GREEN AGENDA MOLDOVA

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National Comprehensive Green Transition Assessment Report for Moldova

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We hope this report serves as a valuable resource for decision-makers and all stakeholders working towards Moldova's sustainable and resilient future.

Photo credit: PA EcoContact

Executive summary

Introduction

Climate change is one of the greatest challenges of our times, and national governments have a key role to play in addressing it. In comparison to other countries, the Republic of Moldova (*hereinafter* Moldova) has a very small national carbon footprint: 4.4 t CO_2e per capita, contributing only 0.03% of global greenhouse gas emissions. Yet the country ranks among the top countries in Europe in terms of high carbon intensity per EUR value added generated in economy[1]. In addition, Moldova is increasingly exposed to climate risks and hazards, which are already producing an annual estimated loss of 1.3% of GDP.[2]

Moldova applied for EU membership in 2022. Following the Commission's recommendation in November 2023, the European Council decided to open accession negotiations with the country and adopted the negotiating framework in June 2024. In October 2024, the European Commission adopted a Growth Plan for Moldova worth EUR 1.9 billion[3], underpinned by a Reform and Growth Facility for the period 2025–2027. The Growth Plan aims to boost Moldova's economy, to bring the country closer to EU membership by accelerating reforms, and to provide significant financial assistance. The latter is based on three pillars:

1. Increasing financial assistance directed at essential infrastructure projects such as building new road and rail infrastructure, completing a new electricity powerline and starting to build two more, and other critical projects;
2. Enhancing access to the EU's single market; and
3. Supporting Moldova's socio-economic and fundamental reforms.

In this regard, green transition is an opportunity to build a new economic model that increases the country's energy security, strengthens its competitiveness on international markets, improves the quality of living environment and infrastructure, and reduces climate vulnerabilities. The European Green Deal (EGD) sets the blueprint for this transformational change. EGD is set to transform the EU into a modern, resource-efficient and competitive economy, ensuring:

- No net emissions of greenhouse gases by 2050;
- Economic growth decoupled from resource use;
- No person and no place left behind.

This report is based on detailed thematic research work conducted between November 2023 and December 2024, which assessed Moldova's readiness for green transition in relevant sectors by looking at the country's policy planning capacities, policy implementation levels, institutional collaboration, R&D and digitalization efforts, and stakeholder integration. It summarizes research

[1] UNDP 2023 https://www.undp.org/sites/g/files/zskgke326/files/2023-06/moldova_eu4climate_2023.pdf; "World Bank Group. 2024. Moldova Country Climate and Development Report

[2] World Bank 2024 https://openknowledge.worldbank.org/entities/publication/b5886ecd-d46b-4d48-a747-19e9326e0e9d

[3] European Commission, https://ec.europa.eu/commission/presscorner/detail/en/ip_24_5124

findings with the aim to provide strategic guidance on setting priorities and accelerating reforms for the Government of the Republic of Moldova. In particular, the report highlights the needs on which further investments from multilateral organizations and international development partners could focus. It also emphasizes areas where the engagement of stakeholders from the private sector, research institutions and non-profit organizations will help accelerate the change. More detailed information on assessment methodology and limitations is provided in the "Methodology" chapter.

The report also includes certain data from the left bank of the Dniester River, commonly referred to as "Transnistria" or the "Transnistrian region"—such as baseline statistical data used under the Nationally Determined Contribution (NDC) and the United Nations Framework Convention on Climate Change (UNFCCC). However, the majority of the reference material relates exclusively to information, measures, and policies applicable to the territory under the administrative control of the constitutional authorities of the Republic of Moldova, as the commitments undertaken within the Energy Community framework apply solely to this part of the national territory.

Scope and purpose of the assessment

This National Comprehensive Green Transition Assessment Report evaluates the Moldova's readiness for green transition, particularly its alignment with the European Green Deal. The report assesses the country's progress, challenges and opportunities in key thematic areas, including climate, energy, buildings and renovation, industry and circular economy, zero pollution, farm to fork, transport and biodiversity. This is complemented with cross-cutting analysis of how the country is also using sustainable finance, research and development (R&D), digitalization and just transition policies to put Moldova on a path of sustainable and equitable growth.

This assessment also provides policy recommendations to support Moldova's transition to a competitive, sustainable, climate-neutral, and equitable economy, ensuring compliance with EU benchmarks and enhancing the country's energy security, competitiveness and national resilience to climate-related risks.

Findings are detailed in the dedicated chapters for each thematic area, including a brief presentation of relevant European goals and targets, an overview of Moldova's status and progress related to the green transition, a shortlist of major roadblocks and enablers, and a list of key priorities for strengthening Moldova's green transition.

While each chapter of the report goes into the specific context and challenges of the sector, the report seeks to give a general assessment of the green transition readiness of each thematic area. The readiness assessment ranges from minimal to advanced progress:

Little Progress

"Little Progress" describes a situation where green transition efforts are just beginning, marked by isolated initiatives and scattered legal provisions, with policies largely misaligned with EU or international standards, and where institutional capacities, budget allocations, and stakeholder engagement are very low.

Some Progress

"Some Progress" indicates that foundational measures and institutional structures have been introduced and are beginning to align with green transition goals, but implementation remains uneven with significant gaps in enforcement, financial support, and cross-sector coordination.

Significant Progress

"Significant Progress" reflects advanced alignment with EU policies and global commitments, featuring robust legal frameworks, clear targets, strong institutional capacities, and active stakeholder collaboration that yields tangible results, even though some refinement may still be needed.

Table 1: Moldova readiness for green transition across thematic areas

Thematic area	Overall readiness score
Climate Policy and Governance	**Some progress**
Energy Transition	**Some progress**
Buildings and Renovation	**Some progress**
Industry and Circular Economy	**Some progress**
Zero Pollution	**Little progress**
Farm to Fork	**Some progress**
Transport and Smart Mobility	**Some progress**
Biodiversity Conservation	**Some progress**

Readiness for green transition: Key findings

Climate Policy and Governance	Some Progress

Moldova's green transition readiness in terms of climate policy and governance is characterized by strong legislative commitments and international support, but significant gaps remain in governance, financial resources, streamlining climate and biodiversity goals across all sectors, as well as inter-sectoral coordination.

The country has made progress in setting ambitious climate targets, committing to reduce greenhouse gas emissions to over 70% below 1990 levels by 2030 which surpasses the EU's interim target of 55%.It has also developed policy frameworks, but the lack of a functional National Commission on Climate Change (NCCC), insufficient domestic funding, limited, albeit growing local innovation capacity in green and digital solutions, and underdeveloped adaptation actions pose substantial barriers.

Addressing these challenges will require sustained political commitment, expanded private sector engagement, and continuous capacity-building efforts to ensure Moldova meets its climate goals, builds an effective green economy, addresses just transition risks, and aligns with EU climate policies.

Overall, Republic of Moldova's readiness for a green transition shows some progress, with notable progress in some areas, but significant gaps persist in implementation, governance, and financial mobilization.

Challenges and gaps

- Moldova is strongly exposed and vulnerable to climate risks through droughts and floodings. If not addressed, these risks will increase, translating into high economic costs.
- Moldova's Law on Climate Action No. 74/2024 establishes a national framework aiming for climate neutrality by 2050 but lacks binding actions, and several key climate policy instruments are missing. These include, but are not limited to, the Emissions Trading System (ETS), a comprehensive environmental taxation system, effective streamlining of climate and biodiversity goals across sectoral policies, and linking budgeting to climate goals.
- Municipalities have limited capacity to lead green transition in line with national goals. They lack the tools to assess the carbon reduction impact of their policies, financial needs for investments, and capacity to use urban planning approaches in creating more sustainable public space and public services.
- Accurate data needed for assessing progress and/or for policy design and forecasting is often lacking. In most green transition areas such as energy, buildings, transport, waste, and biodiversity, there are important data gaps. This often means that for sectoral strategic

planning, one-off studies for data collection are needed and there will be challenges in tracking progress against set policy goals.
- In many sectors, there is rapid transposing of the EU acquis, but with limited implementation details and capacities, which can lead to pushback and frustration from both business sector and civil society.

Energy Transition	**Some Progress**

Moldova's energy transition readiness is marked by the country's heavy reliance on non-EU energy imports, moderate institutional capacity and a relatively strong policy and legal framework. The country has made progress in integrating with the European electricity grid (ENTSO-E) and aligning with EU standards, but it faces challenges in expanding renewables, implementing carbon pricing mechanisms, and securing adequate financing.

To ensure a resilient, low-carbon energy future, addressing these challenges will require stronger policy measures, strategic investments in grid infrastructure, enhanced research and innovation to develop and deploy renewables, and a focused just transition strategy.

Overall, Moldova's readiness for a green energy transition shows some progress, with relatively strong policy frameworks and EU approximation efforts, yet significant gaps remain in implementation, financing, and just transition measures.

Challenges and gaps

- Moldova is highly dependent on energy imports (86.6% in 2022[4]), particularly from non-EU sources. Coupled with low energy efficiency of housing stock, this has recently triggered an energy crisis and significant costs on households and business sector consumers, requiring the Government to step in and implement a series of measures with the support of the EU and other partners.[5]
- The current pace of investments into renewables and energy storage, is not fast enough to alleviate the impacts of energy crises. While Moldova has made progress in the liberalisation of energy markets,[6] regulatory bottlenecks, limitations in access to finance and grid constraints hinder the growth of much-needed investments in the clean energy sector. As the energy sector accounts for nearly 70% of greenhouse gas emissions and renewable energy is currently below the 27% by 2030 target, it remains the priority sector for future actions for coming decades.

[4] International Energy Agency, https://www.iea.org/countries/moldova/energy-mix

[5] European Commission, https://enlargement.ec.europa.eu/news/european-commission-and-moldova-agree-2-year-comprehensive-strategy-energy-independence-and-2025-02-04_en

[6] Energy Community, Energy Community Secretariat "Annual implementation report 2024" https://www.energy-community.org/implementation/report.html

- Several important new policy actions have been taken to support investments, but a large financing gap still remains. The National Centre for Sustainable Energy has been created and is implementing a range of financing programs.[7] The energy sector has been the main focus of development funding from overseas (22.4% of total funding between 2017–2022). In 2024 Moldova also launched its first tender for wind and solar capacities to bring additional generation online.[8] However, meeting NECP and 2050 climate neutrality goals will require mobilizing additional billions in finances to complement existing measures from public, private and international funding.[9]
- Despite progress on its integration with ENTSO-E, there is need for additional interconnectors and energy market development in order to effectively address the current crises and mitigate future ones.
- Moldova lacks a carbon pricing mechanism (ETS or suitable alternative), which is crucial for EU Carbon Border Adjustment Mechanism (CBAM) compliance.

