO), including 12 DSO affiliates of Moldovagaz;
- 4) 5 suppliers of compressed natural gas for vehicles at gas stations.

There is also a TSO in the ATULBD (in the Transnistrian region) - LLC “Tiraspoltrangaz”, Figure 69.

<sup>249</sup> [LP108/2016 \(legis.md\)](https://legis.md/LP108/2016)

<sup>250</sup> <https://anre.md/raport-de-activitate-3-10>

<sup>251</sup> <https://anre.md/registru-de-licentiere-3-261>



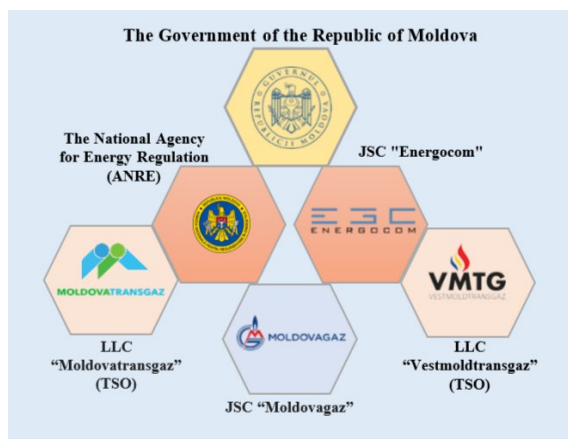


Figure 68. Main actors in the natural gas sector (2022)

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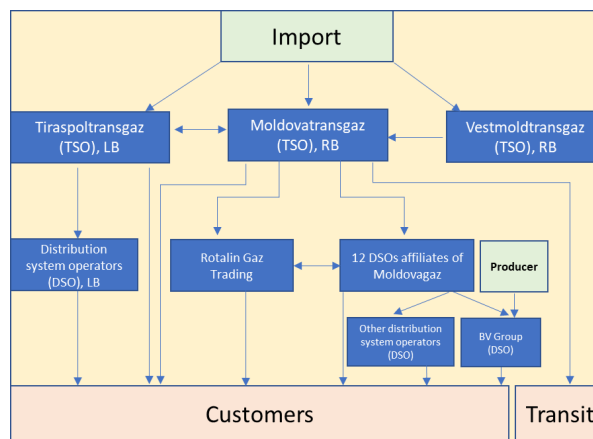


Figure 69. Physical flows of natural gas, 2022

In accordance with art. 92 of the Natural Gas Law, the *natural gas market* of Republic of Moldova consists of the *wholesale* market and the *retail* market. The *rules* of the natural gas market in the Republic of Moldova were approved by the Decision of the Administrative Council of ANRE no. 534/2019<sup>252</sup> of December 27<sup>th</sup>, 2019 and establish the legal framework for carrying out sales-purchase transactions of natural gas and related products on the *wholesale* and *retail market* of natural gas.

In 2011, according to the ANRE decision No. 408/2011<sup>253</sup>, the *retail natural gas market* was declared as non-competitive, due to the fact that in the Republic of Moldova, the only supplier of natural gas at regulated tariffs was JSC “Moldovagaz”. By Decision no. 487<sup>254</sup> of 2019, most of the customers are supplied by “Moldovagaz” under the Public Service Obligation (OSP) until 2026.

In 2021, according to decision no. 444<sup>255</sup>, ANRE imposed on JSC “Moldovagaz” a public service obligation of last resort until 2024 for the situations indicated in the Natural Gas Law (art. 90 (1) and (4)).

It should be mentioned that since the adoption of the Gas Law 108/2016 (article 114), the natural gas retail market has been declared **open** and every final consumer in the Republic of Moldova is eligible and has the right to freely choose and change the gas supplier.

The provisions of Regulation (EU) no. 1227/2011<sup>256</sup> regarding on *wholesale energy* market integrity and transparency were also transposed into Law 108/2016.

According to Art. 94 (Law 108) natural gas sale-purchase transactions, including import or export transactions, are carried out on the *wholesale natural gas* market on the basis of bilateral contracts in a transparent, public and non-discriminatory manner. The participants in the *wholesale market* of natural gas are obliged to register in the Register of participants in the wholesale market, approved by ANRE decision 26/2023<sup>257</sup>.

The Republic of Moldova has made progress in creating a free natural gas market by taking the following important steps:

- Registration on the RBP platform<sup>258</sup>;

<sup>252</sup> [https://www.legis.md/cautare/getResults?doc\\_id=120439&lang=ro#](https://www.legis.md/cautare/getResults?doc_id=120439&lang=ro#)

<sup>253</sup> [https://www.legis.md/cautare/getResults?doc\\_id=7828&lang=ro](https://www.legis.md/cautare/getResults?doc_id=7828&lang=ro)

<sup>254</sup> [https://www.legis.md/cautare/getResults?doc\\_id=119791&lang=ro](https://www.legis.md/cautare/getResults?doc_id=119791&lang=ro)

<sup>255</sup> [https://www.moldovagaz.md/files/documents/files/1639/ANRE\\_nr.444\\_din\\_12.10.2021\\_ro.pdf](https://www.moldovagaz.md/files/documents/files/1639/ANRE_nr.444_din_12.10.2021_ro.pdf)

<sup>256</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R1227&from=EN>

<sup>257</sup> [https://www.legis.md/cautare/getResults?doc\\_id=135727&lang=ro](https://www.legis.md/cautare/getResults?doc_id=135727&lang=ro)

<sup>258</sup> <https://moldovatrangaz.md/en/news/109>

- Signing a cooperation agreement with and Romanian Commodities Exchange<sup>259</sup>;
- Became a participant in the wholesale natural gas market in Romania<sup>260</sup>;
- Signing contracts with Ukrainian Gas TSO and Ukrtransgaz;
- Signing an agreement with Bulgartarnsgaz EAD<sup>261</sup> for access to the network and transmission of natural gas, for the use of the Virtual Trading Point and a balancing contract;
- Purchasing gas for storage<sup>262</sup>;
- Implementation of natural gas transit through the Trans-Balkan corridor in reverse mode from South to North<sup>263</sup>, (in December 2022, 4.3 Mln m<sup>3</sup> were imported in test mode through the Greece-Bulgaria interconnector;
- Signing of an EFET contract (framework contract) with the Greek gas operator DEPA (in April 2023, a 24 MWh (~2,250 cubic meters) was purchased as a test from the DEPA<sup>264</sup>).

### *Access to the system*

The regulated and non-discriminatory access for all natural and legal persons to the natural gas market, to natural gas transport and distribution networks, to storage facilities, as well as to system services is provided for in Law 108/2016, art 3. At the same time in 2019, ANRE by Decision no. 112/2019<sup>265</sup> approved the Regulation on the connection to natural gas networks and the provision of natural gas transmission and distribution services (amended in 2022 by Decision no. 673<sup>266</sup>).

In accordance with Regulation (EU) 2017/459<sup>267</sup> establishing a network code on capacity allocation mechanisms in gas transmission systems and Regulation (EU) 2017/460<sup>268</sup> establishing a network code on harmonized transmission tariff structures for gas, the Republic of Moldova on 11/29/2019 approved the natural gas networks code (ANRE decision no. 420<sup>269</sup>).

The list of physical and virtual entry/exit points (groups of points) is drawn up by the TSO's and published on their website.

The approved list of entry/exit points of the natural gas transmission network can be viewed in:

- For “Moldovatransgaz” LLC: Decision no. 262<sup>270</sup> of 07/24/2020 and amended by Decision no. 689<sup>271</sup> of 12/31/2021.
- For Vestmoldtransgaz SRL: Decision no. 185<sup>272</sup> of 06/09/2020 and amended by Decision no. 415<sup>273</sup> of 09/21/2021.

The *entry/exit points, points connected directly to consumers transmission networks and points connected to distribution system* are part of *relevant points*. The List of relevant points of the natural gas transmission network of the LLC “Moldovatransgaz” was adopted by ANRE decision 209 from 05/14/2021<sup>274</sup> and for LLC “Vestmoldtrasgaz” by ANRE decision nr. 223 from 05/26/2021<sup>275</sup>

<sup>259</sup> <https://www.energo.com.md/images/comunicat/S.A.-ENERGOCOM-a-devenit-membru-afiliat-al-Bursei-Romne-de-Marfuri-BRM.pdf>

<sup>260</sup> <https://www.energo.com.md/press-ro/342-egc-devenit-trader-2022>

<sup>261</sup> <https://www.energo.com.md/press-ro/354-bugaz-oct-22>

<sup>262</sup> <https://www.energo.com.md/press-ro/362-gaz-berd-300>

<sup>263</sup> <https://www.energo.com.md/press-ro/359-import-gaze>

<sup>264</sup> <https://www.energo.com.md/en/press-en/390-import-gaze-testate-bg-gr>

<sup>265</sup> [https://www.legis.md/cautare/getResults?doc\\_id=114525&lang=ro](https://www.legis.md/cautare/getResults?doc_id=114525&lang=ro)

<sup>266</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133030&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133030&lang=ro)

<sup>267</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0459>

<sup>268</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0460>

<sup>269</sup> [https://www.legis.md/cautare/getResults?doc\\_id=120009&lang=ro](https://www.legis.md/cautare/getResults?doc_id=120009&lang=ro)

<sup>270</sup> <https://anre.md/storage/upload/administration/acts/154/Lista%20punctelor%20de%20intrare-ie%20C8%99ire.pdf>

<sup>271</sup> <https://www.moldovatransgaz.md/storage/app/media/Documente%202022/Hot%C4%83r%C3%A2rea%20nr.689%20din%2031.12.2021.pdf>

<sup>272</sup> <https://anre.md/storage/upload/administration/acts/155/VMTG.PDF>

<sup>273</sup> [https://www.vmtg.md/images/H\\_CA\\_ANRE\\_nr\\_415\\_din\\_21.09.2021.pdf](https://www.vmtg.md/images/H_CA_ANRE_nr_415_din_21.09.2021.pdf)

<sup>274</sup> <https://www.moldovatransgaz.md/storage/app/media/Documents%202021/Relevant%20points.pdf>

<sup>275</sup> [https://www.vmtg.md/images/doc/H\\_ANRE\\_223-2021\\_cu\\_privire\\_la\\_aprobarea\\_Listei\\_punctelor\\_relevante.pdf](https://www.vmtg.md/images/doc/H_ANRE_223-2021_cu_privire_la_aprobarea_Listei_punctelor_relevante.pdf)

Data regarding the entry/exit points, the relevant points and EIC codes are presented in Tables 60 and 61.

**Table 60. The main EIC codes for relevant points and entry/exit points of “Moldovatrangaz” LLC\***

Nr.	Relevant points		Entry/exit points		The adjacent system operator
	EIC code of relevant points	The name of Relevant points	EIC code of entry/exit points	The name of entry/exit points	
1	21Z00000000178E	GMS Grebeniki-entry	56ZOPODS5002302E	GMS Grebeniki (ATI Transport Network)	TSO from UA
			56ZOPODS5002303C	SMG Grebeniki (RI Transport Network)	TSO from UA
2	68ZPREL-GREB-EXO	GMS Grebeniki-exit	68ZGREB-AT1-EX-3	GMS Grebeniki (ATI Transport Network)	TSO from UA
			68ZGREB-SDKRIEXE	SMG Grebeniki (RI, SDKRI Transport Network)	TSO from UA
3	68ZPREL-CAUS-ENE	GMS Causeni-entry	56ZIPODSI 1054901	SMG Causeni (ATI Transport Network)	TSO from UA
			56ZIPODS11055000	GMS Causeni (RI, SDKRI Transport Network)	TSO from UA
4	21 z000000000179C	GMS Causeni-exit	56ZIPODS50024058	GMS Causeni (ATI Transport Network)	TSO from UA
			56ZIPODS50024066	GMS Causeni (RI, SDKRI Transport Network)	TSO from UA
5	68ZPREL-VP-EX--7	Virtual Point RI/SDKRI - exit	56ZE-ENP-MD-0007	ATI Virtual Point	TSO from UA
			68ZVP-SDKRI-EX-5	RI/SDKRI Virtual Point	TSO from UA
6	68ZPREL-VP-EN—A	Virtual Point RI/SDKRI - entry	56ZG-EXP-MD-000T	RI/SDKRI Virtual Point	TSO from UA
7	68ZPREL-LIM-EN-3	GMP Limanskoe-entry	56ZOPODS50022021	GMP Limanskoe	TSO from UA
8	21Z000000000360P	GMP Limanskoe-exit	56ZIPODS50022010	GMP Limanskoe	TSO from UA
9	21Z0000000001761	GMS Ananiev-entry	56ZOPODS11040105	GMS Ananiev	TSO from UA
10	68ZPREL-ANAN-EXR	GMS Ananiev-exit	68ZANANIEV-EX-C	GMS Ananiev	TSO from UA
11	21 Z000000000182N	GMS Alexeevka- entry	56ZOPCHV5001902N	GMS Alexeevka	TSO from UA
12	21 Z000000000182N	GMS Alexeevka- exit	56ZOPCHV1103150M	GMS Alexeevka	TSO from UA

\*fragment/part from the list

**Table 61. EIC codes for relevant points and entry/exit points of “Vestmoldtransgaz” LLC**

Relevant points		Entry/exit points		The adjacent system operator
EIC code of relevant points	The name of Relevant points	EIC code of entry/exit points	The name of entry/exit points	
PRO01 - VMTG - INTRARE SMG UNGHENI	GMS Ungheni -entry	21Z000000000356G	GMS Ungheni	S.N.T.G.N. "Transgaz" JSC, TSO
PRO02 - VMTG - 1EȘIRE SMG UNGHENI	GMS Ungheni -exit	21Z000000000356G	GMS Ungheni	S.N.T.G.N. "Transgaz" JSC, TSO
PRO03 - VMTG - 1EȘIRE OSD	Exit to DSO	68ZTLO-MTG-VMTGT	SP Tohatin (city line)	“Chisinau-gaz” LLC, SDO
		68ZTLC-MTG-VMTGD	SP Tohatin (CHP line)	“Chisinau-gaz” LLC, SDO
		68ZGDG-MTG-VMTGC	SP Ghidighici	“Chisinau-gaz” LLC, SDO
PRO04 - VMTG - INTRARE OST	Entry from other natural gas transport networks	68ZTOD-MTG-VMTG3	GMP Todirești	“Moldovatrangaz” LLC, TSO
		68ZTOH-MTG-VMTGX	GMP Tohatin	“Moldovatrangaz” LLC, TSO
PRO05 - VMTG - 1EȘIRE OST	Exit to other natural gas transport networks	68ZTOD-MTG-VMTG3	GMP Todirești	“Moldovatrangaz” LLC, TSO
		68ZTOH-MTG-VMTGX	GMP Tohatin	“Moldovatrangaz” LLC, TSO

The list of all approved EIC codes can be also found on the ENTSO-G website<sup>276</sup>.

The maximum daily capacity (in m<sup>3</sup>) and the rate of utilization of entry/exit points of LLC “Moldovatrangaz” are presented in Table 62.

**Table 62. Entry/Exit points of LLC “Moldovatrangaz” and utilization rate**

No	Name of entry/exit points	Direction of gas flow	Maximum daily capacity (m <sup>3</sup> )	Utilization rate		
				2019 (%)	2020 (%)	2021 (%)
1	GMS Grebeniki	entry	36,000,000	96.15	23.13	21.32
		exit	3,960,000	0.00	0.00	0.00
2	GMS Caușeni	entry	12,000,000	0.00	0.00	0.00
		exit	36,000,000	78.77	8.28	4.75
3	GMS Alexeevka	entry	7,900,000	19.08	32.92	33.43

<sup>276</sup> <https://www.entsog.eu/approved-eic-codes> \l "all-approved-eic-codes

No	Name of entry/exit points	Direction of gas flow	Maximum daily capacity (m <sup>3</sup> )	Utilization rate		
				2019 (%)	2020 (%)	2021 (%)
		exit	12,000,000	0.00	0.00	0.00
4	PI Tohatin-entry	entry	4,890,000	0.00	0.00	0.00
		exit	2,500,000	0.00	0.00	0.00

The entry/exit **tariffs** were approved for LLC “Moldovatrangaz” and LLC “Vestmoldtrangaz” by the decision of ANRE no. 884<sup>277</sup> and 885<sup>278</sup> of November 29<sup>th</sup>, 2022.

Additional information about tariffs can be found on the official websites of the companies:

- <https://moldovatrangaz.md/en/clients/tarife-aplicate>
- <https://www.vmtg.md/index.php/clienti/tarife-de-transport>

### *Storage of natural gas*

In the natural gas sector of the Republic of Moldova, the activity regarding natural gas storage is carried out and regulated by Law 108/2016, and the JSC “Energocon” is defined as the entity for the creation and maintenance of security stocks of natural gas in RM.

In 2022, article 108 of Law 108/2016 was amended by law No. 249<sup>279</sup> of 29/07/2022 that establishes the provision of gas stocks in an amount equal to the consumption of natural gas during at least 10 days of consumption (*one day of consumption being the equivalent of the average daily consumption for the previous calendar winter period*). These safety stocks will be gradually realized according to the schedule:

- no less than 4 days of consumption: starting from September 15<sup>th</sup>, 2022;
- no less than 8 days of consumption: starting from October 1<sup>st</sup>, 2023;
- no less than 10 days of consumption: starting from October 1<sup>st</sup>, 2024.

Respectively, according to Government Decision No. 668/2022<sup>280</sup> “Regarding the creation and maintenance of security stocks of natural gas” the minimum amount of natural gas to be stored until September 15<sup>th</sup> as security stocks was set at 22.8 Mln m<sup>3</sup>.

The implementation of EU Regulation 2022/1032<sup>281</sup> on gas storage, which provides for the creation by November 1<sup>st</sup> of each year of storage volumes corresponding to a level of at least 15% of the average annual gas consumption of the previous five years, is currently still being analyzed.

### *Energy balance – natural gas*

The Moldovan gas market has always been dependent on gas imports, having only insignificant volumes of gas extraction in the Cantemir district. The natural gas extracted from the wells located in the village of Victorovca, constitutes approximately 2 – 4 TJ/year.

The volume of natural gas transit through the territory of Moldova has significantly decreased in recent years due to the use of the Turkstream gas pipeline instead of the Trans-Balkan for gas transit to Romania, Bulgaria, Turkey, Grecia and North Macedonia, Table 63.

<sup>277</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134344&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134344&lang=ro)

<sup>278</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134345&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134345&lang=ro)

<sup>279</sup> [https://www.legis.md/cautare/getResults?doc\\_id=132683&lang=ro](https://www.legis.md/cautare/getResults?doc_id=132683&lang=ro)

<sup>280</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133538&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133538&lang=ro)

<sup>281</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R1032&from=EN>

**Table 63. Volume of transit gas through RM**

	1990	1995	2000	2005	2015	2020
Natural gas transiting the RM, billion m <sup>3</sup>	25.0000	20.9090	19.3649	25.3129	16.9700	0.8906

Source: National Inventory Report 1990-2020. Greenhouse Gas Sources and Sinks in the Republic of Moldova.

The Gross Inland Consumption and the Final Energy Consumption of natural gas in the Republic of Moldova according to the Energy Balance for the period 2015 – 2021, both in units of natural measures and in energy units, is presented in Table 64.

**Table 64. Natural gas consumption in the Republic of Moldova according to the Energy Balance during the period 2015 – 2021<sup>282</sup>**

Energy Balances		2015	2016	2017	2018	2019	2020	2021
Gross inland consumption	Mln m <sup>3</sup>	1,010	1,036	1,035	1,128	1,059	1,080	1,234
	TJ	34,197	35,105	35,062	38,157	35,868	36,548	41,859
	ktoe	816	837	836	911	855	872	997
Transformation Input	Mln m <sup>3</sup>	452	457	445	471	432	434	460
	TJ	15,309	15,480	15,039	15,930	14,627	14,737	15,588
	ktoe	365	369	360	381	349	352	372
Final Energy consumption	Mln m <sup>3</sup>	486	517	529	602	591	616	745
	TJ	16,454	17,510	17,959	20,364	20,012	20,806	25,214
	ktoe	393	418	427	486	476	496	602

According to Figure 71, in 2021, *Gross Inland Consumption* was of 1,234 Mln m<sup>3</sup> or 41,859 TJ.

*Final Energy Consumption* of natural gas from 2015 to 2021 (Figure 70) increased from 486 to 745 Mln m<sup>3</sup>. Consumption of natural gas used by power plants (CHP) for energy production decreased from 452 Mln m<sup>3</sup> (in 2015) to 460 Mln m<sup>3</sup> (in 2021).

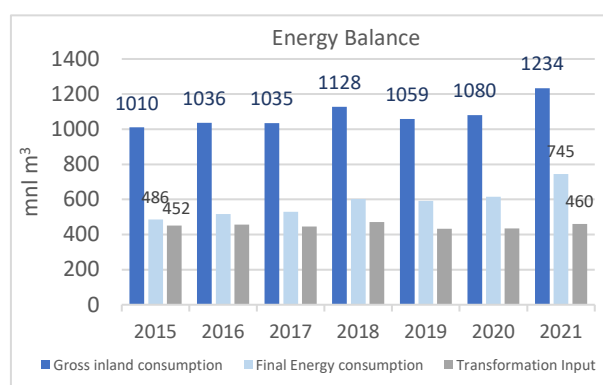


Figure 70. Natural gas consumption in the Republic of Moldova (Energy Balance<sup>283</sup>) for 2015-2021, Mln m<sup>3</sup>

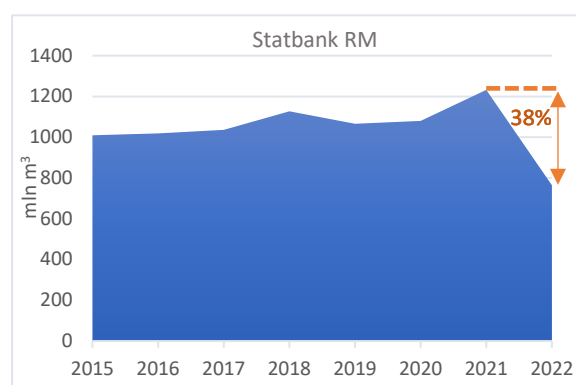


Figure 71. Gross inland consumption of natural gas in the Republic of Moldova (Statbank RM) for 2015-2022, Mln m<sup>3</sup>

The total volume of natural gas consumed in 2022, compared to 2021, decreased approximately by 470 Mln m<sup>3</sup> (-38%). Due to the critical regional situation created in the energy sector, in addition to natural gas, a large amount of fuel oil was also used in CHP plants for power generation, Figure 71.

Comparison of the indicator of *Gross Inland Consumption* of natural gas of Moldova with other countries is provided in the figure 76. These data are provided according to Eurostat for 2021.

<sup>282</sup> [https://statistica.gov.md/ro/balanta-energetica-a-republicii-moldova-63\\_3710.html](https://statistica.gov.md/ro/balanta-energetica-a-republicii-moldova-63_3710.html)

<sup>283</sup> [Balanta energetica a Republicii Moldova, editiile 2007-2022 \(gov.md\)](https://statistica.gov.md/ro/balanta-energetica-a-republicii-moldova-63_3710.html)

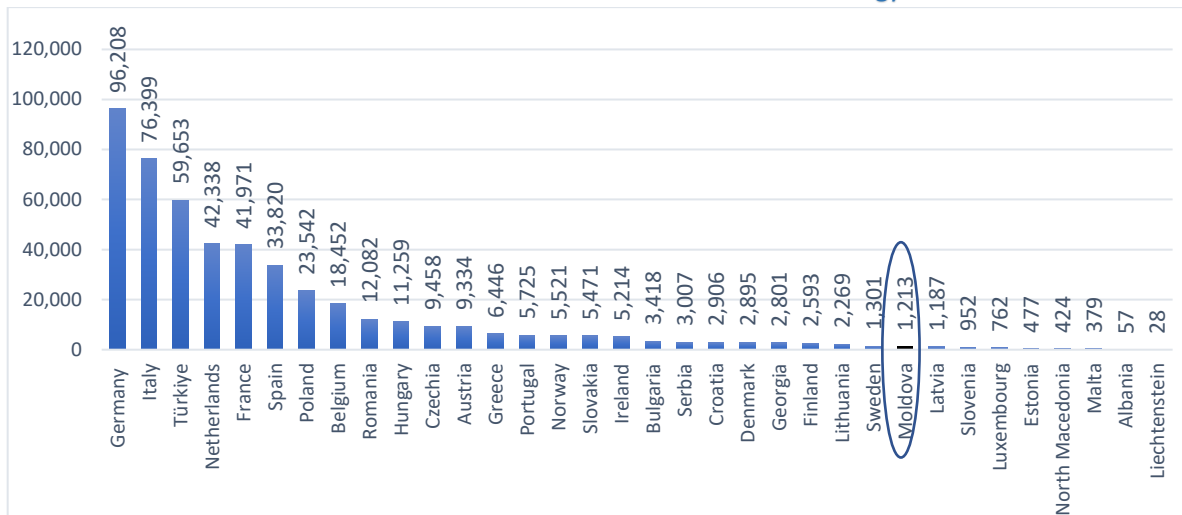


Figure 72. Gross Inland consumption of natural gas in 2021 in the EU and other countries, according to Eurostat, in mcm

The Gross Inland Consumption of natural gas of the Republic of Moldova is approximately at the same level as the consumption of Sweden and Latvia, figure 72.

In 2021, the largest share of natural gas consumption in the structure of natural gas supply was attributed to household users (38%), followed by the energy sector with a share of 32%. The volumes of natural gas consumed by each of the consumer categories in 2021 are reflected in Figures 73 and 74.

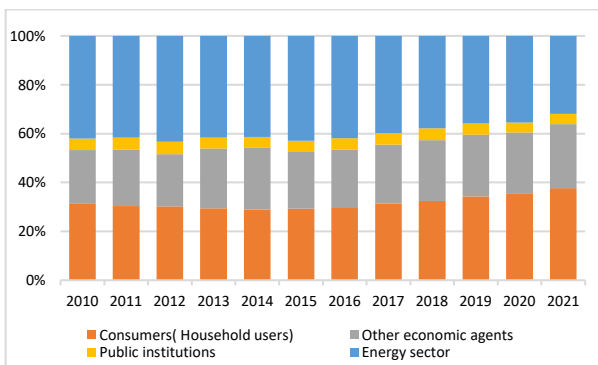


Figure 73. The Structure of Natural Gas Supply in the Republic of Moldova by Consumer Category in 2019-2021, in Mln m<sup>3</sup>

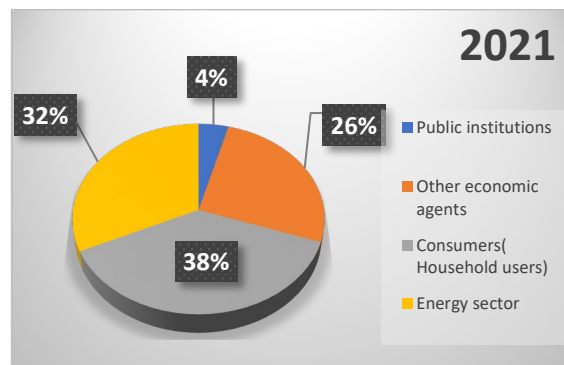


Figure 74. The Structure of Natural Gas Supply in the Republic of Moldova by Consumer Category in 2021, in %

In accordance with the provisions of Government Decision no. 207<sup>284</sup> from 04/03/2019 which transposes the provisions of Regulation (EU) 2017/1938, final consumers in the Republic of Moldova are divided into *protected* and *interruptible*. The last amendment to this decision was made in August 2022 by Government Decision no. 606<sup>285</sup>. The annual consumption of protected consumers represents about 60% of the annual consumption in the Republic of Moldova (Right bank of the Dniester River).

Consumption of natural gas in the Republic of Moldova varies seasonally. Monthly and annual average values of natural gas flows for the period 2015 – 2022 are presented in Figure 75.

<sup>284</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133079&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133079&lang=ro)

<sup>285</sup> [https://www.legis.md/cautare/getResults?doc\\_id=133022&lang=ro](https://www.legis.md/cautare/getResults?doc_id=133022&lang=ro)



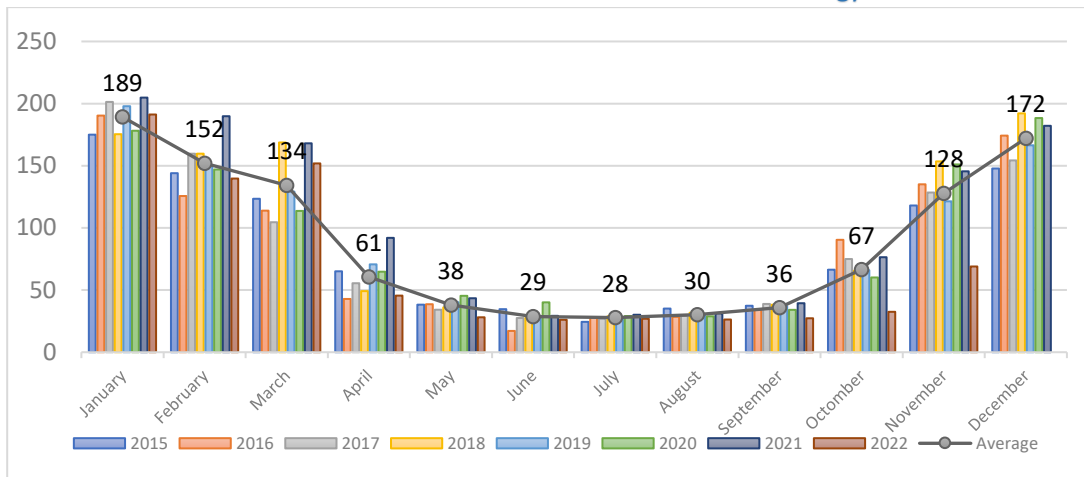


Figure 75. Seasonality of gas consumption in the Republic of Moldova (Right bank of the Dniester River), Mln m<sup>3</sup>

Source: Statbank RM

During the heating period, the average *monthly* consumption of natural gas varied between 128-189 Mln m<sup>3</sup>, while during the summer period the average monthly consumption varied between 28-38 Mln m<sup>3</sup>.

In 2021, the average *daily* consumption of natural gas of the Republic of Moldova (Right bank of the Dniester River) for the *winter* period was of 5-7 Mln m<sup>3</sup>/day and for the *summer* period: 1-2 Mln m<sup>3</sup>. The *annual* average daily consumption was approximately 3 Mln m<sup>3</sup>, Figure 76.

The daily maximum demand (peak load) for natural gas in the Republic of Moldova within the period 2018 – 2021 was between to 6-9 mcm/day. In 2021, the maximum daily consumption on the Right bank of the Dniester River reached 8.4 Mln m<sup>3</sup>/day, or approximately 350 thousand m<sup>3</sup>/h, Figure 77.

According to Annex 2 of Government Decision 207/2019<sup>286</sup>, the highest daily consumption was 8.9 Mln cubic meters/day recorded on February 2<sup>nd</sup>, 2012.

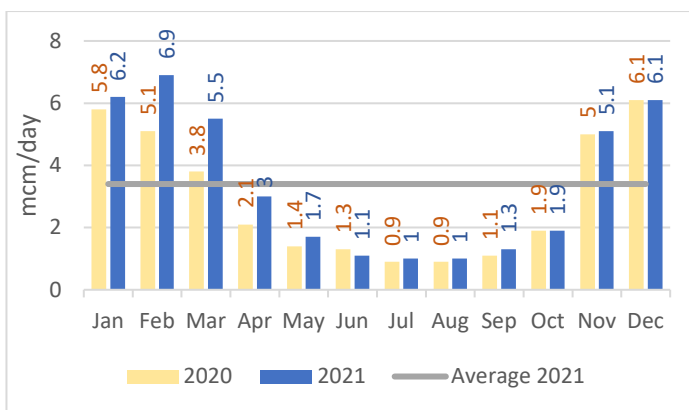


Figure 76. Average Daily Natural Gas Supply to the Republic of Moldova (Right bank of the Dniester River) by month in 2020-2021, mcm/day

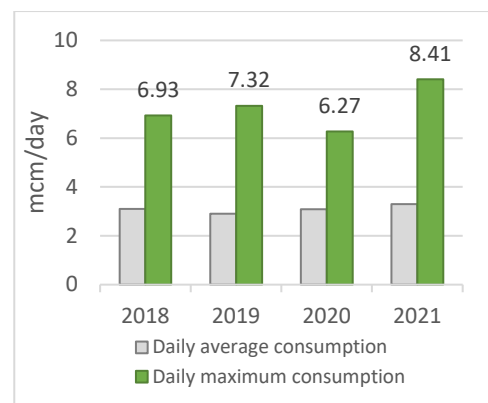


Figure 77. Maximum and average daily consumption Peak Loads, mcm/day

Source: "A National Risk Assessment of all Relevant Risks Affecting the Security of Natural Gas Supply of the Republic of Moldova" (document is under discussions)

For comparison, in the period from April 2021 to April 2022 in European countries, the maximum daily gas demand was recorded on 01/25/2022 and reached a value of 24,226 GWh/day (~2,310 mcm/day), the minimum value was recorded in August 2021 in the amount of 7,020 GWh/day (~670

<sup>286</sup> [https://www.legis.md/cautare/getResults?doc\\_id=113991&lang=ro](https://www.legis.md/cautare/getResults?doc_id=113991&lang=ro)



mcm/day). The total European demand for natural gas in 2021 was 5,189,480 GWh (~495 bcm), Figure 78.

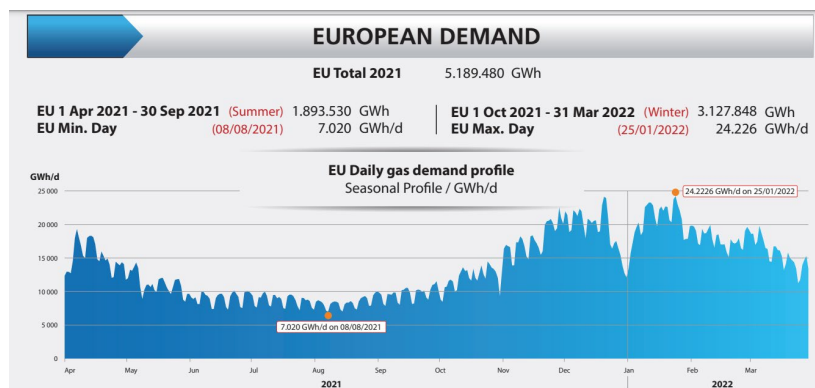


Figure 78. European demand for natural gas, (Source: ENTSO-G)

According to article 7 of the Regulation regarding the quality of natural gas transportation and distribution services<sup>287</sup>, the quality of natural gas transport and distribution services is evaluated based on quality indicators, namely the continuity of natural gas supply: *System Average Interruption Duration Index* (SAIDI) and *System Average Interruption Frequency Index* (SAIFI). The general quality indicators are registered and calculated annually only by the distribution system operators (DSO).

In 2021, a total of **8,590** scheduled (Figure 80) and **386** unscheduled (Figure 79) outages/ interruptions were recorded.

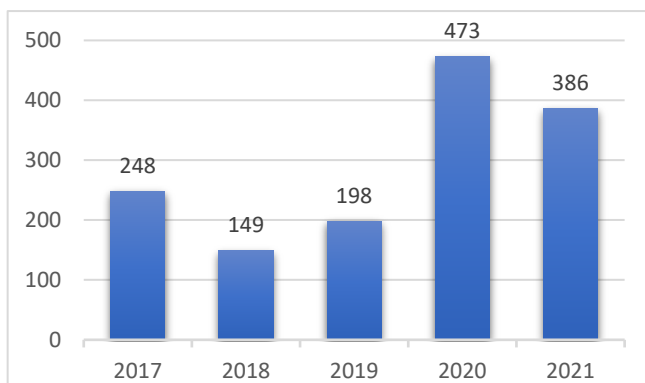


Figure 79. Dynamics of unscheduled interruptions during the 2017 – 2021 period

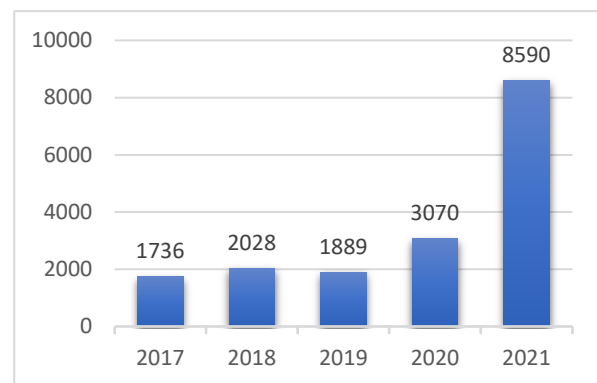


Figure 80. Dynamics of scheduled interruptions during the 2017 – 2021 period

Scheduled interruptions in 2021 (8,590 outages) are related to current repairs and maintenance works on the natural gas network. The duration of scheduled interruptions was within the permissible limits.

The average duration of unscheduled and scheduled interruptions produced in natural gas distribution networks of DSO are presented in Figure 81.

<sup>287</sup> [https://www.legis.md/cautare/getResults?doc\\_id=120013&lang=ro](https://www.legis.md/cautare/getResults?doc_id=120013&lang=ro)

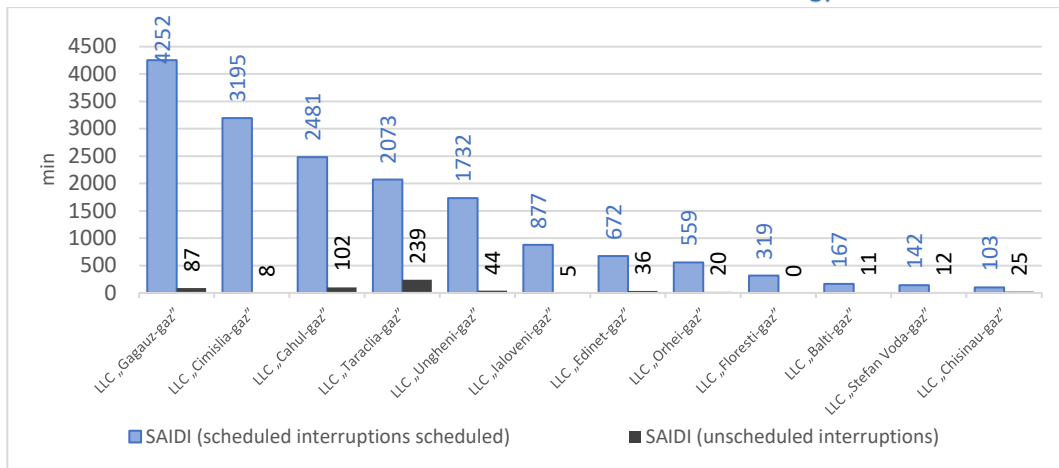


Figure 81. The average duration of unscheduled and scheduled interruptions took place in gas distribution networks natural resources of DSO in 2021

### Current natural gas prices

Until 2021, 100% of the natural gas consumed in Moldova was imported and delivered from SAP “Gazprom” (Russia) through a direct contract with JSC “Moldovagaz”. As a result of changes operated in the regulatory framework of the Republic of Moldova in recent years, JSC “Energom” has been able to purchase natural gas from alternative suppliers on the European market and resell it to JSC “Moldovagaz”.

Below is presented the dynamics of the purchase price of natural gas by JSC “Moldovagaz” for the period 2015 – 2022, Figure 82.

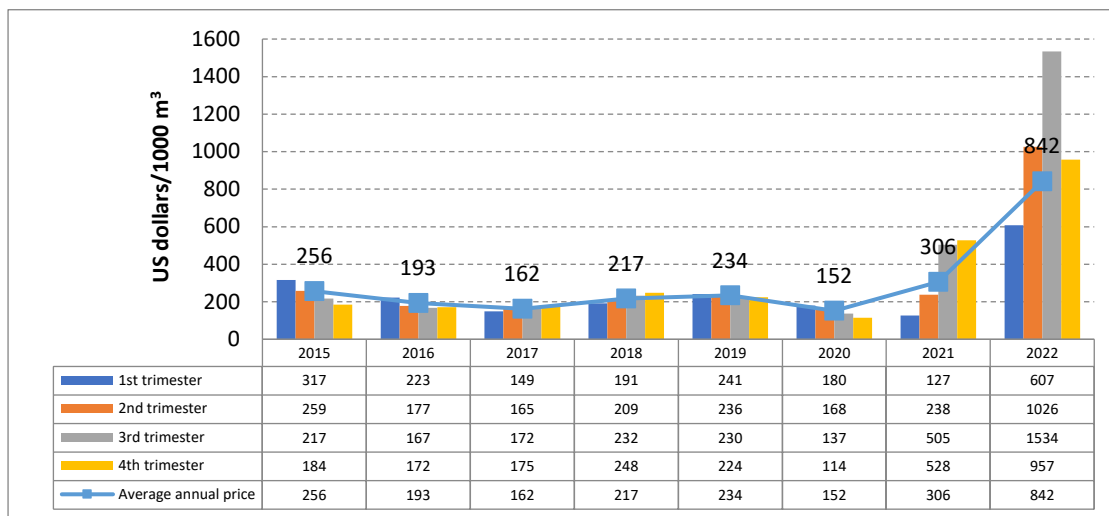


Figure 82. The dynamics of the purchase price of natural gas for the period 2015 – 2022<sup>288</sup>

In the period 2015 – 2021, the average purchase price of natural gas in the Republic of Moldova varied between 152 – 306 USD per thousand m<sup>3</sup>. In 2022 the average annual price increased by 250 % compared to 2021 (from 306 to 842 USD/1,000 m<sup>3</sup>), due to the amended contract with the gas supplier SAP “Gazprom” and the significant increase in natural gas prices on the EU gas spot markets.

<sup>288</sup> [https://www.moldovagaz.md/pic/uploaded/docs/Pretul\\_gazelor\\_naturale\\_ro\\_v27\\_jan\\_2022.pdf](https://www.moldovagaz.md/pic/uploaded/docs/Pretul_gazelor_naturale_ro_v27_jan_2022.pdf)

According to the current contract (2022) between SA “Moldovagaz” and SAP “Gazprom”, the purchase price of natural gas is set monthly, depending on the indicators of the Dutch trading platform TTF and the component of the oil product mix.

### Tariffs

Current regulated prices (February 2023) for the supply of natural gas by LLC “Moldovagaz” were approved by the decision of the Administrative Council of ANRE No. 736<sup>289</sup> of September 23<sup>rd</sup>, 2022, Table 65.