Buildings and Renovation	**Some Progress**

Moldova's green transition readiness in relation to buildings and renovation is characterized by high energy consumption, low renovation rates, and the absence of formal nearly zero energy buildings (NZEB), zero emission buildings (ZEB) and minimum energy performance standards (MEPS). The country has made progress in institutional capacity and EU approximation, but faces shortfalls in policy frameworks, absorbing financing, and practical implementation.

Addressing these challenges will require stronger regulations, dedicated funding mechanisms, and expanded technical and financial solutions to combat energy poverty and reduce reliance on imported fossil fuels.

Overall, Moldova's readiness for a green transition in the buildings and renovation sector shows some progress, with moderate gains in institutional capacity and EU alignment, yet notable gaps persist in policy enforcement, financing and energy efficiency measures.

Challenges and gaps

- Buildings account for 54% of total energy consumption,[10] with renovation rates below 1%, far from the EU's 3% target for public buildings.

[7] CNED, https://cned.gov.md/en/content/about-ncse

[8] Ministry of Energy, https://www.energie.gov.md/en/content/ministry-energy-has-launched-first-tender-construction-wind-and-photovoltaic-parks-total

[9] WorldBank,https://openknowledge.worldbank.org/server/api/core/bitstreams/268abc8d-8e0e-437b-9615-3fe8aa395693/content

[10] National Bureau of Statistics, https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica__15%20ENE__serii%20anuale/ENE020100.px/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

- Energy efficiency renovations have been held back by historically low energy prices, limited capacity and awareness among building owners, limited absorption to tap into existing financing programs, and modest regulatory push.
- Moldova has underutilized the potential of efficient district heating solutions to provide affordable and environmentally friendly heating for buildings.
- Low energy efficiency of the building stock and vulnerability to energy shocks from imported fossil fuels worsen the widespread energy poverty. This is particularly significant in rural areas, where heating systems are outdated and financial support for efficiency improvements has been very limited, further increasing the already high costs of governmental subsidies during the ongoing energy crisis.
- Moldova benefits significantly from international financing partners, such as the EU and development banks, yet domestic funding for extensive renovations remains insufficient.
- At the time of this assessment, no formal definitions for NZEB, ZEB and MEPS were found in the national legislation.

Industry and Circular Economy	**Some Progress**

Moldova's green transition readiness in relation to industry and circular economy is characterized by partial policy alignment with EU directives, but a largely linear waste management system and weak enforcement measures. The country has made progress in developing some policy and legal frameworks and achieving moderate EU approximation, but faces significant shortfalls in implementation, institutional capacity, recycling infrastructure, and financial support.

Addressing these challenges will require stronger enforcement and economic instruments (e.g., gate fees, landfill taxes), sector-specific action plans for sustainable production, and improved systems for data collection and analysis to measure circular material use rates.

Overall, Moldova's readiness for a green transition in industry and circular economy shows some progress, with moderate advancements in policy alignment and EU approximation, yet notable gaps remain in implementation, enforcement, and the integration of circular economy principles into industrial practices.

Challenges and gaps

- Republic of Moldova has partially aligned its waste management policies with EU directives, but key economic and regulatory instruments remain absent. Moreover, enforcement mechanisms remain weak, limiting the impact of existing policy frameworks on actual industrial practices.
- The country's waste management is predominantly linear, with 90% of municipal waste being landfilled. Moldova has not yet implemented gate fees, differentiated waste stream tariffs, or landfill taxes, which are critical for creating effective waste management systems and incentivizing waste reduction and resource efficiency.

- Industrial emissions reduction and resource productivity and circularity rates remain low, with no sector-specific action plans in place for transitioning key manufacturing sectors to sustainable production.
- Circular economy principles are not fully integrated into waste management and industrial policy, limiting material recovery and resource efficiency. Moldova also lacks official calculations for its circular material use rate, with no systematic data available to assess material efficiency. This prevents accurate measurement of progress toward circular economy objectives.

Zero Pollution	**Little Progress**

Moldova's green transition readiness in relation to zero pollution is characterized by fragmented inter-institutional coordination, limited monitoring systems for air, water, and soil quality, and incomplete reporting mechanisms. The country has made moderate progress in establishing a legal framework and approximating EU standards for water quality, but air and noise pollution, as well as control of chemicals lag behind with weak policy implementation and institutional capacity.

Addressing these challenges will require stronger regulatory enforcement, enhanced monitoring infrastructure, and targeted investments in wastewater treatment, pollution reduction technologies, and capacity-building across both public and private sectors.

Overall, Moldova's readiness for achieving zero pollution shows little progress, with some advancements in legal frameworks and EU approximation for water management. Yet significant gaps persist in policy implementation, monitoring, and inter-institutional coordination for air pollution and chemicals. Institutional weaknesses, financial constraints, outdated technological infrastructure, and capacity shortages all contribute to the slow pace of progress across the board.

Challenges and gaps

- The overlapping responsibilities of several ministries have led to inefficiencies and weak regulatory enforcement, and better inter-institutional coordination is needed.
- Air pollution from transport and energy is of significant concern, with limited enforcement of EU-aligned standards.
- The Pollutant Release and Transfer Register (PRTR) system remains incomplete, with many industrial operators failing to report their emissions data. Many companies remain unaware of the technical requirements and legal obligations associated with pollution reduction and resource efficiency.
- Moldova has very limited monitoring systems for air, water and soil quality, as well as noise levels. Existing monitoring systems are fragmented and data collection processes are inconsistent, reducing the country's ability to track pollution sources and trends.
- Current wastewater treatment capacities are severely underdeveloped. Water pollution, especially from industrial and agricultural sources, poses a persistent environmental challenge, requiring stronger regulatory enforcement and investments in modern solutions.

Farm to Fork	Some Progress

The country's green transition readiness in relation to the EU's Farm to Fork strategy is characterized by a large agri-food sector that also significantly contributes to greenhouse gas emissions, water scarcity, pollution, and biodiversity loss.

The country has made progress in establishing some policy frameworks and very moderate advancements in EU approximation and research and innovation, but it faces shortfalls in policy implementation and institutional capacity. Moldova's agricultural sector demonstrates partial alignment with the EU Common Agricultural Policy (CAP), achieving 53% structural compliance as of 2025, with notable progress in institutional reforms and financial mechanisms like subsidy frameworks and rural credit access, but persistent gaps remain in environmental integration.

Addressing these challenges will require increased investment in climate-smart farming (e.g., agroecological and organic agriculture), precision agriculture, on-farm renewables, agricultural training and advisory services, and stronger policy alignment with the EU Farm to Fork strategy—particularly targeting issues like vulnerability to climate impacts, pesticide overuse and food waste.

Overall, Moldova's readiness for a green transition in the agri-food sector shows some progress in policy development and research, yet notable gaps persist in practical implementation, institutional capacity, and adaptation to EU standards.

Challenges and gaps

- Moldova's agri-food sector represents over 16% of the country's GDP and contributes to approximately 45% of the country's total exports, but it is also one of the key contributors to greenhouse gas emissions, water scarcity, pollution and biodiversity loss, with limited adoption of sustainable farming practices.
- This sector is highly vulnerable to climate change, facing an increased frequency of droughts, floods, and other extreme weather events. These climate impacts significantly reduce crop yields and agricultural productivity, particularly affecting small-scale farmers who often lack the means to adapt effectively.
- Agri-food supply chains lack efficiency, with high food waste and low levels of organic production.
- Pesticide and fertilizer use remain high, leading to soil degradation and water pollution.
- Food insecurity and obesity levels remain high, showing a need to transition towards more healthy and sustainable diets.
- There is insufficient investment in precision agriculture and climate-smart farming, limiting productivity improvements.
- Moldova's policy implementation on sustainable food systems lacks a structured approach, which affects alignment with the EU's Farm to Fork strategy.

Transport and Smart Mobility	Some Progress

Moldova's green transition readiness in relation to transport and smart mobility is constrained by a predominantly road-focused policy framework and increasing sectoral greenhouse gas emissions. While some progress has been made in road rehabilitation, public transport modernization, and the initial deployment of Intelligent Transport Systems, the absence of a long-term strategic vision, weak enforcement mechanisms, and insufficient investments in cleaner alternatives hinder alignment with EU sustainability goals.

Addressing these challenges will require the development of a coherent strategic plan with clear decarbonization targets, stronger policy enforcement, and diversified infrastructure financing that prioritizes rail, intermodal hubs, and alternative fuels. Robust support for modal shifts, public transport modernization, and emerging technologies, including ITS and e-mobility, will be essential to significantly reduce emissions and ensure alignment with EU standards.

Overall, Moldova's readiness for a green transition in transport and smart mobility shows some progress, with more notable progress in public transport modernization, initial ITS deployment, and digitalization efforts. However, significant gaps remain in strategic planning, policy implementation, infrastructure investment – including investments in just transition and modal shift – all of which are crucial for meeting EU sustainability targets.

Challenges and gaps

- The transport sector in Moldova is the second-largest contributor to greenhouse gas emissions (30%), with its share doubling from 1990 to 2020. Despite policy efforts, emissions continue to rise and existing measures remain insufficient to reverse this trend.
- While the National Mobility Strategy 2030 provides a policy framework, it does not fully integrate EGD-aligned objectives or long-term decarbonization targets for 2050. Policy implementation remains weak due to insufficient enforcement mechanisms and limited municipal engagement.
- Road transport dominates, delaying modal shift. Public financing is heavily skewed toward road infrastructure, with minimal allocations for rail electrification, intermodal logistics centres, or alternative fuel incentives. Moldova's limited intermodal connectivity reduces its potential as a regional transit hub within the EU transport network.
- Public transport modernization is progressing, but not at scale. Chișinău and Bălți have taken steps to modernize their fleets, including the procurement of electric buses, but aging public transport fleets, poor infrastructure outside major cities, and limited investments in sustainable mobility options continue to hinder progress.
- Current transport infrastructure financing remains heavily skewed towards road rehabilitation, with minimal allocations for rail, waterborne, and air transport development. Essential technologies facilitating smart mobility solutions remain in very early deployment stages, with infrastructure development still lagging.
- The rollout of Intelligent Transport Systems (ITS) solutions – including real-time traffic monitoring, e-ticketing systems, and digital mobility tools – has begun, but deployment remains fragmented. The launch of the Chișinău Traffic Monitoring Centre and national ITS

initiatives mark an initial step toward digital transformation, yet broader adoption is necessary to improve efficiency and congestion management.