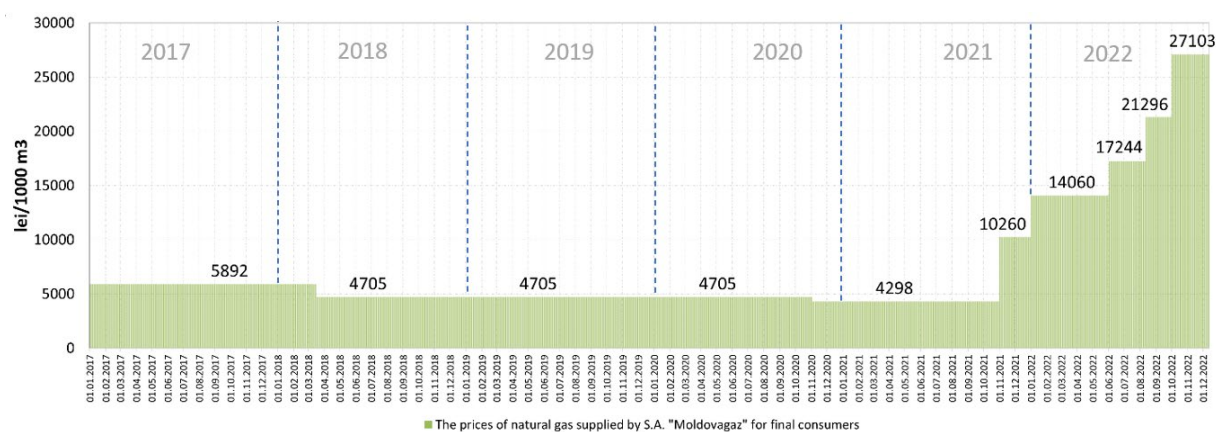
**Table 65. Regulated prices for the supply of natural gas by JSC “Moldovagaz”**

	Price without VAT, MDL/1,000 m <sup>3</sup>	Price without VAT*, USD/1,000 m <sup>3</sup>
• at the entry points in the natural gas transport networks	24,716	~1,264
• at the exit points from the natural gas transport networks	24,914	~1,274
• in the exit points from the high-pressure natural gas distribution networks	25,175	~1,288
• in the exit points from the medium pressure natural gas distribution networks	25,493	~1,304
• in the exit points of the low-pressure natural gas distribution networks	27,103	~1,386

\* Exchange rate at the date the tariffs come into force 1.10.22: 19.5520 lei MD/\$<sup>290</sup>

The tariff for household consumers was set the same **on the entire** territory of the Republic of Moldova (Right bank of the Dniester River) in the amount of 27,103 MDL/1,000 m<sup>3</sup> (~1,386 USD/1,000 m<sup>3</sup>).

The dynamics of weighted average annual tariffs for the supply of natural gas (low-pressure natural gas distribution networks) in the Republic of Moldova over the last 5 years is shown in Figure 83.



**Figure 83. Dynamics of natural gas price for domestic consumers for the period 2017 – 2022, MDL/1,000 m<sup>3</sup>, excluding VAT**

(2022 annual average exchange rate for US Dollar was 18.8972 MDL/USD)<sup>291</sup>

Starting from 2021, natural gas tariffs for final consumers have been reviewed quite often and constantly increased. The current tariff, approved on 10/01/2022 (27,103 MDL/1,000 m<sup>3</sup>), is more than **6** times higher than the tariff that was in force on 10/01/2021 (4,298 MDL/1,000 m<sup>3</sup>).

<sup>289</sup> [https://www.moldovagaz.md/files/documents/files/1635/ANRE\\_nr.736\\_din\\_23.09.2022\\_ro.pdf](https://www.moldovagaz.md/files/documents/files/1635/ANRE_nr.736_din_23.09.2022_ro.pdf)

<sup>290</sup> <https://www.curs.md/ro>

<sup>291</sup> <https://www.cursbnm.md/curs-valutar-mediulunar-bnm-2022>

According to statistics available on the Eurostat website<sup>292</sup>, in the Republic of Moldova, the price of natural gas for household consumers at the beginning of 2022, in the amount of 0.078 EUR/kWh, was higher than the average price in Europe of 0.0629 EUR/kWh, Figure 84.

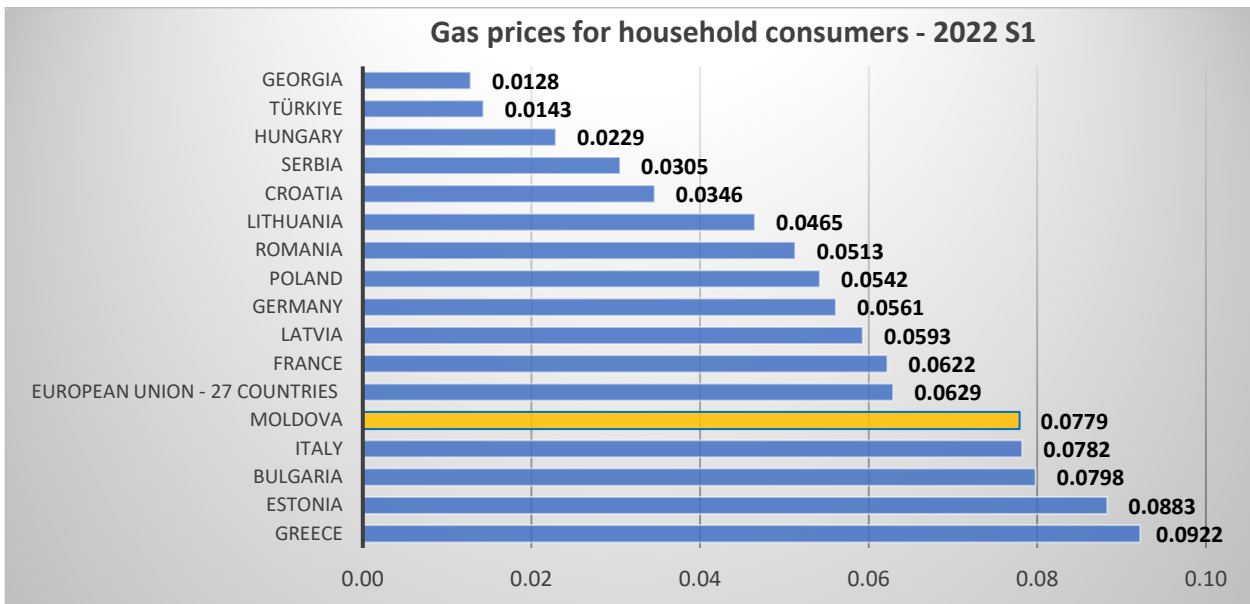


Figure 84. Gas prices for household consumers in 2022- S1, EUR/kWh, excluding taxes and levies

It should be noted that the Republic of Moldova intends to change the gas measurement unit from volume ( $m^3$ ) to energy (kWh). In the Code of Natural Gas Networks (art. 484<sup>293</sup>), the unit of measure “kWh” is already provided.

#### *The structure of the regulated prices for natural gas supply*

At the beginning of 2023, the price structure for the supply of natural gas to household consumers, established by ANRE in 2022, consisted of the following component, Figure 85.

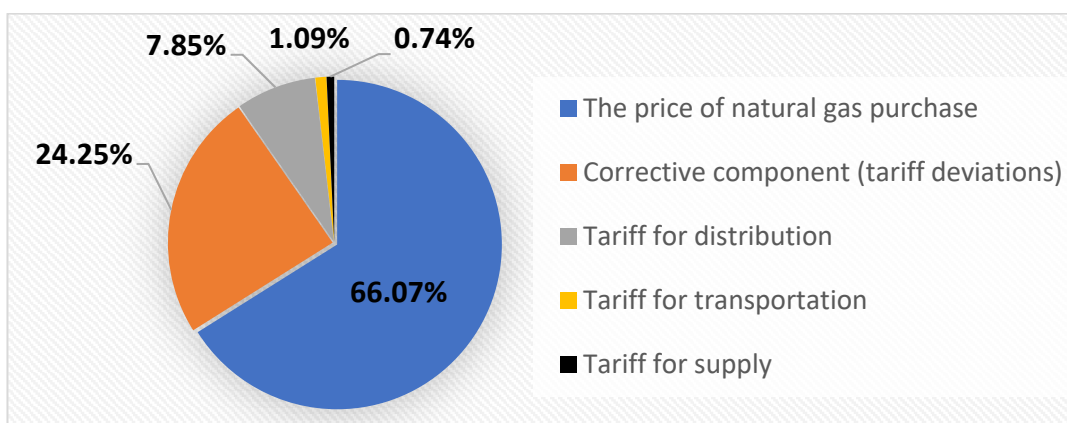


Figure 85. The components of the natural gas tariff approved for the low-pressure network

The largest contribution in the structure of the average natural gas supply tariff (66.1%) is the purchase price of natural gas, which was 17,906 MDL (~USD 926).

<sup>292</sup> [https://ec.europa.eu/eurostat/databrowser/view/nrg\\_pc\\_202/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/nrg_pc_202/default/table?lang=en)

<sup>293</sup> [https://www.legis.md/cautare/getResults?doc\\_id=124357&lang=ro](https://www.legis.md/cautare/getResults?doc_id=124357&lang=ro)

ii) Projections of development with existing policies and measures until at least 2040 (including for the year 2030).

## Electricity

### 1) Energy Sector Indicators Forecasts

Electricity consumption per inhabitant per year under the WEM Scenario rose from 1.28 MWh/capita in 2016, to 1.51 MWh/capita in 2020 and is supposed to increase up to 2.83 MWh/capita in 2050. Heat consumption per inhabitant rose from 0.89 MWh/capita in 2016 to 1.32 MWh/capita in 2020, and is supposed to increase up to 1.32 MWh/capita in 2050, Figure 86.

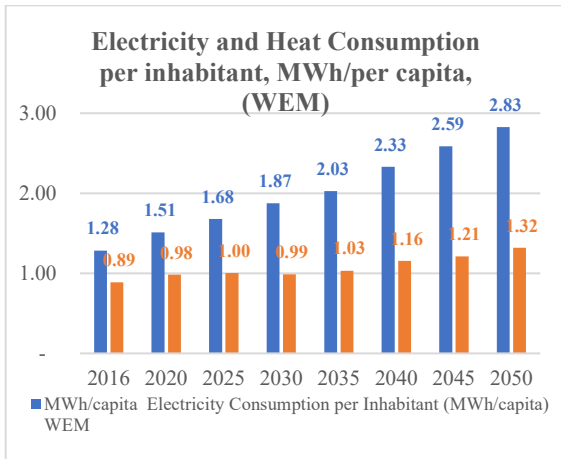


Figure 86. Electricity and Heat Consumption per Inhabitant by WEM scenario, (MWh/capita)

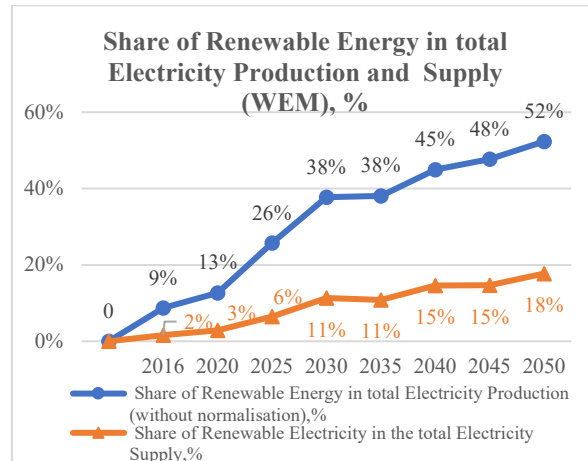


Figure 87. Share of Renewable Energy in total Electricity Production and Supply by WEM scenario, %

Peak demand is expected to increase from 946 MWh to 1,496 MWh.

The share of renewable sources in electricity generation is expected to increase from 9% (2016), 13% (2020) to 52% (2050) and the share of renewable sources in electricity supply is expected to increase from 2% (2016), 5% (2020) to 18% (WEM, 2050), Figure 87.

The share of renewable sources in Final energy consumption (in the Energy Balance) is expected to be at the level of 25% (2050).

The average price of electricity produced by various technologies that are expected in the year 2050 (WEM Scenario) are, as indicated on Figure 88:

- 1) biomass/biogas CHP: 0.10–0.21 EUR/kWh;
- 2) Natural Gas CHP: 0.01 EUR/kWh,
- 3) Natural Gas power plants: 0.07 EUR/kWh;
- 4) Photovoltaic systems: 0.052 – 0.065 EUR/kWh;
- 5) Wind: 0.04 – 0.06 EUR/kWh.

The average price of imported electricity was at the level of 0.05 (2016, 2020) and is planned to attain the level of 0.08 – 0.09 EUR/kWh for both scenarios by 2050.

The average electricity price will increase from 0.04 (2016), 0.05 (2020) to 0.08-0.09 EUR/kWh, Figure 89 (indicator: average cost of electricity, EUR/kWh).

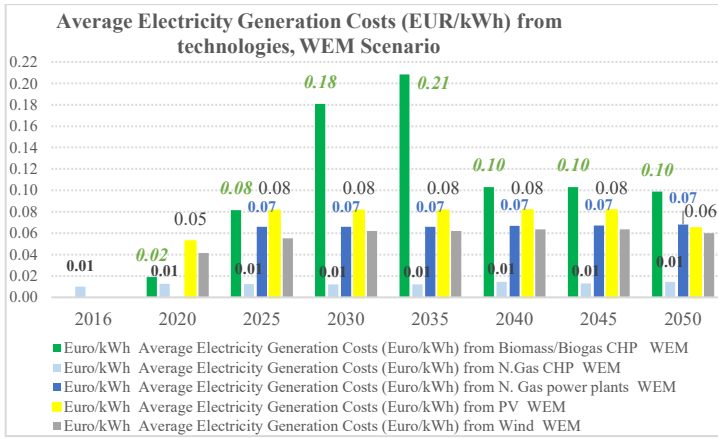


Figure 88. Average Electricity Generation Costs (EUR/kWh), WEM

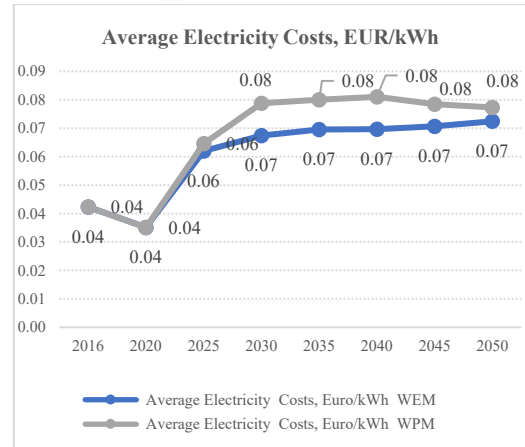


Figure 89. Average Electricity Costs, EUR/kWh

2) Installed Capacity per technology

Installed Capacity per technologies under the WEM Scenario is expected to be at the level of the following values (from 2016 to 2050, MW), Figure 90:

- N. Gas-only power plants- from 0 to 159; -N. Gas-fired CHP plants- from 377 to 284;
- Biomass/biogas CHP plants- from 6 to 50; -Hydro power plant- from 16 to 25;
- Wind Parks- from 25 to 315; -Solar PV- from 2 to 248; -Industrial CHP – up to 12.

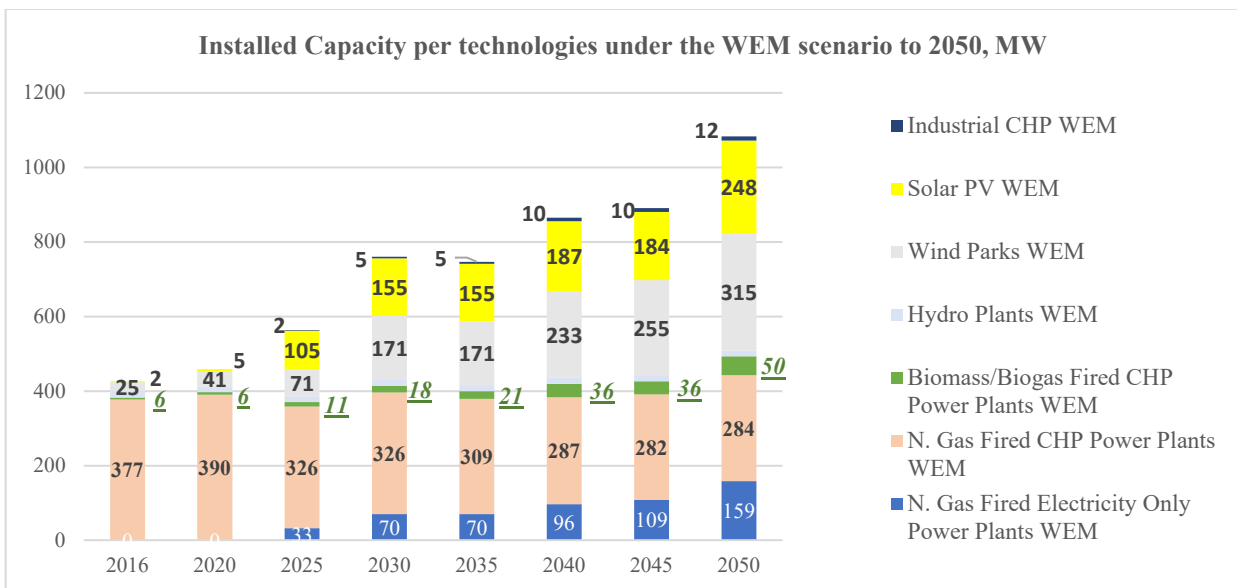


Figure 90. Power Sector: Installed Capacity per technology, MW (WEM)

Installed capacity by technologies under the WPM scenario is planned to be reached by 2050/2016:

- N. Gas-only power plants: up to 150 MW;
- N. Gas-fired CHP plants are expected to decrease from 377 MW to 289 MW;
- Wind Parks are expected to increase from 25 MW to 3,074 MW;
- Solar PV are expected to increase from 2 MW to 561 MW.

Installed capacity for other technologies is expected as values (MW):

- Biomass/ Biogas Fired CHP: will increase from 6 MW to 76 MW;
- Hydro Plants: to 25 MW;
- Battery Storage to 150 MW (2035) and 406 MW (2050);



- *Industrial CHP*: to 5 MW (2025) and to 11 MW (2050).

### 3) Electricity Network Losses

WEM scenario:

*Electricity losses Transmission Network as a % of total Generation plus Net Imports* will decrease from 3.01% to 2.94% by 2050 (WEM).

*Electricity losses Distribution Network as a % of total Generation plus Net Imports* will increase from 6.15% to 6.42% by 2050 (WEM).

WPM scenario:

*Electricity losses Transmission Network as a % of total Generation plus Net Imports* will decrease from 3.01% to 2.04% by 2050 (WPM).

*Electricity losses Distribution Network as a % of total Generation plus Net Imports* will decrease from 6.15% to 4.35% by 2050 (WPM).

### Natural Gas

According to the estimates obtained for the WEM Scenario, the general trend of *Gross inland natural gas consumption* for the period 2016 – 2050 will increase from 856.4 ktoe (2016) to 934.2 ktoe (2050), which is 9% more than consumption in 2016 and about 2% more than consumption in 2020. It should be noted that the forecasted values for natural gas *Imports* almost coincide with the forecasts for *Gross Inland Consumption*. The dynamics of Gas consumption in *Transformation input* also tends to increase by around 40%, from 326.6 ktoe (2016) to 457.2 (2050) ktoe, Figure 91. At the same time, *Distribution losses* has a general decreasing trend and in 2050 will decrease by approximately 40 % compared to 2016.

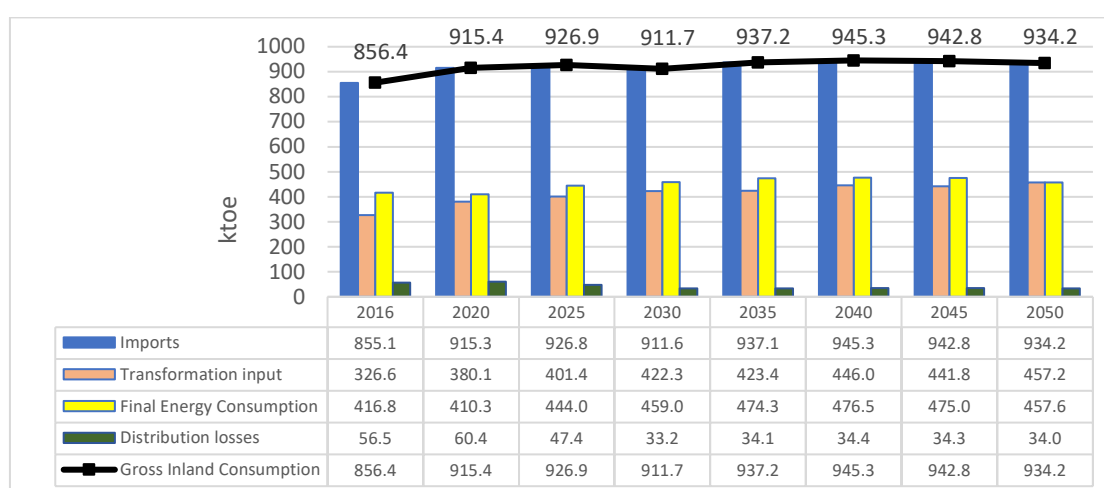


Figure 91. Energy Balance Natural Gas Network, according to the WEM Scenario, for the period 2016 – 2050, in ktoe

The contribution of *Final energy consumption* to *Gross domestic consumption* has the largest share of about 50%.

There is a constant trend of increasing in *Final Energy Consumption* from 416.8 ktoe (2016) to 457.6 ktoe (2050) according to WEM Scenario. Trends in natural gas consumption in all sectors, such as: Industry, Transport, Residential, Services and Agriculture, are presented in Figure 92.



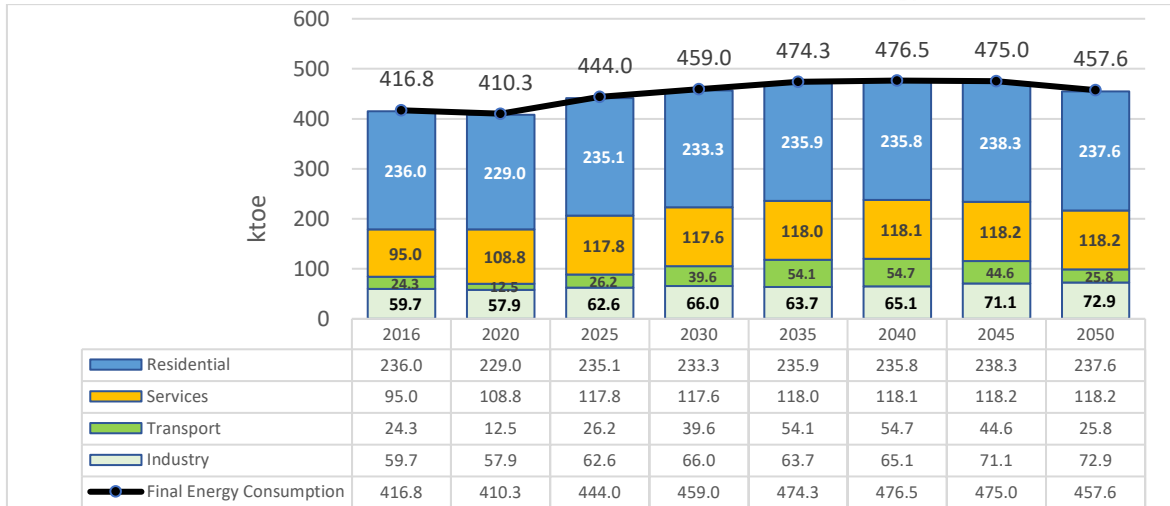


Figure 92. Final Energy Consumption of natural gas by sector for the period 2016 – 2050, (WEM Scenario), in ktoe

The following growth dynamics of natural gas consumption are observed in all sectors:

- Residential: from 236.0 ktoe (2016) to 237.6 ktoe (2050);
- Services: from 95.0 ktoe (2016) to 118.2 ktoe (2050);
- Transport: from 24.3 ktoe (2016) to 25.8 ktoe (2050);
- Industry: from 59.7 ktoe (2016) to 72.9 ktoe (2050);
- Agriculture/Forestry: from 1.8 ktoe (2016) to 3.0 ktoe (2050).

Gas consumption per capita is also quite an important indicator and is often used to compare countries in terms of energy consumption. In 2050, according to the WEM Scenario, natural gas consumption per person will be 2.47 MWh (~230 m<sup>3</sup>), exceeding the 2016 level by 45%, Figure 93.

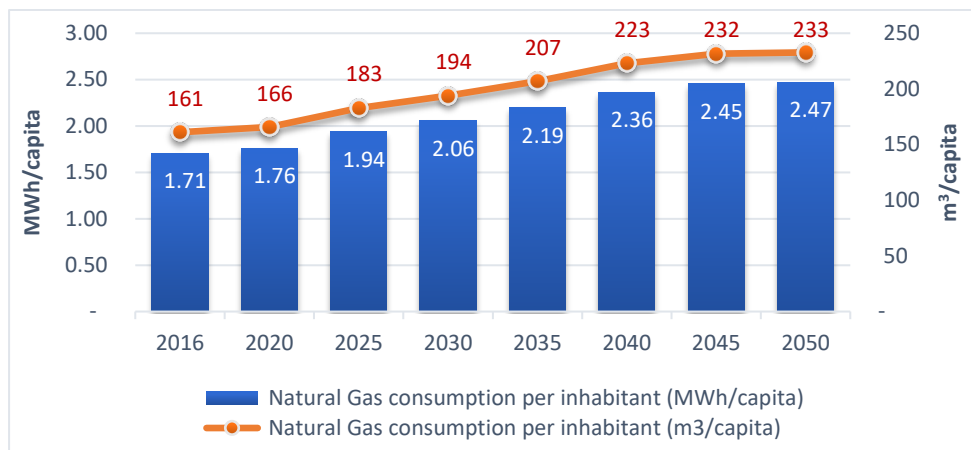


Figure 93. Natural Gas consumption per inhabitant, for the period 2016 – 2050, (WEM Scenario), MWh/capita and m<sup>3</sup>/capita (calculated)

Compared to other countries, this indicator for the Republic of Moldova is below the world average, which in 2021 amounted to 5.2 MWh/capita<sup>294</sup>.

<sup>294</sup> <https://ourworldindata.org/grapher/gas-consumption-per-capita>

#### 4.6. Dimension research, innovation and competitiveness

*i. Current situation of the low-carbon-technologies sector and, to the extent possible, its position on the global market (that analysis is to be carried out at Union or global level)*

Currently, in Moldova there are limited activities regarding R&D in the energy sector and limited number of producers of low-carbon technologies. In 2021 the Global Cleantech Innovation Program has started in Moldova<sup>295</sup> to support the country's cleantech enterprises to develop its innovative solutions and to scale up the market adoption of cleantech innovations. The program provides to existing and new SME's and startups by identifying creative entrepreneurs, who will leverage their skills to increase their innovative ideas into fully developed technologies, ready for entering the national and global markets.

The focus of the GCIP Moldova is enhancing institutional, market, and ecosystem capacities to support emerging clean technology start-ups and strengthening policy frameworks and mechanisms for technology innovation in and by SME's.

Current key priorities of energy research in Moldova are energy efficiency and renewable energy, smart grids control devices, as well as energy storage, but still, most of the companies in the energy sector are service-orientated, mainly in RES and EE. Therefore, there is a significant potential for scaling up low-carbon and energy-efficient solutions, starting from the demonstration and pivotal stage up to the market of renewable energy technologies and achieving more significant energy savings.

*ii. Current level of public and, where available, private research and innovation spending on low-carbon-technologies, current number of patents, and current number of researchers*

According to the National Bureau of Statistics, in 2022 research and innovation activity was carried out in 67 units, including 39 research institutes and centers, 18 higher education institutions and 10 other types of units. About 75 % of the total number of units that carried out research and innovation activity in 2022 were in the form of public ownership (50 public institutions).

On December 31<sup>st</sup>, 2022, 3.9 thousand employees were working in research and innovation, having decreased by 6.4% compared to the number recorded at the end of 2021. Of the total number of employees in research and development, 2.0 thousand were women, representing 52%. According to the work schedule, of the employees who carried out research and development activity, 56% worked full-time. 89.3% of employees in the research and innovation activity were employed in public institutions, compared to 87.3% in 2021.

By occupation category, the largest proportion of employees in research and innovation activity was represented by researchers (72.2%), followed by other categories of employees who perform functions related to the institution's activity (12.3%) and auxiliary staff (11.1%), being lower for technicians: 4.4 % (Table 66). Compared to 2021, the share of researchers registered an increase of 2 p.p., and among female researchers – an increase of 2.7 p.p., their share in total researchers being 50.9%.

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<sup>295</sup> <https://gcip.tech/country/moldova/>

Table 66. Employees from the research and innovation activity by occupation, in the years 2021 – 2022

	People				Structure, %			
	2021		2022		2021		2022	
	Total	Including women	Total	Including women	Total	Including women	Total	Including women
<b>Total</b>	<b>4,157</b>	<b>2,150</b>	<b>3,889</b>	<b>2,023</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Researchers	2,920	1,459	2,809	1,429	70.2	67.9	72.2	70.6
Technicians	245	172	173	125	5.9	8.0	4.4	6.2
auxiliary personal	561	291	430	248	13.5	13.5	11.1	12.3
other employees	431	228	477	221	10.4	10.6	12.3	10.9

In 2022, as in 2021, most researchers (Table 67) were active in the field of natural sciences (30.9 %), although their share decreased by 1.3 p.p. compared to the previous year, and the fewest researchers – in the field of humanities (8.6% compared to 8.5% in 2021). Compared to 2021, the share of researchers decreased even more in the field of agricultural sciences (by 2.6 p.p.), being on the rise in the fields of social sciences and engineering (by 1.6 p.p. and by 1.5 p.p., respectively), as well as in medical sciences (by 0.7 p.p.).

Table 67. Researchers by scientific fields, in the years 2021 – 2022

	People				Structure, %			
	2021		2022		2021		2022	
	Total	Including women	Total	Including women	Total	Including women	Total	Including women
<b>Researchers - total</b>	<b>2,920</b>	<b>1,459</b>	<b>2,809</b>	<b>1,429</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
natural sciences	941	469	867	447	32.2	32.1	30.9	31.3
Engineering and technological sciences	336	69	365	89	11.5	4.7	13.0	6.2
Medical sciences	396	240	402	247	13.6	16.5	14.3	17.3
Agricultural sciences	464	226	375	189	15.9	15.5	13.3	13.2
Social sciences	535	323	559	335	18.3	22.1	19.9	23.5
Human Sciences	248	132	241	122	8.5	9.1	8.6	8.5

In 2022, the expenses incurred for the research and development activity totaled 630.2 Mln MDL, representing 0.23% of the gross domestic product (SDG indicator 9.5.1). In 2022, compared to 2021, expenses for research and development activity increased by 69.7 Mln MDL (or by 12.4%), in public institutions: by 74.6 Mln MDL (or by 16.4%). Of the total expenses incurred for research and development activity in 2022, 84.1% represented the expenses of public institutions, compared to 81.2% in 2021 (recording an increase of 2.9 p.p.).

Out of the total expenses incurred for the research and innovation activity, current expenses held the majority: 95%.

In total current expenses, personnel expenses predominated (439.6 Mln MDL, or 73.4%), material expenses being 67.1 Mln MDL, or 11.2%, and other current expenses constituting 92.2 Mln MDL, or 15.4%.

Compared to 2021, personnel expenses increased by 45.5 Mln MDL, or by 11.6%.

In 2022, most current expenditures (Table 68) were made in the field of natural sciences: 35.2%, followed by medical sciences: 17.6%, agriculture: 17.3 %, engineering and technology: 14.6%, social sciences: 9.1% and humanities: 6.2%.

Table 68. Current expenses for research and development in scientific fields in 2022, in Mln MDL

	Total	including on scientific fields:					
		Natural sciences	Engineering and technological sciences	medical sciences	Agricultural sciences	Social sciences	Human sciences
Current expenses - total	598.9	210.9	87.6	105.4	103.7	54.5	36.8
fundamental research	56.1	4.6	0.1	2.9	0.7	18.4	29.4
applied research	467.9	206.3	20.9	95.1	102.5	35.7	7.4
experimental development	74.9	-	66.6	7.4	0.5	0.4	-

The list of priority areas financed through the Competition of Innovation and Technology Transfer Projects for 2021, launched by the NARD in July 2020, includes the field “Environment and Climate Change” (Priority III). The projects submitted within the 5 Strategic Directions including the Strategic Direction “Secure, Clean and Efficient Energy” received a total financing of 1.92 Mln MDL for 2021. The additional contest in 2021, launched by the NARD in March 2021, provides for a total financing of 2.52 Mln MDL for projects under Priority III “Environment and climate change”.

The number of patents in 2022 according to Agency for Intellectual Property Rights (AGEPI) was 130<sup>296</sup> in decrease compare to 2021, Figure 94. In generally, after 2010 the number of patents continuously decreased as result of low budget allocation for research starting from 2007.

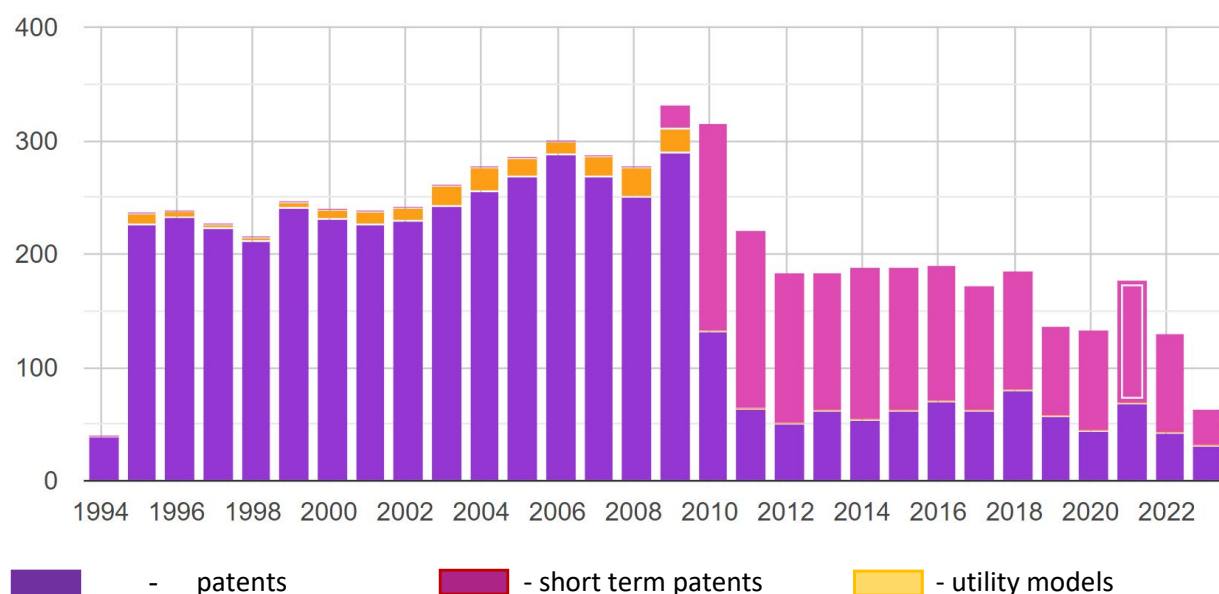


Figure 94. Number of patents issued by AGEPI in Moldova for period 1994-2022

iii. Breakdown of current price elements that make up the main three price components (energy, network, taxes/levies)

The main factors influencing the tariffs:

- The cost of imported energy resources (electricity, natural gas);
- The exchange rate of the national currency against the US dollar;
- The costs necessary for production, transportation and distribution of electricity and natural gas;
- Volumes of natural gas, electricity and heat produced and supplied to consumers;
- Depreciation of fixed assets;
- Tariff deviations;

<sup>296</sup> <http://www.db.agepi.md/Inventions/panorama/2>

The Rate of return is determined according to the cost of supplied electricity/ natural gas or by the method of weighted average cost of capital (for regulated activities).

iv. *Description of energy subsidies, including for fossil fuels*

The concept of vulnerable customers is defined by primary legislation, while a social assistance program and the assistance for the cold period of the year provide measures for their protection. In 2022, a special fund for reducing energy vulnerability was established, providing subsidies for energy consumption and for the replacement of old household appliances.

Subsidies are granted to household consumers for the consumption of natural gas, thermal energy and electricity, according to the maximum compensated volume established by Government Decision no. 814/2022<sup>297</sup>.

### Natural gas

A) The maximum compensated volume for domestic consumers of natural gas in the context of the public service obligation is set at 180 m<sup>3</sup>/month/point of consumption.

The price for domestic consumers of natural gas in the context of the public service obligation, depending on the category of energy vulnerability and within the limits of the price cap provided above, is established as follows:

Energy vulnerability category	The price paid by the household consumer
Very high	12 MDL/m <sup>3</sup>
High	14 MDL/m <sup>3</sup>
Average	17 MDL/m <sup>3</sup>
Low	24 MDL/m <sup>3</sup>
Without vulnerability	Regulated price/supplier price

### Thermal energy

B) The maximum compensated volume for domestic consumers of thermal energy connected to the district heating networks is set at 1.3 Gcal/month/point of consumption.

The tariff for domestic thermal energy consumers, depending on the category of energy vulnerability, is established as follows:

Energy vulnerability category	The price paid by the household consumer
Very high	1 450 MDL/Gcal
High	1 700 MDL/Gcal
Average	1 950 MDL/Gcal
Low	2 500 MDL/Gcal
Without vulnerability	Regulated tariff

### Electricity

C) The maximum standard compensated volume for electricity is set at 75 kWh/month/point of consumption and applies to domestic consumers, except as provided for in point 2.

2. The increased compensated maximum volume for electricity is set at 1,000 kWh/month for household consumers who cumulatively meet the following conditions:

<sup>297</sup> [https://www.legis.md/cautare/getResults?doc\\_id=134277&lang=ro](https://www.legis.md/cautare/getResults?doc_id=134277&lang=ro)

1) electricity is the main source of heating during the cold period of the year, according to the applications submitted on <https://compensatii.gov.md>;

2) household consumers recorded an average monthly electricity consumption of at least 250 kWh/month during the previous cold period;

3) household consumers are not connected to the district heating network or recorded an average monthly consumption of thermal energy lower than 0.3 Gcal/month during the previous cold period;

4) household consumers recorded a natural gas consumption of less than 80 m<sup>3</sup>/month during the previous cold period.

3. The compensated price for household consumers of electricity according to the category of energy vulnerability is established according to the value of the regulated price of electricity for household consumers, as follows:

Regulated price for electricity	Vulnerability energy category	The price paid by the household consumer (MDL/kWh)
Up to 5.00 MDL/kWh	Very high	3.3
	High	3.7
	Average	Regulated tariff
	Low	Regulated tariff
	Without vulnerability	Regulated tariff
Between 5.01 MDL/kWh – 6.00 MDL/kWh	Very high	3.7
	High	4.2
	Average	Regulated tariff
	Low	Regulated tariff
	Without vulnerability	Regulated tariff
Between 6.01 MDL/kWh – 7.00 MDL/kWh	Very high	4.2
	High	4.7
	Average	5.2
	Low	Regulated tariff
	Without vulnerability	Regulated tariff

1. For household consumers whose settlement intermediaries are the orchards, as well as for household consumers in dormitories/apartments/rooms managed by institutions/public authorities/public associations/state enterprises, energy suppliers apply the prices/tariffs established for consumers with high energy vulnerability within the limits of the maximum volumes compensated for each point of consumption, provided for in points A, B and C, based on the lists of consumers presented to suppliers by intermediaries at settlements.

2. For household consumers whose settlement intermediaries are construction companies, energy suppliers apply the prices/tariffs established for consumers with average energy vulnerability within the limits of the maximum compensated volumes for each point of consumption, provided for in points A, B and C, in based on consumer lists presented to suppliers by construction firms.

## Diesel Fuel

The executive approved the Regulation on the way of granting complementary subsidies for diesel excise from the National Fund for the Development of Agriculture and the Rural Environment<sup>298</sup>.

The regulation provides that the complementary subsidy is granted in two stages, for diesel fuel purchased between November 16<sup>th</sup>, 2022 and June 29<sup>th</sup>, 2023, and is deposited no later than July 31<sup>st</sup>, 2023, and diesel purchased starting from June 30<sup>th</sup>, 2023 until September 30<sup>th</sup>, 2023 inclusive, submitted no later than September 30<sup>th</sup>, 2023, as follows:

<sup>298</sup> Government Decision no. 466 of 07/05/2023 regarding the granting of complementary subsidies for diesel fuel excise from the National Fund for the Development of Agriculture and the Rural Environment

**In the amount of:**

100% of the excise duty set for 2023, or 3,248 MDL per ton – for micro, small and medium farmers;

100% of the excise duty set for 2022, or 2,980 MDL per ton – for micro, small and medium farmers;

**In the amount of:**

30% of the excise duty set for 2023, or 974.4 MDL per ton – for large farmers;

30% of the excise duty set for 2022, or 894 MDL per ton – for large farmers.



## 5. IMPACT ASSESSMENT OF PLANNED POLICIES AND MEASURES

5.1. Impacts of planned policies and measures described in section 3 on energy system and greenhouse gas emissions and removals including comparison to projections with existing policies and measures (as described in section 4).

*i. Projections of the development of the energy system and greenhouse gas emissions and removals as well as of emissions of air pollutants in accordance with Directive [as proposed by COM/2013/0920] under the planned policies and measures at least until ten years after the period covered by the plan (including for the last year of the period covered by the plan), including relevant EU policies and measures.*

Total greenhouse gas emissions in the energy sector remain unchanged under the scenario with existing measures.

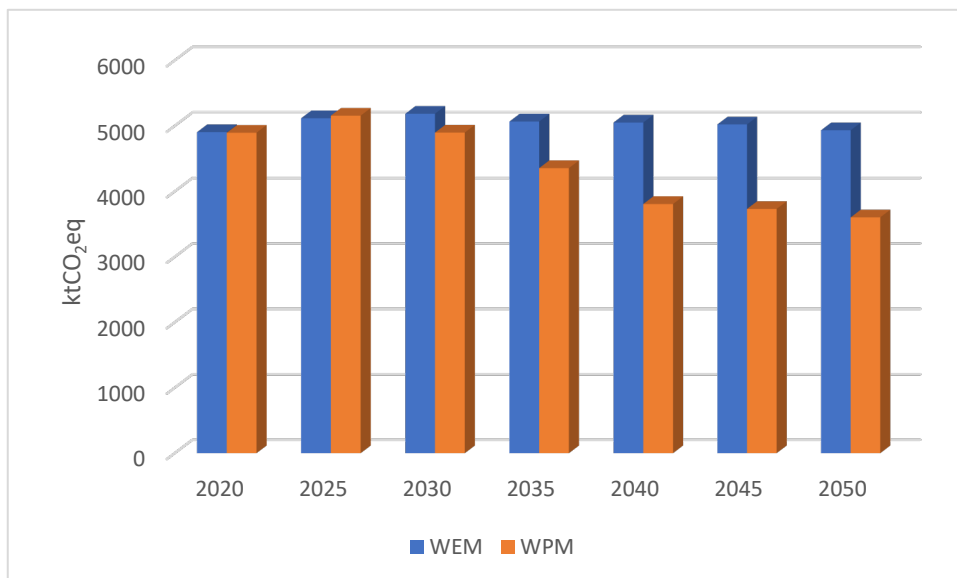


Figure 95. Projections of total GHG emissions in the energy sector for the period 2020 – 2050

If the WPM scenario is implemented, in 2050 the emissions will be reduced by about 1,3 Mt CO<sub>2</sub> eq, or 27% less emissions compared to the WEM scenario. This graph takes into account only emissions from the energy sector on the territory of the Right bank of the Dniester.

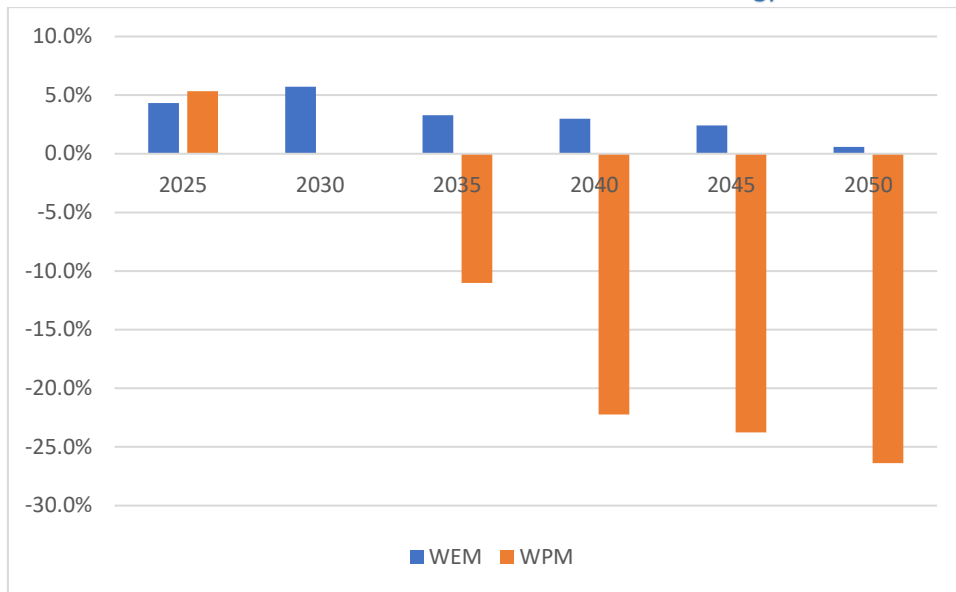


Figure 96. Total GHG emissions reductions as percentages compared to 2020

In the period 2020 – 2025, the trends of the WEM and WPM scenarios coincide: in both cases, the overall GHG emissions are forecasted to increase by about 5% by 2025: up to 4,905 kt CO<sub>2</sub> eq in WEM scenario and up to 4,895 kt CO<sub>2</sub> eq in the WPM scenario. After 2025, the trends present the difference between WEM and WPM scenarios by 2050. According to the WEM scenario, GHG emissions in 2035 are fairly equal to those of 2020 and further fluctuations do not exceed 1-2% of the 2020 level. By 2050, GHG emissions under this scenario will amount to 4,933 kt CO<sub>2</sub> eq. The WPM Scenario assumes a 11% reduction in GHG emissions in 2035 compared to 2020, and by 22,2% in 2040 compared to 2020, down to 3,808 kt CO<sub>2</sub> eq. Further, no significant fluctuations in GHG are predicted, which in 2050 are projected at the level of 3,604 kt CO<sub>2</sub> eq.

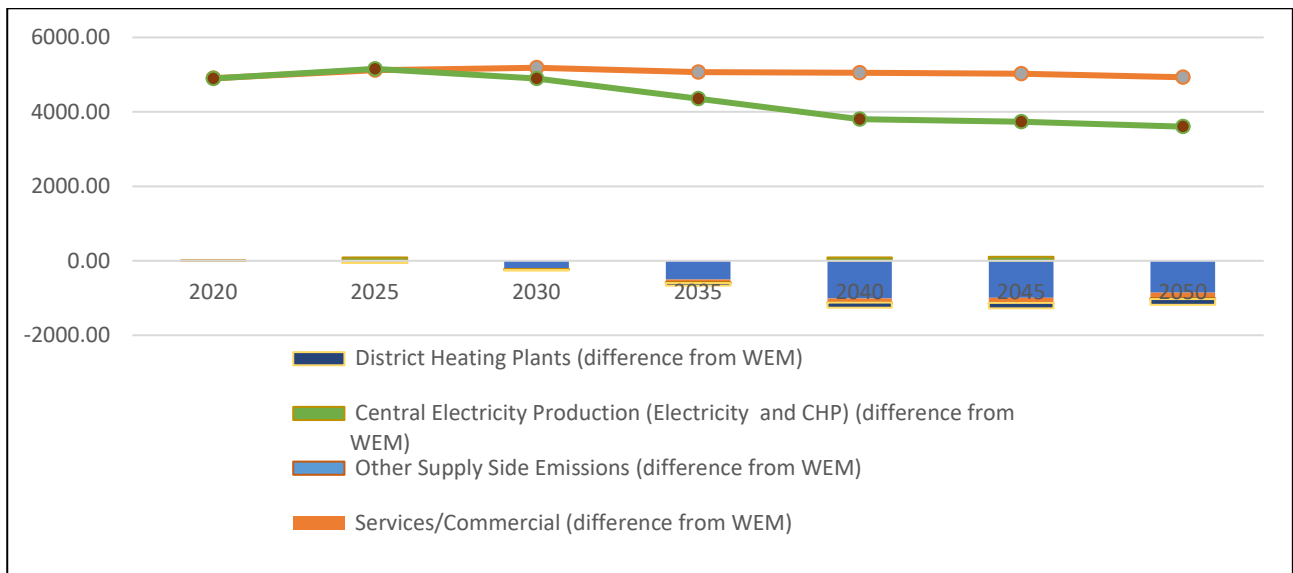


Figure 97. Total CO<sub>2</sub> eq emissions per sector

Despite the fact that in 2030 the total GHG emissions under both scenarios are approximately the same, contributions of various sectors in these scenarios differ. In WPM Scenario GHG emissions in the sector "Central Electricity Production (Electricity and CHP)" are 17,44 kt CO<sub>2</sub> eq less than in WEM Scenario. At the same time, in WPM Scenario GHG emissions in the sector "Transport" are

192.1 kt CO<sub>2</sub> eq lower than in WEM Scenario, and GHG emissions in the sector "District Heating Plants" are 14.6 kt CO<sub>2</sub> eq lower than in WEM Scenario.

In 2050, the contribution of sector "Central Electricity Production (Electricity and CHP)" in WEM Scenario over WPM Scenario will continue and reach the level of 14.3 kt CO<sub>2</sub> eq. The most significant reduction in GHG emissions in WPM Scenario will occur in the sector "Transport": the difference between GHG emissions in WPM Scenario and in WEM Scenario will be of 859,1 kt CO<sub>2</sub> eq. Also, a significant reduction in GHG emissions is projected in sector "Services/Commercial": by 153.5 kt CO<sub>2</sub> eq in WPM compared to WEM Scenario.

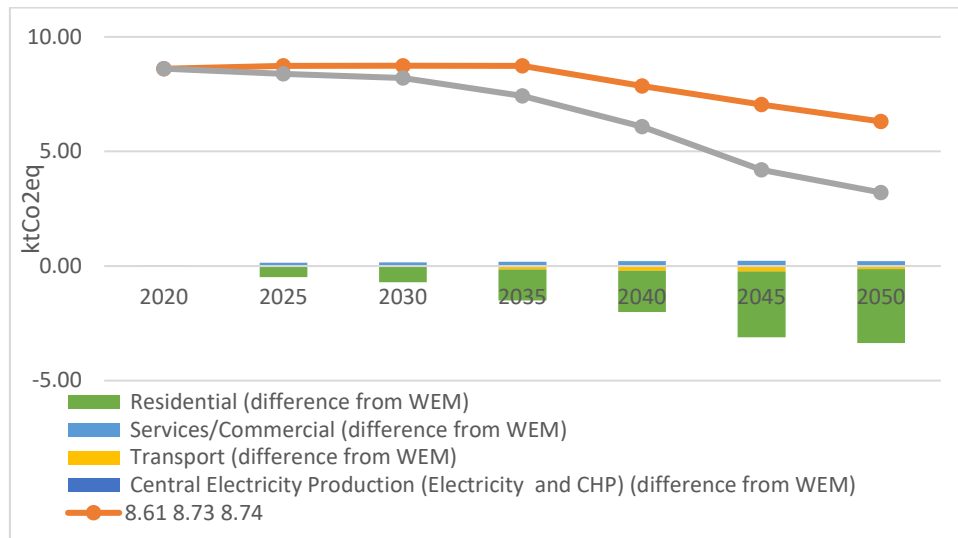


Figure 98. Total CH<sub>4</sub> emissions per sector

Regarding CH<sub>4</sub> emissions, it should be noted that different sectors show different trends in terms of emissions. CH<sub>4</sub> emissions of sector "Services/Commercial" in WPM Scenario exceeds by 0.15 kt CO<sub>2</sub> eq emissions in WEM scenario by 2030 and by 0.2 kt CO<sub>2</sub> eq in 2050. As for such sectors as "Transport" and "Residential", there is a CH<sub>4</sub> emissions decrease in WPM Scenario in them relative to WEM Scenario. CH<sub>4</sub> emissions in sector "Residential" in WPM Scenario is 0.7 kt CO<sub>2</sub> eq less than the emissions in WEM Scenario in 2030 and is 3.23 kt CO<sub>2</sub> eq less in 2050. In sector "Transport" the difference in emissions becomes fixed by 2035 and reaches 0.13 kt CO<sub>2</sub> eq in 2050.

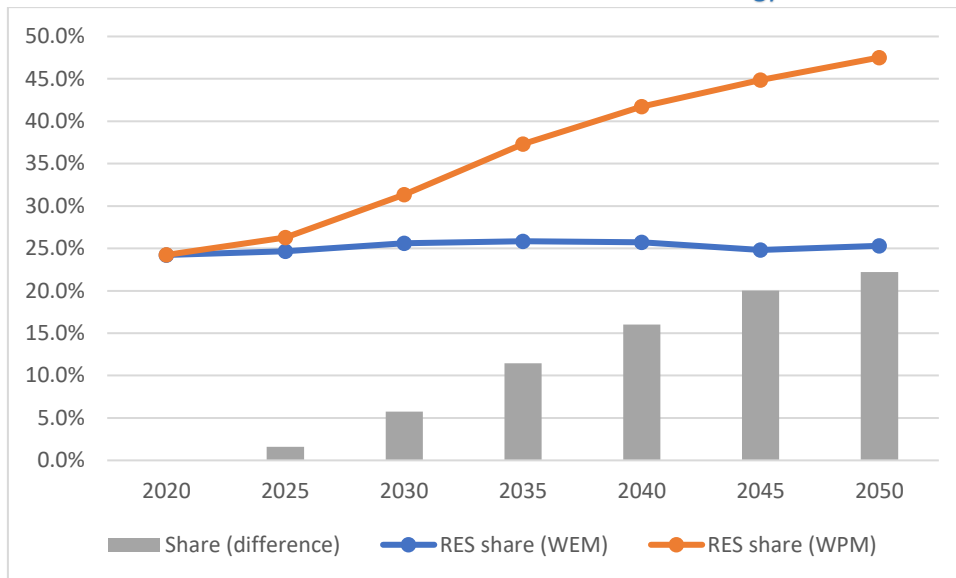


Figure 99. Share of RES in GFEC, in %

The share of RES in the Gross Final Energy Consumption (GFEC) has a steady growing trend in WEM and WPM scenarios. Until 2025, the indicators of both scenarios are very similar: there is an increase in the share of RES from 24.2% in 2020 to 24.7% in WEM Scenario and to 26.3% in WPM Scenario. In 2050, the difference between the scenarios reaches 22.2 percentage points, and the share of RES in GFEC becomes 25.3% in WEM scenario and 47.5% in WPM scenario. These evolutions may be explained by the advanced development of GFEC.

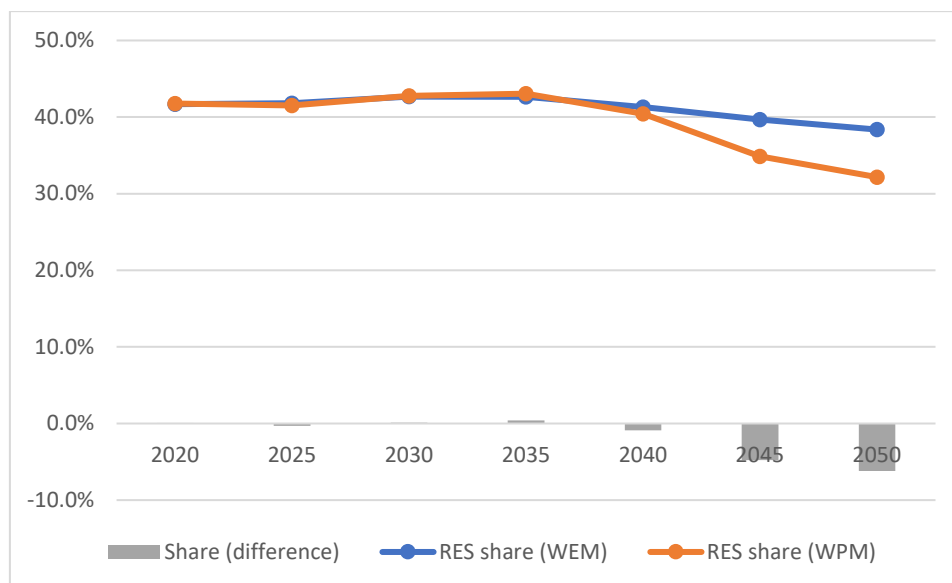


Figure 100. Projections of the share of RES in H&C in the period 2020 – 2050, in %

The trends of the share of renewable energy in the heating sub-sector correspond to the trends of the share of RES in GFEC in both scenarios. An increase in the share of RES in this sub-sector from 41.7% in 2020 to 42.7% in WEM Scenario and to 42.8% in WPM Scenario in 2030 is followed by a decrease to 38.4% in WEM Scenario and 38.2% in WPM Scenario in 2050.

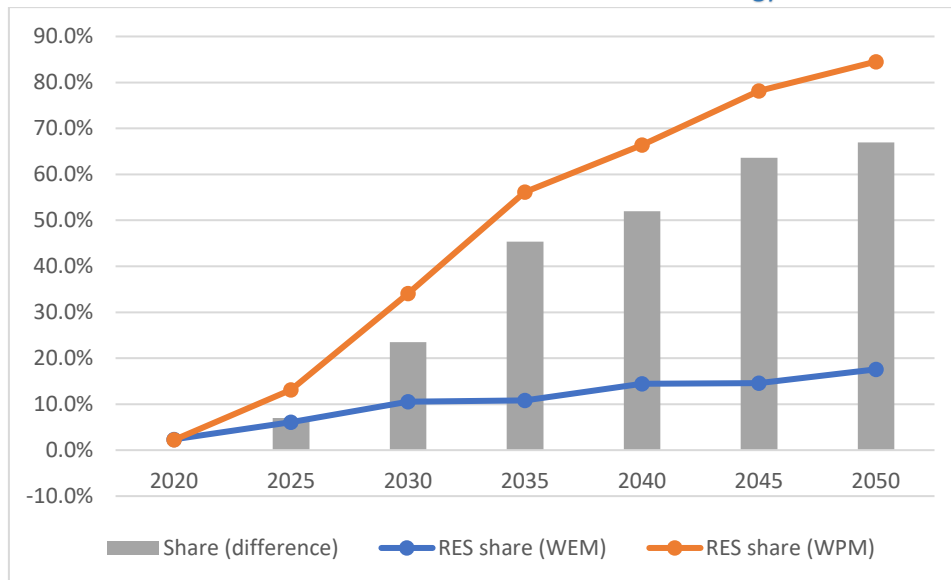


Figure 101. Projections of the share of RES in Electricity Generation in the period 2020 – 2050, in %

In the electricity generation sub-sector, the share of RES has a steady upward trend in both scenarios. In WEM Scenario the share of RES grows from 1.6% in 2020 to 10.6% in 2030 and to 17.6% in 2050. Measures to increase the share of RES provided for in WPM Scenario provide for an increase in the share of RES by 5 percentage points compared to WEM scenario in 2030, up to 34.1%, and by 66.9 percentage points compared to WEM Scenario in 2050, up to 84.5%.

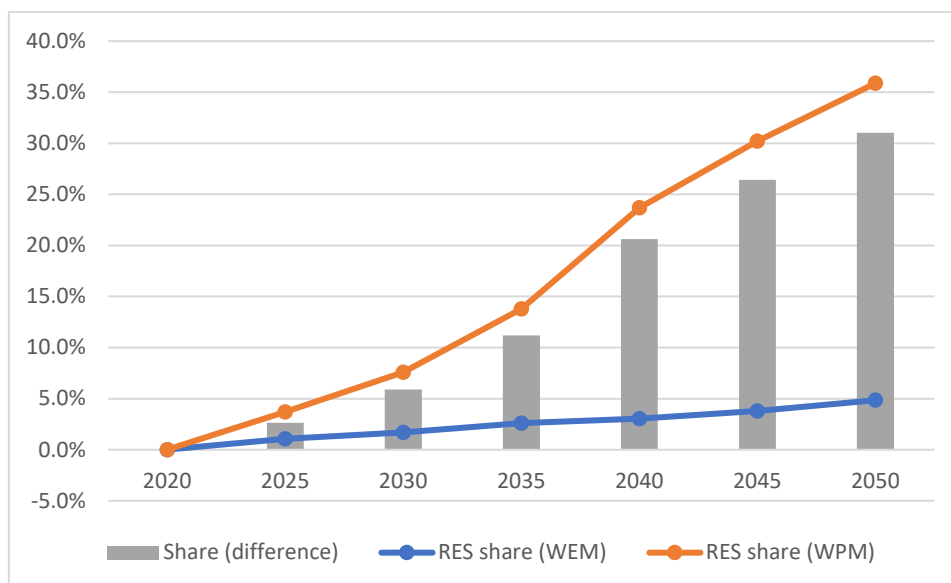


Figure 102. Projections of the share of RES in Transport in the period 2020 – 2050, in %

In the sector Transport, the share of RES in WEM Scenario increases rather slowly, reaching only 1.7% in 2030 and 4.8% in 2050. Much more intensive RES development in the sector is assumed in WPM Scenario, where the share of RES in GFEC of the sector Transport reaches 7.6% in 2030, and 35.9% in 2050.

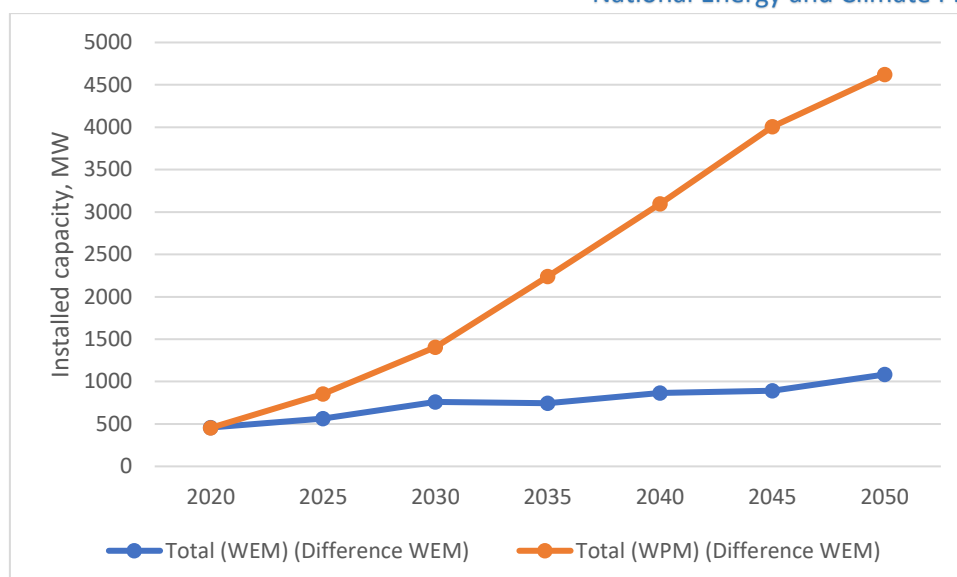


Figure 103. Installed capacity per technology, projections for the period 2020 – 2050

WPM scenario provides for more intensive development of generating capacities. The total installed capacity will be in 2030: in WEM Scenario: 761 MW, in WPM Scenario: 1406 MW, and by 2050: in WEM Scenario: 1,083 MW and in WPM Scenario: 4,622 MW. Almost all types of generating sources are developing more intensively in WPM scenario, with the exception of Natural Gas Fired Electricity Only Power Plants: their installed capacity in WEM scenario will be 70 MW in 2030 and 159 MW in 2050, and in WPM scenario: 150 MW in 2030 without further growth. Development of generating capacities in both scenarios is based on CHP power plants (natural gas, biofuels), and variable RES. At the same time, both scenarios envisage a reduction in the installed capacity of Natural Gas Fired CHP Power Plants after 2030: from 326 MW to 284 MW by 2050 in WEM Scenario and from 81 MW to 75 MW in WPM scenario.

WPM Scenario in addition provides for the construction of waste-fired CHP power plants, their capacity will be 22 MW in 2030 and 25 MW in 2050.

It should be noted that WEM Scenario does not provide for the development of battery storage. In WPM Scenario, installation of battery storages is planned starting from 2040. The battery storage capacity will be 407 MW in 2050.

Detailed data are presented below:

WEM	2020	2025	2030	2035	2040	2045	2050
N. Gas Fired Electricity Only Power Plants	0	33	70	70	96	109	159
N. Gas Fired CHP Power Plants	390	326	326	309	287	282	284
Biomass/Biogas Fired CHP Power Plants	6	11	18	21	36	36	50
Waste Fired CHP Power Plants	0	0	0	0	0	0	0
Hydro Plants	16	16	16	16	16	16	16
Battery Storage	0	0	0	0	0	0	0
Wind Parks	41	71	171	171	233	255	315
Solar PV	5	105	155	155	187	184	248
Industrial CHP	0	2	5	5	10	10	12
<b>Total</b>	<b>459</b>	<b>564</b>	<b>761</b>	<b>747</b>	<b>865</b>	<b>891</b>	<b>1083</b>

WPM	2020	2025	2030	2035	2040	2045	2050
N. Gas Fired Electricity Only Power Plants	0	36	150	150	150	150	150
N. Gas Fired CHP Power Plants	390	385	315	298	349	344	289
Biomass/Biogas Fired CHP Power Plants	6	81	78	76	76	76	75
Waste Fired CHP Power Plants	0	0	20	20	20	30	30
Hydro Plants	16	19	22	25	25	25	25
Battery Storage	0	0	0	150	293	344	407
Wind Parks	37	142	600	1200	1762	2539	3074
Solar PV	5	187	215	312	413	490	561
Industrial CHP	0	5	6	10	10	11	11
<b>Total</b>	<b>455</b>	<b>855</b>	<b>1406</b>	<b>2240</b>	<b>3096</b>	<b>4008</b>	<b>4622</b>

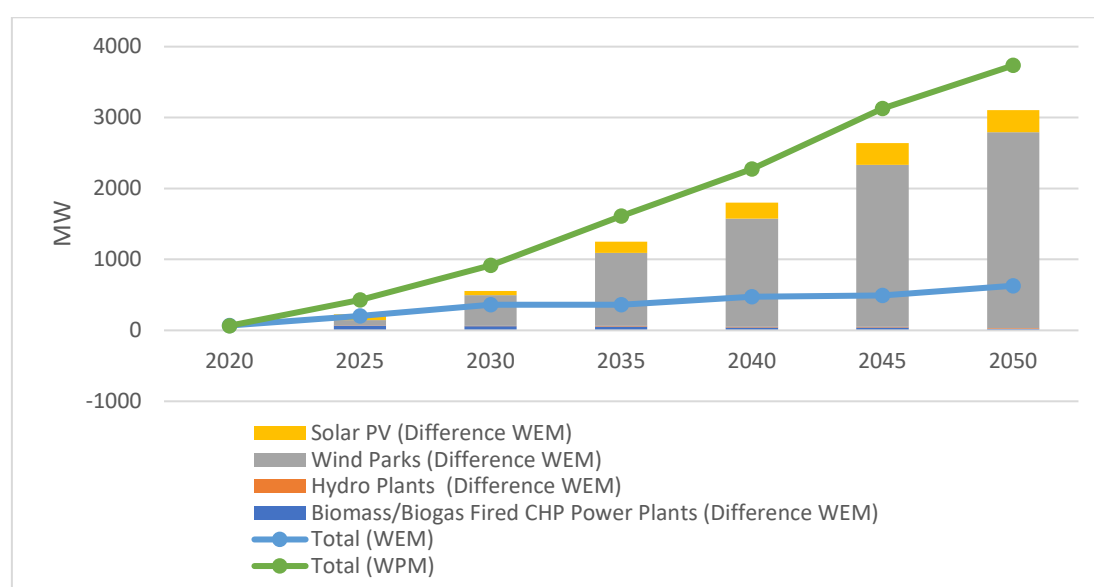


Figure 104. Installed RES capacity per technology

For the WEM Scenario, the rate of commissioning of all types of RES is approximately the same and rather low. When implementing the WPM Scenario, the main volume of commissioning of new RES capacities consists of wind and solar installations, the rate of commissioning of which is sharply increasing.

	Scenario	2020	2025	2030	2035	2040	2045	2050
Biomass/Biogas Fired CHP Power Plants	WEM	6	11	18	21	36	36	50
	WPM	6	81	78	76	76	76	75
Hydro Plants	WEM	16	16	16	16	16	16	16
	WPM	16	19	22	25	25	25	25
Wind Parks	WEM	41	71	171	171	233	255	315
	WPM	37	142	600	1200	1762	2539	3074
Solar PV	WEM	5	105	155	155	187	184	248
	WPM	5	187	215	312	413	490	561



WPM Scenario assumes much more intensive growth of RES capacities than WEM Scenario. Thus, in WEM Scenario RES capacities amount to 360 MW in 2030 and 629 MW in 2050, and in WPM Scenario: 915 MW in 2030 and 3735 MW in 2050.

The largest share in both scenarios is occupied by variable RES – solar PV and wind parks.

In WPM Scenario capacity of wind farms is growing at a slower pace, but in 2045 they are catching up with the pace of WEM Scenario. The total installed capacity of wind parks is 315 MW in WEM Scenario, and 3,074 MW in 2050 in WPM Scenario.

The growth trends of solar PV’s capacities correspond to the general scenario trends of RES: in WEM scenario: 155 MW in 2030 and 248 MW in 2050, and in WPM scenario: 215 MW in 2030 and 561 MW in 2050.

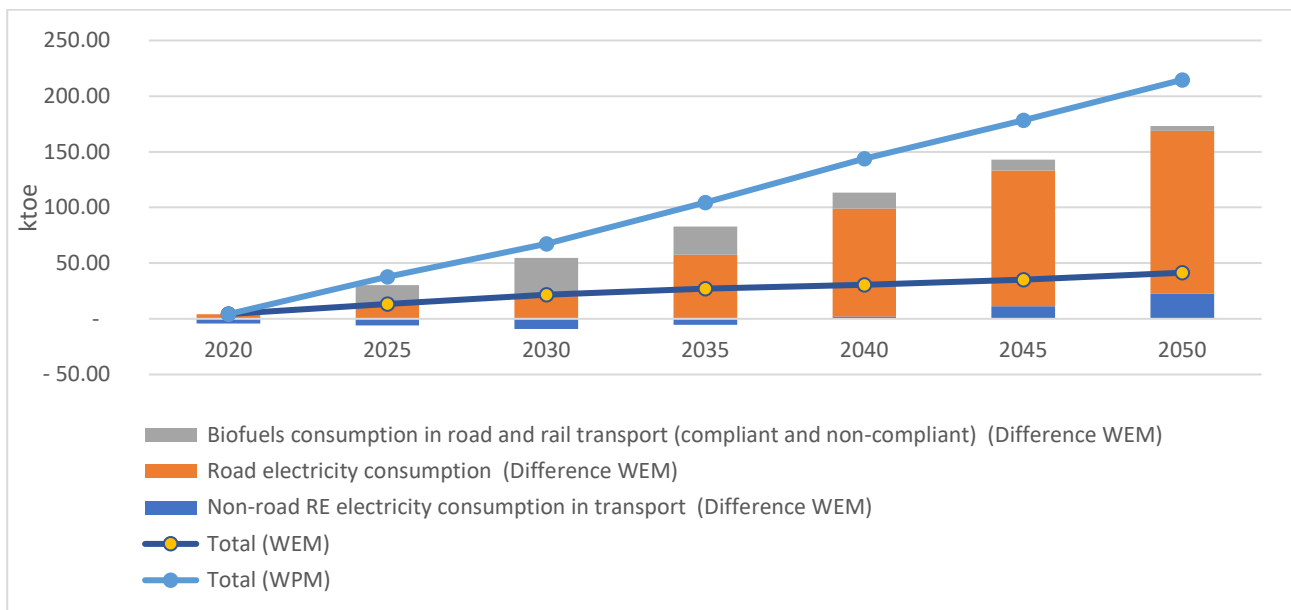


Figure 105. Projections of RES consumption in transport in the period 2020 – 2050

Trends of RES consumption in sector "Transport" in the scenarios under consideration have different evolution rates. Thus, the consumption of RES in 2030 in WEM Scenario is 21.7 ktoe, which is more than 3 times less than the similar indicator in WPM Scenario: 67.34 ktoe. In 2050, this difference four times with RES consumption in WEM scenario 41.41 ktoe, and in WPM scenario: 214.68 ktoe.

In 2030, the difference between the scenarios is due to the high level of biofuel consumption in WPM scenario: 43.85 ktoe (11,59 ktoe in WEM scenario). In 2050, the structure of RES consumption in the sector is changing, and the difference between the scenarios is caused by road RE electricity consumption increase, the consumption of which in WEM scenario is 28.55 ktoe, in WPM scenario 148.07 ktoe.

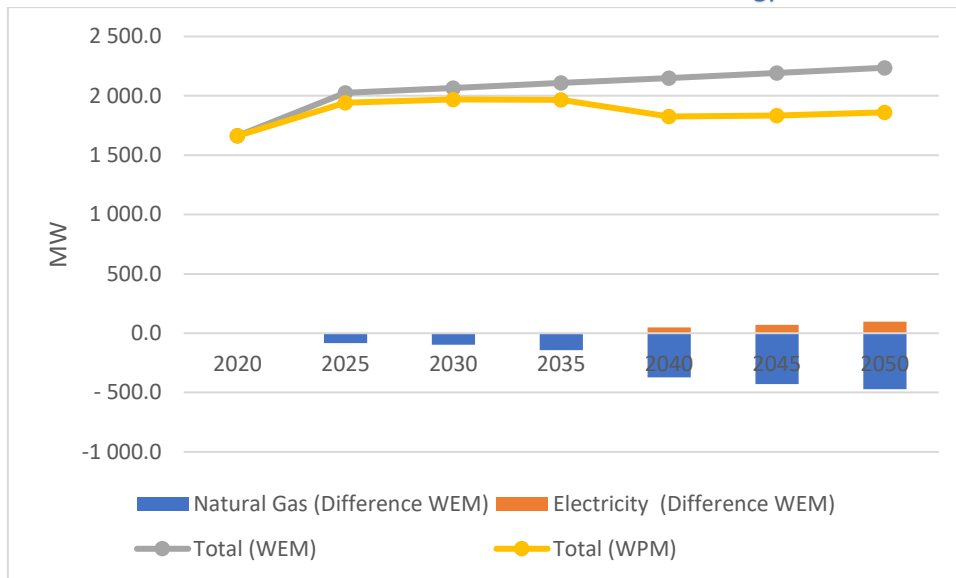


Figure 106. Projections of installed capacity per technology in the district heating sector in the period 2020 – 2050

The trends of installed capacity per technology in the district heating sector WEM and WPM scenarios differ significantly. By 2030, the total installed capacity is projected to increase in WEM Scenario to 1,971.5 MW (from 1,489.4 MW in 2020), and in WPM Scenario, the installed capacity is expected to increase to the level of 1,969.8 MW. In the period up to 2050, in WEM Scenario it is planned to reduce increase capacity to 2,236.7 MW, and in WPM Scenario, it is projected to reduce to 1,861.2 MW.

The main type of fuel for district heating in both scenarios (and the only one in WEM Scenario since 2045) is natural gas. In WPM Scenario electricity is introduced starting in 2040, and electricity installed capacity in the district heating sector reaches 96.2 MW in 2050.

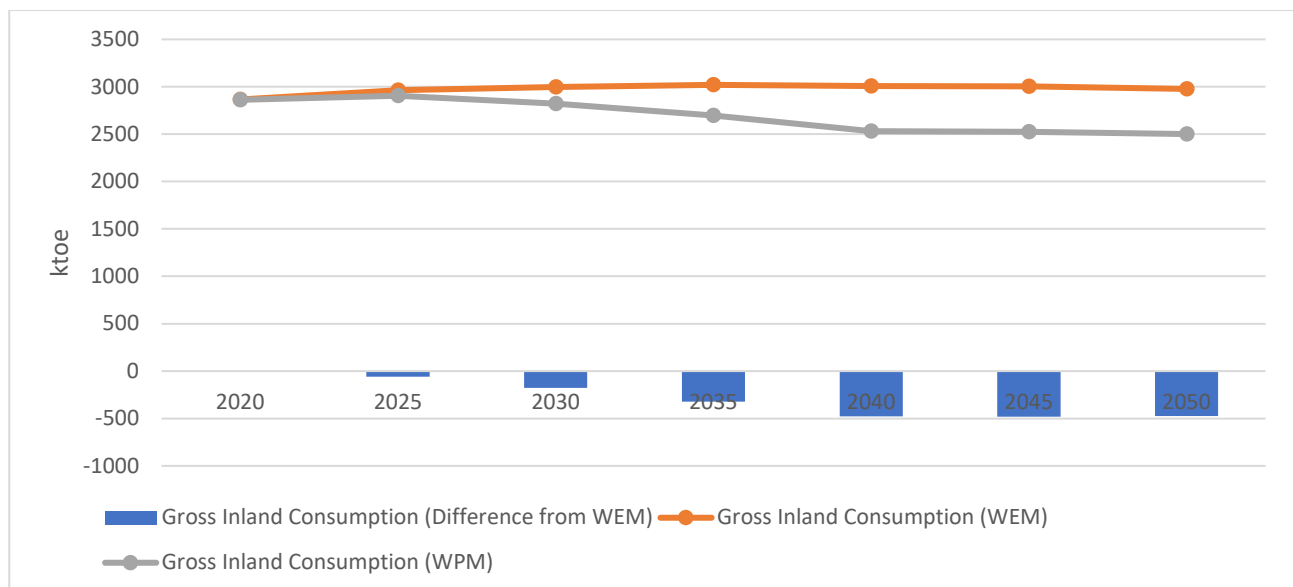


Figure 107. Projections of Gross Inland Consumption in the period 2020 – 2050

Primary energy consumption in WEM Scenario is characterized by constant growth - from 2,866.0 ktoe in 2020 to 3,020.0 ktoe in 2030 and 2,976 ktoe in 2050. Measures to improve Moldova's energy efficiency envisaged in WPM Scenario will reduce the primary energy consumption by 177.0 ktoe in

2030 and by 475.0 ktoe in 2050. Thus, primary energy consumption in WPM scenario is reduced to 2,820.0 ktoe in 2030 and to 2,501.0 ktoe in 2050.

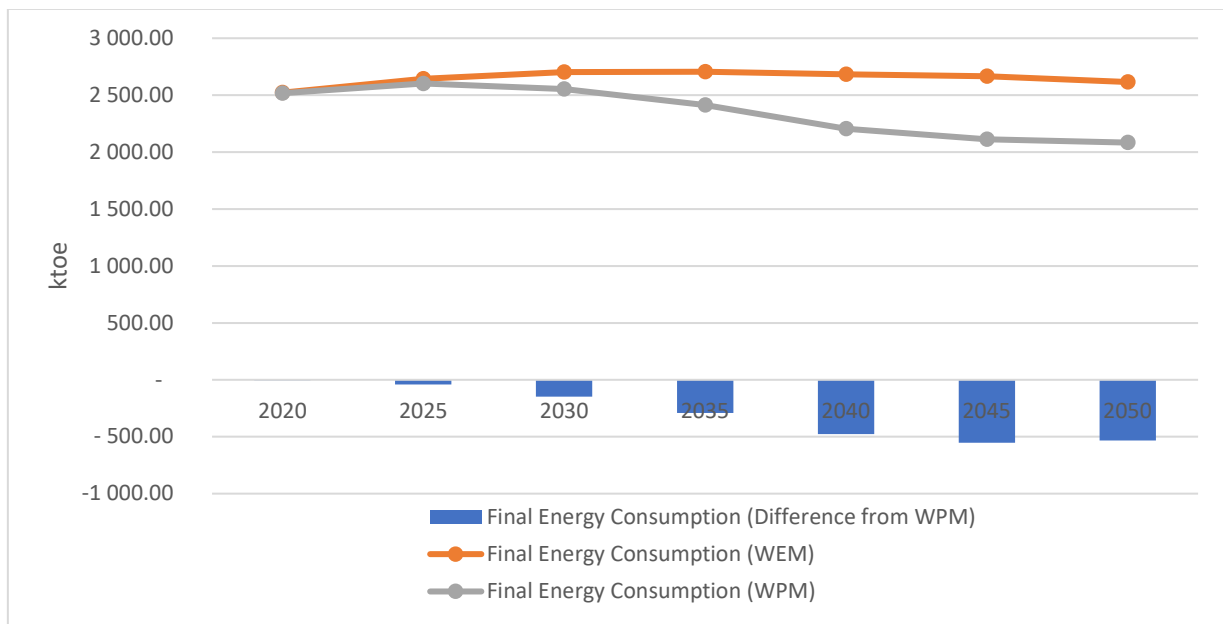


Figure 108. Projections of Final Energy Consumption in the period 2020 – 2050

Similar trends in WEM and WPM scenarios are observed in the final energy consumption, which in WEM Scenario increases from 2,521.95 ktoe in 2020 to 2,701.32 ktoe in 2030 and 2,615.49 ktoe in 2050. Energy efficiency measures envisaged in WPM Scenario reduce final energy consumption by 147.16 ktoe in 2030 and by 532.07 ktoe in 2050. Thus, final energy consumption in WPM scenario is 2,554.16 ktoe in 2030 and 2,083.42 ktoe in 2050.

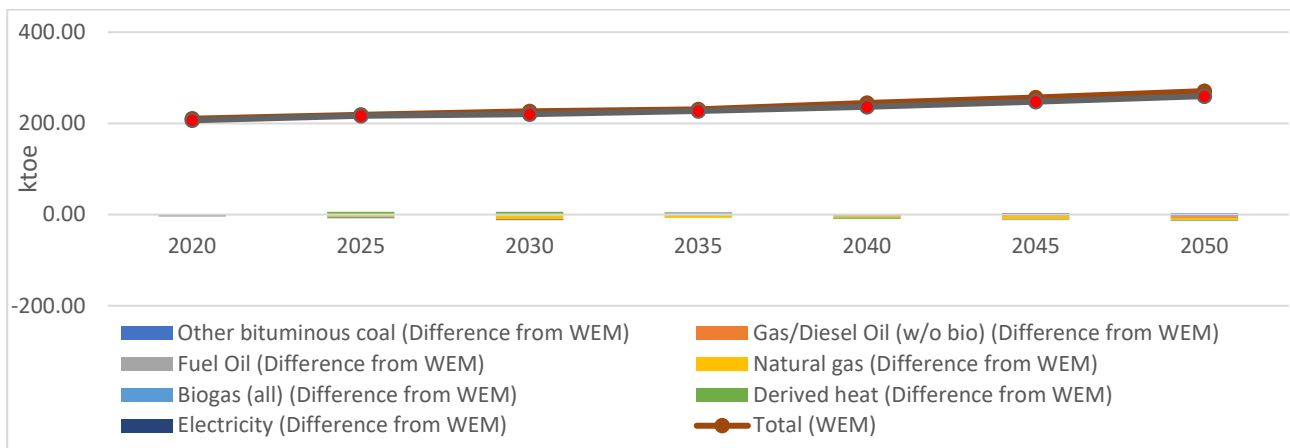


Figure 109. Projections of FEC Industry by energy source in the period 2020 – 2050

In sector "Industry", there are no significant differences between WEM and WPM scenarios. Both scenarios show trends towards insignificant growth in 2035 and show higher growth rates of final energy consumption in 2050. At the same time, the impact of energy efficiency measures on the differences between scenarios is relatively small. So, in 2030, the final energy consumption of the sector in WEM Scenario will be 226.61 ktoe, and in WPM Scenario 220.39 ktoe. In 2050, the final energy consumption of the sector in WEM Scenario will be 270.79 ktoe, and in WPM Scenario 259.78 ktoe.

At the same time, contributions of different types of energy resources to the change in final consumption in both scenarios differ. Thus, in WPM Scenario, due to the implementation of energy efficiency measures, Gas/Diesel Oil (w/o bio) consumption is reduced 0.0 ktoe and 3.65 ktoe, natural gas by 9.13 ktoe and 4.42 ktoe in 2030 and in 2050, respectively, relative to WEM Scenario. At the same time, there is a redistribution of consumed energy resources with an increase in consumption in WPM Scenario relative to WEM Scenario of derived heat by 5.63 ktoe in 2030 and decrease with 0.13 ktoe in 2050, electricity by 1.54 ktoe decrease in 2030 and increase by 2.79 ktoe in 2050.

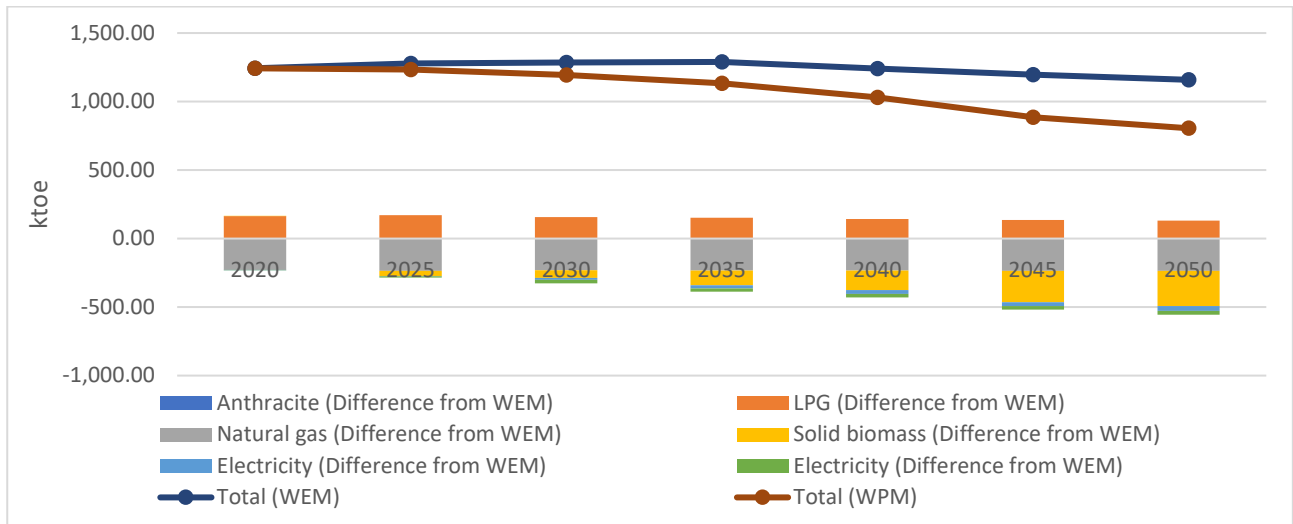


Figure 110. Projections of FEC Residential by energy source in the period 2020 – 2050

The final energy consumption in residential sector in WEM Scenario is slightly increased in the period under review: from 1,248.32 ktoe in 2020 to 1,285.10 ktoe in 2030 and reduced to 1,158.66 ktoe in 2050. Implementation of measures to improve energy efficiency, which are provided for in WPM Scenario, allows achieving much higher rates of reduction of final energy consumption by the sector: 1,194.47 ktoe in 2030 and 805.13 ktoe in 2050. This trend of WPM Scenario is caused by a decrease in the consumption of solid biomass in the first place, by 56.51 ktoe in 2030 and by 256.74 ktoe in 2050 relative to WEM Scenario. Also, in WPM scenario, relative to WEM scenario, there is a reduction in electricity consumption by 25.9 ktoe and 28.94 ktoe, in derived heat by 13.13 ktoe and 35.73 ktoe, in natural gas by 230.42 ktoe and 235.32 in 2030 and in 2050, respectively.