Biodiversity Conservation	**Some Progress**

Biodiversity conservation and restoration in Moldova related to green transition is characterized by growing ecological stress, exacerbated by climate change, habitat fragmentation, and unsustainable land use. While the made forest restoration progress since 2002 and established programs like the National Forest Extension and Rehabilitation Program (NFERP) 2023–2032 with ambitious targets, the current pace of forest cover expansion and ecosystem restoration is insufficient to meet its 2030 and 2032 milestones. Incomplete adoption of EU environmental acquis, weak law enforcement, and non-balanced institutional reform hinder effective environmental policy implementation and progress towards EU and global environmental goals. The country relies heavily on international funding for biodiversity conservation and restoration, with limited domestic financing.

Addressing these challenges will require stronger policy frameworks, enhanced policy and law enforcement, improved biodiversity data collection, expanded and properly managed protected and conserved areas network, as well as increased rates of restoration for degraded ecosystems, to align with EU and global biodiversity goals.

Overall, biodiversity considerations for Moldova's green transition readiness show some progress in forest regeneration and policy development, yet significant gaps persist in enforcement, institutional capacity, and financing, leaving the country below EU and global conservation targets.

Challenges and gaps

- Moldova ecosystems face severe stress from deforestation, unsustainable land use and climate change impacts.
- Land Use, Land-use Change and Forestry (LULUCF) sector could mitigate climate impacts, but deforestation has turned the LULUCF sector into a net emitter.
- The country has made progress in setting national biodiversity targets in some areas, such as protected area coverage. However, the legally binding EU nature restoration targets still require updates or further development to align with evolving conservation priorities.
- Protected areas cover just 5.8% of Moldova's territory, while the Emerald Network covers 8.1%. Monitoring and management planning for protected areas is currently poor or inadequate.
- Biodiversity restoration efforts have progressed, with 137 987 hectares of forest regenerated between 2002 and 2020. The NFERP (2023–2032) sets an ambitious target, aiming to accelerate forest expansion by 2032 towards at least 145 thousand ha for a period of 10 years. However, the current action plan covers only a small part of the timeline (i.e., by 2027), and action plans need to be expanded further to reach the 2032 target. At the same time, there is an important gap in policies regarding degraded ecosystems.

- Incomplete EU regulation adoption hinders invasive species management. Weak law enforcement, partial institutional reform, and the lack of a Biodiversity Information System limit species protection and sustainable resource use.
- Dependence on international funding and limited domestic financing curtail long-term biodiversity initiatives, whereas shortages of qualified personnel and outdated data systems hamper monitoring and informed decisions.

Cross-cutting issues

Just transition

Just transition needs stronger policy focus across all sectors. There are currently significant vulnerable groups, such as people at risk of energy poverty, rural and low-income households with limited access to transport, and small-scale agricultural businesses affected by droughts and floodings. Their vulnerability is exacerbated by additional risks and challenges associated with green transition across sectors, further calling for well-targeted policies to manage those risks and ensure equitable and just outcomes across the economy and society.

Digitalization

Digitalization in support of green transition is underway in various sectors, but there is room for more action. ICT usage and coverage has increased in Moldova over the past decade due to strong government support for sector development through a variety of strategies and regulations. There are significant pilot initiatives for digitalization in energy, buildings, transport and waste policy areas, but there is still a long way to go to digitalize all key public services that can help implement green reforms.

R&D

Green economy is still in the early stages of development and needs boosting. Gross domestic expenditure on R&D (GERD) was only 0.23% of GDP in 2022 (approx. 32.6 million EUR)[11] compared to the EU average of 2.2% of GDP in 2023.[12] Only 11.4% of firms conducted innovative activity during 2021–2022, indicating the need for significant ramping up to support the building of an effective green and digital economy hub.

[11] Eurostat, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220803-1

[12] Eurostat, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D_expenditure

Sustainable finance

The long-term financial sustainability of Moldova's climate commitments is uncertain. Moldova's green transition remains largely donor-funded, with limited domestic financial contribution and underdeveloped private capital mobilization. Long-term operational costs for climate scenarios are not yet secured, raising fiscal sustainability concerns. The domestic financial sector is gradually engaging in green lending but lacks regulatory tools such as taxonomy, ESG standards, and climate budget tagging. Capital markets remain untapped, and public budgets are not yet aligned with climate goals.

Ways forward

Strengthen climate and energy governance

- Operationalize the National Commission on Climate Change, established by Governmental Decision No. 425/12-06-2024[13], to improve inter-ministerial coordination and to mainstream climate into the planning and implementation of economy, transport and agriculture sectors policy.
- Develop and implement a national carbon pricing mechanism, such as a national ETS or equivalent, to ensure CBAM compliance and incentivize private sector decarbonization.
- Accelerate the implementation of the National Energy and Climate Plan (NECP 2025-2030), putting in place credible action plans with sufficient financing and ensuring its alignment with EU acquis.
- Empower and support municipalities in leading Moldova's green transition by creating necessary planning capabilities and tools.
- Develop sector-specific green transition plans that build on green and digital innovation to promote smart agriculture, renewable energy, electric mobility and circular solutions in order to boost the country's economy.

Improve access and mechanisms for green finance

- Accelerate the development of Moldova's green finance architecture, including a national taxonomy, ESG reporting standards, and a Climate Budget Tagging framework to align public spending with climate goals.
- Scale up access to international climate funds (e.g. GCF, GEF) by strengthening project preparation capacity and institutional readiness.
- Mobilize private capital through blended finance instruments, de-risking mechanisms, and guarantees, especially in energy, agriculture and urban infrastructure.

[13] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=143648&lang=ro

- Support local financial institutions in expanding green lending by providing technical assistance and targeted concessional finance for SMEs and households.
- Create enabling conditions for thematic bond issuance and develop regulatory frameworks for green capital market instruments.

Enhance energy security and transition

- Incentivize public-private partnership to invest in renewable energy, such as expanding renewable energy auctions and investing in energy storage solutions to increase grid flexibility.
- Liberalize energy markets, create attractive investment conditions for private sector actors, and improve access to capital via dedicated instruments and banking sector development.
- Diversify energy imports by strengthening regional interconnections and securing additional renewable energy sources. Accelerate the construction and commissioning of the interconnection 400kV overhead lines (OHLs) and achieve cross-border interconnection and electricity trade.
- Phase out fossil fuel subsidies and align utility pricing policies to incentivize investments in renewables, energy efficiency, and sustainable water systems.

Accelerate building sector decarbonization

- Establish higher requirements for MEPS and enforce Energy Performance Certificates (EPCs) for all buildings.
- Increase financial incentives for deep renovations and energy-efficient construction, particularly in vulnerable communities.
- Develop a Building Renovation Plan (BRP) with a 2050 roadmap, aligned with EU requirements for the Energy Performance of Buildings Directive (EPBD 2024)[14] and the Energy Efficiency Directive (EED 2023).[15]
- Introduce public-private financing mechanisms to incentivize owner investments into energy efficiency and renewable energy measures.

Advance industrial and circular economy reforms

- Introduce a classification system (i.e., taxonomy that identifies green economic activities and investments) and green financing mechanisms for industrial decarbonization and circular economy projects.

[14] European Commission, https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en

[15] European Commission, https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en

- Implement Extended Producer Responsibility (EPR) schemes and the “polluter pays” principle to promote sustainable material use and increase recycling capacities.
- Develop sectoral roadmaps for low-carbon industrial transformation with specific targets for emissions reduction and resource efficiency.

Improve environmental protection and resilience

- Implement air quality monitoring systems and stricter emissions standards for transport and industry.
- Strengthen biodiversity protection laws, update national biodiversity targets (specifically those related to the protected areas coverage), and expand conservation funding to ensure restoration of key ecosystems.
- Develop a comprehensive approach to an integrated environmental information system that includes the systematic collection and dissemination of environmental data, strengthening the monitoring of environmental components, and ensuring the availability of accurate and accessible digital data.
- Develop disaster risk reduction strategies that integrate climate adaptation into infrastructure and urban planning. At the same time, fiscal sustainability and adequate sovereign risk management instruments need to be established.

Enhance sustainable food systems

- Develop a national Farm-to-Fork strategy to align with EU sustainable agriculture goals and establish targets for organic farming, reduction in pesticide use, and reduction in fertilizer use to prevent soil and water degradation.
- Increase investment in climate-smart agriculture and precision farming to enhance productivity and reduce environmental impact.
- Promote food waste reduction initiatives and sustainable agri-food supply chains to improve resource efficiency.
- Pursue the ecological gaps in the CAP alignment and ensure adequate EU-taxonomy compliant agricultural financing mechanisms.

Strengthen Sustainable Transport and Smart Mobility

- Set CO_2 performance standards for vehicles to curb emissions and align with EU sustainability goals.
- Expand electric vehicle (EV) infrastructure and incentives – including charging networks, tax benefits and subsidies – to accelerate adoption.
- Modernize and expand public transport, improving accessibility, efficiency and integration with sustainable urban mobility solutions.
- Enhance PPPs for transport infrastructure investments and services.

Conclusion

Moldova has made notable progress in aligning with the European Green Deal but faces significant challenges in governance, financing, and implementation capacity. Strengthening institutional frameworks, securing sustainable financing, and enhancing private-sector engagement will be critical to advancing Moldova's green transition. Addressing these gaps will facilitate compliance with EU accession requirements and ensure long-term economic resilience and sustainability for the country's future.

Thematic Assessments

1. Climate

Understanding Moldova's Status and Progress

The European Green Deal outlines an ambitious vision to transition the European Union economy into a sustainable, climate-neutral, and resilient system. For aspiring EU member states, aligning national climate goals with the EGD represents a crucial step toward European integration. This section explores key targets under the EGD and their implications for effective climate action.

Moldova is making notable progress in aligning its climate policies and targets with the European Green Deal, aiming for climate neutrality by 2050 and setting ambitious net GHG reduction targets of 71% (Option A) / 73% (Option B) by 2030 below its 1990 level.[16] The NDC target covers the whole of Republic of Moldova, including territories on the Left Bank. National Integrated Energy and Climate Plan (NECP), approved by government in February 2025, which covers territory of the Right Bank of Dniester River, sets the target for 68.6% emission reduction by 2030.[17] These goals are in line with the EGD's interim target of a 55% reduction by 2030, however have limited ambition as the Option A target is already very close as of 2022 (see *Figure 1*). Despite significant progress, several challenges and gaps remain.

Emission reduction has been driven by economic restructuring, not policy. For further progress, decarbonizing the energy sector will be critical. Moldova has achieved a 71.5% reduction (without LULUCF) in GHG emissions from 1990 levels as of 2022 (12,95 Mt CO_2e – see *Figure 1*), largely due to economic restructuring following independence.[18] Moldova's ambition to grow the economy will put pressure for GHG emissions to increase. The energy sector, accounting for 69.2% of emissions, remains the primary source of GHGs, with waste and agriculture having the second and third shares, contributing 10.8% and 10.1% respectively *(Figure 2*). Decarbonizing the energy sector, particularly its energy industries, is critical to achieving long-term climate targets.

[16] Nationally Determined Contribution 3.0, https://www.mediu.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/MD_NDC_3.0_EN_31.12.2024_final.pdf

[17] National Integrated Energy and Climate Plan of Moldova, https://gov.md/sites/default/files/document/attachments/nu-763-men-2024_0.pdf

[18] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

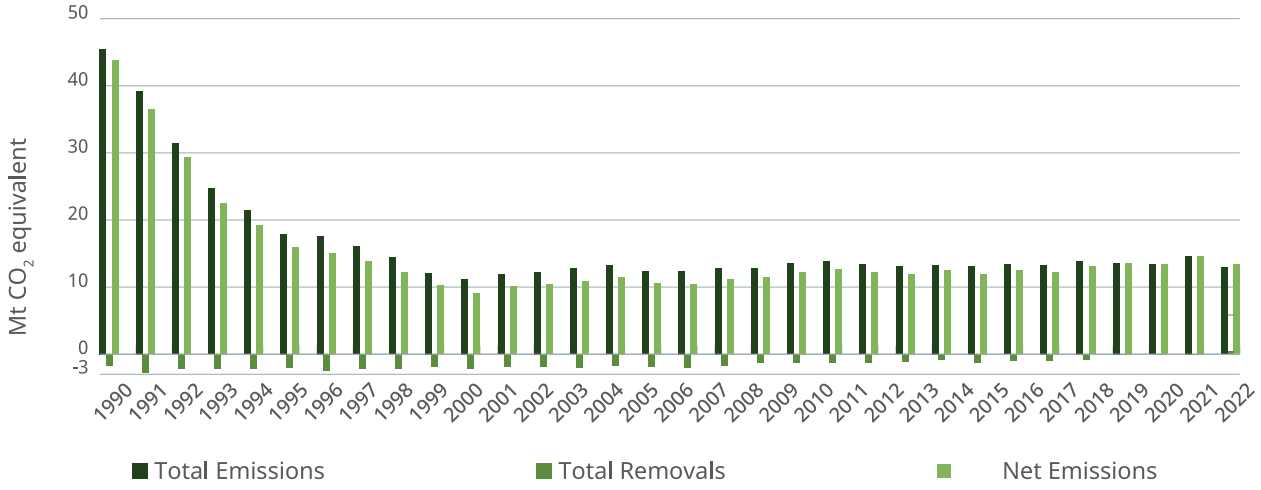


Figure 1: Total national direct greenhouse gas emissions, net GHG emissions and removals between 1990-2022.[19]

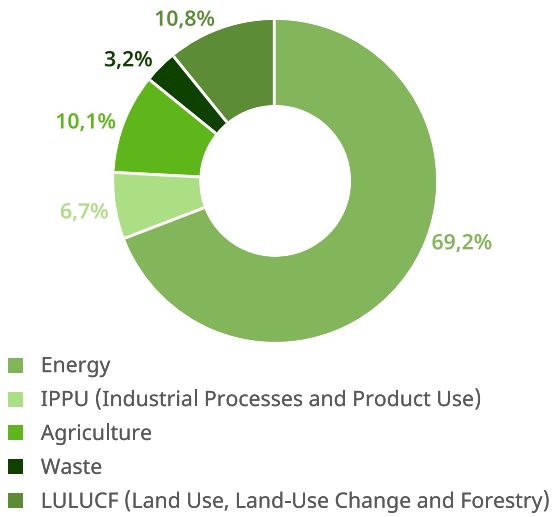


Figure 2: Sectoral breakdown in the structure of net national GHG emissions in the Republic of Moldova in 2022.[19]

Land Use, Land Use Change, and Forestry has become a net emitter. Restoring its carbon sink role is imperative. Historically, the LULUCF sector functioned as a carbon sink, but it has now become a net emitter[20] due to deforestation and other land-use changes. Restoring the LULUCF sector's role as a carbon sink is essential for Moldova to meet its long-term climate goals and support biodiversity conservation.

Despite growing efforts, adaptation to climate change is still underdeveloped, leaving key sectors vulnerable to climate shocks. Moldova ranks among Europe's most climate-vulnerable countries, regularly experiencing droughts, floods, and extreme storms. By mid-century, climate risks are projected to profoundly destabilize Moldova's economy through rising temperatures, hydrological volatility, and intensifying extreme weather events. Recent droughts, such as in 2020 and 2022, have caused severe economic impacts, including significant drops in agricultural

[19] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

[20] Idem

production and employment. There has been significant progress in adaptation planning and the National Climate Change Adaptation Programme until 2030 was approved in 2023.[21] However, implementation of adaptation actions is lagging behind, with insufficient measures in place to tackle climate risks effectively across key sectors like energy, infrastructure, and health. To enhance resilience and reduce vulnerability to climate shocks, more comprehensive implementation plans with clear adaptation targets and sufficient funding for measures are needed.

Governance, policy, and institutional framework is progressing, but better coordination and integration is paramount. Moldova has introduced a Climate Action Law (Law No. 74/11-04-2024)[22] establishing the framework for climate neutrality and binding GHG reduction goals. The National Energy and Climate Plan (NECP 2025-2030) was approved in February 2025.[23] However, the National Commission on Climate Change, intended to coordinate climate policy (see *Textbox 1)*[24], remains non-functional up until now, and sectoral coordination across ministries still needs improving. Moldova has made some progress in developing a robust Monitoring, Reporting, and Verification (MRV) system aligned with EU standards,[25] but not all required technical implementation details are in place. A key climate policy pillar – carbon pricing mechanisms (such as carbon taxation and Emissions Trading System) – is missing and needs to be developed.

Textbox 1: Composition and mandate of NCCC (excerpt from the Governmental Decision nr. 425 /12-06-2024 on the organization and functioning of the National Commission on Climate Change)[23]

The Commission is composed of the Minister of Environment, Minister of Finance, Minister of Energy, Minister of Infrastructure and Regional Development, Minister of Agriculture and Food Industry, Minister of Health, Minister of Labor and Social Protection, Minister of Education and Research, and the Minister of Interior Affairs, under the auspices of the Prime Minister.
The representatives of academia, business and NGOs are not part of the Commission.

The Commission has the following tasks:

- Coordinate the process of policy development for climate change mitigation and adaptation and overall natural disaster risk management;
- Coordinate the integration of climate change mitigation and adaptation considerations into national and sectoral policy documents;
- Ensure the linking of sectoral climate change commitments to contribute to the achievement of national ambitions agreed at international level;
- Plan and facilitate the budgeting of climate change and natural disaster risk reduction actions at national and local levels [...]

[21] UNDP, https://www.undp.org/moldova/press-releases/moldova-has-national-climate-change-adaptation-programme-developed-support-undp

[22] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=143228&lang=ro

[23] Moldova Government: https://gov.md/sites/default/files/document/attachments/nu-1069-cs-2024_0.pdf

[24] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=143648&lang=ro

[25] Moldova Environmental Agency: https://am.gov.md/ro/content/prima-ședință-grupului-de-lucru-pentru-aprobar-ea-cadrului-legal-privind-mrv-al-emisiilor-de

- Approve methodologies, operational manuals, guidelines on climate change adaptation and mitigation and climate compliance criteria for investment projects;
- Ensure information exchange in the climate risk assessment process;
- Participate in coordinating the financing of investment projects and programs by development partners and international funds in line with climate priorities, but without substituting the tasks and powers of the Ministry of Finance for this purpose;
- call on the central public administration authorities to ensure the promotion of appropriate climate change mitigation and adaptation measures at national, sectoral and local levels;
- put forward proposals to improve government policies on climate change in line with the decisions of the United Nations Framework Convention on Climate Change (UNFCCC) and the commitments undertaken under the Association Agreement between the Republic of Moldova and the European Union.

Climate Finance resources are predominantly international and private sector's involvement and green finance mobilization is modest. Moldova's green transition is predominantly financed through foreign aid, with USD 2.7 billion in official development assistance (ODA)-linked climate finance received between 2017 and 2022. Nevertheless, the country requires a minimum of USD 8.3 billion to meet unconditional climate targets by 2030 and an additional USD 30.8 billion under its National Energy and Climate Plan (NECP) through 2050. Despite multilateral and bilateral donors like the European Union, EBRD, and Green Climate Fund substantially contributing to climate finance, a significant funding gap persists due to reliance on external sources and underdeveloped domestic mechanisms. Private sector engagement, though growing at USD 100-200 million annually, focuses on renewable energy, climate-smart agriculture, and urban resilience, but faces barriers such as high collateral requirements and currency risks. Moldova's financial infrastructure lacks climate budget tagging and comprehensive environmental taxation, hindering alignment of public expenditures with climate goals. Institutional bottlenecks include fragmented regulatory frameworks and limited capacity for green finance, necessitating policy reforms such as carbon pricing, green taxonomy development, and blended finance models to mobilize private capital and ensure fiscal sustainability. The energy sector remains a priority, alongside agriculture and transport, with recommendations emphasizing EU-aligned renewable energy auctions, energy efficiency funds, and pollution levies to bridge funding gaps and meet net-zero targets.

Moldova is an innovation leader in Eastern Europe and the South Caucasus region, but R&D and green innovation investments are trailing behind and need boosting. Strategic documents like the National Programme for Research and Innovation for 2024-2027[26] and Digital Transformation Strategy for 2023-2030[27] set green and digital innovation as priority area for Moldova. However, GERD was only 0.23% of GDP in 2022 (approx.32.6 million EUR), with a R&D spending per capita in Moldova of about 13 EUR in the same year. This is much lower than the 244

[26] Ministry of Education and Research, https://mecc.gov.md/sites/default/files/pnci_merged.pdf/

[27] Ministry of Economic Development and Digitalization, https://mded.gov.md/transparenta/64373-2/

EUR per capita R&D spending at the EU level in 2021.[28] Yet, Moldova produces more innovation outputs relative to its level of innovation investments.[29] In 2022, the country moved up in the Global Innovation Index ranking to 56th position, from 64th in 2021.[30] The R&D expenditures in Moldova were directed mostly to natural sciences (35.2%) followed by medical sciences (17.6%), agricultural sciences (17.3%) and engineering and technology (14.6%).