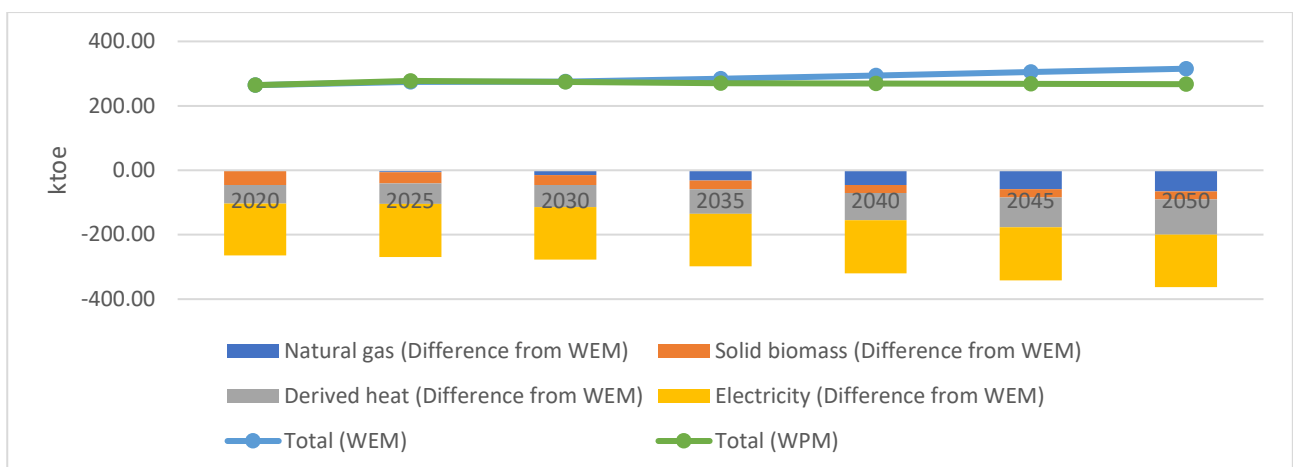


Figure 111. Projections of FEC Services by energy source in the period 2020 – 2050

In the services sector, the trend of final energy consumption in WEM Scenario shows a steady increase from 264.25 ktoe in 2020 to 275.44 ktoe in 2030 and 315.24 ktoe in 2050.

Implementation of energy efficiency measures provided in WPM Scenario allows the sector to keep energy consumption practically at the same level: 273.92 ktoe in 2030 and 264.75 ktoe in 2050. WPM Scenario provides for a change in the structure of energy resources relative to WEM Scenario. Thus, in WPM Scenario, the consumption of natural gas is reduced by 15.29 ktoe and 65.37 ktoe and that of electricity by 162.27 ktoe and 163.68 ktoe in 2030 and in 2050, respectively. At the same time, in WPM Scenario solid biomass consumption decreasing by 30.4 ktoe and 25.17 ktoe, derived heat consumption decreasing by 68.98 ktoe and 108.81 ktoe in 2030 and in 2050, respectively.

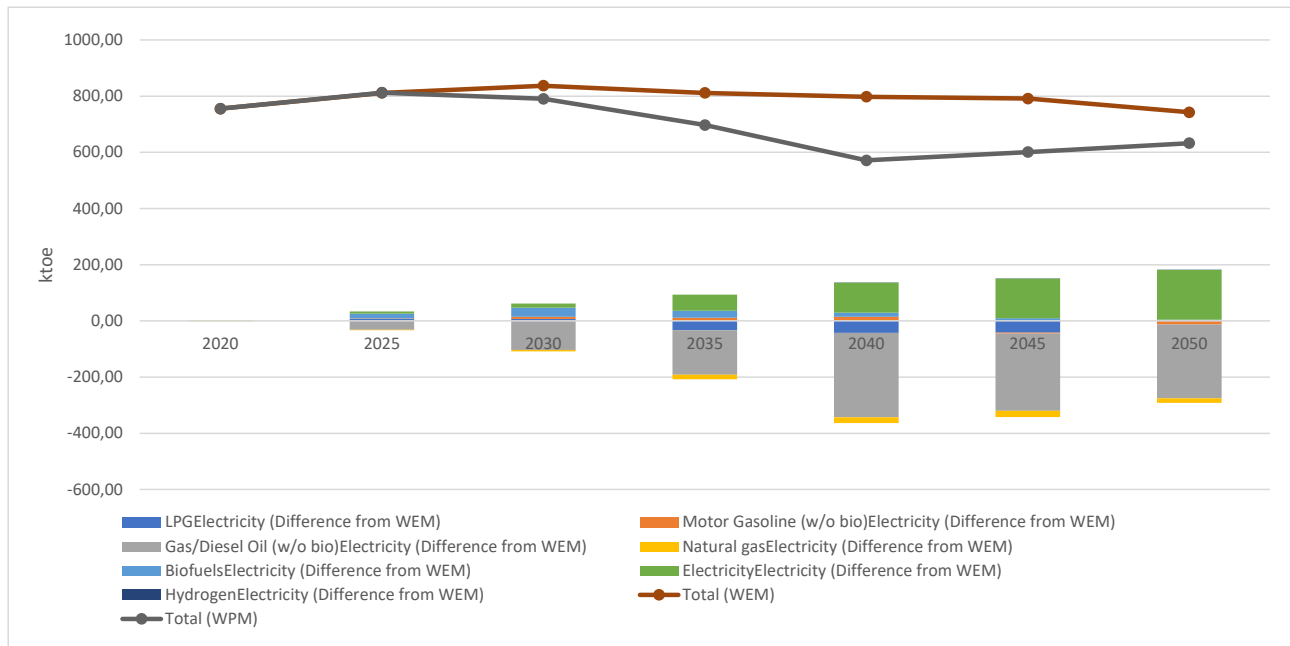


Figure 112. Projections of FEC Transport by Fuel in the period 2020 – 2050

Final energy consumption of the transport sector clearly reflects the results of the implementation of energy efficiency measures. Both scenarios, WEM and WPM, show the same trends in the forecasted period – an increase in consumption by 2025 – 2030, then a decrease in 2040 and an increase in the period 2045 – 2050, but the amplitude of fluctuations in final consumption is greater in WPM Scenario. Thus, final energy consumption in WEM scenario increases from 755.24 ktoe in 2020 to 836.93 ktoe in 2030 and then decreases to 742.26 ktoe in 2050. In WPM Scenario the sectoral final energy consumption increases to 755.27 ktoe in 2030 and decreases to 790.20 ktoe in 2040. This is followed by an increase up to 632.30 ktoe in 2050. Due to measures to improve energy efficiency, the structure of final energy consumption in WEM and WPM scenarios differs significantly. In WPM Scenario the consumption of gas/diesel oil (w/o bio) is 459.44 ktoe in 2030 and 154.92 ktoe in 2050, lower than in WEM Scenario, with the substitution of this energy resource by electricity: 26.56 ktoe in 2030 and 189.18 ktoe in 2050 and hydrogen: 0.66 ktoe in 2050.



Figure 113. Projections of FEC Agriculture by Fuel in the period 2020 – 2050

In the Agriculture / Forestry sector, both scenarios show identical trends - a steady increase in final energy consumption, with the difference between both scenarios being 0.04 - 0.15%. Both scenarios show an increase in final consumption from 81.01 ktOE in 2020 to about 97.85 ktOE in 2030 and to about 128.54 ktOE in 2050. Insignificant (less than 1% in total) fluctuations in the structure are caused by a greater proportion of natural gas, solid biomass and biogas in WPM Scenario.

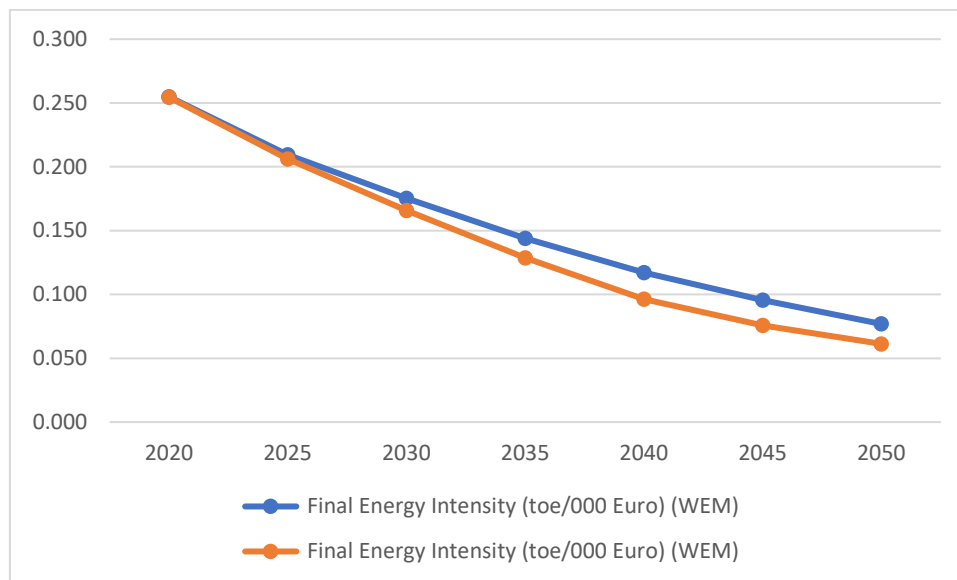


Figure 114. Projections of final energy intensity in the period 2020 – 2050

The final energy intensity indicator in both scenarios shows a significant decrease - from 0.255 toe/1,000 Euro in 2020 to 0.176 toe/1,000 Euro (31% decrease) in WEM Scenario and to 0.166 toe/1,000 Euro (35% decrease) in WPM Scenario in 2030. In 2050, the decrease in the indicator is even more significant: down to 0.077 toe/1,000 Euro (69% decrease compared to 2020) in WEM Scenario and down to 0.061 toe/1,000 Euro (74% decrease compared to 2020) in WPM scenario.

Implementation of the measures provided for WPM Scenario makes it possible to further reduce final energy intensity by 4 percentage points in 2030 and by 5 percentage points in 2050.

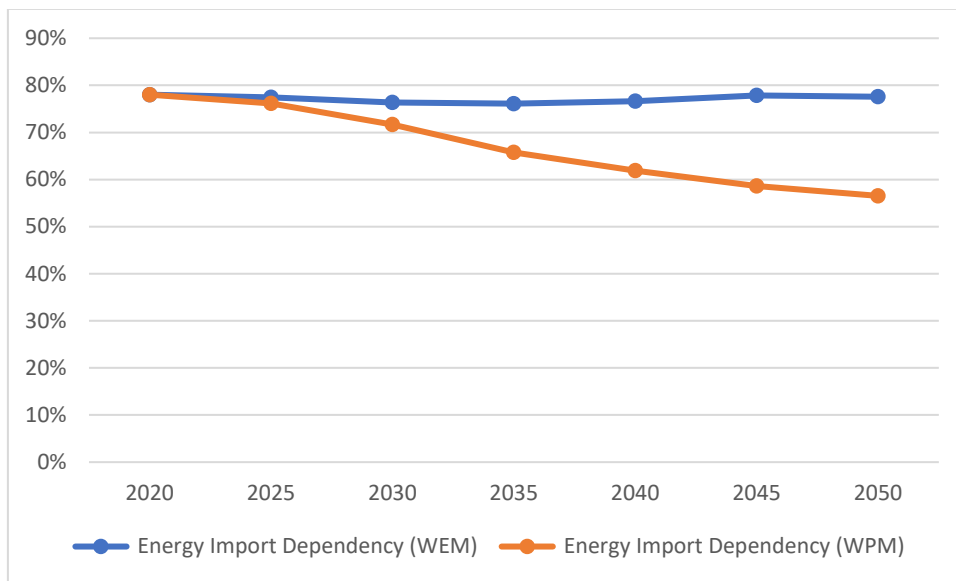


Figure 115. Projections of energy import dependency in the period 2020 – 2050

The trends of the Energy Import Dependency indicator is slowly increasing in WEM Scenario and more quickly decreasing in WPM Scenario after 2030. In WEM Scenario Energy Import Dependency in 2020 – 2025 is of 78%. In 2030, the Energy Import Indicator for WEM Scenario decreases to 76% and for WPM Scenario to 72%. In 2050, in case of WEM Scenario Energy Import Indicator increases to 78% for WEM Scenario and decreases to 57% in WPM Scenario.

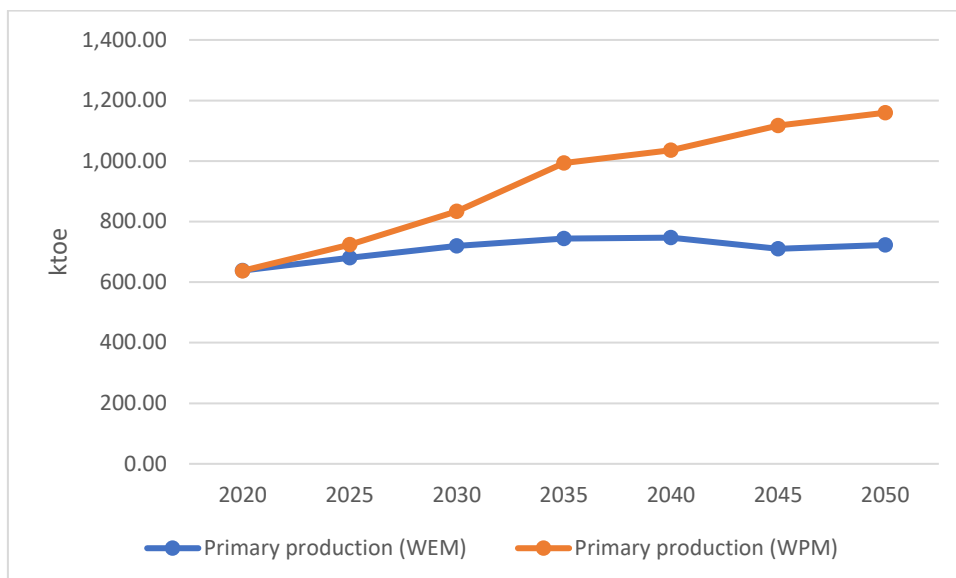


Figure 116. Projections of primary production in the period 2020 – 2050

According to WEM Scenario, primary production is growing until 2040, reaching 747 ktoe, showing a decrease to 710.15 ktoe in 2045 and continues to grow again, reaching 723.24 in 2050.

WPM Scenario demonstrates an increase in primary production by 2030 with the achievement of 8,833.40 ktoe and continuing to increase to 1,159.59 ktoe in 2050.



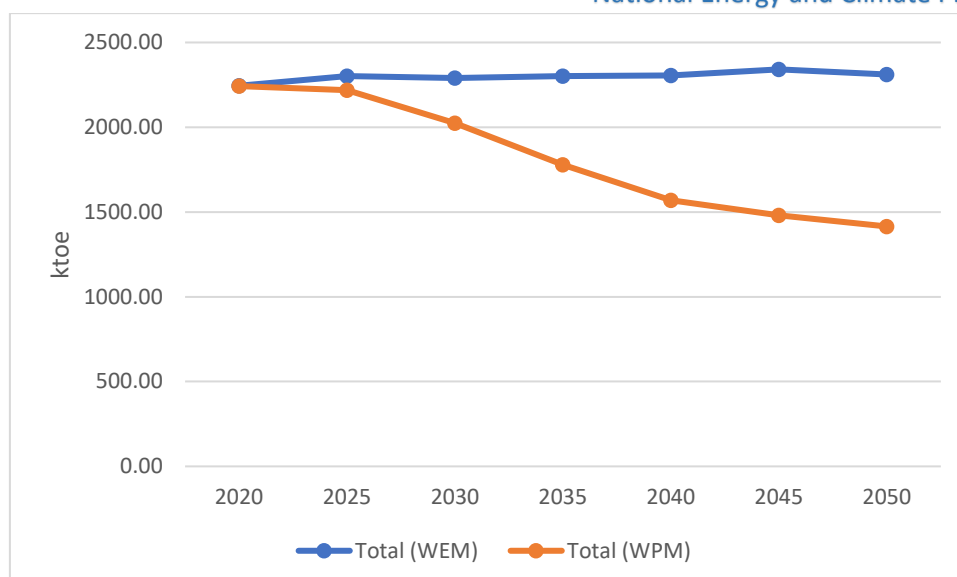


Figure 117. Projections of energy imports in the period 2020 – 2050

Energy imports do not envisage a reduction in WEM Scenario. In the period under review, there are insignificant (less than 3%) fluctuations in the level of imports: from 2,244.73 ktOE in 2020 to 2,290.97 ktOE in 2030 and to 2,311.02 ktOE in 2050.

The implementation of the measures provided for in WPM Scenario leads to a reduction in imports to the level of 2,024.02 ktOE (12% less than in 2020) in 2030 and 1,414.97 ktOE (39% less than in 2020) in 2050. Such a decrease in imports in WPM Scenario is provided, first of all, by a reduction in oil products imports by 51% in 2050.

Detailed data are presented below:

Energy imports (WEM)	2020	2025	2030	2035	2040	2045
Anthracite	45,90	31,01	21,83	14,87	7,91	1,29
Other bituminous coal	25,79	24,60	24,40	24,48	24,57	24,72
BKB	5,33	3,51	2,60	1,96	1,32	0,68
LPG	95,45	101,50	106,07	136,50	119,75	114,85
Motor Gasoline (w/o bio)	134,58	118,31	129,00	138,60	152,14	164,20
Kerosene Type Jet Fuel	36,54	42,73	48,81	55,98	64,49	74,34
Gas/Diesel Oil (w/o bio)	619,19	667,07	658,21	573,74	558,45	546,72
Fuel Oil	13,85	6,93	0,00	0,00	0,00	0,00
Lubricants	9,75	10,85	11,72	12,55	13,44	14,40
Bitumen	29,76	36,22	40,75	45,83	51,56	57,99
Petroleum Coke	3,51	4,07	4,63	5,02	5,40	5,79
Natural gas	915,35	926,79	911,57	937,08	945,26	942,76
Solid biomass	0,13	0,13	0,13	0,13	0,00	0,00
Electricity	309,60	327,55	331,24	354,74	360,49	393,58
<b>Total (WEM)</b>	<b>2244,73</b>	<b>2301,27</b>	<b>2290,97</b>	<b>2301,49</b>	<b>2305,53</b>	<b>2341,30</b>

Energy imports (WPM)	2020	2025	2030	2035	2040	2045	2050
Anthracite	45,90	31,01	21,83	14,87	7,91	1,29	0,00
Other bituminous coal	25,54	24,60	24,17	24,34	24,51	24,12	24,12
BKB	5,33	3,51	2,60	1,96	1,32	0,68	0,00
	942,60	967,47	914,56	787,36	631,75	650,41	677,10
LPG	95,45	110,73	119,49	107,58	79,67	75,78	75,78
Motor Gasoline (w/o bio)	134,57	120,68	136,37	149,77	166,95	160,10	155,10
Kerosene Type Jet Fuel	36,54	42,73	48,81	55,98	64,49	74,34	81,10
Gas/Diesel Oil (w/o bio)	619,17	635,26	552,80	410,62	250,25	262,01	262,01
Fuel Oil	13,85	6,93	0,00	0,00	0,00	0,00	0,00
Lubricants	9,75	10,85	11,72	12,55	13,44	14,40	14,40
Bitumen	29,76	36,22	40,75	45,83	51,56	57,99	61,10
Petroleum Coke	3,51	4,07	4,63	5,02	5,40	5,79	6,10
Natural gas	913,59	911,04	833,29	798,23	804,24	760,62	697,10
Solid biomass	0,13	0,13	0,00	0,00	0,00	0,00	0,00
Biofuels	0,00	16,89	31,81	24,16	13,26	0,00	0,00
Electricity	309,49	264,82	195,75	127,42	86,08	43,04	21,10
Total (WPM)	2	2	2	1	1	1	1
	242,57	219,47	024,02	778,35	569,08	480,16	411,10

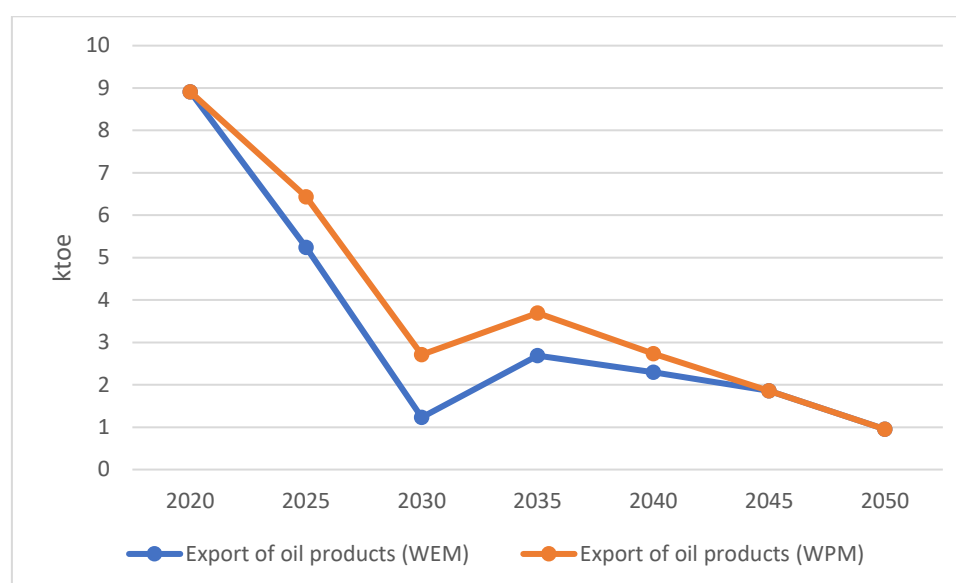


Figure 118. Projections of energy exports per fuel in the period 2020 – 2050

Republic of Moldova is also an exporter of oil products. WEM and WPM scenarios show the same trends in the change of this indicator - a decrease from 2020 to 2050, but there are significant scenario differences. So, in WEM Scenario export decreases to 1.0 ktOE in 2030, then grows to 3.0 ktOE in 2035 and then shows a steady downward trend to 1.0 ktOE by 2050. In WPM scenario the decline in oil products export occurs more smoothly with its complete cessation by 2050.

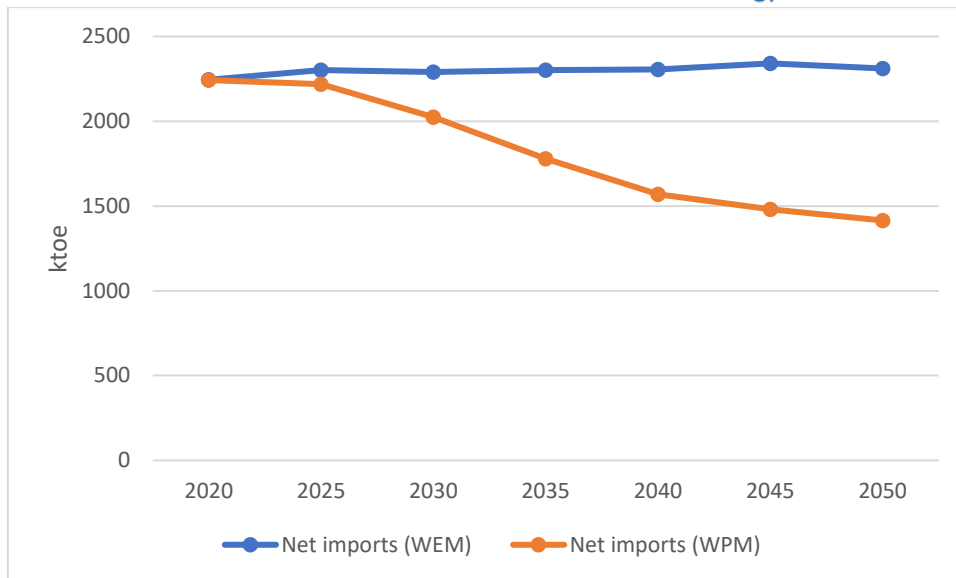


Figure 119. Projections of net imports in the period 2020 – 2050

According to both scenarios, Moldova is a net importer of energy resources. Due to the low share of energy exports, trends in WEM and WPM scenarios of net import fully correspond to energy import scenarios. Due to the measures provided for in WPM Scenario, net imports are reduced by 267.0 ktOE compared to WEM Scenario in 2030 and by 896.0 ktOE in 2050.

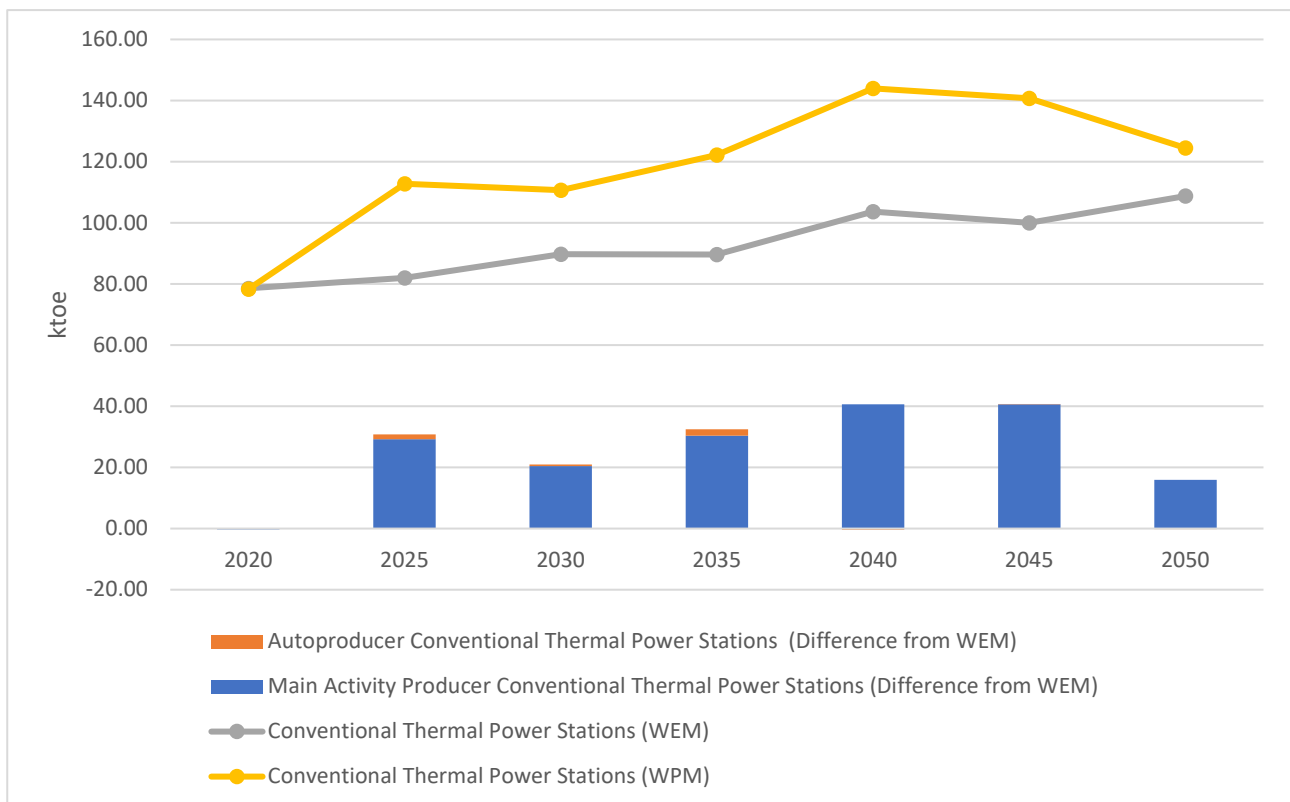


Figure 120. Projections of transformation output in electricity sector in the period 2020 – 2050

Energy consumption in the transformation sector for the WPM Scenario is higher than for the WEM Scenario. This is due to active energy saving, which often leads to the increase of electricity use. The difference in electricity consumption for both scenarios will be provided by generation at the Main Activity Producer Conventional Thermal Power Stations. A small part will also be provided by

Autoproducer Conventional Thermal Power Stations, which should be introduced after 2040 in the WEM Scenario, and after 2025 in the WPM Scenario.

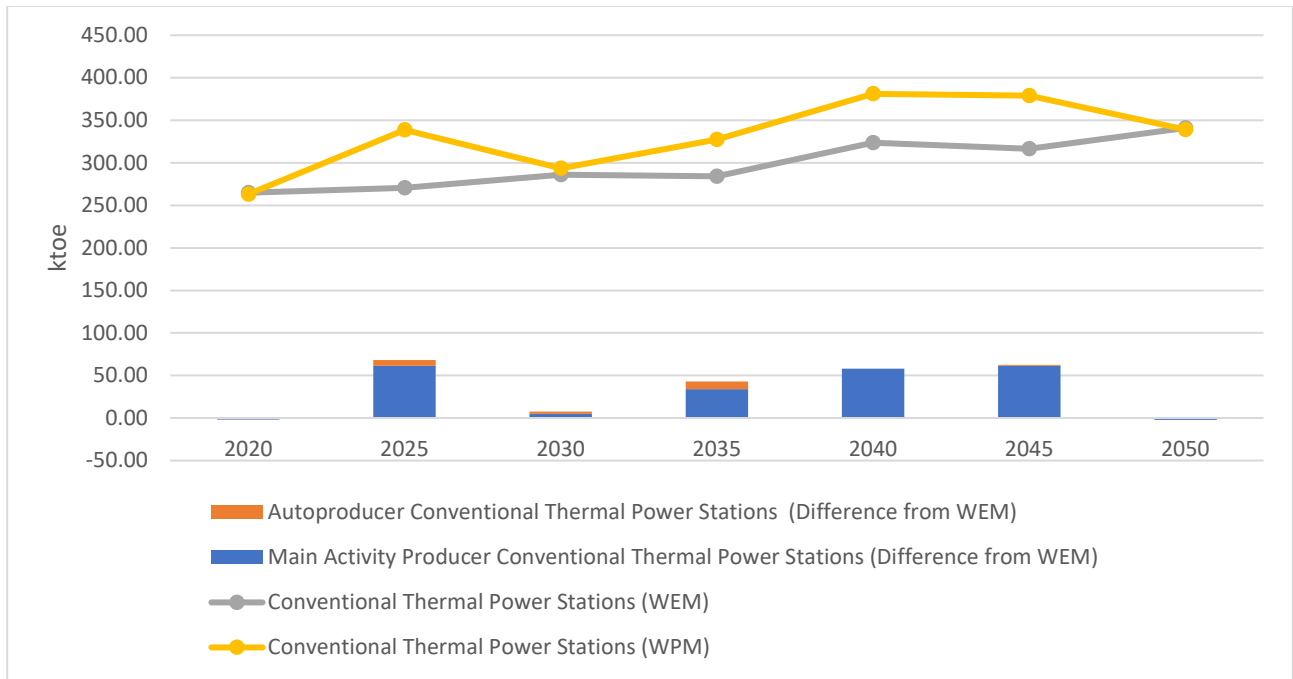


Figure 121. Projections of transformation input in electricity sector in the period 2020 – 2050

Under the WPM Scenario, the transmission sector will consume more fuel, which is associated with an increase in electricity production. In general, the difference between the consumption of fuels to produce electricity for different scenarios repeats the structure of electricity production for different types of producers.

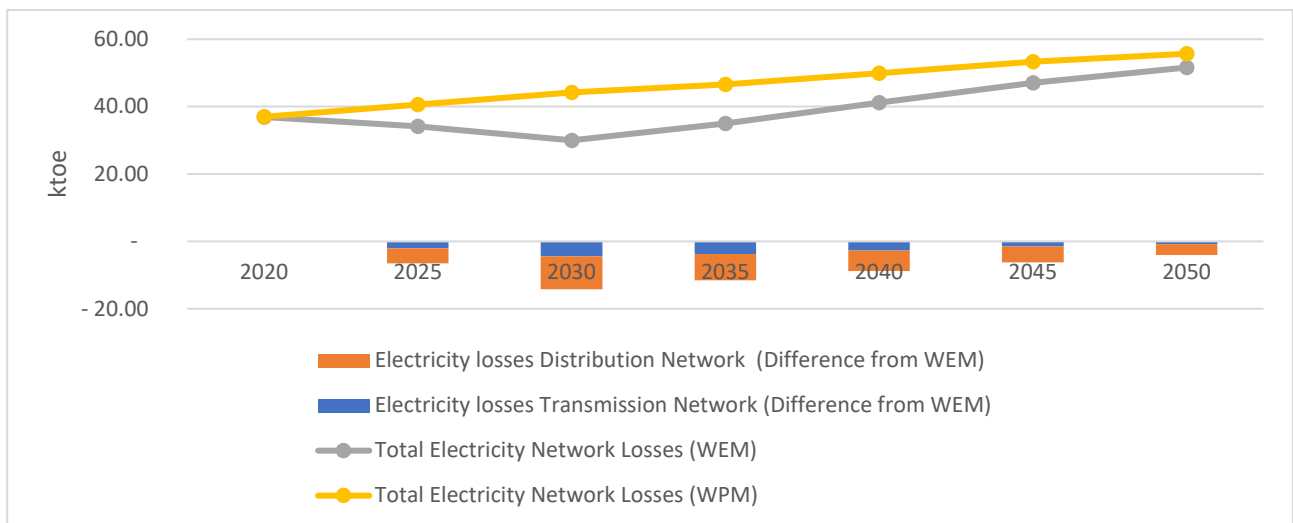


Figure 122. Projections of total electricity network losses in the period 2020 – 2050

Total electricity network losses have a steady tendency to increase in the period under consideration. In WEM Scenario they will decrease from 36.92 ktoe in 2020 to 29.99 ktoe (19% less compared to 2020) in 2030 and will increase to to 51.61 ktoe (39% more compared to 2020) in 2050. In WPM Scenario, due to the implementation of measures to switch on more electricity consumption by 2030,

there is an increase in total electricity network losses to 44.23 ktoe (19% more than in 2020), and up to 55.69 ktoe (50% more than in 2020) in 2050.

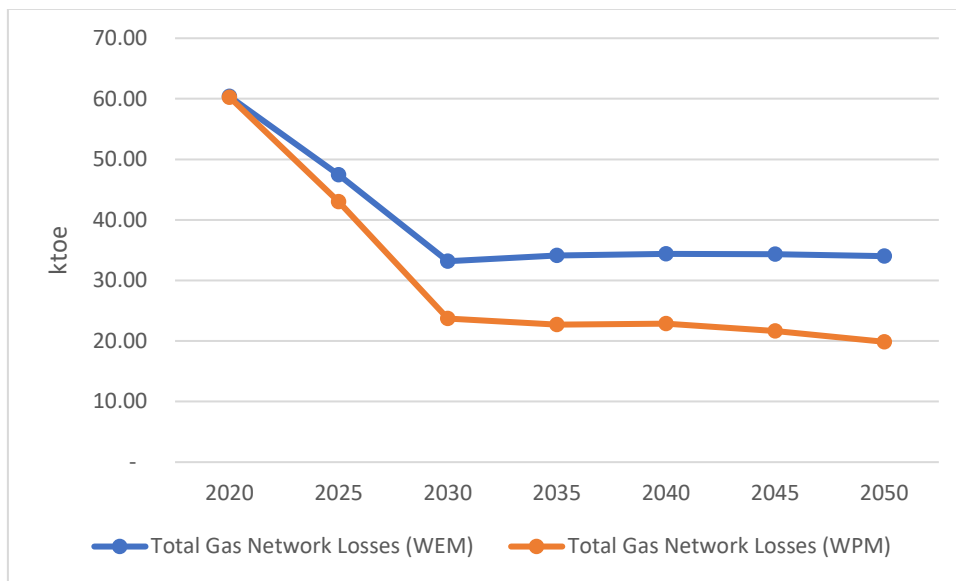


Figure 123. Projections of total gas network losses in the period 2020 – 2050

Total gas network losses indicator has a trend towards a significant decrease in both scenarios until 2030. In WEM Scenario, total gas network losses are 33.18 ktoe, in WPM Scenario: 23.71 ktoe in 2030. Further, the trends become opposite: WEM Scenario shows an increase in total gas network losses up to 34.0 ktoe in 2050, and WPM Scenario – a decrease down to 19.87 ktoe in 2050 due to the implementation of measures to improve the energy efficiency of the gas supply system.

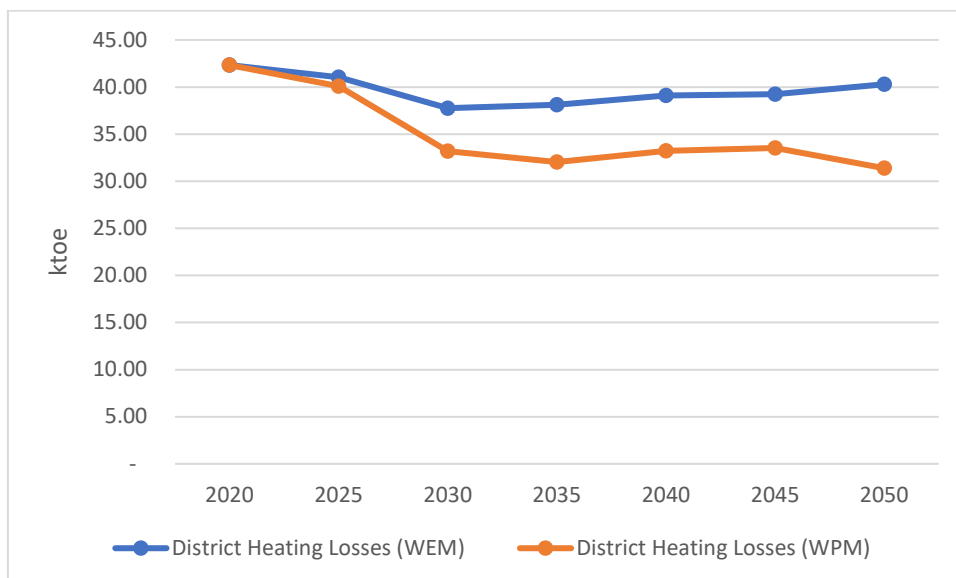


Figure 124. Projections of total heat network losses in the period 2020 – 2050

District heating losses are characterized by an initial downward trend in both scenarios from 492.2 GWh in 2020 to 37.76 ktoe in 2030 in WEM Scenario and to 32.05 ktoe in 2035 in WPM Scenario. Further, there is an upward trend for WEM Scenario reaching in 2050 40.28 ktoe. In case of WPM Scenario the upward trend is up to 2045, losses being 33.53 ktoe and in 2050 a decrease to 31.38 ktoe

*ii. Assessment of policy interactions (between existing and planned policies and measures within a policy dimension and between existing and planned policies and measures of different dimensions) at least until the last year of the period covered by the plan*

Please see the general description of the interactions listed in Chapter 1.

*iii. Assessment of interactions between existing policies and measures and planned policies and measures, and between those policies and measures and Union climate and energy policy measures*

Please see the general description of the interactions listed in Chapter 1.

5.2. Macroeconomic, environmental, skills and social impacts (in terms of costs and benefits as well as cost-effectiveness) of the planned policies and measures described in section 3 at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

Macroeconomic and, as far as possible, environmental impacts of policies and measures on health, employment and education, professional skills and social impacts are the effects that the policies and measures provided for in this NECP have on various aspects of society and economy. These effects can be positive or negative, direct or indirect, short-term or long-term, and may vary depending on the context and the point of view of various stakeholders.

**Macroeconomic implications:** this is the impact on the overall indicators and structure of the economy, such as GDP, inflation, trade balance, public finances, industry structure, competitiveness, innovation, etc. Policies and measures of this NECP will stimulate economic growth by reducing energy costs, increasing productivity, creating new markets and jobs, improving energy security and preventing damage from climate change. However, they will entail costs and trade-offs, such as increased initial investment, redistribution of income and wealth, adjustment costs for affected sectors and regions, etc.

**Health effects:** this is the impact on the physical and mental well-being of people, such as mortality, morbidity, quality of life, medical care costs, etc. Implementation of policies and measures of this NECP will improve health indicators by reducing air pollution, mitigating the effects of extreme weather events, preventing infectious diseases, promoting an active lifestyle, etc. However, it can also pose health risks or problems, such as exposure to hazardous materials or technologies, increased demand for cooling or heating services, dietary changes or vector-borne diseases, etc.

**Environmental impacts:** these are impacts on the natural environment and ecosystems, such as biodiversity, water resources, land use, waste disposal, etc. Policies and measures provided for in this NECP may have a protective effect on the environment by reducing GHG emissions, improving resource efficiency, preserving natural habitats, etc. However, they may also create pressure on the environment or lead to compromises, for example, through more active use of materials and water resources, transfer of emissions or impacts to other regions or sectors.

**Impact on employment:** this affects the quantity and quality of jobs in the economy, for example, the level of employment, wages, qualifications, working conditions, social protection, etc.

Policies and measures in the present NECP will create employment opportunities by increasing demand for labor-intensive industries such as installation of RES, advanced training and retraining, improving labor standards and rights, etc. However, potentially they can also lead to jobs or shifts losses (for example, in the fossil fuel sectors), structural changes in the labor market, skills mismatch, labor mobility problems or relocation.

Creation of additional jobs, specifically in the field of power generation technologies, should be specifically mentioned here. Those jobs are linked either to the manufacturing and installation of power generation technologies or to operation and management (O&M) of power plants. To this end, employment factors (Table below) derived from the review of a number of studies focusing on EU countries having similar characteristics with Republic of Moldova have been used. With their help, jobs that are estimated to be created in WEM and WPM scenarios due to the deployment of new RES capacity for solar PV, wind and biomass have been estimated. The results are illustrated in Figure 125 below.

	Installation (person-years/MW)		O&M (jobs/MW)	
Solar PV	10	15	0.2	0.4
Wind onshore	10	15	0.2	0.4
Biomass	15	20	0.2	0.4

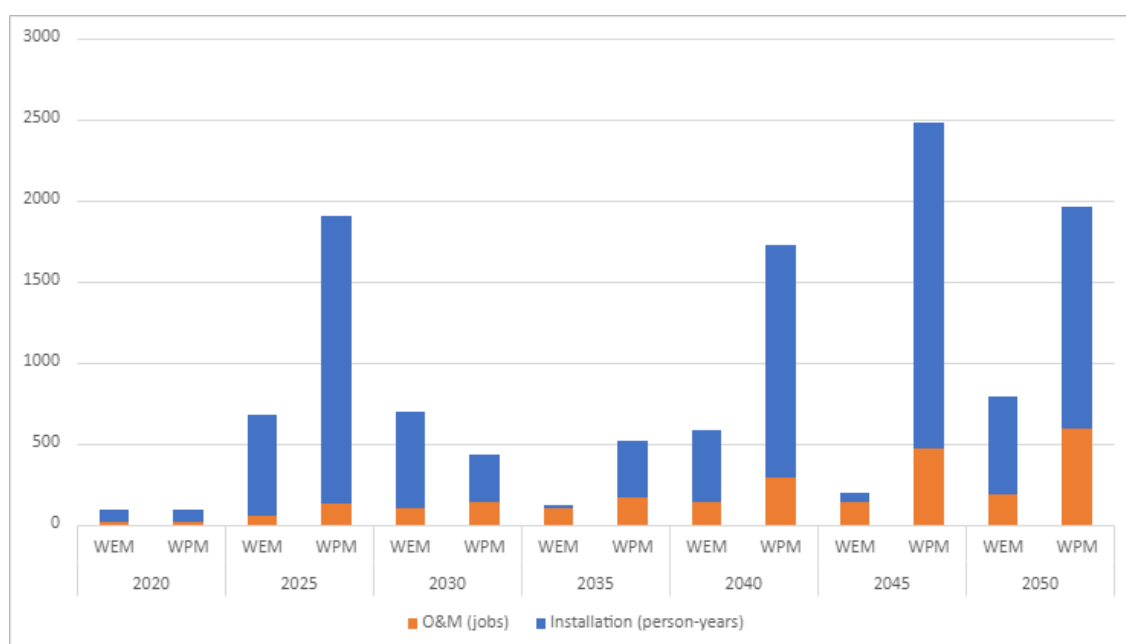


Figure 125. Projections of the number of jobs created in WEM and WPM scenarios due to the deployment of new RES capacity for solar PV, wind and biomass (average annual estimate within a five-year period) in the period 2020 – 2050

In the period 2020-2030, the most intensive job creation in WPM Scenario takes place during the first five-year period - the average annual number of workers for installation of renewable energy at this time reaches 1,774 person-years (in the second five-year period this indicator is 6 times lower: 291 person-years). At the same time, the average annual number of O&M jobs for the first and second five-year periods differ slightly: 126 O&M jobs for the period 2020-2025 and 144 O&M jobs for 2026-2030. In WEM Scenario, installation of RES develops at a more uniform and slower pace, resulting in a similar trend of jobs created for their installation. In WEM Scenario, the average annual number of workers in installation is 623 and 593 person-years, and the number of O&M jobs is 55 and 103 person-years for the periods 2020-2025 and 2026-2030, respectively.

As for the period 2031-2050, employment in installation in WPM Scenario is significantly higher than employment in WEM Scenario. The ratio of average annual person-years in WEM and WPM scenarios, respectively, is: 20 and 350 person-years in 2031-2035, 449 and 1,434 person-years by 2036-2040, 55 and 2,006 person-years in 2041-2045, 602 and 1,367 person-years in 2045-2050. For the average annual O&M jobs, there is a slightly smaller difference in the scenarios. Thus, the number of person-years for O&M RES in WEM and WPM scenarios, respectively, is: 103 and 165 jobs in



2031-2035, 136 and 289 jobs in 2036-2040, 142 and 471 jobs in 2041-2045, 184 and 596 jobs in 2046-2050.

In the field of education, the implementation of the policies and measures of this NECP will improve the results of education by improving access to electricity and digital technologies, increasing environmental awareness and literacy. However, there is a risk of creating certain problems or barriers in the field of education, such as unequal access to energy services or technology, lack of adequate infrastructure or resources for education, the need for curriculum reform or teacher training,

**Social consequences:** these are the consequences for social cohesion and integration into society, such as poverty reduction, reduction of inequality, gender equality, protection of human rights, formation of social capital, etc.

Implementation of policies and measures provided for in this NECP will improve social outcomes by reducing energy poverty and improving access to basic services, empowering women and marginalized groups, strengthening social participation and dialogue, addressing human rights issues related to energy or climate. Nevertheless, when implementing the plan, it is necessary to take into account the possibility of risks of creating social conflicts or tensions, for example, due to increased inequality or polarization, social isolation or discrimination, resistance or opposition from affected groups.

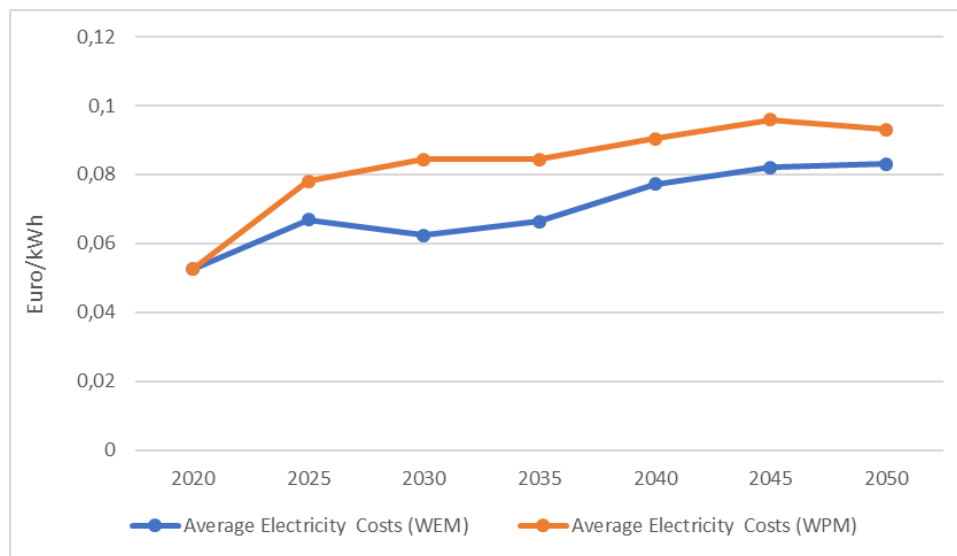


Figure 126. Projections of the average electricity supply cost in the period 2020 – 2050

In the period 2020-2050, average electricity cost has an upward trend in WEM and WPM scenarios. In WPM Scenario it grows steadily from 0.052 EUR/kWh in 2020 to 0.084 EUR/kWh in 2030 and to 0.093 EUR/kWh in 2050. In WEM Scenario, average electricity cost, due to the absence of costs for the implementation of energy efficiency measures, grows at a slower pace. Thus, already in 2030, in WEM Scenario average electricity cost is 0.062 EUR/kWh, which is 35.5% lower than in WPM Scenario. In 2050, the cost difference in both scenarios becomes smaller: in WEM Scenario average electricity cost is 0.083 EUR/kWh, which is 12.0% lower than in WPM Scenario.

### 5.3. Overview of investment needs

#### *i. existing investment flows and forward investment assumptions with regard to the planned policies and measures*

Lack of financial resources is considered one of the key barriers for reaching ambitious sustainable development targets of the Republic of Moldova. Development and operation of various financing instruments at national level is a mandate assigned by law to Energy Efficiency Agency. However, due to various reasons (lack of finance, low energy tariffs, high interest rates for funding provided by local banks etc.), the financing services market for the energy sector is not developed yet.

As a result of high investment needs, availability of financial support and technical assistance from international financial institutions and international development agencies will play a crucial role to ensure implementation of comprehensive energy and climate policies in the Republic of Moldova.

Currently the Government of the Republic of Moldova accesses funding from the international financial institutions and international organizations on preferential terms through various financial instruments:

- credit schemes;
- grants;
- subsidies.

Interest rates on these preferential funding resources are low or not applied under the grants and subsidy conditions. The repayment period of loans is several times longer than the one applied to commercial loans, many of the loans also having grace periods.

Over the past decade, the largest disbursements through the projects with climate-related targets were made by UNDP, the European Union, USAID, World Bank, European Investment Bank, EBRD.

Table 69 provides a summary of energy and climate-related project portfolio of international organizations and IFI's in the Republic of Moldova.

**Table 69. Energy and climate-related project portfolio of International Organizations and IFI's in the Republic of Moldova**

Impact Areas	UNDP	WB	EBRD	EIB	USAID
Biomass	X	X	X		
Climate adaptation and mitigation	X	X			
Climate risks	X				
District heating		X	X		
Energy efficiency	X	X	X	X	X
Natural gas			X	X	X
GHG emission reduction	X				X
Policies		X			X
Power systems		X	X	X	X
Renewables		X			X
Sustainable urban development	X				
Capacity building	X				X

Source: IFIs, UNDP, USAID, Expert Assessment

A complete portfolio of projects of key international organizations and international financial institutions related to energy and climate in the Republic of Moldova is presented in Annex 3.

Among other important players that have also contributed to technical assistance projects and to provision of commercial financing and grants in energy and climate portfolio, it is worth mentioning such institutions as:

- Swiss Agency for Development and Cooperation;
- European Commission;
- GIZ;
- Governments of Romania and Sweden.

Total financing disbursed to energy efficiency and climate change mitigation projects through official development assistance mechanisms in the Republic of Moldova in 2015-2021 reached 63.9 Mln USD. Annex 4 presents key project-level financing data in energy and climate change sectors in the Republic of Moldova according to the OECD official development assistance statistics in the period 2015 – 2021.

Promotion of energy efficiency and renewable sources is considered the first priority for the energy sector of Moldova where strong support from international institutions is highly encouraged. In this regard, the existing regulatory framework provides for the support of foreign and domestic investors in electricity generation installations from wind, photovoltaic, biogas and solid biomass cogeneration plants by granting fixed tariffs and a fixed price.

It is also expected that the investments in transport infrastructure will increase the resilience of the sector, reduce fuel consumption, provide essential gains for public security, as well as substantial economic revenues. The assessment undertaken in transport sector points to the need for enormous investments in the physical infrastructure, but also for associated measures, such as institution and policy change, capacity building and development of strategic documents for the Republic of Moldova to adapt and build resilience to climate change.

The prioritization criteria for energy efficiency and climate-related investment in the Republic of Moldova should meet the following national priorities:

- alignment with the country's climate change sectoral mitigation strategies and plans as well as with the country's legislation;
- contribution to vulnerability reduction at the national level and increase in climate-resilient sustainable development of the energy infrastructure;
- contribution to transformational adaptation of the energy sector;
- contribution to improved economic performance with high level of environmental, social, and gender co-benefits;
- financing needs of vulnerable groups, target population, sectors, development regions, country;
- financial and economic feasibility based on which sectorial investment options have been prioritized;
- total number of direct and indirect beneficiaries.

#### *ii. sector or market risk factors or barriers in the national or regional context*

A number of capacity-related assessments undertaken at the national and sub-national levels in the Republic of Moldova, in particular at sector level, have identified gaps and constraints that cumulatively act as barriers that impede progress in climate change planning and its implementation in the energy sector of the country. The most important of them are:

- World Bank Technical Assistance Document;
- Climate change impact sectorial assessments within the NC5 of the Republic of Moldova to UNFCCC;
- the Technology Needs Assessments of the Republic of Moldova submitted to the UNFCCC;
- development of the Republic of Moldova's Country Program for the engagement with GCF for 2023 – 2027;
- other project-based assessments undertaken by the national and external stakeholders.

These studies have revealed the energy sector-relevant barriers to effective energy sector climate change policies arising from political instability, socioeconomic conditions, uncertainties of future climate as well as financial, technologic, institutional, and individual knowledge limitations.

The climate change has negative long-term impacts on the country's economic growth and it affects the energy sector directly and indirectly. According to the 5<sup>th</sup> National Communication of the

Republic of Moldova to the UNFCCC, the energy sector of the Republic of Moldova is likely to be affected by three types of negative climate impacts:

- temperature increases;
- changes in precipitation regimes;
- increased climate aridity associated with the frequency and intensity amplification of extreme weather events (heatwaves and frost, floods, storms with heavy rains and hail, severe droughts).

The Republic of Moldova has an evolving climate change sectoral policy framework, with many complementarities and links to the cross-cutting sustainable development policy issues. Therefore, the mitigation priorities relevant to the energy sector of Moldova derive from both the national climate change policies and related development national and sub-national policies and plans.

A summary of climate impacts and vulnerabilities of the energy sector of the Republic of Moldova as well as its mitigation priorities are presented in Tables 70 and 71.

Table 70. Climate change impacts and main vulnerabilities of the energy sector of the Republic of Moldova

Climate risk	Risk probability	Climate risk impact on sector and its vulnerability
<b>Energy Sector</b>		
Increasing temperatures	High	Increased demand for electricity due to higher summer temperatures and the need for indoor air conditioning and industrial processes cooling
	High	Increased natural gas consumption due to increased electricity demand
	High	High loss in electricity because of intensive use of electrical cooling equipment due to increased air temperature
	High	Reduced electricity and heat generation capacities of power plants caused by insufficient heat loading
Water regime changes	High	Increased electricity demand for irrigation caused by lower soil moisture
	Medium	Reduced electricity generation capacity of power plants caused by the decrease of water flow in Prut and Dniester Rivers as a result of reduced precipitation volume
Extreme weather events (heatwaves; frost; droughts; floods; winds, hailstorms, more frequent and intense strong rains)	Medium	Decreased resilience of energy sector infrastructure, including assets useful lifespan, higher capital expenditure and running costs
	Medium	Increased intensity of energy caused by higher electricity consumption for air conditioning and irrigation. Increased intermittency in electricity supply
	Medium	Climate change (drought) compromised wood production, including biomass production for energy generation and production of liquid biofuels
	Medium	Longer duration of unplanned power supply distortions due to the increase in the frequency of spontaneous fires and the need to protect airlines
	Medium	Decrease in the share of electricity production from renewable energy due to reduced back up of balancing energy
<b>Transport Sector (Fuel Consumption-related Issues)</b>		
Increasing temperatures	High	Decreased resilience of transport sector infrastructure, including assets lifespan, higher capital expenditure and running costs
Water regime changes	High	Increased damage of road cover and increased fuel consumption by transport
	High	Larger length of the airport runway and more fuel required due to less dense air
	High	Longer travel time due to speed restrictions
Extreme weather events (heatwaves; frost; droughts; floods; winds, hailstorms, more frequent and intense strong rains)	Medium	Infrastructure deformations caused by heat waves, rain storms, floods and snow variations: damage to roads, railways, airport runways, piping systems, bicycle paths and sidewalks, bridges and viaducts
	Medium	Reduced circulation of public transport and/or increasing costs that will primarily affect vulnerable groups
	Medium	Travel and timetable delays
	Medium	Loss of visibility due to fog, snow, loss of maneuverability, obstruction of pathways, use of chemical treatment for dispersion

Source: Updated NDC (2020), Expert Assessment

Table 71. Climate change-related priorities of the energy sector of the Republic of Moldova

Sector	Priority	Main Activities to Support Energy Sector
Energy	Ensure reliable, clean and affordable energy	<ul style="list-style-type: none"> <li>– Reduce the incidence of energy poverty, mainly through the implementation of measures that contribute to reducing energy costs and making energy consumption more efficient;</li> <li>– Promote the development of "green" energy. Stimulate the interest for "green" energy production and consumption by capitalizing on renewable energy sources (wind turbines and hydro installations, PV systems, solar panels for heating and hot water production), including the use of efficient and clean biomass production technologies, as well as facilitating the connection of production facilities to existing distribution capacities;</li> <li>– Promote public street lighting modernization projects;</li> <li>– Promote climate technologies that create jobs in the energy sector for both women and men, youth people.</li> </ul>
	Promote increased resilience of climate-smart infrastructure in the energy sector	<ul style="list-style-type: none"> <li>– Develop quality, reliable, sustainable and resilient infrastructure throughout the country to support economic development and population well-being, with an emphasis on broad and equitable access for all;</li> <li>– Build storage facilities for the energy produced by wind and photovoltaic power units;</li> <li>– Promote decentralized generation of electricity (solar photovoltaic systems, hydraulic installations, micro-hydroelectric stations, etc.);</li> <li>– Promote energy efficiency (e.g.: use of modern energy generation and transport technologies, thermal insulation of buildings, construction of refrigerators near CHP's and producing steam cold for the preservation of fruits and vegetables, etc.);</li> <li>– Restore electrical stations equipment of energy distribution networks designed for defrosting/de-icing or introduce new defrosting technologies;</li> <li>– Improve the robustness of electricity transmission and distribution infrastructure;</li> <li>– Optimization of heat supply by establish free economic zones close to CHP's for economic production of the sectors that use steam or hot water in technological processes (greenhouses, absorption refrigeration systems, processing of agricultural raw materials, etc.);</li> <li>– Promote climate-proofing buildings and infrastructure and increase their energy efficiency performance;</li> <li>– Revise existing building standards to ensure that new buildings are resilient, energy-efficient, have additional mitigation effects;</li> <li>– Contribute to the development of a robust project pipeline for climate-smart infrastructure.</li> </ul>
Transport (Fuel Consumption-Related Issues)	Improve understanding of climate change-related risks and support planning	<ul style="list-style-type: none"> <li>– Provide training to decision-makers managing the construction of transport infrastructure on climate risk impacts;</li> <li>– Undertake periodic assessments of the level of resilience to climate change impact of the transport infrastructure;</li> <li>– Produce a research-analysis-assessment platform on climate change risks with impact on transport infrastructure, involving insurance companies;</li> </ul>

Sector	Priority	Main Activities to Support Energy Sector
	capacities for climate-resilient infrastructure in the transport sector	<ul style="list-style-type: none"> <li>– Communicate transport sector climate risks to the targeted audience and general public using georeferenced data on climate hazards, social and gender vulnerabilities, risk mapping covering different scenarios of threats, other tools.</li> <li>– Carry out research on the design and development of advanced materials and technologies aimed at increasing the resistance of roads, railways, aerodromes, ports to climate hazards;</li> <li>– Adjust urban and land-use planning to future climate change-related risks for transport infrastructure (roads, bridges, railways, waterways, aerodromes);</li> <li>– Promote funding schemes to support climate action that fit specific transport sector related needs, geographic area, other specifics.</li> </ul>
	Improve access to climate-resilient and safe public transport	<ul style="list-style-type: none"> <li>– Ensure the access of citizens to safe transport systems with fair, accessible and sustainable prices for all, as well as improving road safety, in particular by expanding the public transport system;</li> <li>– Promote a well-developed cycling path network, accessible pedestrian routes;</li> <li>– Promote more sustainable consumer behavior in using transport.</li> </ul>
	Create sustainable transport infrastructure	<ul style="list-style-type: none"> <li>– Implement adaptation measures to combat the effect of temperature variation: heat-tolerant streets and highways, landscape protection, heat-resilient paving materials; milling out ruts; shifting construction schedules to cooler parts of the day; design for higher maximum temperatures in replacement or new construction; adaptation of cooling systems;</li> <li>– Promote and implement adaptation solutions for extreme precipitations such as climate-resilient paving materials and overlay with more rut-resilient asphalt; use of the most efficient technologies to assure sealing and renewal of asphalt concrete; wider use of efficient road maintenance methods, including preventive and corrective maintenance; improve flood protection; greater use of sensors for monitoring water flows; upgrading of road drainage systems and improved collection and disposal of rainwater from the roads; pavement grooving and sloping; implement increased standards for drainage capacity for new transportation infrastructure and major rehabilitation projects;</li> <li>– Identification and implementation of corporate management and advanced technological models for the management of transport infrastructure in response to the impact of climate change;</li> <li>– Purchase the necessary equipment for cleaning and widening riverbeds, and the development of a system for navigation monitoring, etc.</li> <li>– Contribute to the development of a robust project pipeline for climate-smart infrastructure.</li> </ul>

Source: Updated NDC (2020), Expert Assessment



As a result, efforts should be made to move towards a more coordinated and integrated approach to mainstreaming climate change issues into the energy policy of Moldova (for example, by means of active involvement of the inter-sectorial Climate Change Coordination Mechanism led by the National Commission on Climate Change).

Some energy sector's policies of the Republic of Moldova have their official validation until 2020, while a few policies cover the timespan until 2030, therefore, the draft policy documents, laws and regulations that passed various stages of public consultation and Government approval have been taken into account when identifying cross-sectorial and sectorial adaptation priorities.

The main systemic impediments for an increased political commitment in addressing climate change mitigation issues in the energy sector planning process include:

- insufficient prioritization of climate change issues in the national energy policy agenda;
- insufficient knowledge of high-level decision makers in the energy sector on the magnitude of the climate change impacts and the threat to economic growth and energy infrastructure resilience;
- lack of financing;
- lack of capacity for comprehensive policy design and its implementation.

National actors, benefiting from the engagement and the participation in the climate change global agenda, have limited awareness and knowledge of trends and opportunities presented by the global sustainable energy agenda, particularly regarding the opportunities for a range of information, tools, technical assistance, and project funding.

Current energy sector's legislation and policy papers in Moldova have the following bottlenecks:

- climate impacts are addressed insufficiently in legislation and policy documents related to the energy sector;
- the lack of a specific reference to climate change in many laws hinders the development of mitigation actions relevant to the energy and energy efficiency sectors of the Republic of Moldova, because responsible authorities cannot request funding for climate-related activities;
- sectoral strategies do not take into account or do not relate directly climate change and energy efficiency, energy security considerations in proposed sectorial measures and objectives, even when these objectives are directly affected by climate variability and climate change.

Table 72 provides an overview of sector-level climate change mitigation barriers and gaps in the Republic of Moldova.

**Table 72. Sector-level climate change mitigation barriers and gaps of the Republic of Moldova**

<b>Sector</b>	<b>Enabling Environment</b>	<b>Organizational Environment</b>
Energy	<ul style="list-style-type: none"> <li>– Limited integration of mitigation measures in the development plans of enterprises, national and sectorial plans (energy efficiency, renewable energy use);</li> <li>– Lack of climate mitigation target requirements in the legal documents related to the energy sector;</li> </ul>	<ul style="list-style-type: none"> <li>– Limited ability to provide training and exchange of experiences with other energy organizations on best practices and techniques to reduce facility vulnerabilities to climate change;</li> <li>– Need to develop a coordination mechanism with service providers to ensure information</li> </ul>

Sector	Enabling Environment	Organizational Environment
	<ul style="list-style-type: none"> <li>– Limited financial and institutional capacity to improve governance and implementation capacity in terms of energy efficiency and renewable energy;</li> <li>– Limited capacity development and training for workers and service providers (with focus in energy management, energy audit, sustainable strategic planning).</li> </ul>	<ul style="list-style-type: none"> <li>flow in support of operational activities of the energy sector;</li> <li>– Limited ability to conduct economic analysis of costs and benefits of climate mitigation interventions to support increased adoption of new technologies and approaches into the energy sector's policy planning;</li> <li>– Mitigation to climate change is currently not an opportunity for employment in the energy sector.</li> </ul>
Transport (Fuel Consumption-Related Issues)	<ul style="list-style-type: none"> <li>– The financial resources of the Road Fund are not channeled into research of climate related risks and/or impact assessment, capacity or planning for the transport sector and a change in its governing laws is needed;</li> <li>– The technical standards for the design, construction and operation of transport infrastructure are to be adjusted to the potential impacts of climate change as well as to new modalities of urban mobility;</li> <li>– Inadequate methodologies for climate impact measurement of related policies, plans and available financial resources;</li> <li>– Insufficient management capabilities (financial, technical and commercial) in the transport infrastructure maintenance system.</li> </ul>	<ul style="list-style-type: none"> <li>– Limited technical ability to organize and create the necessary technical adaptation options to climatic events;</li> <li>– Lack of appropriate facilities that would allow entities to rehabilitate transport infrastructure with focus on more efficient fuel use;</li> <li>– Lack of an efficient national-level policies to address the removal of obsolete and non-complying vehicles from the State Register and the monitoring of scrapping operations;</li> <li>– Limited integration of mitigation measures in the development plans of enterprises, national, municipal and sectorial plans related to the transport sector;</li> <li>– Mitigation to climate change is currently not an opportunity for employment in the transport sector.</li> </ul>

Source: Updated NDC (2020), Expert Assessment

Table 73 reflects cross-sectorial needs of the country and the priority actions to be pursued to avoid key climate change mitigation barriers and gaps of the Republic of Moldova.

*Table 73. Cross-sectorial climate change mitigation barriers and gaps of the Republic of Moldova*

Policy framework and institutional capacities	Systemic Barriers and Gaps	Organizational Barriers and Gaps	Individual Barriers and Gaps
Disaster Risk Reduction	Climate change mitigation issues are not sufficiently mainstreamed into legislation on disaster preparedness of the energy sector of Moldova	Lack of a comprehensive strategy	Low level of awareness about measures aimed at disaster risk reduction for the energy infrastructure
National Development Policies	Climate change mitigation issues are not sufficiently mainstreamed into national development strategies of the energy sector of Moldova	Reporting on climate-related issues in the energy sector is not consolidated. The climate change-related “portfolio” is not seen from a holistic	Decision-makers in the energy sector do not perceive climate mitigation as an important issue which requires a special attention

Policy framework and institutional capacities	Systemic Barriers and Gaps	Organizational Barriers and Gaps	Individual Barriers and Gaps
		and programmatic approach perspective	
Economic and Sectorial Development Policies	Legislation in climate-sensitive sectors do not sufficiently address climate change mitigation as an integral aspect of the sectoral policy	Authorities of the energy sector do not have a clear legal mandate to conduct a comprehensive work on climate-related issues	Weak integration of climate-related issues into the municipality-level energy policy
Environment Policies	Climate-related strategies are in their early stages and are not yet reflected in sectorial policies	Restructuring and shifts in program mandates often lead to low availability of program-related information There is need to prepare compelling budget requests that explain the development linkages of energy and environmental programs.	Decision-makers and staff still lack specialized knowledge to design and implement climate change mitigation programs and plans aimed at the energy sector
Public Administration and Public Management	Climate change mitigation portfolio is not sufficiently evaluated or monitored. Lack of ongoing support for energy sector mitigation initiatives leads to continuity gaps	Government agencies may report on program implementation but they do not necessarily incorporate lessons learned into the future program design. Unclear alignment between agency budgeting and policy priorities	Sectorial agencies may lack the skills to analyze the energy and climate-related data they collect and utilize the findings from projects aimed at sectoral mitigation. Staff often lacks specialized training or mentoring.
Gender and Vulnerable Groups	Climate change mitigation in the energy sector is not sufficiently mainstreamed into legislation on human health and related social services	Limited understanding of methodological approach to mainstream energy sector mitigation at organizational level. Limited disaggregated data on climate change impact on gender issues	Low level of awareness about climate mitigation and related practices hinders development of community resilience
Knowledge Management	Lack of guiding policies and/or strategies on knowledge management in the energy sector	Limited understanding within government and lead agencies on knowledge management in the energy sector	Climate change, its impacts are not prioritized or used in daily agenda of civil servants of the government institutions responsible for the energy policy
Communication and Public Awareness	Insufficient guiding policies and/or strategies on communication and awareness raising with regard to climate risks in the energy sector of Moldova	Limited understanding within government and lead agencies on the need for communication and awareness raising campaigns	Low level of awareness about communication practices that may improve community resilience

Source: Updated NDC (2020)

*iii. Analysis of additional public finance support or resources to fill identified gaps identified under point ii*

Public financing instruments can play an important role in achievement of NECP targets of the Republic of Moldova.

The following priority mitigation measures will require financing support (Table 74).

Table 74. Financing required and benefits expected from key measures included in NECP of the Republic of Moldova

Measure	Description	Financing Required and Benefits Expected
Capacity limits, maximum quotas and capacity categories in the field of electricity from renewable sources until December 31 <sup>st</sup> , 2025, GD no. 401/2021	<p>The project was developed to adjust the legal framework for the application/ implementation of the support schemes provided in Art. 34 of Law no.10/2016 on promotion of the use of energy from renewable sources to current conditions, specifically the fixed price, set by tendering, for eligible producers who own or will own power plants with a cumulative power higher than the capacity limit established by the Government, and fixed tariff, established and approved by ANRE for eligible producers who own or will own power plants with a cumulative power not exceeding the capacity limit established by the Government, but which must not be less than 10 kW.</p> <p>The document provides for the allocation of new shares of renewable electricity generation capacity, for a longer period of time, namely until 2025, which will be supported by support schemes provided for by the framework law – fixed price and fixed tariff, respectively.</p> <p>At the same time, the project provides for the allocation of shares of intermittent generation capacities, such as 310 MW photovoltaic and wind installations, as well as for non- intermittent technologies, such as 90 MW cogeneration and hydroelectric installations, for the announced period of time.</p>	Based on the data provided by the relevant international institutions, the value of the investments necessary for construction of all the capacities proposed to be allocated by the Government, of the respective lot of generation units would range between 400 and 800 Mln EUR, depending on the interest in the development of projects, the cost of technologies and, implicitly, the effect of the “economy of scale”.
The Environmental Strategy for 2014-2023 and the Action Plan for its implementation, GD no. 301/201476, amended by GD no. 1143/201877	To reduce GHG emissions from the energy sector by at least 25%; to reduce GHG emissions from housing, industry and agriculture by 20%; to reduce GHG emissions from transport by 15%.	Reducing air pollution, greenhouse gas emissions and emissions from vehicles can bring annual benefits up to 2.5% of GDP; long-term economic benefits due to improvement of sewerage systems, wastewater collection and treatment would amount to 0.44% – 1.73% of GDP; 66.2 Mln MDL in the transport sector, which will lead to carbon emissions reduction in this sector by 15% compared to the baseline scenario; about 329 Mln MDL for the implementation of mitigation measures with direct or indirect impact on GHG emissions generated by the industrial sector.
The Low Emission Development Strategy until 2030 and the Action Plan for its implementation, GD no. 1470/2016, as amended by the GD no. 738/2018 and GD no. 1143/2018	The objective is in line with the one set in the intended Nationally Determined Contribution (2015) and is oriented towards the unconditional reduction, by 2030, of the total national emissions of net greenhouse gases by no less than 64% compared to 1990. The emission reduction target could be increased to 78% conditionally, provided external support is available.	For the period 2021-2030 – 3.3 billion US dollars unconditionally and 2.5 billion US dollars conditionally.

Measure	Description	Financing Required and Benefits Expected
<p>Program for the promoting “green” economy for 2018-2020 and the Action Plan for its implementation, GD no. 160/2018</p>	<p>Objective: to promote implementation of the “green” economy principles in the RoM in harmony with economic development and social welfare. The implementation of the Program will ensure the development of the necessary capacities of all those involved in the planned activities, by achieving the following specific objectives, by 2020:</p> <ul style="list-style-type: none"> <li>– ensuring conditions for good governance and strengthening of the institutional and management potential in promoting “green” economy by 30% at national level;</li> <li>– ensuring promotion of measures aimed at implementing the principles of the “green” economy, so that 17% of gross final energy consumption is derived from renewable energy sources and energy efficiency is improved by 8.2%;</li> <li>– ensuring the greening of about 30% of small and medium-sized enterprises through adequate support in the implementation of “green” economy principles;</li> <li>– ensuring promotion of organic farming by implementing the principles of “green” economy and extending the area of agricultural land used for organic farming by about 20%;</li> <li>– reducing air pollution by 30% through development of sustainable transport;</li> <li>– ensuring promotion of measures aimed at implementing the principles of “green” economy in construction by 15%;</li> <li>– ensuring the implementation of the principles of resource efficiency and clean production in about 30% of enterprises and organizations;</li> <li>– ensuring at least 15% of all public procurement corresponding to sustainable procurement criteria;</li> <li>– increasing knowledge about “green” economy and sustainable development among students by at least 30%;</li> <li>– raising public awareness about “green” economy and sustainable development by at least 30%;</li> <li>– setting up the system for monitoring green growth indicators.</li> </ul>	<p>The general cost for the implementation of the Program is estimated at about 122.5 million lei.</p>
<p>The Law on ratification of the Loan Agreement between the Republic of Moldova and the International Bank for Reconstruction and Development on the Implementation of the</p>	<p>Increasing the energy efficiency of Chisinau CHSS</p>	<p>92 Mln EUR</p>

Measure	Description	Financing Required and Benefits Expected
Second Project for Improving the Efficiency of the District Heat Supply System, no. 193/2020		
Law on ratification of the Loan Agreement between the RoM and the EBRD for the implementation of the Project Thermal Energy System of Balti municipality ("CET-Nord SA") - Phase II, Presidential Decree no. 289/2021	<p>The project aims to increase the quality of the services provided to the inhabitants of the municipality by restoring the domestic hot water supply system, implementing the intra-block horizontal distribution system, ensuring the thermal comfort in the buildings by individual management of heat consumption, optimizing the operational costs, remote centralized control and monitoring, reducing the thermal energy losses, etc.</p> <p>The investment will help alleviate infrastructure problems and promote systemic decarbonization. This will encourage reduction in electricity imports, leading to better energy security and significant savings in CO<sub>2</sub> emissions.</p> <p>The new investment is based on the improvements achieved in the first stage of the project, completed in 2019, which led to a significant reduction in natural gas consumption, reduction of CO<sub>2</sub> emissions and better-quality district heating services.</p> <p>The provisions of the project result from the need to fulfil the commitments undertaken by our country towards sustainable development, energy efficiency and achieve the objectives of the Energy Strategy of the Republic of Moldova until 2030.</p> <p>Thus, for Project implementation purposes, the Republic of Moldova will contract a 15 Mln EUR loan from the EBRD, as well as a 2 Mln EUR grant from the Eastern Europe Partnership for Energy Efficiency and Environment (E5P).</p> <p>The total budget of the Project is 17 Mln EUR, with an implementation period of 3 years (2022 – 2025).</p>	Investments through energy efficiency measures in public buildings worth 75.5 Mln EUR. Monetary savings estimated at 5.2 Mln EUR / year (which could be excluded from the budgets of public institutions or could be directed by the management of these institutions to cover other needs).
Contract between the RoM and the EIB for the implementation of the project "Energy Efficiency in the Republic of Moldova", GD no. 397/2021	<p>The project is geared towards creating a financial instrument necessary for the energy rehabilitation of the real estate fund of the Republic of Moldova, which includes public buildings owned by central and local public authorities, characterized by a low energy performance due to the age of the buildings, as well as the acute lack of investments in the consolidation and energy efficiency increasing works during exploitation.</p> <p>In this regard, in order to implement the Energy Efficiency Project in the Republic of Moldova, the RoM shall contract a loan worth 30 Mln EUR from the EIB, another loan worth 30 Mln EUR from the EBRD, as well as a grant worth 15.5 Mln EUR from the European Commission's Neighborhood Investment Platform. Thus,</p>	Investments through energy efficiency measures in public buildings worth 75.5 Mln EUR. Monetary savings estimated at 5.2 Mln EUR / year (which could be excluded from the budgets of public institutions or could be directed by the management of these institutions to cover other needs).

Measure	Description	Financing Required and Benefits Expected
	<p>the total budget of the Project is 75.5 Mln EUR, with an implementation period of 4 years (2022-2025).</p> <p>The main category of Project beneficiaries will be public institutions, namely governmental public institutions of national importance (the socially important ones, such as republican/national hospitals) and public institutions of local/municipal importance (kindergartens, schools, hospitals).</p> <p>The specific objectives of the Project are to improve the energy performance indicators of buildings, focusing on the improvement/rehabilitation of the building envelope, heating, ventilation and air conditioning systems, implementation of lighting systems, distribution of thermal energy and integration of renewable energy resources, when this is technically permissible.</p>	
The National Research and Innovation Program for 2020-2023 and the Action Plan for its implementation	<p>Increasing the efficiency of the national research and innovation system and ensuring optimal conditions for generating new knowledge obtained based on fundamental and applied research and their implementation to increase the competitiveness of the national economy and the general level of well-being. Research shall include the Environment and Climate Change Directorate that cover the themes “Secure, Clean and Efficient Energy” and “Waste, Plastics and Pollutants”.</p>	<p>Estimated costs for the implementation of competitively selected projects according to the priorities and strategic directions are 224.7 Mln MDL for 2020 and, respectively, 238.9 Mln MDL for 2021, 257.9 Mln MDL for 2022, 276.3 Mln MDL for 2023. The costs for institution building measures in research and innovation are estimated at 149.8 Mln MDL for 2020 and 128.7 Mln MDL for 2021, 110.5 Mln MDL for 2022, 92.1 Mln MDL for 2023. The implementation of the Program will result in development of solutions, technologies and materials with GHG emissions reduction impact, as well as sustainable development of society.</p>
“Zero Net Carbon Emissions, Science-Based Target” Commitment signed by Lafarge Holcim Group on 21 September 2020 at the New York Climate Conference	<p>Aiming at implementation of the “Zero net carbon emissions, science-based objective” commitment towards 2030, according to the Lafarge Holcim Group Investment Roadmap, launched in 2019, the Lafarge Holcim Group states its ambition to increase the CO<sub>2</sub> mitigation targets by reducing the intensity of emissions from cement production, up to 475 kg CO<sub>2</sub> net emissions per ton of cement produced</p>	<p>Estimated costs and benefits: 160 Mln CHF by 2030</p>
Government Decision no. 561 of 31.07.2020 approving the Regulation on Packaging and Packaging Waste	<p>Partial transposition of Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste. The regulation establishes priority measures aimed at preventing production of packaging waste and the principles for reducing the final disposal of packaging waste through reuse, recycling and recovery.</p>	<p>Costs paid by producers per ton of materials put on the market ranging from 14 EUR/ton (UK) to 200 EUR/ton (Austria), with an average of 92 EUR/ton; for the RM the costs are to be estimated based on the respective feasibility studies.</p>



Measure	Description	Financing Required and Benefits Expected
Government Decision no. 836 of 18.11.2020 on approval of the Regulation on granting direct payments per head of animal. Published: 02.12.2020 in the Official Gazette no. 318, art. 992.	Support of agricultural sector	The allocation of 140 Mln MDL was planned for the implementation of the Program from the state budget.
The Land Improvement Program aimed at ensuring sustainable management of soil resources for 2021-2025 and the Action Plan for its implementation for 2021-2023, GD no. 864/2020	Achieving the objectives set until 2025 regarding the prevention, stopping the degradation of soils and enhancing fertility, erosion control on 482 hectares; deep erosion control on 1900 hectares; wind erosion (deflation) control on 170 hectares; soil improvement on 68.5 thousand hectares; chemical improvement on 500 hectares; water improvement (irrigation facilities), and expanding irrigated areas by 68 thousand hectares; preserving and increasing soil fertility on 5 thousand hectares	Financing amounting to 4,278 billion MDL were planned, including 59,626 Mln MDL from the state budget, respectively 4,219 billion MDL from external sources; the benefits correspond to the objectives set out above.
Environmental Strategy for 2014-2023 and the Action Plan for its implementation, GD no. 301/2014	The extension of the forest areas up to 15% of the country's territory, of the natural areas protected by the state up to 8% of the territory	83 Mln MDL
The Low Emission Development Strategy until 2030 and the Action Plan for its implementation, GD no. 1470/2016	3.8 thousand hectares afforested annually; 5.9% of the total area (860,000 ha) of degraded land improved by afforestation; 3.6% of the total area of degraded land planted with forest vegetation; 12,000 ha of planted protection forest belts, 10 thousand ha of planted forest energy crops	2,597 Mln MDL from the state budget, 1,621.4 Mln MDL from external assistance.
The Horticulture Development Program for 2021-2025 and the Action Plan for its implementation, GD no. 840 of 18.11.2020	The document will contribute to the achievement of the objective "Targeting investments towards strengthening the value chain and the agricultural production processing infrastructure and modernization of the processing industry by creating a system of small and medium enterprises for processing, storage and packaging agri-food products", established by the above Plan for the agricultural sector and food industry	3,026 Mln MDL for establishment of multiannual plantations and 391 Mln MDL for deforestation of aging multiannual plantations.
Draft Strategy on Adaptation of the Forestry Sector to Climate Change for 2018-2025 and Action Plan for its implementation	Extending areas covered with forest vegetation outside the forest fund by 13.5 thousand ha; creation of rural and urban green spaces on 5 thousand ha; planting energy forest crops on an area of about 10.0 thousand ha	160.3 Mln MDL for all activities
Draft National Plan on Extension of Areas Covered	Expansion of forest vegetation on the total area of 13.0 thousand ha on the account of degraded lands, as well as providing 71.5 million pieces of planting material for the extension works	545.8 Mln MDL for the implementation of all activities.

Measure	Description	Financing Required and Benefits Expected
with Forest Vegetation for 2019-2024		
Concept of the National Reforestation Campaign for 2022- 2031 (draft)	Extension of forest vegetation on the total area of 76 thousand ha of new land, including 66 thousand ha of forest plantations (forests) and 10 thousand ha of riparian forest and agricultural fields protection belts. The structure by the type of ownership is the following: state owned – 9.12 thousand ha or 12.0%, owned by ATU– 46.2 thousand ha (60.8%), private ownership – 20.68 thousand ha (27.2%). The planting needs under the Campaign will require about 48 million seedlings annually (40 million for planting; 8 million additions for repairs), cumulatively for the entire period – 450 million seedlings	The Program implementation cost by 2022 is 383,273 Mln MDL, of which 374,585 Mln MDL from the state budget and 8,688 Mln MDL from other sources, including the MAC-P World Bank project (5,163 Mln MDL)
The Environmental Strategy for 2014-2023 and Action Plan for its implementation, GD no. 301/2014	The overall objective of the Strategy is to create an effective environmental management system, including (Specific Objective 7 “Creation of an integrated air quality management system, a 30% reduction of pollutant emissions into the atmosphere by 2023 and at least 20% of greenhouse gases by 2020, compared to the baseline scenario”. In the Waste sector, a reduction of about 15% of GHG emissions compared to the baseline scenario is expected by 2020	About 110 Mln MDL are planned for implementation of actions and measures to achieve these objectives. The Action Plan also includes other legislative measures for which the allocated budget is not indicated.
Waste Management Strategy for 2013-2027, GD no. 248/2013	The Waste Management Strategy for 2013-2027 promotes a new way of collecting municipal waste, recovery of reusable materials, environment protection and implementation of a unitary street sanitation program, which contributes to reduction of the amount of waste deposited in those areas, by establishing an appropriate treatment system for each type of waste, aimed at environment protection. The general objectives of the Strategy are to develop the integrated municipal waste management systems by harmonizing the regulatory acts; territorial division of the country into 8 waste management regions; to increase the amount of recycled and capitalized waste by 20-30% by 2025; to reduce the amount of deposited biodegradable waste; to develop regional waste disposal infrastructure by building 7 SWD landfills and 2 mechanical-biological treatment plants (MBT) in Chisinau and Balti municipalities; to re-cultivate at least 50% of the number of non-compliant landfills by 2027.	The cost of implementing the strategy provisions regarding development of the municipal waste management infrastructure indicates 145,168,000 EUR with the support of internal and external financing attracted and implemented for the development of the waste management institutional capacity, infrastructure and services.
Draft Waste Management Program for 2022-2027 and the Action Plan for its implementation	The National Waste Management Program for 2022-2027 is developed in order to implement the Government’s Action Plan for 2020-2023, approved by the GD no. 636/2019 and will contribute to the achievement of the objective aimed at developing by 2027 of an economically efficient integrated waste management system which ensures the fundamental right to a healthy and safe environment and achievement of the main indicators of sustainable development, included in the country’s sustainable development strategic framework.	Modernization of municipal waste integrated management infrastructure during 2026- 2030, will require approximately 200 Mln EUR financed from the EIB/EBRD loan, and the compensation of about 25% of investments will be covered by the contribution from the State Budget.

Measure	Description	Financing Required and Benefits Expected
	<p>The Program contains specific objectives regarding the management of each type of waste and the achievement of the general objectives. In the context of municipal waste and climate change mitigation, it includes measures to promote and implement selective waste collection systems in all urban and rural areas where feasible, both in the domestic and production sectors, as well as in sorting, composting and recycling facilities. It is also planned to develop municipal waste disposal capacities (construction of 8 regional deposit sites and 2 mechanical-biological treatment stations) endowed with methane recovery facilities.</p> <p>The Program provides for measures to reduce the amount of municipal biodegradable waste by 15% of the total amount of municipal waste, by developing the biodegradable waste collection system at source for residents and other entities, including implementation of selective food/kitchen waste collection and development of capacities for separate treatment of food/kitchen waste. The aerobic and anaerobic enhancement and construction of waste composting and fermentation capacities can indirectly contribute to minimizing waste generation as well as its sustainable disposal, and therefore to reducing GHG emissions.</p>	

Two categories of funding are needed in order to meet the objectives of GHG emissions reduction in the context of low-emissions development. The first should ensure achieving an adequate level of capacity in the field of GHG mitigation. The second is investment needed to implement measures and technologies that contribute to the proposed GHG reductions.

Technical needs and climate change capacities development are currently evaluated at 1,530 thousand US dollars, technological transfer needs are evaluated at 675 thousand US dollars, and for the implementation of NAMA aimed at achieving the conditional nationally determined contribution – 4.9 billion US dollars, according to the LEDP 2030.