R&D intensity in the private sector is low, in terms of both performance and funding. Only 11.4% of firms conducted innovative activity during 2021-2022, which is significantly lower than the EU average of approximately 53% in 2020.[31]

Overall, Republic of Moldova's progress toward aligning with the EGD (*Table 2*) **demonstrates its commitment to addressing climate change. However, achieving its ambitious targets requires strengthened governance, enhanced adaptation efforts, and greater mobilization of financial resources, particularly from domestic and private sectors. Addressing these gaps will be crucial to realizing the country's green transition and meeting its climate goals.**

Table 2: Summary of how Moldova fares against EU climate goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Climate neutrality (Net-zero GHG emissions) by 2050	Target to achieve carbon neutrality by 2050; no binding legislation yet.
At least 55% net reduction in GHG emissions from 1990 levels by 2030	71% [Option A] / 73% [Option B] reduction by 2030 (NDC3) [32]
Net removals of -310 Mt CO_2e by 2030 through LULUCF	Expansion of forest land by around 145,000 ha planned; significant challenges exist.
Reduce economic losses from climate disasters	High economic losses observed; disaster risk reduction investments limited.
Increase preparedness to extreme weather events	Preparedness measures under development; reliance on natural ecosystem restoration.
Integrate climate adaptation into national and sectoral policies	Adaptation efforts outlined in strategies, but implementation remains partial.

[28] Eurostat, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220803-1

[29] UNECE, https://unece.org/sites/default/files/2023-06/UNECE_Interim_Sub-Regional_Innovation_Policy_Outlook_2022_web.pdf

[30] WIPO, https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf

[31] Eurostat, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20221118-2

[32] Nationally Determined Contribution 3.0: https://www.mediu.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/MD_NDC_3.0_EN_31.12.2024_final.pdf

EU Goals and Targets	Moldova's Current Targets and Status
Integrated climate governance framework (Ensure cross-sectoral alignment and coordination of climate strategies)	Limited coordination across sectors; governance improvements needed.
Robust MRV system for tracking GHG emissions and progress on climate actions	Developing MRV system; partial compliance with EU and UNFCCC standards.
Leverage private capital via PPPs for climate projects	Public Private Partnership frameworks are emerging but not yet fully operational for climate action.
Implement Climate Budget Tagging system	No formal Climate Budget Tagging system is implemented.
Develop access to green bonds, loans, and guarantee schemes for climate action projects	Limited access to green financial instruments; interest in exploring options.

Major Roadblocks on Moldova's Path to Green Transition

Moldova has seen significant progress in reducing GHG emissions (*Figure 3*), surpassing the EU-wide targets in relative reduction terms. However, the country faces structural and institutional challenges that hinder a comprehensive green transition. Weak governance structures, insufficient financial resources, limited adaptation measures, the ongoing development of the regulatory framework presents both challenges and opportunities for strengthening the country's long-term sustainability commitments. Enhancing clarity, consistency, and implementation mechanisms will be key to overcoming existing barriers and ensuring effective progress. Addressing these roadblocks is essential for ensuring Moldova's alignment with EU climate policies and achieving an effective green transition and establishing a low-carbon economy.

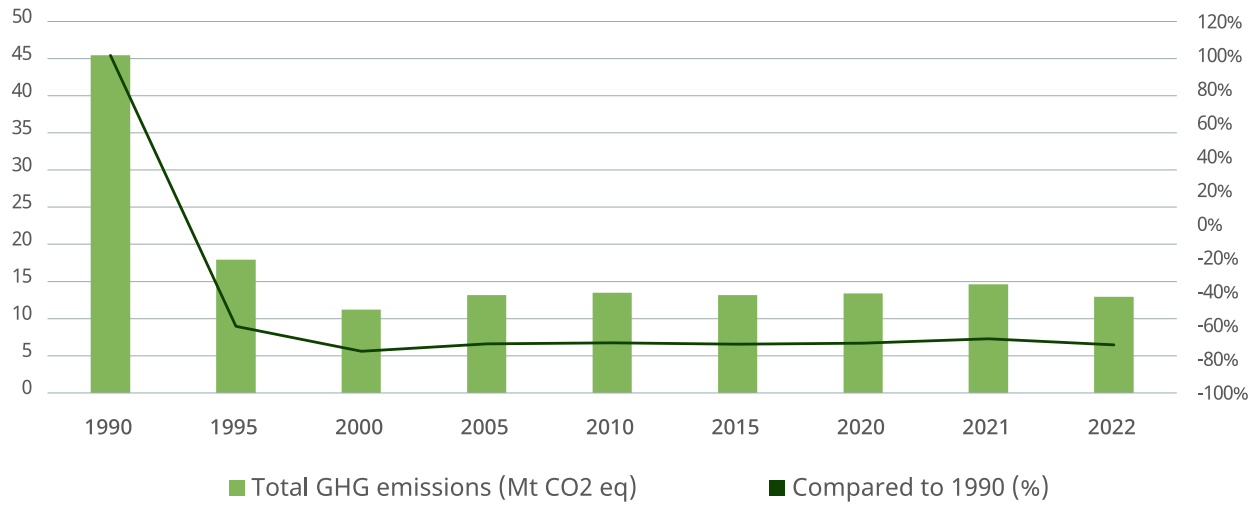


Figure 3: Trends in Total GHG emissions for the period 1990 – 2022.[33]

[33] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

GHG Emission Reduction (Mitigation) Challenges

The LULUCF sector has become a net GHG emissions source. Despite its progress in emission reduction, Moldova faces structural challenges that may hinder long-term climate neutrality. Moldova's LULUCF sector, which should act as a carbon sink, has become a net source of emissions due to deforestation and unsound land management practices. In 2021, LULUCF emissions amounted to +49 kt CO_2e, and to +420.66 in 2022, compared to being a carbon sink until 2020 (*Figure 4*). The Government has set a target to restore hectares of forest cover[34], but this remains logistically complex and financially demanding. Progress on this is slow due to capacity constraints and financial requirements.

Year	1990	1995	2000	2005	2010	2015	2020	2021	2022
Total LULUCF emissions (kt CO_2e)	-1,676	-2,059	-2,156	-1,699	-1,257	-1,203	-22	**49**	**421**

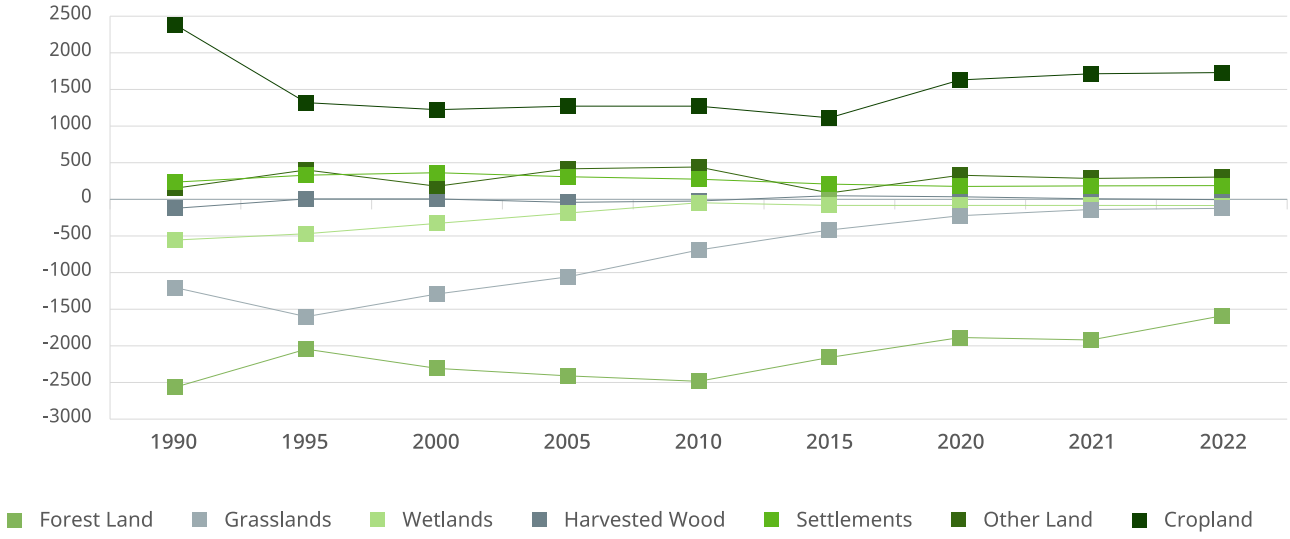


Figure 4: Evolution of GHG emissions from LULUCF sector between 1990 and 2022 (in the table above – Total LULUCF emissions in kt CO2e; in the graph – represented as net remover or net emitter relative to the horizontal axis).[35]

Lack of carbon pricing mechanisms (ETS or equivalent) and CBAM readiness poses trade risks. Moldova does not have an operational Emissions Trading System or another relevant carbon pricing mechanism, which is crucial for compliance with the EU's Carbon Border Adjustment Mechanism. Without a carbon pricing mechanism, businesses lack incentives to transition toward low-carbon production, increasing risks of trade restrictions on Moldova's carbon-intensive

[34] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=135917&lang=ro

[35] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

exporters. While Law no. 74/2024 on Climate Actions lays the foundation for establishing ETS-like mechanisms, the implementation details are still being developed.

Existing measures remain insufficient to reverse growing climate impact of transport sector. Transport fuel combustion is the second largest contributor to GHG emissions in the Energy sector: 30% of the total energy emissions in 2022 (*Figure 5)*, yet it lacks CO_2 performance standards for vehicles. Transport emissions have risen to 2,777 kt CO_2e in 2022, more than double compared to year 2000.[36] Additionally, there are no consumer information measures on fuel economy and GHG emissions for vehicles, slowing the transition to cleaner transportation and delaying progress toward low-carbon mobility.

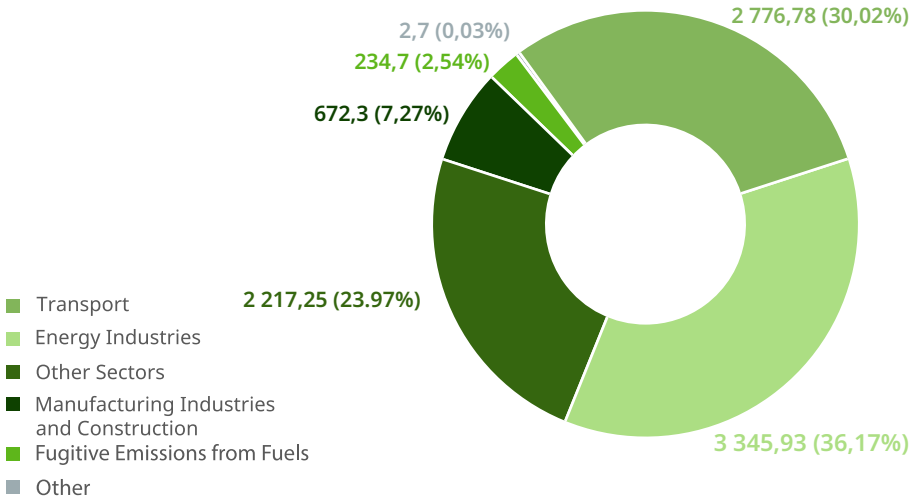


Figure 5: Transport sector contribution of GHG emissions relative to other sub-sectors in the Energy sector in kt CO_2e.

Climate Change Adaptation Challenges

The approval of the National Program on Climate Adaptation in 2023 marks a significant step toward strengthening climate resilience, but better coordination is needed. The program establishes sector-specific measures for vulnerable areas. However, ensuring effective implementation requires improved coordination across ministries to overcome fragmentation and enhance efficiency. A more integrated approach will accelerate Moldova's capacity to respond to climate risks and reduce vulnerability to extreme weather events.

Climate risk assessments in spatial planning are lacking. Key economic sectors, including construction and infrastructure, lack formal climate vulnerability assessments. Without proactive planning and without taking relevant actions, Moldova remains highly exposed to climate-related disasters such as floods and droughts.

There is a financial dependence and deficit for adaptation. Adaptation efforts rely predominantly on international donor support, with insufficient domestic financial resources allocated for resilience-building initiatives. The lack of domestic financing mechanisms undermines the long-term sustainability of adaptation policies**.**

[36] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

Governance and Coordination

The National Commission on Climate Change is still non-operational. Moldova's governance structures need strengthening of their capacity to coordinate the effective implementation of policies across all sectors in order to ensure that the climate goals the country has set are met. The NCCC, designed to coordinate national climate policy,[37] remains inactive, thus limiting inter-ministerial cooperation and decision-making. Established in June 2024, as of January 2025, the Commission is yet to have its first meeting.

NECP 2030 ambition needs to be backed by appropriate financing. Although Moldova's National Integrated Energy and Climate Plan (NECP 2025–2030) sets ambitious climate targets, it lacks the necessary financial and institutional support for full-scale implementation.

Municipalities have limited capacity to lead green transition in line with national goals. While several projects have been implemented in bigger cities on climate adaptation and sustainable transport,[38,39] most of municipalities lack the tools to assess the carbon reduction impact of their policies, financial needs for investments and capacity to use urban planning approaches in creating more sustainable public space and public services.

Financial and Capacity Constraints

Climate goals face financing deficit. Studies and strategic documents vary significantly in terms of their assessment on the required investments to reach climate neutrality, ranging anywhere between ca 10%-20% of GDP and 30-130 billion euros in total. Nevertheless, all of them acknowledge the need for additional measures and further funding compared to existing ones. Between 2019 and 2024, various foreign donors committed to spend the total of EUR 4.5 billion (i.e. nearly half of the required budget). Most of financial support disbursed and spent for projects in Moldova between 2019 and 2024 came as standard grants (64%) followed by investment-related loans (16% of the volume) and aid loans (14% of the volume). The largest volumes were recorded in 2022 and 2023.[40] The majority of financing remains donor-dependent, raising concerns over long-term financial sustainability.

Private sector engagement is very limited. Private capital plays a modest role in the country's climate finance system, restricting investment in renewable energy, climate resilience, and green technology.

Climate Budget Tagging is not operational. Moldova has not yet implemented Climate Budget Tagging, a critical tool for tracking and optimizing climate-related public expenditures (see

[37] State registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=143648&lang=ro

[38] UNDRR, https://www.undrr.org/news/making-cities-resilient-2030-initiative-drives-risk-reduction-and-resilience-building

[39] UNDP, https://www.undp.org/moldova/projects/closed-moldova-sustainable-green-cities

[40] See Moldova Comprehensive Green Transition Assessment: Financing the Transition

Textbox 2).[41] However, it is in the process of developing the draft of methodology on CBT that was presented for endorsement to the Ministry of Finances and the Ministry of Environment.

Textbox 2: CBT definition.

Climate Budget Tagging (CBT) is a tool for monitoring and tracking of climate-related expenditures in the national budget system. It provides comprehensive data on climate-relevant spending, enabling government to make informed decisions and prioritize climate investments. CBT enables public scrutiny on government and donors' spending on tackling climate change issues strengthening accountability and transparency (UNDP).[41]

Resource and capacity constraints create challenges for green agenda implementation. Although the Ministry of Environment has a dedicated unit for climate change policies and other ministries have increased the number of people working on green transition related topics, the demanding volume of complex measures required both for the implementation of green agenda goals and for the EU accession process highlight a significant shortage of human resources. The public sector faces serious capacity shortages, as competitive salaries and incentives remain an issue to attract and retain skilled climate policy professionals.

To conclude, while Moldova has demonstrated commitment to climate action, its ability to execute a full-scale green transition remains constrained by limited governance capacity, financial shortfalls, and regulatory gaps. Strengthening climate governance, securing sustainable financing, and integrating climate resilience into sectoral policies will be essential for overcoming these roadblocks and advancing Republic of Moldova's alignment with EU climate endeavours.

Existing Enablers for Moldova's Progress Towards Climate Goals

Despite significant challenges, Moldova has several enablers that support its progress towards climate goals and alignment with the European Green Deal. These enablers include a strengthened legislative framework, increasing international financial and technical assistance, and institutional advancements that enhance governance and climate action. Additionally, Moldova's ongoing efforts to integrate adaptation policies across sectors and strengthen capacity-building initiatives at both national and local levels contribute to its ability to meet its climate commitments and drive a sustainable transition.

[41] NDC Partnership: https://ndcpartnership.org/knowledge-portal/climate-toolbox/climate-budget-tagging#:~:text=Climate%20Budget%20Tagging%20(CBT)%20is,decisions%20and%20prioritize%20climate%20investments

Legislative and Policy Support

Moldova has a framework Law on Climate Action (Law No. 74/11-04-2024).[42] It provides the legal framework for achieving climate neutrality by 2050 and sets the foundations for emissions reduction commitments, adaptation measures, and monitoring mechanisms, ensuring policy continuity and accountability (see *Textbox 3*).

Moldova has international commitments and a clear EU accession agenda. The country's aspirations for EU membership and EU accession agenda serve as a major incentive for aligning national policies with EGD standards. Moldova's commitments under the Paris Agreement and the EU accession process accelerate legislative reforms, enhances institutional frameworks, and strengthens country's commitment to climate action.

Textbox 3: Excerpt from the Law on Climate Action (Law No. 74/11-04-2024)[42]

"Article 1. Purpose of this law.

This law establishes the regulatory framework in the field of climate actions towards achieving climate neutrality by 2050, in order to meet the long-term global temperature goal set out in the Paris Agreement, ratified by Law No. 78/2017. It also establishes the regulatory framework for progressing towards achieving the global goal of adapting to climate change.

The purpose of this law is to ensure the gradual and irreversible reduction of greenhouse gas emissions in order to protect human health, the integrity of ecosystems and biodiversity against the threats posed by climate change, to strengthen adaptive capacity, to reduce society's vulnerability to climate change and to increase climate resilience, by applying the financial mechanism for setting a price for carbon dioxide emissions (hereinafter referred to as CO2 emissions) and the "polluter pays" principle." [...]

Article 2. Goals of this law.

This law sets to:

ensure the development and implementation of policy and planning documents to achieve the objectives and national targets set in accordance with the Paris Agreement, as well as energy and climate objectives [...]"

There is basis for cross-sectoral approach. The alignment of climate goals with the National Development Strategy "European Moldova" 2030 and newly adopted National Integrated Energy and Climate Plan help build climate priorities into development planning, enhancing cross-sectoral integration of climate goals (see *Textbox 4*).[43]

[42] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=143228&lang=ro

[43] Moldova Government: https://gov.md/ro/moldova2030

Textbox 4: Excerpt from the National Development Strategy "European Moldova 2030"[43]

"[...] the Government has developed the National Development Strategy "European Moldova 2030" (NDS) – the national long-term strategic vision document, which indicates the directions of the country's development and which adapts the priorities, objectives, indicators and targets of the international commitments assumed by the Republic of Moldova to the national context. [...]

Goal 10: Ensuring a healthy and safe environment.
Improving water, air and soil quality
Ensuring responsible consumption of natural resources
Ensuring climate resilience by reducing risks related to climate change
Sustainable increase in forest area and protected areas
Active transition towards a green and circular economy [...]

To ensure a healthy and safe environment, the following priorities are foreseen: [...]
Modernization of the vehicle fleet, by introducing differentiated environmental taxes, depending on the level of pollution.[...]
Creating an integrated air quality management system, reducing emissions of pollutants into the atmosphere and greenhouse gases.[...]"

Moldova has set a carbon sink goal. The country's plan to reforest approximately 145,000 hectares of land by 2032 aligns with the EU's goal of increasing carbon sinks to -310 Mt CO_2 by 2030. This policy initiative supports climate mitigation through nature-based solutions while enhancing biodiversity and ecosystem resilience.

National Climate Change Adaptation Programme (NCCAP 2030) has been approved (GD 624/30-08-2023).[44] Its overall goal is to reduce vulnerability and increase resilience to climate change impacts through systemic transformations in all priority adaptation sectors. NCCAP 2030 describes trends and risks, and recommends sectoral adaptation actions for agriculture, energy, forestry, transport, water resources and health sectors (see *Textbox 5*).

Textbox 5: Excerpt from NCCAP 2030[44]

"11. The approach to climate change adaptation at the national level is systemic, cross-sectoral, integrated into relevant sectoral policies and focuses on up-to-date knowledge and risk assessments for vulnerable sectors. [...]

15. [...] The Programme aims to address cross-sectoral issues as identified during NAP-1 and outlined in Moldova's updated NDC".

[44] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=140163&lang=ro

16. From a broader perspective, the NCCAP 2030 will contribute to the implementation of the Republic of Moldova's international commitments [...]"

Governance and Institutional Setup

The National Commission on Climate Change can be a central driver. If fully operationalized, the NCCC can serve as a central coordinating body for Moldova's climate action, improving policy implementation, inter-ministerial collaboration, and stakeholder engagement, as it brings together key ministries.