The investments needed to implement unconditional measures and technologies that result in GHG emissions reduction and, at the same time, will ensure the sustainability of the national economy development, are evaluated at about USD 8.3 billion for 2021 – 2030, according to the LEDP 2030.

The cost of implementing conditional actions (supported) for the same period is 2.6 billion US dollars. The total estimated cost of unconditional and conditional actions included in the LEDP for 2021–2030 is 10.9 billion US dollars (Table 75).

Annex 3 consolidates specific projected costs of key energy efficiency and low-carbon technologies and their forecasts until 2050.

**Table 75. Financing needs in the context of ensuring low-emissions development of the Republic of Moldova**

No.	Shares	Required support, USD Million
	<b>Total Technical and Capacity Development Needs, thousand \$US</b>	<b>1,530</b>
1	Supporting the country's capability for capacity development and strengthening the national inventory system	50
2	Strengthening the national capacity to develop the GHG inventory for the LULUCF sector, including developing the land use matrix and completing the transition to the 2006 IPCC Guidelines for the LULUCF sector	30
3	Strengthening the capacity of the national network of research institutions to conduct studies, research and assessments to identify additional mitigation opportunities including financial and organizational justifications in terms of social, technical and economic impact	170
4	Enhance national capacity to prepare viable NAMA project proposals in transport, industry and agriculture sectors to attract investment	100
5	Strengthening the policies, legal framework and management of the forestry sector of the Republic of Moldova	50
6	Strengthening the capacity of stakeholders in the waste sector to implement EU directives and regulations	40
7	Facilitating the dialogue for the transfer of experience and lessons learned, as well as training of stakeholders and relevant experts within the administrative structure of the Republic of Moldova for the successful implementation of the MRV national system, with a special focus on the MRV of the LEDS and NAMA	40
8	Involvement and mobilization of the private sector in low-carbon and climate resilient action	300
9	Mobilization of investments for the implementation of the NDC of Moldova	300
10	Integration of mitigation and adaptation measures and objectives into business development plans, national and sectoral plans of the energy sector.	200
11	Stakeholder training and promotion of workshops devoted to afforestation, land restoration practices, creation of silvo-pastoral systems and sustainable grassland management	50
12	Stakeholder training, including through workshops on renewable energy sources and energy efficiency, and development of respective technical and financial demonstration tools (in the context of NAMAs on renewable energy sources and energy efficiency)	200
<b>Financial needs to implement NAMA actions, US \$ million</b>		

No.	Shares	Required support, USD Million
	<b>Total including</b>	<b>4,838</b>
1	Promotion of low-capacity CHPs in the Republic of Moldova	23
2	Promotion of heat pumps in the Republic of Moldova	180
3	Promotion of wind power in the Republic of Moldova	640
4	Use of solar energy for domestic hot water production in the Republic of Moldova	606
5	Promoting efficient lighting in the Republic of Moldova	236
6	Hybrid and electric buses and minibuses in Chisinau municipality	344
7	Substitution of clinker in cement production	100
8	Reduction of GHG emissions in enteric fermentation by including dried grape marc in rations	228
9	Implementation of the soil conservation tillage system in the Republic of Moldova	5
10	Afforestation of degraded lands, riparian areas and protective curtains in the Republic of Moldova	144
11	Use of energy willow for thermal energy production in the Republic of Moldova	89
12	Promoting energy from waste in the Republic of Moldova	15
13	Other unconditional NAMAs	2,271
<b>Needs for the implementation of technology transfer, thousand \$US</b>		
	<b>Total inclusive</b>	<b>675</b>
1	Institutional assistance in promoting advanced technologies	250
2	Traineeships for knowledge of advanced technologies in operation	125
3	Identifying the most relevant and effective financial instruments to be applied by financial institutions in Moldova in promoting and implementing climate investments	300

Table 76 consolidated the analysis of the current availability of energy efficiency and decarbonization financing mechanisms in the Republic of Moldova and priorities for their improvement.

*Table 76. Analysis of the current availability of energy efficiency and decarbonization financing mechanisms in the Republic of Moldova and priorities for their improvement*

Measure	Current Status of Measure Adoption in Moldova	Impact of Measure on GHG Emissions and Energy Consumption Reduction	Recommendations for Policy Adoption in Moldova
<b>Market-based Instruments</b>			
Emission trading	Not implemented	High	High priority for improvements
Energy saving obligation	Not implemented	Medium	Medium priority for improvements
Energy saving auctions	Not implemented	Medium	Medium priority for improvements
Technology Procurement	Not implemented	Medium	Medium priority for improvements
Incentives facilitating Third Party Financing / ESCO's	Partially implemented	High	High priority for improvements
Incentives for the producers of innovative technologies	Partially implemented	Medium	Medium priority for improvements
Technology deployment schemes	Partially implemented	Medium	Medium priority for improvements
Green certificates	Not implemented	High	High priority for improvements

Measure	Current Status of Measure Adoption in Moldova	Impact of Measure on GHG Emissions and Energy Consumption Reduction	Recommendations for Policy Adoption in Moldova
Green tariffs	Partially implemented	High	High priority for improvements
Quota system for the promotion of renewables	Not implemented	Medium	Medium priority for improvements
Tender system for the promotion of renewables	Partially implemented	Medium	Medium priority for improvements
Renewable energy auctions	Partially implemented	High	High priority for improvements
<b>Tariffs</b>			
Preferential feed-in tariffs for CHP	Not implemented	High	High priority for improvements
Preferential feed-in tariffs for renewables	Implemented	High	Good level of policy adoption

5.4. Impacts of planned policies and measures described in section 3 on other Member States and regional cooperation at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

*i. Impacts on the energy system in neighboring and other Member States in the region to the extent possible*

The key factor on NECP influencing the regional energy sector is related to implementation of policies and measures in the natural gas and electricity markets of the Republic of Moldova.

Apart from not large-scale renewable energy capacities, the balance of electricity demand in Moldova is supplied from Ukraine and the ATULBD (from the thermal power plant CJSC “MGRES”, owned by the Russian company “Inter RAO”), which together account for about 80% of electricity demand. Traditionally the Republic of Moldova relies on Ukraine both for reserves and balancing its generation. This reliance severely limits its ability to integrate variable renewable energy sources into the grid. As a result, the majority of the flexibility in the Moldovan power system relies on the Ukrainian power system.

The Republic of Moldova took concrete steps to diversify natural gas and electricity supplies, including creating interconnections with Romania, which helped to improve energy security.

Over the past few years, the Republic of Moldova has made a notable progress in diversifying natural gas supply routes and adopting EU legislation to liberalize the natural gas market. With new cross-border and domestic natural gas transmission and distribution infrastructure, increased access to energy markets of neighboring countries, and shifting regional energy flows, the country now has access to a range of new options to mitigate high dependency on natural gas supplies.

Through further active restructuring of the sector, liberalization of the internal market and harmonization with the EU legislation, the Republic of Moldova is successfully moving towards achieving the higher connectivity and interoperability required to exploit these opportunities.

Strengthening cooperation with EU institutions is a crucial factor to enhance mechanisms for cooperation in the natural gas sector to ensure sharing best practices, information exchange and coordination of efforts in preventive actions planning and emergency response.

In terms of preventive action planning process in the natural gas sector, there are several important steps that the Republic of Moldova can take in order to enhance cooperation with other EU Member States:

- Once potential risks are identified, Moldova should work with other Contracting Parties to develop a comprehensive plan to prevent and respond to emergencies. The plan should outline

- the roles and responsibilities of each Contracting Party and establish protocols for communication and coordination;
- Stakeholders can conduct joint trainings and exercises with other Contracting Parties to ensure adequate preparedness to respond to emergencies. These exercises can help identify gaps in the plan and improve communication and coordination;
  - The Republic of Moldova is intended to cooperate with other Contracting Parties to share best practices and lessons learned from past emergencies.

Complex dependence on natural gas supplies and transit from Russia, combined with its ownership control of the natural gas system, creates an overly high dependence and a series of associated security risks.

The Republic of Moldova took concrete steps to diversify natural gas supplies in cooperation with EU Contracting Parties by creating interconnections with Romania. The completion of the Iasi-Ungheni-Chisinau pipeline together with the possibility to use the Trans-Balkan route for reverse flow are the key technical options to diversify natural gas supply sources in cooperation with EU Contracting Parties.

To allow sufficient natural gas flows to the Republic of Moldova during the cold season, Romania, with the support of other EU partners, is building on its territory the Onesti – Gheraesti – Letcani natural gas pipeline and two compression stations in Onesti and Gheraesti. Completion of this project will allow 1.5 bcm/year of natural gas to be provided to Moldova with sufficient pressure and throughput.

Another option to support sustainable security of natural gas supply is to explore the possibility of using natural gas storage facilities in Ukraine and Romania to cover the demand in exceptional circumstances or peak demand, as it was in 2022.

In December 2019 a Memorandum of Understanding was signed between the Ministry of Economy and Infrastructure of the Republic of Moldova and the Ministry of Energy and Environmental Protection of Ukraine on the cooperation in the area of security of gas supply.

In February 2022 a Memorandum of Understanding was signed between the Ministry of Infrastructure and Regional Development of the Republic of Moldova and the Romanian Ministry of Energy, on cooperation in the field of energy security.

Recent changes in regional and internal natural gas infrastructure and internal market reforms may lead to a new reality where the security of natural gas supply can be significantly improved.

In July 2021, LLC “Moldovatrangaz” joined the Memorandum of Understanding on trans-regional cooperation for the development of an integrated natural gas market for South-East and East Europe (SEEGAS).

In 2019 LLC "Moldovatrangaz" carried out the reconstruction works of the Căușeni gas measuring station to ensure the conditions for reverse flow through the Trans-Balkan pipeline that was considered one of the main alternative options for the natural gas supply of the Republic of Moldova in case no gas transit agreement between the Russian Federation and Ukraine was concluded. The technical reverse capacity on the main transit route is 18 mcm/d.

In December 2019, LLC “Moldovatrangaz” concluded an interconnection agreement with Ukraine’s Natural gas TSO (GTSOU) in line with the Network Code on Interoperability and Data Exchange Rules. The agreement covers the interconnection points Grebenyky, Căușeni, Oleksiivka and Ananyiv, and provides a virtual point for delivery to Moldovan consumers near the border.

LLC “Vestmoldtrangaz“ has concluded an interconnection agreement with the adjacent TSO Transgaz Romania for the interconnection point Ungheni.

A burden sharing agreement was signed between Republic of Moldova and Ukraine to increase flexibility of operation of the natural gas supply system of the Republic of Moldova and to provide additional options to mitigate natural gas supply risks.



In spite of high transit tariffs there is an interest from private companies in Ukraine and Romania that may increase the transit volumes of natural gas with associated reductions in transmission costs. LLC “Moldovatransgaz” signed contracts on natural gas transmission system services with 14 international traders, 11 of which have tested the shipment of natural gas in various directions over Moldova’s transmission network.

Both TSO’s LLC “Moldovatransgaz” and LLC “Vestmoldtransgaz” joined the Regional Booking Platform (RBP) developed by the Hungarian national TSO, FGSZ. Moldova plans to switch the measurement of natural gas in its transport system to energy units. Since November 2022 the capacity allocations auctions are performed in line with the Network Code on Capacity Allocation (CAM), that allows the fair and non-discriminatory access to all system users, through an electronic platform, certified by ENTSO-G. Gas Network Codes have been transposed enabling the reverse flow (backhaul). In total this creates a positive trend for increased interoperability and regional market integration in cooperation with the TSO’s of Romania and Ukraine.

In August 2020, GTSOU carried out a south-north transmission test requested by a private company to enable delivery of natural gas from Revithoussa LNG terminal in Greece via the Balkan pipeline through Bulgaria and Romania to Ukraine. The technical viability of this route has been demonstrated although commercial viability is still unclear. The above developments indicate the sound policy basis for regional cooperation and integration with regional markets to make Moldova an important transit hub for the region.

From 2023 Republic of Moldova as a Contracting Party to the Energy Community will be able to purchase natural gas on a joint EU Energy platform. The EU demand aggregation and joint gas purchasing mechanism is important to improve security of energy supply. Participation to the EU mechanism is dedicated to all natural gas undertakings consuming gas established in the Energy Community that comply with criteria as laid down in Council Regulation (EU) 2022/2576.

Thus, the Republic of Moldova, which was until recently supplied exclusively from Ukraine and the ATULBD, will potentially have access to a number of supply options in cooperation with EU Contracting Parties and Ukraine. These include:

- Traditional supply of Russian natural gas through Ukraine;
- Procurement of natural gas from EU markets to be supplied through Ukraine or Romania;
- Procurement of Russian natural gas supplied through TurkStream and Trans-Balkan reverse flow (TBRF) at the border between Romania and Ukraine (GMS Isaccea/GMS Orlovca);
- Access to LNG markets, especially after the anticipated completion of the Alexandroupolis LNG terminal and Bulgaria-Greece interconnector.

In accordance with the Article 108 of the law No. 108 of 27/05/2016, in order to ensure the security of natural gas supply, the competent authorities of the Republic of Moldova will collaborate with the competent authorities of the countries that are part of the Energy Community, promoting bilateral and regional collaboration.

The collaboration refers to situations that causes or may cause serious disturbances in the natural gas supply of both the Republic of Moldova and another country that is a Contracting Party to the Energy Community.

Bilateral and regional collaboration aims in particular at:

- Coordination of measures regarding the security of natural gas supply in exceptional situations;
- Identification of interconnections and their development and modernization, including ensuring bidirectional capacities;
- Identifying the conditions and practical ways of providing mutual assistance.

Pursuant to the EU Regulation 2017/1938, the Energy Community Secretariat coordinates the actions of the competent authorities related to the security of supply in the Contracting parties, including Republic of Moldova, through the Security of Supply Coordination Group.

Cooperation and solidarity mechanisms among Energy Community Contracting Parties and the Republic of Moldova have also been developed.

The specialized central body of the Republic of Moldova guarantees a regional collaboration with the competent authorities of the neighboring countries in order to ensure measures to prevent and reduce the impact of possible exceptional situations in the field of natural gas supply. Transmission system operators ensure collaboration with adjacent transmission system operators to prevent possible interruptions in natural gas supply and to minimize the damage that can be caused in the event of such a situation.

In order to ensure the security of natural gas supply, the specialized central body together with the operators of the transmission systems will collaborate with the relevant public authorities and the operators of the adjacent transmission systems from neighboring countries (Romania and Ukraine).

The specialized central body, together with the operators of the transmission systems, participates in the development of joint preventive action plans and common emergency plans in collaboration with the relevant public authorities and the operators of adjacent transmission systems from neighboring countries.

The Emergency Plan for Natural Gas Supply of the Republic of Moldova Considering the Requirements of Articles 8 and 10 of the EU Regulation 2017/1938 Concerning Measures to Safeguard the Security of Gas Supply includes measures that meet the following conditions:

- no measures restricting natural gas flows on the natural gas market at the national level, as well as within the Energy Community;
- the supply of natural gas in another Energy Community Contracting Party is not endangered or seriously affected.

In the event of an exceptional situation, the Competent Authority on natural gas undertakings of the Republic of Moldova as well as other public authorities will have the following obligations and responsibilities:

- early warning situation: if the early warning situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the situation created and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the early warning situation.
- alert situation: if the alert situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the created situation and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the alert situation.
- emergency situation: if the emergency situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the created situation and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the emergency situation.

#### *ii. Impacts on energy prices, utilities and energy market integration*

Moldova has a high dependence on energy imports, mainly from Russia. Moldova's energy consumption is relatively low compared to its neighboring countries, such as Romania and Ukraine.

Therefore, Moldova's impact on energy prices, utilities and energy market integration of neighboring countries is likely to be limited.

However, Moldova has some potential to influence energy prices in the region by diversifying its energy sources and increasing its renewable energy production. Moldova has been working to reduce its reliance on Russian gas by building a gas interconnector with Romania, which allows it to access alternative gas supplies from the European market. Moldova also plans to connect its electricity grid with Romania and the EU internal power market, which would enable it to import cheaper and cleaner electricity from other countries. Moreover, Moldova has a high potential for renewable energy sources, especially wind, solar and biomass which could help it reduce its greenhouse gas emissions and lower its energy costs.

By diversifying its energy sources and increasing its renewable energy production, Moldova could improve its energy security and resilience, as well as contribute to the regional and global efforts to mitigate climate change. This could also have positive effects on energy prices in neighboring countries by creating more competition and cooperation in the energy market, as well as reducing the dependence on fossil fuels. However, these efforts require significant investment and policy support.

### *iii. Impacts on regional cooperation*

The planned measures will have an impact on the energy systems of neighboring countries, including through joint international projects, which will require joint actions in the future.

**Line 400 kV Vulcanesti-Chisinau.** The works of construction of the electric energy transportation overhead power line (OPL) include 400 KV Vulcanesti-Chisinau. The project will contribute to the diversification of supply and the energy security of the country. The project will also contribute to connecting the country to the European electricity market, which will increase competition and improve access to cheaper sources of electricity. The project is also expected to foster opportunities for cross-border electricity trade in the South-Eastern Europe region.

**Line 400 kV Balti Suceava.** The project include construction of the 400kV high-voltage electricity transmission line between the city of Balti and the Romanian border that will be part of Balti-Suceava interconnection and will include the following components:

- Component 1. Construction of new substation Balti 400/330 kV and extension of existing 330kV substation in Balti.
- Component 2: Construction of a 400 kV electricity transmission line between Balti and the border with Romania.

The Project will improve the energy security for Moldova by accelerating the ongoing integration with ENTSO-E and facilitate the development of regional integration as Moldova will introduce a new route for electricity exchange.

**Main gas pipeline Ungheni-Chisinau.** The Ungheni-Chisinau natural gas pipeline is a proposed 120 km extension to the existing Ungheni-Iasi gas interconnector. The overall objective of the project “Interconnection gas pipeline between the Natural Gas Transmission System of Romania and the Natural Gas Transmission System of the Republic of Moldova on the Iasi-Ungheni-Chisinau direction” is to ensure a high level of energy security of the Republic of Moldova and the North-East part of Romania by diversifying the sources of natural gas.

The Gas Security Supply Plan contains provisions regarding the fact that the specialized central body of the Republic of Moldova guarantees a regional collaboration with the competent authorities of the neighbouring countries in order to ensure measures to prevent and reduce the impact of possible exceptional situations in the field of natural gas supply. Transmission system operators ensure collaboration with adjacent transmission system operators to prevent possible interruptions in natural gas supply and to minimize the damage that can be caused in the event of such a situation.

1. In order to ensure the security of natural gas supply, the specialized central body together with the operators of the transmission systems will collaborate with the relevant public authorities and the operators of the adjacent transmission systems from neighbouring countries (Romania and Ukraine), but also other countries, as the case may be, especially in relation to:

- coordination of measures regarding the security of natural gas supply in exceptional situations;
- identification of interconnections and their development and modernization, including to ensure bidirectional capacities;
- identifying the conditions and practical ways of providing mutual assistance.

2. The specialized central body, together with the operators of the transmission systems, participates in the development of joint preventive action plans and common emergency plans in collaboration with the relevant public authorities and the operators of adjacent transmission systems from neighbouring countries.

3. The Emergency Plan includes measures should meet the following conditions:

- no measures restricting natural gas flows on the natural gas market at the national level, as well as within the Energy Community;
- the supply of natural gas in another Energy Community Contracting Party is not endangered or seriously affected.

4. In the event of an exceptional situation, the Competent Authority, natural gas undertakings as well as other public authorities will have the following obligations and responsibilities:

- early warning situation: if the early warning situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the situation created and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the early warning situation.
- alert situation: if the alert situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the created situation and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the alert situation.
- emergency situation: if the emergency situation cannot be managed properly by applying measures at the national level, at the Commission's direction, to communicate this fact to the president of the Energy Community Security of Supply Coordination Group, in order to convene a meeting of the Group in order to examine the created situation and to provide assistance to the Republic of Moldova in connection with the coordination of the measures implemented at the national and regional level to deal with the emergency situation.

5. To increase the natural gas supply system flexibility and resilience, the Republic of Moldova began storing natural gas in Ukraine and Romania in 2020-2022.

Burden sharing mechanisms with these neighbouring countries will increase the flexibility of operation of the natural gas supply system of the Republic of Moldova, providing additional options to mitigate natural gas supply risks.

## 6. IMPLEMENTATION STAGES AND MONITORING, REPORTING AND EVALUATION FRAMEWORK

### *i.) Implementation*

All competent institutions mentioned in the Plan will bear the responsibility for its implementation. Implementation of measures and policies detailed in the five dimensions of the NECP requires the involvement of the most powerful national institutions, efficient management, as well as adequate international assistance. In order to achieve the targets set in the document, donors' financial support is also needed.

The goal of the institutional arrangements for this NECP's implementation is to cover three main areas:

- 1) national planning of developed measures and policies within the national regulatory framework and strategic development priorities;
- 2) efficient management of public and donor offered finances;
- 3) monitoring and control of implementation of the planned actions provided for in this NECP.

### *ii.) Monitoring*

Monitoring of this NECP implementation will be carried out jointly by the Ministry of Energy and the Ministry of Environment. Aiming at ensuring the monitoring process, a monitoring group, which will periodically evaluate the implementation of policies and measures and the achievement targets, will be created by the order of the Minister of Energy. Based on the information collected and systematized, it will draft the annual implementation report and submit it to the Government.

National GHG emissions and evolution trends are periodically reported in the national communications of the Republic of Moldova to the UNFCCC (since 2000), respectively in the national inventory reports (since 2010). These documents are developed on the basis of studies, research, reports made by national consultants, including with international experience in the field, selected to do the calculations and analysis of the retrospective information, and with the responsibilities to develop short-term, medium and long-term GHG emissions scenarios for each sector, based on the macroeconomic development scenarios of the Republic of Moldova.

### *iii.) Reporting and evaluation*

Annual monitoring reports will be developed within the monitoring process, which will include information on the implementation measures and policies, and on the progress towards the achievement of each individual target mentioned in this NECP. In coordination with the Energy Community Secretariat, the document will be revised and updated every 2 years starting in 2025. After each iteration the updated version of the document will undergo a complete monitoring, reporting and evaluation process and will be approved by the Government of Moldova.

## Annex 1. Energy Balance 2020 and key statistical data

Figures in ktoe

SUPPLY AND CONSUMPTION	Total products	Coal	Natural gas	Oil products	Biofuels and waste	Electricity	Heat
Primary Production	682	-	-	6	668	8	-
From other sources	279	-	-	-	-	279	-
Imports	1,935	80	868	971	2	14	-
Exports	21	-	-	20	1	0	-
International bunkers	-	-	-	-	-	-	-
Stock changes	-18	-1	4	-11	-10	-	-
<b>GROSS CONSUMPTION</b>	<b>2,857</b>	<b>79</b>	<b>872</b>	<b>946</b>	<b>659</b>	<b>301</b>	<b>-</b>
<b>TRANSFORMATION, INPUT</b>	<b>388</b>	<b>0</b>	<b>352</b>	<b>7</b>	<b>21</b>	<b>8</b>	<b>-</b>
Electricity plants	12	-	-	0	4	8	-
Main activity producer combined heat and power (CHP) plants	256	-	256	-	-	-	-
Autoproducer combined heat and power (CHP) plants	17	-	14	-	3	-	-
Main activity producer heat plants	40	-	40	-	0	-	-
Autoproducer heat plants	54	0	42	0	12	-	-
Oil refineries	-	-	-	-	-	-	-
Petrochemical plants	7	-	-	7	-	-	-
Liquefaction plants	-	-	-	-	-	-	-
Charcoal production plants	2	-	-	-	2	-	-
Not elsewhere specified - transformation	-	-	-	-	-	-	-
<b>TRANSFORMATION, OUTPUT</b>	<b>315</b>	<b>-</b>	<b>-</b>	<b>7</b>	<b>0</b>	<b>85</b>	<b>223</b>
Electricity plants	10	-	-	-	-	10	-
Main activity producer combined heat and power (CHP) plants	208	-	-	-	-	72	136
Autoproducer combined heat and power (CHP) plants	13	-	-	-	-	3	10
Main activity producer heat plants	34	-	-	-	-	-	34
Autoproducer heat plants	43	-	-	-	-	-	43
Oil refineries	-	-	-	-	-	-	-
Petrochemical plants	7	-	-	7	-	-	-
Liquefaction plants	-	-	-	-	-	-	-
Charcoal production plants	0	-	-	-	0	-	-
Not elsewhere specified — transformation	-	-	-	-	-	-	-
<b>Energy sector</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>17</b>	<b>1</b>
<b>LOSSES</b>	<b>96</b>	<b>0</b>	<b>24</b>	<b>3</b>	<b>0</b>	<b>35</b>	<b>34</b>



Annex 2. Energy Forecast 2050

Figures in ktoe

	Energy Source	2020	2025	2030	2035	2040	2045	2050
<b>Primary Production</b>	<b>Total Fuels</b>	<b>629</b>	<b>688</b>	<b>713</b>	<b>673</b>	<b>701</b>	<b>721</b>	<b>711</b>
	Solid Fuels	0	0	0	0	0	0	0
	Oil (Total)	6	5	5	4	3	2	3
	Crude Oil	6	5	5	4	3	2	3
	Shale Oil	0	0	0	0	0	0	0
	Other Oil Products	0	0	0	0	0	0	0
	Gas	0	0	0	0	0	0	0
	Natural Gas	0	0	0	0	0	0	0
	Nuclear Heat	0	0	0	0	0	0	0
	Total Renewables and Wastes	623	683	708	669	698	719	708
	Hydro	5	5	6	7	7	7	7
	Wind	4	25	25	25	87	189	257
	Solar	0	20	27	33	49	61	71
	Biomass&Wastes	614	633	650	604	556	462	373
	Geothermal	0	0	0	0	0	0	0
<b>Imports</b>	<b>Total Fuels</b>	<b>2,243</b>	<b>2,215</b>	<b>2,159</b>	<b>2,070</b>	<b>1,875</b>	<b>1,849</b>	<b>1,850</b>
	Solid Fuels	77	59	48	41	34	26	21
	Oil (Total)	943	976	930	802	624	642	665
	Crude oil	0	0	0	0	0	0	0
	Oil Products	943	976	930	802	624	642	665
	Gas	914	895	936	924	895	871	853
	Natural gas	914	895	936	924	895	871	853
	Total Renewables and Wastes	0	17	33	25	11	0	0
	Biomass&Wastes	0	17	33	25	11	0	0
	Electricity	309	269	212	278	310	310	310
<b>Stock changes</b>	<b>Total All Fuels</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Solid Fuels	0	0	0	0	0	0	0
	Oil (Total)	0	0	0	0	0	0	0
	Crude Oil	0	0	0	0	0	0	0
	Oil Products	0	0	0	0	0	0	0
	Gas	0	0	0	0	0	0	0
	Natural gas	0	0	0	0	0	0	0
	Total Renewables	0	0	0	0	0	0	0



	Energy Source		2020	2025	2030	2035	2040	2045	2050
		Biomass&Wastes	0	0	0	0	0	0	0
<b>Exports</b>	<b>Total Fuels</b>		<b>9</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>0</b>
	Solid Fuels		0	0	0	0	0	0	0
	Oil (Total)		9	5	4	3	3	2	0
		Crude oil	0	0	0	0	0	0	0
		Oil Products	9	5	4	3	3	2	0
	Gas		0	0	0	0	0	0	0
		Natural gas	0	0	0	0	0	0	0
	Total Renewables and Wastes		0	0	0	0	0	0	0
		Biomass&Wastes	0	0	0	0	0	0	0
	Electricity		0	0	0	0	0	0	0
<b>Bunkers</b>	<b>Total Fuels</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Oil (Total)		0	0	0	0	0	0	0
<b>Direct Use</b>	<b>Total Fuels</b>								
	Oil (Total)								
		Refinery Feedstock							
<b>Gross Inland Consumption</b>	<b>Total Fuels</b>		<b>2,863</b>	<b>2,898</b>	<b>2,868</b>	<b>2,740</b>	<b>2,573</b>	<b>2,568</b>	<b>2,561</b>
	Solid Fuels		77	59	48	41	34	26	21
	Oil (Total)		940	976	931	803	624	642	668
		Crude oil	6	5	5	4	3	2	3
		Oil Products	934	971	926	799	621	640	665
	Gas		914	895	936	924	895	871	853
		Natural gas	914	895	936	924	895	871	853
	Nuclear Heat		0	0	0	0	0	0	0
	Total Renewables and Wastes		623	700	741	694	710	719	708
		Hydro	5	5	6	7	7	7	7
		Wind	4	25	25	25	87	189	257
		Solar	0	20	27	33	49	61	71
		Biomass&Wastes	614	650	683	629	567	462	373
		Geothermal	0	0	0	0	0	0	0
	Electricity		309	269	212	278	310	310	310
<b>Transformation Sector</b>									
<b>Transformation input - Electricity Sector</b>	Total Fuels								
<b>Conventional Thermal Power Stations</b>	Total Fuels		263	325	447	445	499	505	498

	Energy Source		2020	2025	2030	2035	2040	2045	2050
		Solid Fuels	0	0	0	0	0	0	0
		Oil Products	5	5	0	0	0	0	0
		Natural gas	253	288	404	403	427	431	435
		Blast Furnace Gas	0	0	0	0	0	0	0
		Biomass&Wastes	5	32	43	42	72	74	62
<b>of Which:</b>									
<b>Main Activity Producer Conventional Thermal Power Stations</b>	<b>Total Fuels</b>		<b>263</b>	<b>324</b>	<b>437</b>	<b>434</b>	<b>481</b>	<b>486</b>	<b>478</b>
		Solid Fuels	0	0	0	0	0	0	0
		Oil Products	5	5	0	0	0	0	0
		Natural gas	253	286	394	392	409	412	416
		Biomass&Wastes	5	32	43	42	72	74	62
<b>Autoproducer Conventional Thermal Power Stations</b>	<b>Total Fuels</b>		<b>0</b>	<b>2</b>	<b>10</b>	<b>10</b>	<b>18</b>	<b>19</b>	<b>20</b>
		Solid Fuels	0	0	0	0	0	0	0
		Oil Products	0	0	0	0	0	0	0
		Natural gas	0	2	10	10	18	19	20
		Blast Furnace Gas	0	0	0	0	0	0	0
		Biomass&Wastes	0	0	0	0	0	0	0
<b>Nuclear Power Stations</b>	Nuclear Heat		0	0	0	0	0	0	0
<b>Transformation Output - Electricity Sector</b>	<b>Total Net Electricity Generation</b>		<b>78</b>	<b>110</b>	<b>186</b>	<b>186</b>	<b>205</b>	<b>206</b>	<b>204</b>
<b>Main Activity Producer Conventional Thermal Power Stations</b>	Total Net Electricity Generation		78	110	184	184	200	201	199
		Solid Fuels	0	0	0	0	0	0	0
		Oil Products	0	0	0	0	0	0	0
		Natural gas	77	99	171	171	177	177	179
		Biomass&Wastes	1	11	13	13	24	24	20
<b>Autoproducer Conventional Thermal Power Stations</b>	Total Net Electricity Generation		0	0	2	2	4	5	5
<b>Nuclear Power Stations</b>	Total Net Electricity Generation		0	0	0	0	0	0	0
<b>Transformation input - Heat Sector</b>	Total Fuels								
<b>District heating plants</b>	Total Fuels		137	152	108	113	96	96	93
		Solid Fuels	2	2	1	1	0	0	0

	Energy Source		2020	2025	2030	2035	2040	2045	2050
		Oil Products	1	1	0	0	0	0	0
		Natural gas	128	146	104	110	92	92	89
		Biomass&Wastes	5	4	3	2	1	0	0
		Electricity	0	0	0	0	2	3	4
<b>Transformation Output - Heat Sector</b>	Total Heat Production		132	145	103	104	90	93	93
<b>District heating plants</b>	Total Heat Production	From:							
		Solid Fuels	2	1	1	0	0	0	0
		Oil Products	1	1	0	0	0	0	0
		Natural gas	126	140	100	102	83	83	80
		Biomass&Wastes	4	3	2	1	1	0	0
		Electricity	0	0	0	0	6	9	12
<b>Transformation input - Other Sectors</b>	Total All Fuels		6	5	5	4	3	2	3
<b>Blast-furnaces</b>		Coke oven coke	0	0	0	0	0	0	0
<b>Refineries</b>		Crude Oil and Feedstock	6	5	5	4	3	2	3
<b>BKB / PB Plants</b>		Lignite / Brown Coal	0	0	0	0	0	0	0
<b>Charcoal production plants (transformation)</b>		Solid biomass	0	0	0	0	0	0	0
<b>Non-specified Transformation Input</b>		Natural gas							
<b>Transformation Output - Other Sectors</b>	Total All Fuels		0	0	0	0	0	0	0
<b>Blast-furnaces</b>		Blast furnace gas	0	0	0	0	0	0	0
<b>Refineries</b>	Total All Fuels		11	9	8	6	5	3	5
		Refinery gas	0	0	0	0	0	0	0
		LPG	0	0	0	0	0	0	0
		Motor Gasoline (w/o bio)	0	0	0	0	0	0	0
		Kerosene Type Jet Fuel	0	0	0	0	0	0	0
		Naphtha	0	0	0	0	0	0	0
		Gas/Diesel Oil (w/o bio)	2	1	1	1	1	0	1
		Fuel Oil	9	7	6	5	4	2	4

	Energy Source		2020	2025	2030	2035	2040	2045	2050
		Other Products	1	1	1	0	0	0	0
<b>BKB / PB Plants</b>		BKB	0	0	0	0	0	0	0
<b>Charcoal production plants (transformation)</b>		Charcoal	0	0	0	0	0	0	0
<b>Non-specified Transformation Input</b>									
<b>Consumption of the energy branch</b>									
<b>Own Use in Electricity, CHP and Heat Plants</b>									
		Oil Products							
		Derived Heat	0	0	0	1	1	1	1
		Electricity	10	10	14	15	17	17	16
<b>Storage power stations balance</b>		Electricity	0	0	0	0	1	2	3
<b>Used for storage</b>		Electricity	0	0	0	0	7	17	26
<b>Production in storage power station</b>		Electricity	0	0	0	0	6	16	24
<b>Oil and Natural Gas extraction plants</b>		Natural gas	0	0	0	0	0	0	0
		Electricity	0	0	0	0	0	0	0
<b>Oil refineries (Petroleum Refineries)</b>		Oil Products	3	2	2	1	1	1	1
		Natural gas	0	0	0	0	0	0	0
		Electricity	0	0	0	0	0	0	0
<b>Coal Mines</b>		Electricity	0	0	0	0	0	0	0
<b>BKB / PB Plants</b>		Electricity	0	0	0	0	0	0	0
<b>Non-specified (Energy)</b>		Natural gas							
		Electricity							
		Derived Heat							
<b>Distribution losses</b>		Solid fuels							
		Oil Products							
		Gas	60	42	27	26	25	25	24
		Derived heat	42	40	35	34	37	39	38
		Electricity	37	34	30	35	42	48	52
<b>Final non-energy consumption</b>		Solid fuels	0	0	0	0	0	0	0

	Energy Source		2020	2025	2030	2035	2040	2045	2050
		Oil Products	40	47	52	58	65	72	81
		Gas	0	0	0	0	0	0	0
<b>Final energy consumption per Sector</b>									
	Industry	Iron & steel industry	0	0	0	0	0	0	0
		Chemical and Petrochemical industry	0	0	0	0	0	0	0
		Non-ferrous metal industry	0	0	0	0	0	0	0
		Non-metallic Minerals (Glass, pottery & building mat. Industry)	71	72	69	70	70	70	71
		Transport Equipment	0	0	0	0	0	0	0
		Machinery	0	0	0	0	0	0	0
		Mining and Quarrying	0	0	0	0	0	0	0
		Food and Tobacco	106	102	106	101	107	111	116
		Paper, Pulp and Print	0	0	0	0	0	0	0
		Wood and Wood Products	0	0	0	0	0	0	0
		Construction	0	0	0	0	0	0	0
		Textile and Leather	0	0	0	0	0	0	0
		Non-specified (Industry)	30	36	35	39	43	48	54
		Total	207	209	209	209	220	229	241
	Transport	Rail	16	20	46	61	77	94	111
		Road	694	741	699	583	425	432	440
		International aviation	37	43	49	56	64	74	86
		Domestic aviation	0	0	0	0	0	0	0
		Domestic Navigation	1	1	1	2	2	2	2
		Pipeline transport	7	7	8	8	8	7	7
		Non-specified (Transport)							
		Total	755	812	803	710	576	609	646

	Energy Source		2020	2025	2030	2035	2040	2045	2050
	Other Sectors	Services	275	280	274	270	269	269	273
		Residential	1,242	1,234	1,195	1,134	1,029	886	805
		Agriculture / Forestry	81	90	98	105	112	120	128
		Total	1,599	1,604	1,567	1,509	1,410	1,275	1,206
<b>Final energy consumption per Fuel</b>									
		Solid fuels	63	55	47	40	34	26	21
		Oil (total)	889	943	921	782	578	587	598
		Gas	408	426	415	398	371	342	325
		Total Renewables	615	592	583	532	440	299	229
		Derived heat	226	229	213	209	222	234	231
		Electricity	349	379	401	465	542	605	664
		Other	0	0	0	3	20	21	25
		Total	2,550	2,624	2,580	2,427	2,206	2,113	2,093

### Annex 3. Portfolio of Projects of Key International Organizations and International Financial Institutions Related to Energy and Climate in the Republic of Moldova

#### UNDP Projects Pipeline in the Republic of Moldova

Project Title	Project Budget, thousand USD	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Urban Energy Efficiency Project	60.0		x	x							
Disaster and Climate Risk Reduction Project	332.3	x	x	x	x						
Hydro chlorofluorocarbons Phase-out Management plan 2	20.0				x						
GEF6 Sustainable Green Cities PPG	106.7				x	x					
Disaster&Climate Risk Reduction-2	464.6		x	x	x	x					
Hydro chlorofluorocarbons Phase-out Management Plan	134.0	x	x	x	x	x					
Low Emission Capacity Building Project-Moldova	710.7	x	x	x	x	x					
Clima-East: Ecosystem-based adaptation and mitigation	703.8		x	x	x	x	x				
National Climate Change Adaptation Planning	1 205.7		x	x	x	x	x				
Moldova Energy and Biomass Project	30 107.6	x	x	x	x	x	x	x			
Transforming the market for Urban Energy Efficiency	1 426.6			x	x	x	x	x	x		
HCFC Phase-out management plan, Stage 2	278.4							x	x	x	x
Moldova Sustainable Green Cities	2 523.9							x	x	x	x
NAP-2	950.0									x	X
Enabling activities for HFC phase-down Kigali	34.0										x

Source: UNDP



## World Bank Projects Pipeline in the Republic of Moldova

Project Name	Project Development Objective	Implementing Agency	Current Project Cost, USD
Second District Heating Efficiency Improvement Project	The Development Objective of the Project is to increase the efficiency of the District Heating system in Chisinau.	Moldova Energy Projects Implementation Unit	100,000,000
Moldova Power System Development Project	The Project Development Objective is to increase capacity and improve reliability of the power transmission system in Moldova.	Ministry of Economy, Moldova Energy Projects Implementation Unit (MEPIU)	45,000,000
Climate Adaptation Project	The Project Development Objective (PDO) is to enhance the adoption of climate-smart practices in agriculture, forestry and pasture management in targeted landscapes and strengthen national disaster management systems.	Ministry of Environment, Ministry of Agriculture and Food Industry, Ministry of Internal Affairs	27,200,000
Climate Adaptation Project	The Project Development Objective (PDO) is to enhance the adoption of climate-smart practices in agriculture, forestry and pasture management in targeted landscapes and strengthen national disaster management systems.		0
District Heating Efficiency Improvement Project	The objective of the proposed project is to contribute to improved operational efficiency and financial viability of the District Heating company and to improve quality and reliability of heating services delivered to the population of Chisinau.	Moldova Energy Projects Implementation Unit (MEPIU), Ministry of Economy, "Termoelectrica" SA	61,100,000
Biogas Generation from Animal Manure Pilot	-	-	3,493,000
Moldova: SIDA Trust Fund on Financing Energy Sector Reform and Efficiency Improvements	-	-	2,874,225
Economic Recovery Development Policy Operation	The objective is to reinforce a planned fundamental redirection of economic policy making in Moldova whilst providing much-needed budget financing to smooth fiscal correction in response to the global crisis.	-	25,000,000
Additional Financing for Energy II Project	Improve the security and reliability of the electricity transmission system and wholesale electricity supply and, therefore, facilitate unimpeded commercial operation of the power system. Improve the availability, quality, and efficiency of heating in selected priority public buildings.	-	11,000,000
Public Heating Biomass Systems in Moldovan Rural Communities (Community	-	-	1,491,752

Project Name	Project Development Objective	Implementing Agency	Current Project Cost, USD
Development Carbon Fund Facility)			
Energy Conservation & Emissions Reduction Project (Community Development Carbon Fund)	This project aims at GHG emission reduction as result of efficiency improvements and fuel switching measures for a series of public buildings (kindergartens, schools, vocational schools, hospitals, policlinics etc.) implemented via the WB Moldova Energy II Project	Carbon Finance Unit	477,284
Renewable Energy from Agricultural Waste (Biomass)	A study on the Potential Use of Renewable Energy (Biomass) in Moldova, financed under the Austrian Global Environment Consultant Trust Fund, was completed in September 2002.	-	2,627,258
Energy 2 Project	Improve the security and reliability of the electricity transmission system and wholesale electricity supply and, therefore, facilitate unimpeded commercial operation of the power system. Improve the availability, quality, and efficiency of heating in selected priority public buildings.	-	39,925,095
Supplemental Credit to SAC	-	-	5,000,000
Energy Project	-	-	11,945,000

Source: World Bank

## EBRD Projects Pipeline in the Republic of Moldova

Project Title	Date	Status	Public/Private	Sector
GCF GEFF Regional - MAIB	03 Nov 2020	Signed	Private	Financial institutions
Moldova Buildings Energy Efficiency	15 Sep 2020	Passed Final Review, Pending Approval	State	Municipal and environmental infrastructure
Moldova Emergency Gas Purchase Facility	20 Feb 2020	Cancelled	State	Natural resources
Moldova Romania Power Interconnection Phase I	27 Jul 2017	Repaying	Public	Energy
Green City Framework: Chisinau buildings	14 Sep 2016	Repaying	Public	Municipal and environmental infrastructure
Balti District Heating Project	17 Apr 2014	Repaying	Public	Municipal and environmental infrastructure
MoREEFF - Moldovan Residential EE Financing Facility	05 Apr 2012	Complete	Private	Financial institutions
MoSEFF II - Moldovan Sustainable Energy FF Extension	05 Apr 2012	Complete	Private	Financial institutions
SE "Moldelectrica" Transmission Rehabilitation Loan	17 Jan 2012	Repaying	Public	Power and energy
Post-Privatization Power Distribution Loan	09 Nov 2000	Complete	Private	Power and energy
Moldova Power Distribution Equity Investment	23 Mar 2000	Complete	Private	Power and energy

Source: EBRD

## EIB Projects Pipeline in the Republic of Moldova

Name	Signature Date	Sector	Signed Amount, EUR	Description
MOLDOVA ENERGY EFFICIENCY PROJECT	07/18/2018	Energy	58,000,000	The operation is a framework loan (FL) in support of sustainable energy efficiency improvements targeting public and residential buildings in various cities in the Republic of Moldova. Part of the allocations under the FL has already been identified ex ante and consists of the refurbishment of 139 public buildings. The remainder of the pipeline of allocations will be further developed by the Energy Efficiency Agency and the promoter, with advisory support. The main objective of this operation is to increase the energy efficiency of public and residential buildings, which has a significant impact on CO <sub>2</sub> emission reduction and thus contributes to climate change mitigation. Moreover, energy efficiency investments will boost local and regional economic activity, particularly in the construction industry, and therefore support the development of the private sector in general and SMEs in particular.
MOLDOVA ROMANIA ELECTRICITY INTERCONNECTION	12/20/2017	Energy	80,000,000	Construction of a 400kV transmission interconnection between Moldova and Romania comprising (i) a converter station in Vulcanesti, (ii) upgrade of substations in Vulcanesti and Chisinau and (iii) a new 400 kV line Vulcanesti-Chisinau (Moldova).
CHISINAU ENERGY EFFICIENCY	11/16/2017	Services	10,000,000	The operation is a framework loan (FL) in support of sustainable energy efficiency improvements targeting public buildings in Chisinau, Republic of Moldova. Part of the allocations under the FL has already been identified ex ante through advisory support and consists of the refurbishment of 22 public buildings. The remainder of the pipeline of allocations will be further developed by the Municipality of Chisinau, the promoter, with advisory support and may also include residential buildings.
UNGHENI-CHISINAU GAS PIPELINE	12/19/2016	Energy	3,000,000	Construction of a 120 km natural gas pipeline from Ungheni on the Moldova-Romania border to Chisinau.
UNGHENI-CHISINAU GAS PIPELINE	12/19/2016	Energy	38,000,000	Construction of a 120 km natural gas pipeline from Ungheni on the Moldova-Romania border to Chisinau.
GREEN FOR GROWTH FUND II	12/03/2013	Energy	1,250,000	Increase of EIB investment in the Green for Growth Fund, targeting energy efficiency and smaller renewable energy investments within the South-Eastern Europe region and in the Eastern Neighborhood region.
MOLDELECTRICA POWER TRANSMISSION	06/26/2012	Energy	17,000,000	The project will increase the capacity and improve the reliability of the Moldovan electricity transmission system, with the aim of bringing it closer to the ENTSO-E standards. It includes the rehabilitation of some key transmission assets, such as substations, transmission lines and transformers which have reached the end of their technical life. It consists of a large number of individual schemes geographically dispersed throughout the country.
SOCIETE GENERALE SME & ENERGY ENV LOAN	11/24/2010	Credit lines	20,000,000	A dedicated loan for SMEs, including a tranche for small and medium scale energy / environment projects promoted by mid-caps and public entities, through Société Générale Group's subsidiaries in Georgia and Moldova.