Funding and Financial Resources

Moldova benefits from international support. The country receives financial and technical assistance from multiple international development partners. These resources help fund mitigation, adaptation, and institutional capacity-building projects.

Public-Private Partnerships are taking root. Moldova has successfully tested green financing models, including EBRD-backed loans to commercial banks for sustainable agriculture and energy efficiency projects. Such pilot programs offer scalable models for engaging the private sector in climate finance.

Capacity Building and Knowledge Sharing for Policy Development and Implementation

Donors support capacity building. International development partners are investing in training programs for ministry officials, local governments, and NGOs to enhance institutional expertise in climate policy development and project implementation (see example in *Textbox 6*).[45]

Textbox 6: "Satul European" (European Village) – a donor-supported opportunity that has helped local authorities improve their project implementation skills[45]

The current administration in Moldova has improved local authorities' access to funds for development projects to some degree through "Satul European" program, managed by Moldova's National Office for Regional and Local Development, The program allowed local authorities to apply directly for funds to improve the infrastructure of their communities. 492 projects were selected for funding in 2023. While this program still involves local authorities receiving funds through the central government, it allows those local authorities to play a greater role in the aid distribution process by applying simply and directly for project funding, resulting in the aid being distributed more equitably and effectively.

[45] Middle East Institute, https://www.mei.edu/publications/navigating-development-moldova-role-and-challenges-foreign-donor-organizations

In light of the efficiency of the application process, its nonpartisan nature, geographical footprint and the impact on the capacities of local authorities, the program has been regarded as a success story that shows how empowering local authorities can be far-reaching.

Moldova is diversifying its sources of climate-related information, including scientific and local knowledge on climate scenarios, impacts and effectiveness of environmental activities, climate change adaptation planning and management. The first steps on contribute to awareness of climate change trends and vulnerabilities are based on the Governmental Decision No. 55/2025,[46] which approves the concept for climate change information and information management portal. This portal is a set of software tools, designed to store, process and provide climate information to different categories of stakeholders.

The country is slowly but steadily advancing its Monitoring, Reporting and Verification systems. MRV systems are essential for achieving the objectives of the European Green Deal, as it ensures the accurate collection and reporting of greenhouse gas emissions data. Such data makes it possible to assess the progress towards climate neutrality by 2050 and inform emission reduction policies. Thus, the MRV contributes to transparency and accountability in the implementation of climate action. At the time of this report, the transposition of the Monitoring, Reporting, Verification and Accreditation regulations, although not yet completed, is well advanced.[47]

- Moldova transposed verification criteria from the EU ETS Directive and introduced the obligation to submit annual emission report verified by accredited verifier and general administrative measures in Law on Climate Action No. 74/2024.
- National Accreditation Centre MOLDAC[48] has been appointed as the national accreditation body responsible for accreditation of GHG verifiers.
- Government Decision No. 575/2024 regarding the regulation on monitoring, reporting and verification of greenhouse gas emissions from stationary installations and aviation activities outlines the framework for transposition of Accreditation and Verification Regulation. [49]

In conclusion, Moldova's green transition is supported by strong legislative commitments, international financial assistance, and institutional reforms that enhance climate governance. However, the effective implementation of these enablers will require:

- **Sustained political commitment;**
- **Expanded private sector engagement;**
- **Continuous capacity-building and awareness raising efforts among authorities, enterprises and the general public; and**

[46] State registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=147029&lang=ro

[47] European Commission, https://enlargement.ec.europa.eu/document/download/858717b3-f8ef-4514-89fe-54a6aa15ef69_en?filename=Moldova%20Report%202024.pdf

[48] MOLDAC, https://acreditare.md/

[49] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=145745&lang=ro

- **Completing the final steps for the implementation of MRV systems and a carbon pricing mechanism.**

Key Priorities for Strengthening Moldova's Green Transition

Moldova's path towards green transition and full alignment with the European Green Deal requires a structured, strategic approach that strengthens GHG reduction efforts, enhances adaptation measures, secures financial capacity, and improves governance structures. While progress has been made, further policy and institutional reforms are needed to accelerate climate action and ensure the comprehensive implementation of Moldova's climate commitments. Strengthening governance frameworks, aligning policies with EU requirements, and ensuring financial sustainability will be critical in achieving the country's climate neutrality and a sustainable, low-carbon economy.

1. Strengthen Climate Governance

The operationalization of the National Commission on Climate Change is a fundamental step toward ensuring effective climate governance. Establishing clear operational protocols, governance structures, and a dedicated budget will enable the NCCC to function as a central coordinating body for national climate policies. Inter-ministerial cooperation must be institutionalized through the Climate Law, ensuring that cross-sectoral climate action is streamlined and effective.

The institutional reform within the Environmental Agency and the State Hydrometeorological Service will further enhance monitoring and enforcement capabilities, particularly regarding emissions tracking and adaptation planning. Additionally, Moldova must strengthen local government capacities by increasing access to training, financial support, and decentralized decision-making processes to ensure climate resilience-building efforts reach all regions.

2. Enhance Policy Alignment and Implementation

First and foremost, the country needs a taxonomy to systematically classify green / sustainable economic activities. Moldova must focus on effective implementation of its National Energy and Climate Plan, ensuring that it covers the entire national territory, including the Transnistrian region, and increasing the ambition for the unconditional target. Accelerating legislative alignment with EU climate acquis is equally critical, particularly in areas such as emissions trading, renewable energy directives, and vehicle emissions standards, including CO_2 emissions.

Moldova also needs to accelerate the implementation of the National Energy and Climate Plan (NECP 2025–2030), putting in place credible action plans with sufficient financing and ensuring its full alignment with EU acquis. Accelerating legislative alignment with EU climate acquis is equally

critical, particularly in areas such as emissions trading, renewable energy directives, and vehicle emissions standards, to name a few.

To ensure effective implementation, Moldova must improve data collection and reporting standards in line with EU requirements, strengthening its Monitoring, Reporting, and Verification system. The institutionalization of climate-related impact assessments for infrastructure projects will also enhance long-term policy effectiveness.

3. Accelerate Greenhouse Gas Reductions

To meet its long-term climate commitments, Moldova must establish carbon pricing policies, such as a functional Emissions Trading System (or an equivalent that aligns with the EU ETS), allowing businesses to prepare for the Carbon Border Adjustment Mechanism while providing stronger financial incentives for emissions reductions.

The LULUCF sector must undergo significant reform to restore its role as a carbon sink. Moldova's plan to expand forest coverage by approximately 145,000 hectares by 2032 will support biodiversity, improve soil health, and contribute to carbon sequestration. Additionally, integrating binding climate targets for grasslands and croplands will ensure a coherent approach between biodiversity conservation and climate adaptation objectives.

In the transport sector, Moldova needs to introduce regulatory CO_2 limits on new vehicles, aligning with EU vehicle emissions legislation to curb transport-related emissions, one of the country's fastest-growing sources of GHGs.

In the energy sector, the accelerated promotion of renewable energy sources is vital. This should include encouraging investments in solar, wind, bioenergy and storage to reduce dependence on fossil fuels and reduce GHG emissions. Improving energy efficiency, by implementing additional measures to increase energy efficiency in buildings, industry and transport, will help not only to reduce energy consumption and associated emissions, but also address pressures of energy crises and bring economic savings.

In the agricultural sector, efficient manure management practices need to be applied to reduce methane and nitrous oxide emissions. Similarly, promoting sustainable agricultural practices by encouraging crop rotation, use of cover crops and reduced tillage will help decrease GHG emissions and increase soil carbon sequestration.

4. Enhance Climate Adaptation and Resilience

A comprehensive adaptation framework and implementation plan is necessary to ensure the country's resilience to climate-related risks. The National Adaptation Program approved in 2023 covers agriculture, energy, health, transport, water management, and forestry sectors, yet it is

missing the infrastructure and spatial planning components. Having all these policies coordinated at national level will enable Moldova to implement more effective and better targeted responses to climate threats. Additional attention should be given to supporting vulnerable communities and reskilling/upskilling programs with a focus on energy and industry.

The integration of climate risk and vulnerability assessments into spatial planning and construction regulations will improve resilience to extreme weather events, particularly in flood-prone areas. Local governments need to be mandated to carry out climate risk assessments and integrate resilience-building considerations into urban planning to reduce exposure to climate-related disasters.

Moldova also needs to expand early warning systems, integrating formal vulnerability and risk assessments with robust monitoring and evaluation (M&E) frameworks to track adaptation progress. A stronger integration of LULUCF and biodiversity considerations into national adaptation strategies will further enhance the role of ecosystem-based approaches in climate resilience planning.

5. Secure Sustainable Climate Financing

Financial sustainability remains a key priority for Moldova's green transition. Implementing a Climate Budget Tagging framework will ensure greater transparency in climate-related expenditures and help align national financial flows with climate targets.

Strengthening domestic funding mechanisms, such as the National Environmental Fund and National Centre for Sustainable Energy, will reduce Moldova's reliance on international donors and allow for greater financial independence in climate initiatives. Moldova can increase revenues for much needed investments by expanding fiscal incentives, improving environmental taxation and implementing carbon pricing mechanisms. These measures will stimulate private investment and ensure that international climate finance mechanisms are used more strategically.

Expanding private sector engagement is essential. National Bank of Moldova has created Sustainable Finance Roadmap, but implementation steps are needed to scale up green finance initiatives. Effective implementation of green finance taxonomy following the EU Taxonomy model, expanding loan and guarantee instruments in cooperation with commercial banks, and leveraging public-private partnerships (PPPs) to mobilize investment in sustainable projects will help to close the funding gap.[50] The use of blended finance models can further de-risk private investments, ensuring that climate finance mechanisms remain attractive for investors.

[50] National Bank of Moldova, https://bnm.md/files/Foaia%20de%20parcurs%20pentru%20finan%C8%9Bare%20durabil%C4%83_eng.pdf

6. Empower and Support Municipalities to Lead the Green Transition

Moldovan Government needs to focus on developing tailored green transition frameworks that consider local economic and social factors. This includes encouraging municipalities to create Local Climate and Sustainability Plans that align with national goals while also addressing the unique challenges and opportunities of each community. By integrating climate adaptation, clean energy, and sustainable urban development into these local plans, municipalities can adopt a comprehensive approach to the green transition. Additionally, current few pilot cities who which are implementing and testing small-scale green projects—such as energy-efficient public buildings, waste-to-energy solutions, sustainable mobility solutions or urban green spaces—can help demonstrate the feasibility and benefits of sustainable practices. Successful pilot initiatives can serve as scalable models for other municipalities across the country.