USAID Project Pipeline in the Republic of Moldova

No.	Name & Description	Implementer & Beneficiary	Implementation period
1.	<p><b>Energy Technology and Governance Program:</b></p> <p><b><i>Workstream I - ENTSO-E Integration Support:</i></b></p> <ol style="list-style-type: none"> <li>1. Supporting Moldelectrica with modelling, analysis, and testing as part of ongoing feasibility studies performed by ENTSO-E project consortium group</li>   <li>2. Day Ahead Congestion Forecasting Methodology and Software</li>   <li>3. Performing network capacity allocation procedure</li> </ol> <p><b><i>Workstream II - Renewable Energy Integration</i></b></p> <ol style="list-style-type: none"> <li>1. Analysis of the current situation of renewables penetration and drafting the initial RES integration scenarios</li> <li>2. Load demand forecast for short and long planning horizons</li> <li>3. Analysis of the Moldova power system balance and interconnections with neighboring systems</li> <li>4. Development of the demand/generation scenarios in the DigSilent software models</li> <li>5. Prospective grid technical analysis using the deterministic approach</li> <li>6. Quasi-dynamic modelling of the RES integration into the Moldova power system</li> <li>7. Economic analysis development of the unit commitment model of the Moldova power system and conducting the generation adequacy study</li> </ol> <p><b><i>Workstream III - Reform of Moldelectrica’s Corporate Cyber Security Governance</i></b></p> <ol style="list-style-type: none"> <li>1. Conduct a Cybersecurity Capability Maturity Model (C2M2)</li>   <li>2. Develop a Digital Asset Inventory</li> </ol>	<p><b><i>Implimenter –</i></b>            United States Energy Association (USEA)</p> <p><b><i>Beneficiary –</i></b>            Moldelectrica SoE</p>	<p>2020 – 2022</p>

2.	<p><b>Enhancing stability and technical expertise in European and Eurasian markets (ESTEEM)</b></p> <p><b>I. Developing Network Code on Gas Balancing of Transmission Networks</b>  <i>(Deliverables - Draft Methodology for daily imbalance charge calculation; Draft Methodology for the calculation of neutrality charges for balancing; Draft Standard contract terms for balancing agreements; Action Plan for ANRE to operationalize key gas network code elements regarding gas balancing of transmission networks.)</i></p> <p><b>II. Electricity Market Formation and Increasing Regulatory Capacity</b></p> <p>II.1. Market Coupling Analysis  <i>(Deliverable - Gap analysis on required regulatory mechanisms of market coupling and action plan for ANRE to enable implementation of market coupling)</i></p> <p>II.2. Design of Collateral Management System and Introduction of Risk Management Methodologies  <i>(Deliverables - Draft rulesets for collateral management; Online webinar for best practices on risk management methods; Best practices document on risk management methods)</i></p> <p>II.3. Calculation of Load Profiles for Settlement Purposes  <i>(Deliverables - Draft rulesets for calculation of load profiles for settlement; Online webinar for best practices on calculation of load profiles; Best practices document on calculation of load profiles)</i></p> <p><b>III. Electricity Installation and Siting Supervision</b>  <i>(Deliverable- Summary of Key Regulatory Steps and Considerations related to Siting)</i></p> <p><b>IV. Peer Review of Methodology for Determination of Gas Distribution Technical Losses</b></p>	<p><b>Implementer</b> - National Association of Regulatory Utility Commissioners (NARUC)</p> <p><b>Beneficiary</b> – ANRE, MIRD, Moldovatransgaz</p>	2021 – 2022
3.	<p><b>Connect for Growth (C4G; USAID’ regional project)</b></p> <p><b>Moldova energy market development activities:</b></p> <p><b>1. Energocom Capacity Building</b>  <i>Tasks - Establish the necessary protocols and guidelines for the trading department; Support the establishment of organizational design and staffing requirements for the trading department; Support Energocom with securing financing for gas purchases; Provide practical training for conducting trades and improved decision-making and execution; Provide training on LNG markets; Support procurement of IT systems and licenses for data subscriptions for enhancing trading decision-making</i></p> <p><b>2. Energocom and MIRD Support for Gas Storage</b></p>	<p><b>Implementer</b> - C4G team of experts (international and national)</p> <p><b>Beneficiary</b> – Energocom, MoEN, PM’s and President’s office</p>	2022

	<p><i>Tasks – Support at procurement of storage and emergency gas stocks for both physical security and commercial considerations; Support drafting needed legal amendments, compliant with EU requirements, for the security of gas supplies.</i></p> <p><b>3. Crisis Planning Support (Optional)</b> <i>Task - Work with the Moldovan relevant authorities to determine a crisis management plan for the energy sector and propose clear roles and responsibilities for energy sector crisis management</i></p> <p><b>4. Advisory support embedded within the Government of Moldova</b> <i>Tasks – To improve capacity and decision-making within the GoM and Presidential administration to support the advancement of the sector and to help overcome the current energy crisis conditions.</i></p>		
4.	<p><b>Moldova Energy Security Activity (MESA)</b></p> <p><b>Objectives:</b></p> <ol style="list-style-type: none"> <li>1. Improved physical and market integration of Moldova’s energy system with Europe. MESA will build the capacity of local institutions to advance implementation of the EnC acquis, operationalize a competitive electricity market that is integrated with neighboring countries, establish a Market Operator (MO), and support the transition to a competitive framework for RE.</li> <li>2. Increased RE integration and climate change resilience. MESA will work with stakeholders to accelerate progress toward energy transition goals, keeping in mind energy security, affordability, and the nationally determined contribution (NDC) mitigation and adaption targets</li> <li>3. Increased investment in domestic power generation and EE. MESA will build consensus among government and private sector stakeholders on a policy and financial framework to advance greater RE/EE investments</li> </ol>	<p><b>Implementer</b> - Tetra Tech ES, Inc.</p> <p><b>Beneficiary</b> – MoEN, ANRE, energy utilities, and other relevant authorities and institutions</p>	2022 – 2026



#### Annex 4. Project-level Financing in Energy and Climate Change Sectors in the Republic of Moldova According to the OECD Official Development Assistance Statistics Data in 2015-2021

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2021	Swedish International Development Authority (SIDA)	CORE-SUPPORT NATIONAL ENVIRONMENTAL CENTRE	Environmental policy and administrative management	IV.1. General Environment Protection	Sweden will support NEC, a civil society organization from Moldova, to implement core support activities provided by NEC Strategic Plan and RAF during 2020 - 2023. Core support is granted to strengthen institutional capacities and to assist the implementation of NEC medium term Strategic Plan 2020-2023. The main objective and expected result of core activities is that NEC contributes to developing the capacities of journalists in reflecting environmental issues. Principal values for SIDA and cooperation partners were shared and discussed as guidance during initial consultations on the contribution/project between program coordinator and organization. NEC is open to endorse SIDA's common starting points for cooperation. The Embassy, together with NEC will have a continuous, open and transparent dialogue on ethical and other value based issues.	0.237
2021	Swedish International Development Authority	CORE-SUPPORT AJMTEM	Environmental education/training	IV.1. General Environment Protection	Sweden will support AJMTEM, a civil society organization from Moldova, to implement core support activities provided by AJMTEM Strategic Plan and RAF during 2020 - 2023. Core support is granted to strengthen institutional capacities and to assist the implementation of AJMTEM medium term Strategic Plan 2020-2023. The main objective and expected result of core activities is that AJMTEM contributes to developing the capacities of journalists in reflecting environmental issues. Principal values for SIDA and cooperation partners were shared and discussed as guidance during initial consultations on the contribution/project between program coordinator and organization. AJMTEM is open to endorse SIDA's common starting points for cooperation. The Embassy, together with AJMTEM will have a continuous, open and transparent dialogue on ethical and other value based issues.	0.246
2021	Swedish International Development Authority	RESILIENT COMMUNITIES THROUGH WOMEN S EMPOWERMENT UNDP - RESILIENT COMMUNITIES THROUGH WOMEN S EMPOWERMENT	Environmental education/training	IV.1. General Environment Protection	UNDP Moldova has applied to SIDA for funding of 22 681 644 SEK to carry out the Resilient Communities through Women Empowerment in 30 localities from 6 districts of Moldova during the period 2020-2022. The strategy of the project is to build inclusive sustainable and resilient communities and create an enabling environment for women's economic, social and educational empowerment through the following outcomes: (i) sustainable, climate resilient and environmentally-sound livelihoods defined and local capacities & knowledge on environment, climate change and gender enhanced and implemented successfully (ii) NGOs capacities to provide expertise to LPAs and women in the field of resilience to climate change, sustainable development and gender mainstreaming, (iii) environment-friendly and climate resilient practices and projects implemented by women headed households, women agro-producers and communities, and, (iv) sustainable and climate resilient practices and business models disseminated and replicated.	0.546

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2020	Türkiye	ESTABLISHMENT OF SOLAR PANEL SYSTEM	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Solar energy	0.013
2020	European Commission	EX-POST EVALUATION OF THE MOLDOVA ENERGY AND BIOMASS PROJECT	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	Ex-post evaluation of the Moldova Energy and Biomass Project (Phase I and II)	0.069
2020	European Commission	CREATION OF EXCELLENCE CENTER THROUGH PILOTING DEMONSTRATIVE NEW ENERGY EFFICIENCY TECHNOLOGIES AND RENEWABLE ENERGY SOURCES IN FESTELITA COMMUNITY	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	The project will help Festelita village to implement investment projects, incorporated in its Sustainable Energy Action Plan (SEAP) under the Covenant of Mayors and thus bridge the gap between the SEAP and its practical implementation.	0.360
2020	Ministry of Foreign Affairs	ECOVISIO/MOLDOVA ZERO WASTE MEDIA CAMPAIGN	Environmental education/training	IV.1. General Environment Protection	Moldova is weltering in garbage. In 2018 solid waste collection and evacuation services were only available in 1481 out of 16822 localities covering around 6.4%3 of population living in rural areas. Solid waste is either burnt in stoves or open air or thrown away in spontaneous trash heaps despite them being illegal. The project mission is: Raising public awareness of the impact of proper solid waste management on public health and wellbeing. By achieving this result the Project will improve grassroots prerequisites for implementation of the National Solid Waste Management Strategy by contributing to: 1. change of peoples behavior that will reduce the negative impact on environment from waste 2. increasing populations preparedness to pay for proper solid waste management services	0.018
2020	Agency for International Development	MODERN ENERGY SERVICES	Energy policy and administrative management	II.3.a. Energy Policy	Increase the efficiency, reliability, and transparency of energy services and promote investment in the development, transport, processing, and utilization of indigenous energy sources and imported fuels.	0.323
2020	GEF (general)	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative participatory and integrated urban planning approach.	0.032

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2020	GEF (general)	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative participatory and integrated urban planning approach.	0.106
2020	GEF (general)	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative participatory and integrated urban planning approach.	0.569
2020	GEF (general)	CLEAN TECHNOLOGY INNOVATION PROGRAMME FOR SMES AND START-UPS IN THE REPUBLIC OF MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	Clean technology innovation program for SMEs and start-ups in the Republic of Moldova	0.011
2020	European Investment Bank	MOLDELECTRICA POWER TRANSMISSION	Electric power transmission and distribution (centralised grids)	II.3.f. Energy distribution	The project will increase the capacity and improve the reliability of the Moldovan electricity transmission system, with the aim of bringing it closer to the ENTSO-E standards. It includes the rehabilitation of some key transmission assets, such as s	4.672
2020	Swedish International Development Authority	STUDY ON ENVIRONMENT AND SOCIAL IMPACT OF THE FUNCTIONING OF THE DNIESTER HPC	Environmental policy and administrative management	IV.1. General Environment Protection	The Ministry of Agriculture, Regional Development and Environment has kindly requested support in development an environmental and social impact study of the current functioning of the Dniester Hydropower Complex as well as the impacts in case of the further development of the complex in the context of the ongoing negotiations with Ukraine of the Agreement on the functioning of the Dniester Hydropower Complex. The UNDP Moldova is the implementing partner, assessing the needs and the structure of the study, the budget of the contribution is 4973410 SEK. The duration of the project is 12 months. The intervention aims at providing a science-based analysis of the impacts of the functioning of the Dniester Hydropower Complex on the territory of Moldova to serve the Government of Moldova in process of negotiations of the agreement on the functioning of the Dniester HPC. The intervention also aims at contributing to public awareness raising and involvement in protection of the Dniester River.	0.112
2020	Slovak Agency for International Deve (SAMRS)	SUPPORT OF SUSTAINABLE DEVELOPMENT IN MOLDOVA	Environmental education/training	IV.1. General Environment Protection	The main goal of this project is to support sustainable development in Moldova.	0.012
2020	IDA	MOLDOVA POWER SYSTEM DEVELOPMENT PROJECT	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution		0.235

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2020	Ministry of Environment	CLIMATE CHANGE SOLUTIONS FOR MOLDOVA	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Installation of solar energy 31 kW power station in Comrat Pedagogical University and transfer of good practice for local partners	0.018
2020	European Commission	SUPPORT TO MODERNISATION OF THE ENERGY SECTOR IN THE REPUBLIC OF MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	The overall objective of the project is to support the Republic of Moldova in the reform of its Energy sector with a view to ensure higher efficiency and higher energy security. It also supports the implementation of the commitments the country undertook as a Contracting Party to the Energy Community and in the framework of the EU-MD Association Agreement.	0.119
2020	Japanese International Co-operation Agency	TC AGGREGATED ACTIVITIES	Energy policy and administrative management	II.3.a. Energy Policy	TC AGGREGATED ACTIVITIES	0.003
2020	Japanese International Co-operation Agency	TC AGGREGATED ACTIVITIES	Energy policy and administrative management	II.3.a. Energy Policy	TC AGGREGATED ACTIVITIES	0.002
2019	Slovak Agency for International Development (SAMRS)	SUPPORT OF SUSTAINABLE DEVELOPMENT IN MOLDOVA	Environmental education/training	IV.1. General Environment Protection	The main goal of this project is to support sustainable development in Moldova.	0.012
2019	European Commission	EFFICIENT PUBLIC LIGHTING IN CALARASI CITY - FIREFLY IN THE HEART OF FORESTS	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	The project will increase the efficiency of the public lighting and citizens' safety in Calarasi city.	0.241
2019	European Commission	CANTEMIR THERMAL REHABILITATION OF EDUCATIONAL BUILDINGS CANTREB	Energy conservation and demand-side efficiency	II.3.a. Energy Policy	- Improve the energy efficiency of 4 public buildings by taking comprehensive thermal rehabilitation measures aimed at the reduction of energy consumption and CO <sub>2</sub> emissions as part of the SEAP targets as well as local budget operational and maintenance.	0.501
2019	European Investment Bank	CHISINAU ENERGY EFFICIENCY	Energy conservation and demand-side efficiency	II.3.a. Energy Policy	The operation is a framework loan (FL) in support of sustainable energy efficiency improvements targeting public buildings in Chisinau, Republic of Moldova.	0.176

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2019	European Commission	MOLDOVA ENERGY AND BIOMASS PROJECT (PHASE II)	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	The project focuses on development of local biomass market and general market consolidation of the biomass-related business through continued support to solid biofuel producers and support to local biomass boiler production.	0.048
2019	European Commission	MOLDOVA-ROMANIA INTERCONNECTION PHASE I	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	Development of electricity interconnection between the Republic of Moldova (RoM) and Romania in order to connect the RoM to the EU electricity market.	0.907
2019	Japanese International Co-operation Agency	TC AGGREGATED ACTIVITIES	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	TC AGGREGATED ACTIVITIES	0.005
2019	European Investment Bank	MOLDELECTRICA POWER TRANSMISSION	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	The project will increase the capacity and improve the reliability of the Moldovan electricity transmission system, with the aim of bringing it closer to the ENTSO-E standards. It includes the rehabilitation of some key transmission assets	4.478
2019	European Commission	SUPPORT TO MODERNISATION OF THE ENERGY SECTOR IN THE REPUBLIC OF MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	The overall objective of the project is to support the Republic of Moldova in the reform of its Energy sector with a view to ensure higher efficiency and higher energy security. It also supports the implementation of the commitments the country undertook as a Contracting Party to the Energy Community and in the framework of the EU-MD Association Agreement.	0.826
2019	Agency for International Development	EXPANDED ACCESS TO MODERN ENERGY SERVICES	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	Expanded Access to Modern Energy Services	0.297
2019	UNDP	ESCO MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.002
2019	GEF (general)	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy		0.375
2019	Austrian Development Agency	FS-MOL-CONSULTAIR, ENERGY EFFICIENT SOLAR COOLING	Solar energy for centralized grids	II.3.b. Energy generation,	The aim of the feasibility study is to evaluate the feasibility of building a Moldovan pilot production of solar-air-heating products for innovative and energy efficient air conditioning and / or agricultural drying applications.	0.022

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		AND DRYING IN MOLDOVA		renewable sources		
2019	Ministry of Environment	DEVELOPMENT OF RENEWABLE ENERGY (SOLAR ENERGY) TECHNOLOGIES IN MOLDOVA	Solar energy - thermal applications	II.3.b. Energy generation, renewable sources	Project aims at installing 55 kW solar power system for a multi-storey office building in Chisinau, Moldova	0.001
2019	European Commission	EX-POST EVALUATION OF THE MOLDOVA ENERGY AND BIOMASS PROJECT	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	Ex-post evaluation of the Moldova Energy and Biomass Project (Phase I and II)	0.045
2019	European Commission	SCALE-UP OF BUDGET SUPPORT SPSP ENERGY.	Energy policy and administrative management	II.3.a. Energy Policy	A 10 M Euros disbursement in case of signature of a FA with IFIs on the construction of the Ungheni-Chisinau gas pipeline and transposition of major provisions of the 3rd Energy Package (Electricity and Natural gas laws).	1.119
2019	UNDP	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative, participatory and integrated urban planning approach.	0.005
2019	Agency for International Development	MODERN ENERGY SERVICES	Energy policy and administrative management	II.3.a. Energy Policy	Increase the efficiency, reliability, and transparency of energy services and promote investment in the development, transport, processing, and utilization of indigenous energy sources and imported fuels.	0.027
2018	GEF (general)	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative, participatory and integrated urban planning approach.	0.195
2018	ROAID	ELABORATION OF THE SUSTAINABLE ENERGY ACTION PLAN IN THE G?G?UZ REGION	Energy policy and administrative management	II.3.a. Energy Policy	Elaboration of the Sustainable Energy Action Plan at the level of the Gagauz Region.	0.037
2018	European Commission	VERIFICATION MISSION OF THE CONTRIBUTION AGREEMENT NO. 2014 / 354-896	Energy policy and administrative management	II.3.a. Energy Policy		0.017
2018	UNDP	MOLDOVA GREEN CITIES	Energy policy and administrative management	II.3.a. Energy Policy	Catalyze investments in low carbon green urban development based on innovative, participatory and integrated urban planning approach.	0.000

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2018	European Investment Bank	MOLDELECTRICA POWER TRANSMISSION	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	The project will increase the capacity and improve the reliability of the Moldovan electricity transmission system, with the aim of bringing it closer to the ENTSO-E standards. It includes the rehabilitation of some key transmission assets.	6.373
2018	Swedish International Development Authority	DISTRICT HEATING STUDY CHISINAU	Energy policy and administrative management	II.3.a. Energy Policy	The Ministry of Economy kindly asked for support in improving the work of the electricity and heating supplier of Chisinau. In order to do so, a study on Technical Audit, Hydraulic calculation, Energy Modelling and Assets Development of Termoelectrica's heat and Power Assets in Chisinau Municipality will be conducted. The implementing partner is the World Bank, which has extensive experience in the energy sector in the Republic of Moldova. In order to avoid opening new Trust Funds, the Agreement on the Energy Sector Management Assistance Program (ESMAP) Trust Fund will be amended in order to include the support for the district heating study. By the end of the intervention the beneficiaries will have an energy model based on the plant performance characteristics. The model is likely to be used by "Termoelectrica" SA in order to optimize its operation.	0.251
2018	Ministry of Foreign Affairs	EBRD E5P	Energy policy and administrative management	II.3.a. Energy Policy	Eastern Europe Energy Efficiency and Environment Partnership	0.615
2018	Ministry of Foreign Affairs of the Netherlands	BKR ENERGY REFORMS MOLDOVAN CITIZEN	Energy policy and administrative management	II.3.a. Energy Policy	Address one of the most serious concerns of Moldavia, namely the sustainability and diversification of the energy sector. Project aims to be watchdog regarding the policies and reforms implemented in the energy sector and to increase the general public's knowledge in this field. Target group is mainly the youth of the general population but also the local community, Moldavian decision makers, Brussels institutions international donors.	0.008
2018	European Commission	REVIEW OF THE MOLDOVA ENERGY AND BIOMASS PROJECT	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	Review of several components of the project : Biomass-Heating Systems, Revolving-funds, Laboratory, PPPs. This contract is a FWC which was selected through RfS 388-678.	0.041
2018	UNDP	ESCO MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.005
2018	Ministry of Energy	CONTRIBUTION TO ENERGY POLICY AND ADMINISTRATIVE MANAGEMENT IN MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	Contribution to Energy policy and administrative management in Moldova.	0.002



Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2018	IDA	MOLDOVA ECONOMIC GOVERNANCE DPO1	Energy policy and administrative management	II.3.a. Energy Policy		3.791
2018	Local administration	INSTALLATION OF A PHOTOVOLTAIC SYSTEM	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Installation of a photovoltaic system for the Helmut Wolf Women's Center in Ciuciuleni.	0.011
2018	Local administration	INSTALLATION OF A PHOTOVOLTAIC SYSTEM	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Construction of a dormitory and a kitchen with adjoining canteen room for secondary school.	0.011
2018	Swedish International Development Authority	STUDY ON ENVIRONMENT AND SOCIAL IMPACT OF THE FUNCTIONING OF THE DNIESTER HPC	Environmental policy and administrative management	IV.1. General Environment Protection	The Ministry of Agriculture, Regional Development and Environment has kindly requested support in development an environmental and social impact study of the current functioning of the Dniester Hydropower Complex as well as the impacts in case of the further development of the complex in the context of the ongoing negotiations with Ukraine of the Agreement on the functioning of the Dniester Hydropower Complex. The UNDP Moldova is the implementing partner, assessing the needs and the structure of the study, the budget of the contribution is 4973410 SEK. The duration of the project is 12 months. The intervention aims at providing a science-based analysis of the impacts of the functioning of the Dniester Hydropower Complex on the territory of Moldova to serve the Government of Moldova in process of negotiations of the agreement on the functioning of the Dniester HPC. The intervention also aims at contributing to public awareness raising and involvement in protection of the Dniester River.	0.572
2018	Ministry of Environment	DEVELOPMENT OF RENEWABLE ENERGY TECHNOLOGIES	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Development of renewable energy technologies	0.047
2018	European Commission	CANTEMIR THERMAL REHABILITATION OF EDUCATIONAL BUILDINGS CANTREB	Energy conservation and demand-side efficiency	II.3.a. Energy Policy	Improve the energy efficiency of 4 public buildings by taking comprehensive thermal rehabilitation measures aimed at the reduction of energy consumption and CO <sub>2</sub> emissions as part of the SEAP targets as well as local budget operational and maintenance costs. Diversify sources of energy in order to minimize the energy dependence on the imported natural gas and electricity by way of promoting private sector in developing available renewable energy resources	0.073

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2018	European Commission	REVIEW OF THE SPSP ENERGY BUDGET SUPPORT FINAL TRANCHE	Energy policy and administrative management	II.3.a. Energy Policy		0.012
2018	ROAID	ELABORATING ACTION PLANS FOR SUSTAINABLE ENERGY IN CIMISLIA AND IALOVENI DISTRICTS	Energy policy and administrative management	II.3.a. Energy Policy	Elaborating action plans for sustainable energy in Cimislia and Ialoveni districts	0.058
2017	Agency for International Development	MODERN ENERGY SERVICES	Energy policy and administrative management	II.3.a. Energy Policy	Increase the efficiency, reliability, and transparency of energy services and promote investment in the development, transport, processing, and utilization of indigenous energy sources and imported fuels.	0.499
2017	Japanese International Co-operation Agency	TC AGGREGATED ACTIVITIES	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	TC AGGREGATED ACTIVITIES	0.003
2017	European Commission	SUPPORT TO MODERNISATION OF THE ENERGY SECTOR IN THE REPUBLIC OF MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	The overall objective of the project is to support the Republic of Moldova in the reform of its Energy sector with a view to ensure higher efficiency and higher energy security. It also supports the implementation of the commitments the country undertook as a Contracting Party to the Energy Community and in the framework of the EU-MD Association Agreement.	0.289
2017	Ministry of Foreign Affairs	DEVELOPMENT OF THE RURAL AREAS BY SUPPORTING OF COMMUNITY INITIATIVES – RENOVATION WORKS IN GYMNASIUM FROM BALANESTI VILLAGE, DISTRICT NISPORENI	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Improvement of a school feeding and food hygiene in the school canteen in village Balanesti and providing pupils with access to meals. This goal was achieved by the repairing of the school canteen (an exchange of the windows and the doors), buying the electric cooker, metal shelves, cookware, chairs and tables) and the installation of solar heating on the roof of the school building.	0.001
2017	Ministry of Foreign Affairs	ENHANCEMENT OF ENERGY EFFICIENCY THROUGH INSTALLATION OF	Energy conservation and demand-side efficiency	II.3.a. Energy Policy	Diversification of the energy resources by installing the heating system based on biofuels in the Social Center in Stauceni. Purchase of two heating boilers and building materials, carrying out the construction works and connection of the building to the electricity grid.	0.017

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		AUTONOMOUS HEATING SYSTEM IN SOCIAL CENTRE IN STAUCENI				
2017	Ministry of Foreign Affairs	ENHANCEMENT OF ENERGY EFFICIENCY THROUGH INSTALLATION OF AUTONOMOUS HEATING SYSTEM IN SOCIAL CENTRE IN STAUCENI	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Diversification of the energy resources by installing the heating system based on biofuels in the Social Center in Stauceni. Purchase of two heating boilers and building materials, carrying out the construction works and connection of the building to the electricity grid.	0.017
2017	UNDP	ESCO MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.025
2017	European Commission	ESP EXPANSION TO EASTERN PARTNERSHIP - MOLDOVA	Energy generation, non-renewable sources, unspecified	II.3.c. Energy generation, non-renewable sources	The E5P is a multi-donor fund encouraging municipal investments in energy efficiency and environmental projects in the EaP region.	7.215
2017	GEF (general)	ESCO MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	DEV_OUTCOME_1, OUTPUT_1.5 - The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.018
2017	Ministry of Foreign Affairs	CONTRIBUTION FOR EASTERN EUROPE ENERGY EFFICIENCY AND ENVIRONMENT PARTNERSHIP FUND (MOLDOVA) (ODA-ELIGIBLE COUNTRIES ONLY)	Energy policy and administrative management	II.3.a. Energy Policy	Contribution of 350 000 EUR for Eastern Europe Energy Efficiency and Environment Partnership Fund's expansion to Georgia and Moldova, in five annual installments of 70 000 euros each, including 40 000 euros annually (and 200 000 in total) for E5P operations in Moldova and 30 000 euros annually (and 150 000 in total) for E5P operations in Georgia.	0.045

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2016	Foreign Office	ENVIRONMENTAL EDUCATIONAL PROGRAM	Environmental education/training	IV.1. General Environment Protection	Promote civil society, enable young adults in Moldova to implement project ideas, concepts for sustainable development of the country	0.077
2016	Japanese International Co-operation Agency	TC AGGREGATED ACTIVITIES	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	TC AGGREGATED ACTIVITIES	0.007
2016	European Commission	TECHNICAL ASSISTANCE FOR THE IMPLEMENTATION OF THE SECTOR POLICY SUPPORT PROGRAMME SUPPORT TO REFORM OF THE ENERGY SECTOR	Energy policy and administrative management	II.3.a. Energy Policy	The objective of this project is to support Moldova in the implementation of reforms in the energy sector, focusing on energy efficiency and renewable energy.	0.269
2016	European Commission	MOLDOVA ENERGY AND BIOMASS PROJECT	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	The project will primarily focus on improving heating comfort levels in rural public sector buildings including schools and community centers by using readily available waste straw supplied from local agricultural enterprises.	0.503
2016	European Commission	TECHNICAL ASSISTANCE FOR THE IMPLEMENTATION OF THE SECTOR POLICY SUPPORT PROGRAMME SUPPORT TO REFORM OF THE ENERGY SECTOR (DUMMY TO MA	Energy policy and administrative management	II.3.a. Energy Policy	The objective of this project is to support Moldova in the implementation of reforms in the energy sector, focusing on energy efficiency and renewable energy.	0.148
2016	Ministry of Foreign Affairs	CONTRIBUTION FOR EASTERN EUROPE ENERGY EFFICIENCY AND ENVIRONMENT	Energy policy and administrative management	II.3.a. Energy Policy	Contribution of 350,000 EUR for Eastern Europe Energy Efficiency and Environment Partnership Fund's expansion to Georgia and Moldova, in five annual installments of 70,000 euros each, including 40,000 euros annually (and 200,000 in total) for ESP	0.044

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		PARTNERSHIP FUND (MOLDOVA)			operations in Moldova and 30,000 euros annually (and 150,000 in total) for E5P operations in Georgia.	
2016	UNDP	ESCO MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.014
2016	Swedish International Development Authority	LOAN PORTFOLIO GUARANTEE FOR SUSTAINABLE ENERGY - TA SUPPORT TO LOCAL FINANCIAL INSTITUTION	Energy policy and administrative management	II.3.a. Energy Policy	SIDA and USAID will provide a guarantee to encourage loans for investments in energy efficiency and sustainable energy in Moldova. Technical assistance to the financial intermediary (Prime Capital), enterprises and individuals will also be offered.	0.142
2016	European Commission	MOLDOVA ENERGY AND BIOMASS PROJECT (PHASE II)	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	The project focuses on development of local biomass market and general market consolidation of the biomass-related business through continued support to solid biofuel producers and support to local biomass boiler production.	5.089
2016	European Commission	E5P EXPANSION TO EASTERN PARTNERSHIP MOLDOVA	Energy generation, non-renewable sources, unspecified	II.3.c. Energy generation, non-renewable sources	The E5P is a multi-donor fund encouraging municipal investments in energy efficiency and environmental projects in the EaP region.	5.936
2016	European Commission	NIF PROJECT: 2ND PHASE OF THE MOLDOVA SUSTAINABLE ENERGY EFFICIENCY FINANCE FACILITY (MOSEFF2)	Energy education/training	II.3.a. Energy Policy	MoSEFF2 will address barriers to the financing and implementation of energy efficiency projects by providing local banks with guidance in assessing sustainable energy projects: by providing potential sub-borrowers with guidance in implementing the best solution for their energy situations and (if needed) help in preparing their loan application.	0.498
2016	Swedish International Development Authority	MODERNISATION OF LOCAL PUBLIC SERVICES IN MOLDOVA, GIZ - MODERNISATION OF	Environmental policy and administrative management	IV.1. General Environment Protection	To introduce citizen-oriented regional development in priority sectors of local public services. Support to national, regional and local administration in planning and implementation of improved services in four priority sectors - water supply and sanitation, solid waste management and energy efficiency in public buildings.	1.169

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		LOCAL PUBLIC SERVICES				
2016	Ministry of Environment	SHARING LITHUANIAN EXPERIENCE IN THE USE OF TECHNOLOGIES RELYING ON THE RENEWABLE ENERGY SOURCES	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Project on sharing of the Lithuanian experience with the developing countries in the use of technologies relying on the renewable energy sources.	0.111
2016	Ministry of Environment	STRENGTHENING ADMINISTRATIVE AND INSTITUTIONAL CAPACITIES IN THE AREA OF ENVIRONMENTAL POLICY IN MOLDOVA	Environmental policy and administrative management	IV.1. General Environment Protection	Strengthening administrative and institutional capacities in the area of environmental policy in Moldova	0.002
2016	Ministry of Foreign Affairs	THE PROJECT FOR EFFECTIVE USE OF BIOMASS FUEL	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	Provision of boilers using biomass fuel to public facilities	0.481
2016	Slovak Agency for International Deve (SAMRS)	TRIP OF SLOVAK EXPERTS FROM SIEA AND URSO TO MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	Moldovan Agency for Energy Efficiency (AEE) has asked the Embassy of SR in Chisinau, to share experience in the practical implementation of legislation in the field of renewable energy. Moldova currently has prepared a new law on renewable energy sources, which will be effective from 01.01.2017. The practical implementation of this law is linked to a number of other tasks that AEE will have to implement in the near future. It will be necessary above all to prepare related secondary legislation based on the norms of law.	0.002
2016	Agency for International Development	LOCAL GOVERNMENT SUPPORT PROJECT (LGSP) - MODERN ENERGY SERVICES	Energy policy and administrative management	II.3.a. Energy Policy	The Local Government Support Project (LGSP) is a four-year activity to assist local governments to design and implement policies and procedures that contribute to good governance, develop capacity to meet decentralized authorities and responsibilities for services in a transparent manner, and provide basic services that engender growth of local economies and make services more cost effective and efficient. The LGSP has three interrelated components: 1. Improve municipal service delivery, including planning, service management and service quality and quantity. Component one will assist in the development of physical, strategic, and financial planning that supports local infrastructure coverage and /or quality improvements as well as the use of more effective and efficient	0.701

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
					methods of service organization. Technical assistance shall be provided to support detailed plans for improved management and infrastructure improvements based on the plans, with assistance to secure funding and leverage co-finance for implementation. 2. Increase revenues available to local governments and improvements in financial management practices. Component two provides assistance to strengthen the financial management basis for planning and executing service improvements and maximizing the revenue potential of the local government. 3. Municipal Energy Efficiency Component three assists with the development and implementation, as the case may be, of local energy efficiency plans and practices, and improves planning to attract capital investments to reduce the heavy cost of energy on local government budgets. Activities will assist with local energy efficiency plans and support management of municipal energy efficiency projects.	
2016	Miscellaneous	PAYMENT TO UNIDO (VOLUNTARY CONTRIBUTION)	Solar energy for centralised grids	II.3.b. Energy generation, renewable sources	-	0.077
2016	Ministry of Regional Development and Public Administration	FINANCING OF THE CREATION OF A GAS DISTRIBUTION DISPATCH IN UNGHENI	Retail gas distribution	II.3.f. Energy distribution	Financing of the creation of a gas distribution dispatch in Ungheni	0.396
2016	Ministry of Regional Development and Public Administration	FINANCING THE TECHNICAL PROJECT RELATED TO UNGHENI-CHISINAU GAS PIPELINE	Retail gas distribution	II.3.f. Energy distribution	Financing the technical project related to Ungheni-Chisinau gas pipeline	0.620
2015	European Commission	MOLDOVA ENERGY AND BIOMASS PROJECT (PHASE II)	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	The project focuses on development of local biomass market and general market consolidation of the biomass-related business through continued support to solid biofuel producers and support to local biomass boiler production.	2.474
2015	European Commission	REVIEW OF THE MOLDOVA ENERGY AND BIOMASS PROJECT EQUIPMENTS	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	The overall objective of this contract is to make a technical review of the output 1 of the MEBP project focused on installation of biomass heating systems in public institutions.	0.047



Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		INSTALLATION COMPONENT				
2015	European Commission	EBRD LEAD IFI REMUNERATION FOR THE PROJECT MOLDELECTRICA POWER TRANSMISSION NETWORK REHABILITATION	Electric power transmission and distribution (centralized grids)	II.3.f. Energy distribution	Following the signature of the NIF Framework Agreement, the Lead IFI shall receive a remuneration (in this case for the project MOLDELECTRICA POWER TRANSMISSION NETWORK REHABILITATION - 2013/308-751)	0.222
2015	Swedish International Development Authority	SUPPORT IN MANAGING ENERGY PORTFOLIO	Energy policy and administrative management	II.3.a. Energy Policy	The Embassy in Chisinau has had a vacancy for the position as program officer for the energy portfolio since June 2014. To be able to manage the energy portfolio until a replacement will arrive in Chisinau, the Embassy will need support of a consultant.	0.042
2015	Swedish International Development Authority	EBRD/BAS ENERGY EFFICIENCY FOR SME SECTOR - TAM/BAS	Energy education/training	II.3.a. Energy Policy	Co-finance of the EBRD TAM/BAS Programs' energy efficiency component. The project focus on increasing awareness of investment opportunities for SMEs in energy savings, and in contacts with banks.	0.475
2015	Ministry of Foreign Affairs	RAISING ECOLOGICAL AWARENESS AMONG MOLDOVAN CITIZENS - ECO-CAMPAIGN ON WATER AND ENERGY SAVING.	Energy education/training	II.3.a. Energy Policy	-	0.033
2015	Swedish International Development Authority	LOAN PORTFOLIO GUARANTEE FOR SUSTAINABLE ENERGY - TA SUPPORT TO LOCAL FINANCIAL INSTITUTION	Energy policy and administrative management	II.3.a. Energy Policy	SIDA and USAID will provide a guarantee to encourage loans for investments in energy efficiency and sustainable energy in Moldova. Technical assistance to the financial intermediary (Prime Capital), enterprises and individuals will also be offered.	0.086
2015	UNDP	ESCO MOLDOVA	Energy generation, renewable	II.3.b. Energy generation,	The project objective is to create a functioning, sustainable and effective ESCO market in Moldova, as the basis for scaling up mitigation efforts in the whole municipal building sector in Moldova.	0.069

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
			sources - multiple technologies	renewable sources		
2015	European Commission	DUMMY CONTRACT LATE PAYMENT INTERESTS MOLDOVA ENERGY AND BIOMASS PROJECT (PHASE II) (354 896)	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	Dummy contract Late payment interests Moldova Energy and Biomass Project (Phase II) (354-896)	0.014
2015	Ministry of Foreign Affairs	REGIONAL PROJECT OF THE CZECH UNDP TRUST FUND	Energy education/training	II.3.a. Energy Policy	Capacity and Building for Developing the ESCO Market in Moldova	0.046
2015	European Commission	REVIEW OF ENPI 2011 SECTOR POLICY SUPPORT PROGRAMME	Energy policy and administrative management	II.3.a. Energy Policy	Review of SPSP Support to the Reform of the Energy Sector in Moldova(AAP2011)	0.058
2015	European Investment Bank	GREEN FOR GROWTH FUND II	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	Increase of EIB investment in the Green for Growth Fund, targeting energy efficiency and smaller renewable energy investments within the South-Eastern Europe region and in the Eastern Neighborhood region. (SECTOR CODE : 35113000)	1.387
2015	European Commission	TECHNICAL ASSISTANCE FOR THE IMPLEMENTATION OF THE SECTOR POLICY SUPPORT PROGRAMME SUPPORT TO REFORM OF THE ENERGY SECTOR	Energy policy and administrative management	II.3.a. Energy Policy	The objective of this project is to support Moldova in the implementation of reforms in the energy sector, focusing on energy efficiency and renewable energy.	0.219
2015	European Commission	SUPPORT TO THE DEVELOPMENT OF AN ENERGY STATISTICS SYSTEM IN THE REPUBLIC OF MOLDOVA	Energy policy and administrative management	II.3.a. Energy Policy	The overall objective of the Project is to assist the Moldovan authorities to develop, establish and report on implementation of energy sector policies, based on a well-established and functioning Energy Statistics System (ESS) in line with the internationally recognized methodologies.	0.064

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
2015	Swedish International Development Authority	SHORT TERM ASSISTANCE TO ANRE - REVIEW OF ENERGY TARIFFS, ELECTRICITY AND GAS - SHORT TERM ASSISTANCE TO ANRE	Energy policy and administrative management	II.3.a. Energy Policy	The National Agency for Energy Regulation, ANRE in Moldova is in a process of reviewing its previous decision on energy tariff increases. ANRE has requested additional audits from the regulated energy companies and will based on these perform a tariff review. ANRE needs assistance from independent international consultant to assist in the review.	0.036
2015	Miscellaneous	PAYMENT TO UNIDO (VOLUNTARY CONTRIBUTION)	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	-	0.044
2015	Ministry of Foreign Affairs	TECHNICAL AND TECHNOLOGICAL INNOVATIONS IN FARMS USING RENEWABLE ENERGY SOURCES IN MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	-	0.120
2015	Ministry of Foreign Affairs	ALTERNATIVE ENERGY SOURCES IN RURAL DEVELOPMENT OF MOLDOVA	Energy generation, renewable sources - multiple technologies	II.3.b. Energy generation, renewable sources	-	0.205
2015	Central administration	SUSTAINABLE ENERGY ACTION PLAN (SEAP) FOR CHISINAU. URBAN REGENERATION MARKET STUDY	Energy generation, non-renewable sources, unspecified	II.3.c. Energy generation, non-renewable sources	The main objective of the study will be to review the energy performance and suggest feasible alternatives to consider within an investment plan which allows the client to reduce the energy use and its environmental impact	0.122
2015	Ministry of Foreign Affairs	PAYMENT FOR THE TECHNICAL ASSISTANCE PROGRAM IN THE FIELD OF SOLAR	Solar energy for centralized grids	II.3.b. Energy generation, renewable sources	Payment for the technical assistance program in the field of solar energy UNIDO for Moldova	0.027

Year	Agency Name	Project Short Description	Purpose Name	Sector Name	Long Description of Activity Financed	Amount, Current Prices (USD Millions)
		ENERGY UNIDO FOR MOLDOVA				
2015	Swedish International Development Authority	CAPACITY BUILDING MIN OF ECON & EE AGENCY - MAIN SUPPORT THROUGH MIN OF ECO ADM BY MEPIU	Energy policy and administrative management	II.3.a. Energy Policy	TA to support capacity for strategic planning and coordination of reforms for increased energy efficiency and use of renewable energy resources as part of Moldova's EU approximation in the energy sector. Includes support to a revision of Moldova's Energy Strategy, national action plans for energy efficiency and renewables, and capacity building to for sector planning, coordination, implementation, and monitoring.	0.486
2015	Ministry of Foreign Affairs	CONTRIBUTION FOR EASTERN EUROPE ENERGY EFFICIENCY AND ENVIRONMENT PARTNERSHIP FUND (MOLDOVA)	Energy policy and administrative management	II.3.a. Energy Policy	Contribution of 350 000 EUR for Eastern Europe Energy Efficiency and Environment Partnership Fund's expansion to Georgia and Moldova, in five annual installments of 70 000 euros each, including 40 000 euros annually (and 200 000 in total) for ESP operations in Moldova and 30 000 euros annually (and 150 000 in total) for ESP operations in Georgia.	0.044
2015	Swedish International Development Authority	ORGANISATIONAL REVIEW AND SYSTEM AUDIT OF THE MOLDOVA ENERGY EFFICIENCY FUND - ORGANISATIONAL REVIEW AND SYSTEM AUDIT OF THE	Energy policy and administrative management	II.3.a. Energy Policy	Organizational review and system audit of the Energy Efficiency Fund in Moldova	0.068
2015	Ministry of Foreign Affairs	THE PROJECT FOR EFFECTIVE USE OF BIOMASS FUEL	Biofuel-fired power plants	II.3.b. Energy generation, renewable sources	Provision of boilers using biomass fuel to public facilities	3.962

Source: OECD ODA Statistics

## Annex 5. Projected Costs of Key Energy Efficiency and Low-Carbon Technologies Until 2050

## Photovoltaics

Capital investment cost trajectories of utility-scale photovoltaics without tracking							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	1,020	830	720	580	500
	Diversified	EUR 2015/kW		790	600	450	370
	ProRES	EUR 2015/kW		690	450	370	320
	Min	EUR 2015/kW		650	390	310	260
	Max	EUR 2015/kW		920	870	780	730
O&M costs	-	%CAPEX	1.7%	1.7%	1.7%	1.7%	1.7%
Capital investment cost trajectories of commercial-scale PV, flat surface							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	1,140	920	810	650	560
	Diversified	EUR 2015/kW		880	670	510	410
	ProRES	EUR 2015/kW		770	500	410	350
	Min	EUR 2015/kW		720	430	350	290
	Max	EUR 2015/kW		1,030	970	880	810
O&M costs	-	%CAPEX	2.5%	2.5%	2.5%	2.5%	2.5%
Capital investment cost trajectories of residential-scale PV, inclined surface							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	1,360	1,100	960	780	670
	Diversified	EUR 2015/kW		1,050	800	600	490
	ProRES	EUR 2015/kW		920	600	490	420
	Min	EUR 2015/kW		860	520	410	350
	Max	EUR 2015/kW		1,230	1,150	1,050	970
O&M costs	-	%CAPEX	2%	2%	2%	2%	2%

## Solar thermal electricity

Capital investment cost trajectories of parabolic trough with storage							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	6,000	5,650	5,100	4,530	4,200
	Diversified	EUR 2015/kW		4,630	4,040	3,630	3,420
	ProRES	EUR 2015/kW		4,920	3,760	3,430	3,280
	Min	EUR 2015/kW		4,120	3,040	2,660	2,490
	Max	EUR 2015/kW		5,800	5,470	5,120	4,910
O&M costs	-	%CAPEX	1.7%	1.7%	1.7%	1.7%	1.7%
Capital investment cost trajectories of solar tower with storage							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	5,280	4,970	4,480	3,990	3,690
	Diversified	EUR 2015/kW		4,070	3,560	3,190	3,010
	ProRES	EUR 2015/kW		4,330	3,310	3,010	2,880
	Min	EUR 2015/kW		3,620	2,680	2,340	2,190
	Max	EUR 2015/kW		5,110	4,820	4,510	4,320
O&M costs	-	%CAPEX	1.7%	1.7%	1.7%	1.7%	1.7%

## Biomass heat and power

Capital investment cost trajectories of biomass subcritical steam turbine CHP plant							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	3,600	3,400	3,310	3,230	3,120
	Diversified	EUR 2015/kW		3,330	3,180	3,050	2,910
	ProRES	EUR 2015/kW		3,380	3,190	3,100	2,980
	Min	EUR 2015/kW		3,220	3,020	2,850	2,660
	Max	EUR 2015/kW		3,520	3,480	3,450	3,400
O&M costs	-	%CAPEX	2%	2%	2%	2%	2%
Capital investment cost trajectories of gasified biomass CHP plant							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	5,300	5,010	4,870	4,760	4,590
	Diversified	EUR 2015/kW		4,900	4,680	4,490	4,280
	ProRES	EUR 2015/kW		4,980	4,700	4,560	4,390
	Min	EUR 2015/kW		4,740	4,450	4,190	3,920
	Max	EUR 2015/kW		5,180	5,130	5,080	5,010
O&M costs	-	%CAPEX	2%	2%	2%	2%	2%
Capital investment cost trajectories of biomass-fired Organic Rankine Cycle							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	4,700	4,440	4,320	4,220	4,070
	Diversified	EUR 2015/kW		4,340	4,150	3,980	3,800
	ProRES	EUR 2015/kW		4,420	4,160	4,040	3,900
	Min	EUR 2015/kW		4,200	3,950	3,720	3,480
	Max	EUR 2015/kW		4,600	4,540	4,510	4,440
O&M costs	-	%CAPEX	2%	2%	2%	2%	2%
Capital investment cost trajectories of anaerobic digestion plants							
		Unit	2015	2020	2030	2040	2050
Capital investment costs	Baseline	EUR 2015/kW	3,100	2,930	2,850	2,780	2,680
	Diversified	EUR 2015/kW		2,860	2,740	2,630	2,510
	ProRES	EUR 2015/kW		2,910	2,750	2,670	2,570
	Min	EUR 2015/kW		2,770	2,600	2,450	2,290
	Max	EUR 2015/kW		3,030	3,000	2,970	2,930
O&M costs	-	%CAPEX	4%	4%	4%	4%	4%

## Gasified biomass fired CHPP

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	5 - 30				
Electrical power generation	MW <sub>el</sub>	1 - 15				
Net electrical efficiency	[%]	18	18	19	19	20
degree of fuel utilization accountable to el. Power	%	23	23	24	24	24
degree of fuel utilization accountable to district heating	%	77	77	76	76	76
Total degree of utilization, nominal load	%	85	85	85	85	85
Total degree of utilization, annual average	%	78	78	78	78	78
Electricity consumption	%	2.3	2.2	2.1	2	2
Technical lifetime	Years	20	25	25	25	30
Steam supply		+	+	+	+	+
Hot water (up to 140 °C)		o	o	o	o	o
Warm water (up to 105 °C)		(o)	(o)	(o)	(o)	(o)
Low temperature (up to 70 °C)		-	-	-	-	-
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	170	170	170	170	170
SO <sub>2</sub>	g/GJ <sub>th</sub>	<	<	<	<	<
NO <sub>x</sub>	g/GJ <sub>th</sub>	70	70	65	65	60
CH <sub>4</sub>	g/GJ <sub>th</sub>	<	<	<	<	<
N <sub>2</sub> O	g/GJ <sub>th</sub>	<	<	<	<	<
Particels	g/GJ <sub>th</sub>	<	<	<	<	<
<b>C. Financial data</b>						
Quality of estimation		medium				
Nominal investment	M€/MW <sub>el,max</sub>	5.3	5.3	5.1	4.9	4.7
- of which equipment	M€/MW <sub>el,max</sub>	3.4	3.4	3.2	3	3
- of which installation	M€/MW <sub>el,max</sub>	1.9	1.9	1.9	1.9	1.7
Fixed O&M	k€/MW <sub>el,max</sub> /a	108	108	97	97	86
Variable O&M excl. electricity costs	€/MWh <sub>el,max</sub>	4	4	4	4	4



**Gas engine ICE biogas-fired**

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	0.4 - 9.0				
Electrical power generation	MW <sub>el</sub>	0.3 - 11				
Net electrical efficiency	[%]			41		
degree of fuel utilization accountable to el. Power	%	49	49	51	53	53
degree of fuel utilization accountable to district heating	%	51	51	49	47	47
Total degree of utilization, nominal load	%	85	85	86	88	88
Total degree of utilization, annual average	%	79	79	80	82	82
Electricity consumption	%	0.2	0.2	0.2	0.2	0.2
Technical lifetime	years	25	25	30	30	30
Steam supply		N/A	N/A	N/A	N/A	N/A
Hot water (up to 140 °C)		--	--	--	--	--
Warm water (up to 105 °C)		(o)	(o)	(o)	(o)	(o)
Low temperature (up to 70 °C)		(+)	(+)	(+)	(+)	(+)
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	210	210	200	190	190
SO <sub>2</sub>	g/GJ <sub>th</sub>	160	140	120	120	120
NO <sub>x</sub>	g/GJ <sub>th</sub>	205	170	150	150	150
CH <sub>4</sub>	g/GJ <sub>th</sub>	<	<	<	<	<
N <sub>2</sub> O	g/GJ <sub>th</sub>	<	<	<	<	<
Particels	g/GJ <sub>th</sub>	<	<	<	<	<
<b>C. Financial data</b>						
Quality of estimation		medium				
Nominal investment	M€/MW <sub>el,ISO</sub>	0.8	0.8	0.7	0.7	0.7
- of which equipment	M€/MW <sub>el,ISO</sub>	0.7	0.7	0.6	0.6	0.6
- of which installation	M€/MW <sub>el,ISO</sub>	0.1	0.1	0.1	0.1	0.1
Fixed O&M	k€/MW <sub>el,ISO</sub> /a	9	9	9	9	9
Variable O&M excl. electricity costs	€/MWh <sub>el,ISO</sub>	13.1	13.1	13.1	13.1	13.1

**Water tube boilers**

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	20 - 250				
Total degree of utilization, nominal load	%	95	95	95	95	95
Total degree of utilization, annual average	%	87	87	87	87	87
Electricity consumption	%	0.5	0.5	0.4	0.4	0.4
Technical lifetime	Years	30	30	35	35	40
Steam supply		-	-	-	-	-
Hot water (up to 140 °C)		o	o	o	o	o
Warm water (up to 105 °C)		(o)	(o)	(o)	(o)	(o)
Low temperature (up to 70 °C)		+	+	+	+	+
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	60	60	60	60	60
SO <sub>2</sub>	g/GJ <sub>th</sub>	<	<	<	<	<
NO <sub>x</sub>	g/GJ <sub>th</sub>	20	20	18	18	15
CH <sub>4</sub>	g/GJ <sub>th</sub>	<	<	<	<	<
N <sub>2</sub> O	g/GJ <sub>th</sub>	<	<	<	<	<
Particles	g/GJ <sub>th</sub>	<	<	<	<	<
<b>C. Financial data</b>						
Quality of estimation		medium				
Nominal investment	M€/MW <sub>th</sub>	0.1	0.1	0.1	0.1	0.1
- of which equipment	M€/MW <sub>th</sub>	0.06	0.06	0.06	0.06	0.06
- of which installation	M€/MW <sub>th</sub>	0.04	0.04	0.04	0.04	0.04
Fixed O&M	k€/MW <sub>th</sub> /a	2	2	1.9	1.9	1.8
Variable O&M excl., electricity costs	€/MWh <sub>th</sub>	0.2	0.2	0.2	0.2	0.2

**Electrical boiler**

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	1-30				
Total efficiency, nominal load	%	99	99	99	99	99
Total efficiency, annual average	%	98	98	98	98	98
Electricity consumption	%/MW <sub>th</sub>	101	101	101	101	101
Technical lifetime	years	20	20	20	20	20
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ	-	-	-	-	-
SO <sub>2</sub>	g/GJ	-	-	-	-	-
NO <sub>x</sub>	g/GJ	-	-	-	-	-
CH <sub>4</sub>	g/GJ	-	-	-	-	-
N <sub>2</sub> O	g/GJ	-	-	-	-	-
Particles	g/GJ	-	-	-	-	-
<b>C. Financial data</b>						
Quality of CAPEX estimation		medium				
Nominal investment	M€/MW	0.12	0.12	0.12	0.12	0.12
- of which equipment	%	0.08	0.08	0.08	0.08	0.08
- of which installation	%	0.04	0.04	0.04	0.04	0.04
Fixed O&M	€/MW/a	0.5	0.5	0.5	0.5	0.5
Variable O&M excl., electricity costs	€/MWh	0.2	0.2	0.2	0.2	0.2

## Electrical Heat Pump

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	43.009				
Cooling generation capacity	MW <sub>th</sub>	0.7 - 7				
COP Heating	%	350	360	370	380	410
COP Cooling	%	250	260	270	280	310
Electricity consumption	%/MW <sub>th</sub>	10	9	7	5	4
Technical lifetime	years	20	20	25	25	25
Steam supply		N/A	N/A	N/A	N/A	N/A
Hot water (up to 140 °C)		N/A	N/A	N/A	N/A	N/A
Warm water (up to 105 °C)		--	--	--	--	--
Low temperature (up to 70 °C)		(o)	(o)	(o)	(o)	(o)
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	0	0	0	0	0
SO <sub>2</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
NO <sub>x</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
CH <sub>4</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
N <sub>2</sub> O	g/GJ <sub>th</sub>	0	0	0	0	0
Particles	g/GJ <sub>th</sub>	0	0	0	0	0
<b>C. Financial data</b>						
Quality of CAPEX estimation		high				
Learning rate	%					
Nominal investment	M€ <sub>2016</sub> /MW <sub>th</sub>	1	1	1	1	1
- of which equipment	M€/MW <sub>th</sub>	0.36	0.33	0.3	0.28	0.27
- of which installation	M€/MW <sub>th</sub>	0.36	0.33	0.3	0.28	0.27
Fixed O&M	k€/MW <sub>th</sub> /a	3	3	2.7	2.4	2
Variable O&M excl. electricity costs	€/MWh <sub>th</sub>	2	1.8	1.7	1.6	1.6

**Absorption heat pump**

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	0.15 - 12				
Cooling generation capacity	MW <sub>th</sub>	0.1 - 10				
COP Heating	%	170	170	171	172	173
COP Cooling	%	70	70	71	72	73
Electricity consumption	%/MW <sub>th</sub>	1.50	1.50	1.50	1.50	1.50
Technical lifetime	Years	25	25	25	25	25
Steam supply		N/A	N/A	N/A	N/A	N/A
Hot water (up to 140 °C)		N/A	N/A	N/A	N/A	N/A
Warm water (up to 105 °C)		--	--	--	--	--
Low temperature (up to 70 °C)		(o)	(o)	(o)	(o)	(o)
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	0	0	0	0	0
SO <sub>2</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
NO <sub>x</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
CH <sub>4</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
N <sub>2</sub> O	g/GJ <sub>th</sub>	0	0	0	0	0
Particles	g/GJ <sub>th</sub>	0	0	0	0	0
<b>C. Financial data</b>						
Quality of CAPEX estimation		medium				
Learning rate	%	7 - 8				
Nominal investment	M€ <sub>2017</sub> /MW <sub>th</sub>	0.42	0.39	0.38	0.37	0.35
- of which equipment	M€/MW <sub>th</sub>	0.21	0.195	0.19	0.185	0.175
- of which installation	M€/MW <sub>th</sub>	0.21	0.195	0.19	0.185	0.175
Fixed O&M	k€/MW <sub>th</sub> /a	2	2	2	2	2
Variable O&M excl. electricity costs	€/MWh <sub>th</sub>	0.3	0.3	0.3	0.2	0.2

## District heating substation

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat generation capacity	MW <sub>th</sub>	0.01 - 0.5				
Total efficiency, nominal load	%	98	98	98	98	98
Total efficiency, annual average	%	95	95	95	95	95
Electricity consumption	%/MWh <sub>th</sub>	negligible				
Technical lifetime	Years	20	20	20	20	20
<b>B. Environmental data</b>						
Steam supply		N/A	N/A	N/A	N/A	N/A
Hot water (up to 140 °C)		(-)	(-)	(-)	(-)	(-)
Warm water (up to 105 °C)		(o)	(o)	(o)	(o)	(o)
Low temperature (up to 70 °C)		(+)	(+)	(+)	(+)	(+)
<b>C. Financial data</b>						
Quality of CAPEX estimation		High				
Learning rate	%					
Nominal investment	M€ <sub>2017</sub> /MW <sub>th</sub>	0.08	0.07	0.07	0.07	0.07
- of which equipment	M€/MW <sub>th</sub>	0.06	0.06	0.06	0.06	0.06
- of which installation	M€/MW <sub>th</sub>	0.02	0.02	0.01	0.01	0.01
Fixed O&M	k€/MW <sub>th</sub> /a	0.13	0.13	0.13	0.13	0.13
Variable O&M excl. electricity costs	€/MWh <sub>th</sub>	0	0	0	0	0

## District heating piping network

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Linear heat density	MWh/(m.a)	1 - 5				
Net loss	%	10	10	10	10	10
Electricity consumption	%/MWh <sub>th</sub>	1	1	1	1	1
Technical lifetime	Years	30	30	35	35	35
Steam supply		--	--	--	--	--
Hot water (up to 140 °C)		-	-	-	-	-
Warm water (up to 105 °C)		(o)	(o)	(o)	(o)	(o)
Low temperature (up to 70 °C)		+	+	+	+	+
<b>B. Environmental data</b>						
CO <sub>2</sub>	g/MJ <sub>th</sub>	0	0	0	0	0
SO <sub>2</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
NO <sub>x</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
CH <sub>4</sub>	g/GJ <sub>th</sub>	0	0	0	0	0
N <sub>2</sub> O	g/GJ <sub>th</sub>	0	0	0	0	0
Particles	g/GJ <sub>th</sub>	0	0	0	0	0
<b>C. Financial data</b>						
Quality of CAPEX estimation		medium				
Learning rate	%					
Nominal investment	€/m	500	498	496	494	490
- of which equipment	€/m	200	199	198	197	196
- of which installation	€/m	300	299	298	297	294
Fixed O&M	%/CAPEX/a	1	1	1	1	1
Variable O&M excl. electricity costs	€/MWh	N/A	N/A	N/A	N/A	N/A



## Hot water tank storage

	Unit	2015	2020	2030	2040	2050
<b>A. Energy/technical data</b>						
Heat storage volume	m <sup>3</sup>	100 – 50 000				
Heat generation capacity	MW	0.35 - 90				
Net Storage capacity	MWh	3 – 1 500				
Total efficiency, nominal load	%	98	98	98	98	98
Total efficiency, annual average	%	92	92	92	92	92
Electricity consumption	%/MW <sub>th</sub>	1	1	1	1	1
Technical lifetime	Years	25	25	25	25	25
<b>B. Environmental data</b>						
Steam supply		NA	NA	NA	NA	NA
Hot water (up to 140 °C)		(o)	(o)	(o)	(o)	(o)
Warm water (up to 105 °C)		o	o	o	o	o
Low temperature (up to 70 °C)		o	o	o	o	o
<b>C. Financial data</b>						
Quality of CAPEX estimation		medium				
Nominal investment per power output	M€/MW <sub>th</sub>	0.088	0.088	0.088	0.088	0.088
- of which equipment	M€/MW <sub>th</sub>	0.032	0.032	0.032	0.032	0.032
- of which installation	M€/MW <sub>th</sub>	0.056	0.056	0.056	0.056	0.056
Fixed O&M	k€/MW <sub>th</sub> /a	0.4	0.4	0.36	0.36	0.36
Variable O&M per MWh	€/MWh	NA	NA	NA	NA	NA

## Anexx 6. Summary of measures

Dimension	Policy Measure Code	Policy Measure Name	Quantified objective:	Type of measure	Implementation Timeframe	Implementation Cost (million €)	Financing source(s)
Decarbonization	PM_DC1	Carbon Border Adjustment Mechanism (WPM)	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Reform	2020 – 2030, including the preparation period	10.1	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC2	Emissions Trading System	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Reform	2025 – 2030	0.5	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC3	Climate Change Coordination Mechanism	Number of documents implemented under coordination of Commission	Regulation Act	2024 – 2030	0.5	State
Decarbonization	PM_DC4	Development of the projects of the Joint Joint Credit Mechanism with Japan Joint Crediting Mechanism (JCM)	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Investment	2024 – 2030	140	Japan
Decarbonization	PM_DC5	The National Climate Change Adaptation Program until 2030 and its the Action Plan for its implementation	Number of implemented projects for increasing resilience to climate change	Investment	2023 – 2030	95.6	State, EU donors, Green Climate Fund, external assistance, SIDA, UNDP-ADA, EIB, EBRD, WB, etc.
Decarbonization	PM_DC6	The Low Emission Development Program of the Republic of Moldova until 2030 and the Action Plan for its implementation	To attract external financing to achieve the conditional obj	Investment	2023 – 2030	8560	UNDP, state, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC7	Preparation for and Introduction introduction of carbon tax	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels Achieving climate neutrality by 2050	Reform	2024 – 2030, including the preparation period	0.5	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC8	Implementation and monitoring of the Low-carbon Carbon Development Strategy Program until 2030 and of the Action Plan for its implementation and of the National Climate Change Adaptation Plan to Climate ChangeProgram until 2030 and the Action Plan for its implementation	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Reform	2024 – 2030	0.2	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC9	The program for the promotion of the green and circular economy for the years 2024 – 2028	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Investment	2024 – 2028		State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC10	Law on Climate change Actions	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to	Reform	2024 – 2050	0.5	State

			1990 levels Achieving climate neutrality by 2050				
Decarbonization	PM_DC11	Development of the secondary regulatory framework for the implementation of the Industrial Emissions Law no. 227/2022 Law on industrial emissions	levelsNumber of companies reduced pollution level	Reform	2024 – 2030	0.5	State
Decarbonization	PM_DC12	Law on fluorinated greenhouse gases	The purpose of the F-gases law is to regulate precautionary measures at the national level regarding: a) use, recovery and disposal of fluorinated greenhouse gases, as well as related auxiliary measures; b) the introduction on the market of specific products and equipment that contain or whose operation is based on fluorinated gases with a greenhouse effect, with the exception of refrigeration and/or air conditioning equipment, which, at the time of import, does not contain such gases; c) the specific use of fluorinated gases with a greenhouse effect; d) the application of quantitative limits for the introduction of hydrofluorocarbons on the market.	Reform	2024 – 2048	0.5	State
Decarbonization	PM_DC13	Implementation of the energy management system according to the Moldovan Standard SM EN ISO 50001: 2019	levelsContribution of energy efficiency in reduction of final energy consumption	Investment	2024 – 2030	1.1	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC14	Substitution of clinker in the cement production	CO2 emissions per ton of cement	Investment	2024 – 2030	27.1	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Decarbonization	PM_DC15	Environment Strategy until 2033	Reduction of GHG emissions by 70 % (with LULUCF) in 2030 compared to 1990 levels	Reform	2024 – 2033	0.5	State
Decarbonization	PM_DC16	Waste Management Strategy 2013-2027	Normative documents elaborated for increasing quantity of recycled and reused waste; to improve waste management processes	Regulatory	2023 – 2027	0.5	State
Decarbonization	PM_DC17	Moldova Solid waste Waste Management Project	The project aims to improve and increase solid waste management services in the participating Waste Management Zones, and address environmental challenges	Investment	2023 – 2030	68.1	State, EBRD, EIB, E5P
Decarbonization	PM_DC18	Implementation of the “no-till” and mini-till conservative tillage system	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990	Investment	2024 – 2030	660	State, external assistance, private sector, donors

Decarbonization	PM_DC19	Implementation of sustainable agricultural land management practices	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990	Investment	2024 – 2030	490	State, external assistance, private sector, donors
Decarbonization	PM_DC20	Manure storage in communal platforms or individual warehouses	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990	Investment	2024 – 2030	105.5	State, external assistance, private sector, donors
Decarbonization	PM_DC21	Promotion of bull cattle feeding technologies by using feed in the form of unique mixtures (monorotation) without or with small amounts of green fodder	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990	Investment	2024 – 2030	18.6	State, external assistance, private sector, donors
Decarbonization	PM_DC22	Promoting the use of apple pomacegrape marc in ruminant rations with the aim of reducing greenhouse gas emissions	Unconditional reduction, until 2030, of greenhouse gas emissions from the agricultural sector by 44 % and conditional greenhouse gas reduction of up to 47 % compared to 1990	Investment	2024 – 2030	4.8	State, external assistance, private sector, donors
Decarbonization	PM_DC23	Land afforestation	Removals increased target for LULUCF sector, as that specified in the LEDP 2030 and the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario	Investment	2024 – 2032	23375	State, external assistance, private sector, donors
Decarbonization	PM_DC24	Creation of forest protection curtains	Removals increased target for LULUCF sector, as that specified in the LEDP 2030 and the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario	Investment	2024 – 2032	5	State, external assistance, private sector, donors
Decarbonization	PM_DC25	Planting of energy forestry crops	Removals increased target for LULUCF sector, as that specified in the LEDP 2030 and the Action Plan for its implementation: +10% by 2030, as compared to 1990 year level under unconditional scenario and +391% by 2030 under the conditional scenario	Investment	2024 – 2030	8.5	State, external assistance, private sector, donors
Decarbonization	PM_DC26	Amended Law on promotion of and use of renewable energy sources	Increase share of energy from RES to 27 % in 2030	Regulatory	2024 – 2030	0.5	State, external assistance, private sector, donors
Decarbonization	PM_DC27	Support scheme based on fixed prices	Increase share of RES in electricity generation	Investment	2024 – 2030	185.5	State, external assistance, private sector, donors
Decarbonization	PM_DC28	Support scheme based on fixed tariff	Increase share of RES in electricity generation	Investment	2024 – 2030	335.5	State, external assistance, private sector, donors
Decarbonization	PM_DC29	Support scheme based on net metering	Increase share of RES in electricity generation	Investment	2024 – 2030	45.5	State, external assistance, private sector, donors

Decarbonization	PM_DC30	Fostering deployment of RES in district heating	Increase share of RES in H&C by 1.1 % annually	Investment	2025 – 2030	100	State, external assistance, private sector, donors
Decarbonization	PM_DC31	Promotion of heat pumps for H&C	36.3 ktce produced by heat pumps in H&C sector	Investment	2025 – 2030	27.2	State, external assistance, private sector, donors
Decarbonization	PM_DC32	Promotion of sustainable green cities for Moldova	Increase share of RES in transport up to 7.6 % in 2030	Investment	2024 – 2030	1.8	State, external assistance, private sector, donors
Decarbonization	PM_DC33	Promotion of biofuels and bioliquids	Increase share of RES in transport up to 7.6 % in 2030	Investment	2024 – 2030	24.3	State, external assistance, private sector, donors
Decarbonization	PM_DC34	Promotion of the electrification of road and rail transport	Increase share of RES in transport up to 7.6 % in 2030	Investment	2024 – 2030		State, external assistance, private sector, donors
Decarbonization	PM_DC35	Promotion of innovative technologies in renovation and Energy Efficiency in SME	Reducing GHG emissions by 70 % in 2030 compared to base year 1990	Investment	2024 – 2030	45	External donors, EIB
Decarbonization	PM_DC36	Promotion of energy efficiency in SME	Reducing GHG emissions by 70 % in 2030 compared to base year 1990	Investment	2024 – 2030	75	State, external assistance, private sector, donors
Decarbonization	PM_DC37	Promotion of renovation and Energy Efficiency in SME	Reducing GHG emissions by 70 % in 2030 compared to base year 1990	Investment	2024 – 2030	4.4	State, external assistance, private sector, donors
Decarbonization	PM_DC38	Promotion of Rural Competitiveness and Resilience	Reducing GHG emissions by 70 % in 2030 compared to base year 1990	Investment	2024 – 2030	4.4	USAID
Decarbonization	PM_DC39	Promotion of energy communities	Increase the share of RES in both electricity and H&C	Investment	2025 – 2030	Be integrated in PM_DC26, PM_DC27, PM_DC28 and PM_DC29.	State, external assistance, private sector, donors
Decarbonization	PM_DC40	Promotion of biomass for electricity production	Increase the share of RES in both electricity	Investment	2024 – 2030	362	State, external assistance, private sector, donors
Decarbonization	PM_DC41	Action Plan for implementing the Roadmap for preparing and instituting carbon pricing in the Republic of Moldova	Reduction of GHG emissions by 70 % in 2030 compared to base year 1990	Regulatory	2024 – 2030	0.5	State, external assistance
Decarbonization	PM_DC42	Promotion of the national process of planning the adaptation of the Republic of Moldova to climate change (Stage 2)	Reduction of GHG emissions by 70 % in 2030 compared to base year 1990	Investment	2024 – 2030	1.1	UNDP
Decarbonization	PM_DC43	Promotion of considerable reductions in fine particle emissions and black carbon from roads	Reduction of pollutant emissions, including indirect GHG emissions	Regulatory	2023 – 2030	0.5	State
Decarbonization	PM_DC44	Promotion of fiscal incentives for electrical vehicles	Reduction of GHG emissions by 70 % in 2030 compared to base year 1990	Regulatory	2024 – 2030	0.2	State
Energy Efficiency	PM_EE1	Residential Building Refurbishment	Cumulative effect 409.06 ktce Average annual effect 51.13 ktce Average Efficiency in Residential Space Heating 65%	Investment	2023 – 2030	63	Subsides (48 Mln EUR), state, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE2	Public Sector Building Refurbishment	Cumulative effect 89.85 ktce Average annual effect 11.231 ktce	Investment	2023 – 2030	32	Subsides (25 Mln EUR), state, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE3	Creation of databases (inventories) on the stock of buildings	Contribution to PM_EE1-PM_EE6	Reform	2023 – 2030	Budget incorporated into PM_EE2	State, EU and other funds, grants, public funds and own funds, funds

							of international financial institutions
Energy Efficiency	PM_EE4	Conducting a market assessment for the costoptimal level of refurbishment	Contribution to PM_EE1-PM_EE2	Research	2023 – 2030	Budget incorporated into PM_EE2	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE5	Development of the missing parts for the calculation methodology and minimum energy efficiency requirements for new and rehabilitated buildings	Contribution to PM_EE1-PM_EE2	Reform	2023 – 2030	0.5	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE6	Creating a National Energy Efficiency Information System	Unified data monitoring system in the field of energy efficiency in various sectors of the economy	Reform	2023 – 2030	0.5	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE7	Introducing energy efficiency certification of buildings (for inspection of heating/ventilation and air conditioning systems), adopt a plan for practically zero-energy buildings, etc	Contribution to PM_EE1-PM_EE2	Reform	2023 – 2030	22.1	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE8	Fully transpose the provisions of the EU's Energy Performance of Buildings Directive (EPBD)	Contribution to PM_EE1-PM_EE2	Reform	2023 – 2030	1.5	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE9	Creation of financial mechanisms to support the environmental repair of apartment buildings and individual residential buildings, including with the integration of renewable energy sources	Contribution to PM_EE1	Investment	2025 – 2030	1.561	State, EU and other funds, grants, public funds and own funds, funds of international financial institutions
Energy Efficiency	PM_EE10	Implementation of smart metering systems and other advanced metering technologies to better respond to demand, remote metering and realtime consumption-based energy/gas billing	Cumulative effect 53.9 ktoe Average annual effect 6.732 ktoe Decision to proceed with electricity/gas smart meters deployment at distribution level	Reform	2023 – 2030	43.7	own funds
Energy Efficiency	PM_EE11	Promotion of energy services and energy performance contracts	Cumulative effect 34.4 ktoe Average annual effect 4.296 ktoe Contribution to all final energy consumption measures	Reform	2025 – 2030	535.5	State, EU and other funds, public funds and own funds
Energy Efficiency	PM_EE12	Creation and development of the field of energy services, financial instruments and energy audit	Contribution to PM_EE11	Reform	2025 – 2030	Budget incorporated into PM_EE11	State, EU and other funds, public funds and own funds
Energy Efficiency	PM_EE13	Development of a national program for the renewal of the vehicle fleet by introducing a differentiated environmental fee depending on the level of pollution	Cumulative effect 5.0 ktoe Average annual effect 0.625 ktoe Final energy savings	Reform	2023 – 2028	798	own funds
Energy Efficiency	PM_EE14	Supporting the development of incentives for the import of electric and hybrid vehicles, as well as the development of national infrastructure required for electric vehicles, charging points and parking infrastructure	Cumulative effect 20.2 ktoe Average annual effect 2.524 ktoe 2025 – 11 thousand units of EV's 2030 – 46 thousand units of EV's	Investment	2023 – 2028	1166	State, EU and other funds, grants, public funds and own funds

Energy Efficiency	PM_EE15	Create initiatives to support the transition of residential and urban public transport or freight transport to hybrid or electric vehicles	Contribution to PM_EE13-PM_EE14	Investment	2023 – 2028	450	Own funds
Energy Efficiency	PM_EE16	Increase in the share of rail transport	Cumulative effect 85.3 ktoe Average annual effect 10.66 ktoe Transition of 30 % of road freight transport to rail freight	Investment	2023 – 2030		State, EU and other funds, public funds
Energy Efficiency	PM_EE17	Promoting sustainable mobility	Cumulative effect 59.2 ktoe Average annual effect 7.402 ktoe	Investment	2023 – 2030	488.5	State, EU and other funds, public funds
Energy Efficiency	PM_EE18	Implementation of a mandatory energy audit and ISO 50001 certification according to the Moldovan Standard SM EN ISO 50001: 2019	Contribution to all end-use measures Final energy savings	Reform	2023 – 2030	35.3	State, EU and other funds, public funds
Energy Efficiency	PM_EE19	Implementation of requirements for energy labeling for products of energy impact	Contribution to all end-use measures	Reform	2023 – 2030	4.7	State, EU and other funds, public funds
Energy Efficiency	PM_EE20	Introduction of obligations on environmental procurement	Contribution to PM_EE2	Reform	2023 – 2030	4.2	State, EU and other funds, public funds
Energy Efficiency	PM_EE21	Promoting of universal street lighting with a priority based on the supply from RES	Contribution to PM_EE29	Investment	2024 – 2030	Budget incorporated into PM_DC29	State, EU and other funds, own funds, providers of energy services
Energy Efficiency	PM_EE22	Promoting/modernizing highly efficient CHP units	Cumulative effect 611.14 ktoe Average annual effect 76.392 ktoe	Reform and Investment	2023 – 2030	624.7	State, EU and other funds, own funds, providers of energy services
Energy Efficiency	PM_EE23	Modernizing of district heating networks	Cumulative effect 12.121 ktoe Average annual effect 1.515 ktoe District Heating Losses as a % of total heat transferred: 18.1 % (1.1 % reduction compared to 2020)	Reform and Investment	2023 – 2030	639	State, EU and other funds, own funds, providers of energy services
Energy Efficiency	PM_EE24	Promotion of measures for improving energy efficiency in electricity infrastructure	Cumulative effect 68.60 ktoe Average annual effect 8.575 ktoe Electricity losses Transmission Network as a % of total Generation plus Net Imports: 2.15 % (0.86 % reduction compared to 2020); Electricity losses Distribution Network as a % of total Generation plus Net Imports: 4.51 % (1.77 % reduction compared to 2020)	Reform and Investment	2024 – 2030	2917	State, EU and other funds, own funds, providers of energy services
Energy Efficiency	PM_EE25	Promotion of measures for improving energy efficiency in natural gas infrastructure	Cumulative effect 27.47 ktoe Average annual effect 3.434 ktoe Natural gas losses Transportation Network as a % of total gas transferred: 2.83 % (3.72 % reduction compared to 2020)	Reform and Investment	2024 – 2030	522	State, EU and other funds, own funds, providers of energy services
Energy Efficiency	PM_EE26	Development of sustainable and innovative financing of energy efficiency projects	Contribution to all end-use measures	Reform and Investment	2024 – 2030	Budget incorporated	EU and other funds (e.g., World Bank, EBRD, IFT's etc.), public funds and own funds



						into all end-use measures	
Energy Efficiency	PM_EE27	Improve the bankability of energy efficiency projects	Contribution to all end-use measures	Reform and Investment	2024 – 2030	Budget incorporated into all end-use measures	EU and other funds, public funds and own funds
Energy security	PM_ES1	Line 400 kV Vulcanesti-Chisinau	Increased interconnection capacities	Investment	2023 – 2026	260	public funds and own funds
Energy security	PM_ES2	Line 400 kV Balti-Suceava	Increased interconnection capacities	Investment	2023 – 2026	40	public funds and own funds
Energy security	PM_ES3	A feasibility study for interconnector capacity extension	Increased interconnection capacities	Research	2022 – 2030	1.2	State, EU and other funds, public funds and own funds
Energy security	PM_ES4	Main gas pipeline Ungheni-Chisinau	Increased interconnection capacities	Investment	2022 – 2030	92	State, EU and other funds, public funds and own funds
Energy security	PM_ES5	Development of the natural gas transmission network and the possibility of two-way connection; diversification of routes and sources of natural gas supplies	Increased interconnection capacities	Research	2022 – 2030		State, EU and other funds, public funds and own funds
Energy security	PM_ES6	Elimination of internal restrictions in the natural gas transportation system	Increased interconnection capacities	Research	2022 – 2030	0.2	State, EU and other funds, public funds and own funds
Energy security	PM_ES7	Improving the process of risk assessment and emergency preparedness	Report on risk assessment	Reform	2020 – 2030	0.2	State, EU and other funds, public funds and own funds
Energy security	PM_ES8	Creation of minimum reserves of natural gas	Level of operational reserves by supplier and type of energy product	Investment	2022 – 2030		State, EU and other funds, public funds and own funds
Energy security	PM_ES9	Creation of minimum oil products reserves	Level of operational reserves by supplier and type of energy product	Investment	2022 – 2030		State, EU and other funds, public funds and own funds
Energy security	PM_ES10	Energy mix diversification	Installation of new renewable energy capacities, modernization of existing cogeneration plants (CHP), as well as assessment of the potential for converting waste into energy	Investment	2022 – 2030	Budget incorporated into all end-use measures	State, EU and other funds, public funds and own funds
Internal Energy Market	PM_IEM1	Transposition and implementation of Network Codes and EU guidelines for the electricity sector	Infrastructure, policies and measures related to market-based price formation, market integration aimed at increasing the tradeable capacity, Consumer protection and improvement of competition, regional integration.	Reform	2023 – 2030	2.5	Public funds and own funds
Internal Energy Market	PM_IEM2	Obtaining ENTSO-E observer status SE “Moldelectrica” and then full member status	Development of opportunities for participation in the European electricity market to increase the flexibility of the national power system, diversification of supply electricity	Reform	2023 – 2030	0.5	Public funds and own funds
Internal Energy Market	PM_IEM3	Modernization of existing networks	Increased quality of supply indicators, deployment smart grids, aggregation, demand response services and distributed generation, RES connections.	Investment	2023 – 2030	100	EIB

Internal Energy Market	PM_IEM4	Development of the natural gas transport network and bidirectional interconnection capabilities	Increased quality of supply indicators, demand response services	Investment	2023 – 2030	300	Own and credit funds
Internal Energy Market	PM_IEM5	Creation of minimum reserves of natural gas. Exploring the possibility of building gas storage facilities (underground or terrestrial) in the Republic of Moldova	Review of previous feasibility studies, taking into account the geological and technical conditions for the construction of underground storage facilities.	Investment, Research	2023 – 2030	490	Own and credit funds
Internal Energy Market	PM_IEM6	Increasing the transparency of energy markets	Increasing the availability of operational data regarding volumes of electricity and natural gas for transactions for market participants	Reform	2023 – 2030	1.5	EU and other funds, public funds, own funds
Internal Energy Market	PM_IEM7	Appointment of an electricity market operator	Increasing the volume of electricity transmitted, the growth in the number of market participants, the implementation of intra-day and day ahead electricity transactions and growth of the number of bilateral contracts	Reform	2022 – 2030	0.5	EU and other funds, public funds, own funds
Internal Energy Market	PM_IEM8	Launch of day-ahead and intraday markets	Increase market use of the interconnectors, increase in the number of market participants, increase in the number of electricity transactions, deployment smart grids, aggregation, demand response services as well as storage and distributed generation	Reform	2023 – 2030	1.5	EU and other funds, public funds, own funds
Internal Energy Market	PM_IEM9	Continued market opening and gradual liberalization of electricity and natural gas markets	Increased quality of supply indicators, deployment smart grids, aggregation, demand response services as well as storage and distributed generation.	Reform	2023 – 2030	1.5	EU and other funds, public funds, own funds
Internal Energy Market	PM_IEM10	Facilitating the process of changing the supplier	Improved quality of electricity supply indicators, increased system flexibility, increased number of suppliers, increased number of contracts	Investment	2023 – 2030	0.5	EU and other funds, public funds and own funds
Internal Energy Market	PM_IEM11	Creation of natural gas trading platforms and a capacity allocation process at interconnection points. Establishment of a compensation mechanism between TSO's. Introduction of balancing responsibility of users of natural gas	Implementation of the methodology for compensating the costs incurred and ensuring the transfer of revenues for the use of the natural gas network between the TSO's in the country.	Investment	2023 – 2030	3.5	EU and other funds, public funds and own funds
Internal Energy Market	PM_IEM12	Identification of appropriate social aids, adapted to the needs of vulnerable consumers	Protecting vulnerable consumers through appropriate social aids, such as compensation for the consumption of natural gas, heat and electricity	Investment	2023 – 2030	2.3	EU and other funds, public funds and own funds

Research, innovation and competitiveness	PM_RIC1	Competition of Innovation and Technology Transfer Projects including the field “Environment and Climate Change”	Increase the level of technological readiness in the field of energy (Qualitative objective)	Investment	2023 – 2030	7.4	State, EU and other funds, public funds and own funds
Research, innovation and competitiveness	PM_RIC2	Improvement R&D and innovation management	Increase the level of technological readiness in the field of energy (Qualitative objective)	Investment	2023 – 2030	4.6	State, EU and other funds, public funds and own funds
Research, innovation and competitiveness	PM_RIC3	Promotion creation and operation of science and technology parks and innovation incubators	Increase the level of technological readiness in the field of energy (Qualitative objective)	Investment	2023 – 2030	210	State, EU and other funds, public funds and own funds
Research, innovation and competitiveness	PM_RIC4	Establishment, involving and networking of intermediate bodies associated with the flow of information, management, technology and funding for technologies transfer	Increase the level of technological readiness in the field of energy (Qualitative objective)	Investment	2023 – 2030	1.8	State, EU and other funds, public funds and own funds
Research, innovation and competitiveness	PM_RIC5	Promotion of Smart Specialization	Development of innovative products	Investment	2023 – 2030	18.4	State, EU and other funds, public funds and own funds
Research, innovation and competitiveness	PM_RIC6	Support the cooperation between other Member States in the technology transfer and exploitation of research results	Increase the level of technological readiness in the field of energy (Qualitative objective)	Investment	2023 – 2030	5.5	State, EU and other funds, public funds and own funds