Investment and financing access are critical to turning these local plans into reality. The government should support municipalities in identifying financial needs and applying for EU and donor funding targeted at green infrastructure, clean energy projects, and climate resilience measures. Furthermore, capacity-building and institutional support are essential to equip municipalities with the skills and knowledge needed to plan, finance, and implement green projects effectively. By strengthening local capabilities and providing targeted financial and technical support, Moldova can create a robust framework for municipalities to lead the green transition effectively.

7. Implement Green and Digital Innovation Plans for Key Sectors

To boost Moldova's economy through green and digital innovation, the government should focus on key sectors: agriculture and food processing, ICT, transport, business services, energy, and the circular economy. This requires developing sector-specific green transition plans that promote smart agriculture, renewable energy, electric mobility, and circular solutions. For this, detailed sectoral analysis to assess emissions, economic potential, and investment needs is required. Based on this analysis, Moldova should implement targeted policies and incentives to drive the adoption and development of green technologies.

To transform Moldova into a regional hub for net-zero technologies, the government should develop investment and financing strategies that leverage EU, donor, and local private-sector funds. Additionally, economic modelling should be used to demonstrate the benefits of net-zero transitions in terms of GDP growth, jobs, and emissions reductions. Engaging stakeholders—government, industry, and investors—through consultations will help validate findings and refine these strategies.

8. Digitize data collection and access for climate resilience.

Moldova has initiated important steps towards digitalizing its climate action efforts, but challenges remain, such as inefficient MRV systems and limited access to open climate data. To fully leverage

digital technologies, Moldova needs to implement a centralized digital MRV system, develop open data platforms, enhance relevant statistics collection and utilisation that is needed for policy design and evaluation, and strengthen institutional capacities. Addressing these gaps will be essential for Moldova to achieve its climate goals and enhance sustainability efforts.

By reinforcing climate governance, accelerating policy alignment, expanding GHG reduction strategies, enhancing adaptation planning, and securing sustainable financing, Moldova will strengthen its green transition and advance its EU integration process. These measures will both support the achievement of national climate objectives, and ensure long-term resilience, economic sustainability, and compliance with European climate-focused efforts.

2. Energy

Understanding Moldova's Status and Progress

The European Green Deal presents a transformative vision for achieving a climate-neutral Europe by 2050, with energy transition playing a central role. As a candidate for EU accession and a member of the Energy Community, Moldova is expected to align its energy policies with these objectives. The core priorities focus on decarbonization, energy efficiency, security of supply, and affordability. Moldova is advancing its efforts to align with the European Green Deal and the Energy Community framework, setting ambitious targets for emissions reduction and renewable energy integration. Whereas the latest update of Nationally Determined Contribution 3.0 aims to increase the share of renewable energy to 27% in gross final energy consumption by 2030[51] and 47.5% by 2050, the recently adopted National Integrated Energy and Climate Plan states that with additional measures Moldova could reach 30% renewable energy and a 68.6% reduction in greenhouse gas emissions from 1990 levels by 2030 (NECP targets have been established only for the territory located on the right bank of the Dniester River)[52]. However, achieving these objectives remains a challenge due to Moldova's continued dependence on energy imports, slower-than-needed renewable energy expansion, and infrastructure constraints.

Energy Sector is the single largest GHG emission source requiring priority attention for decarbonization. Moldova is making progress in aligning its energy policies with the European Green Deal and the Community Acquis of the Energy Community, with the goal of achieving a 68.6% reduction in GHG emissions from 1990 levels by 2030. The energy sector is the largest contributor to emissions (*Figure 6)*, accounting for 69.2% of total national GHG emissions in 2022 (from 84.7% in 1990 – see *Figure 7*),[53] and highlighting the urgent need for the decarbonization of this sector.

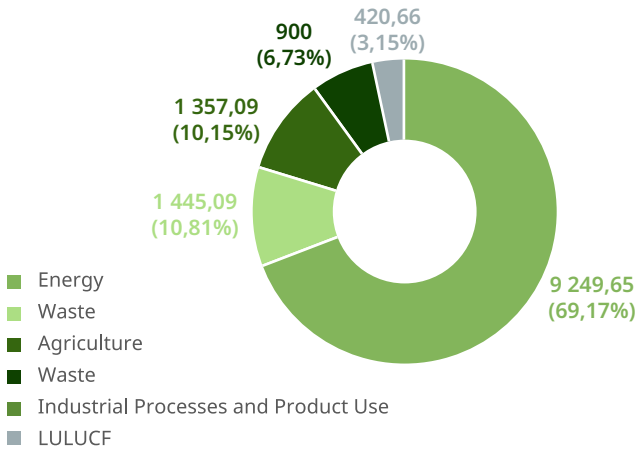


Figure 6: Sectoral breakdown of the total national GHG emissions in the Republic of Moldova in 2022 in kt CO_2e.[54]

[51] NDC 3.0 https://www.mediu.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/MD_NDC_3.0_EN_31.12.2024_final.pdf

[52] Moldova Government, https://gov.md/sites/default/files/document/attachments/nu-763-men-2024_0.pdf

[53] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

[54] Moldova National Inventory Report:1990-2022, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

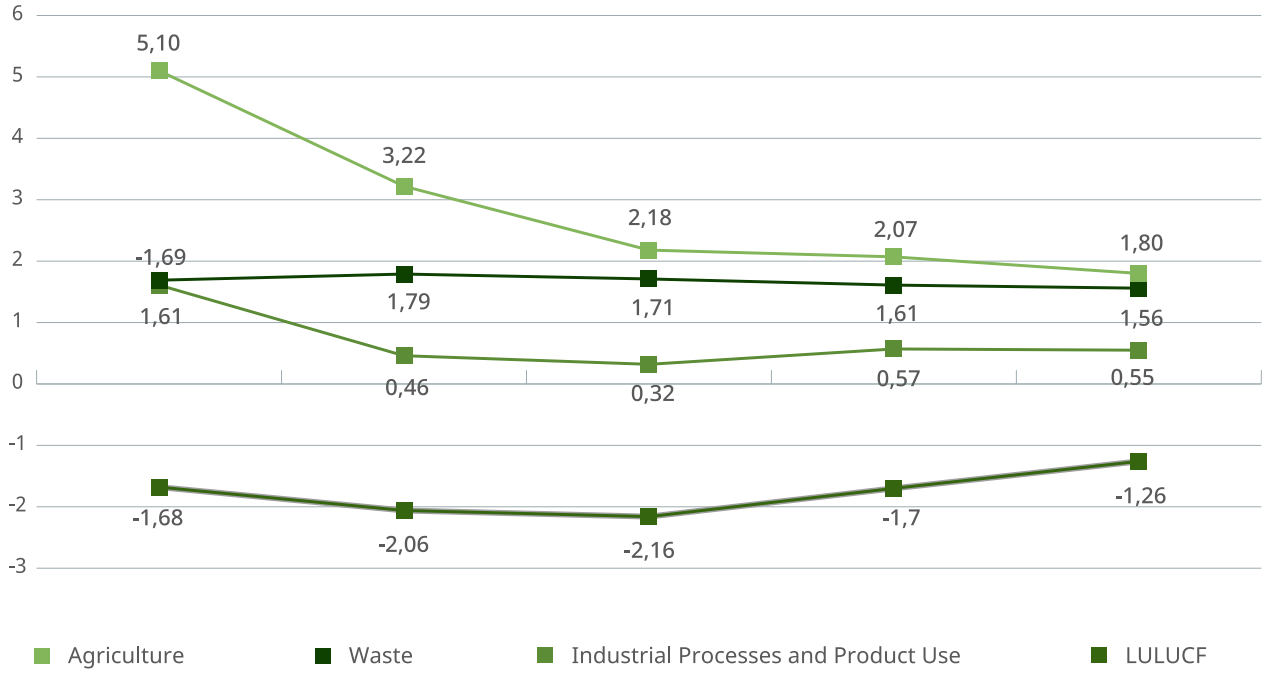


Figure 7: Trends in GHG emissions from Energy sector for the period 1990 – 2022 (Mt CO_2e).[55]

Moldova has made renewable energy commitments, but the country's transition to renewables remains slow considering the extent of current energy crisis. With NECP additional measures, the country aims to achieve a 30% renewable energy share by 2030. As of January 2024, only 23.66% of energy consumption was sourced from renewables. By the end of 2024, the country has developed 423 MW of solar photovoltaic (PV) capacity (including prosumers) and 154 MW of wind capacity. This falls well short of the long-term goal of 4,000 MW required by 2050. The first renewable energy auction launched in August 2024 aims to stimulate investment, yet grid constraints and limited storage capacity continue to impede large-scale deployment (see example in *Textbox 7*).[56]

Textbox 7: Illustrative example of investment initiatives being impeded by grid constraints.[56]

The Commission for Exceptional Situations (CSE) has decided to simplify the process of obtaining grid connection permits. This decision aims to enhance the utilization of all available capacities for renewable electricity generation.

Thus, companies that have completed at least the coordination phase of the execution procedure will receive grid connection permits from system operators by February 10, 2025, depending on the available capacity in the grid. This decision applies to all entities that do not currently hold a valid

[55] Idem

[56] Moldova Ministry of Energy, https://www.energie.gov.md/en/content/process-obtaining-grid-connection-permits-renewable-energy-plant-owners-will-be-facilitated

grid connection permit but had one in the past, including prosumers. This measure targets several companies that have already installed renewable power plants with a total capacity of 31 MW. Of this capacity, 23.5 MW already have valid grid connection permits, while 7.5 MW are physically prepared for renewable energy generation but lack connection permits.

Ministry of Energy has been drafting a project to amend the Electricity Law, which would introduce a mechanism to hold permit holders accountable, including the implementation of a financial guarantee. As of January 2025, Moldelectrica, the transmission system operator, has issued permits for approximately 1,500 MW of new capacity installations, primarily from renewable energy sources. However, less than 10% of these permits are activated annually, limiting the opportunities for investors with genuine intentions to develop renewable energy plants

Grid modernization is vital for scaling renewables. The Energy Strategy 2050 Concept[57] outlines measures to modernize the electricity grid and integrate renewable energy into district heating systems. Strengthening infrastructure is critical for connecting further renewables, adding storage capacities, improving demand-side management, reducing reliance on fossil fuel-based power generation, and achieving long-term decarbonization goals.

Energy efficiency remains a key pillar of the country's energy transition but is challenging to achieve. Total final energy consumption (TFEC) in Moldova was 2470 ktoe in 2023 (excluding regions on the Left Bank), representing a 5.3% increase compared to 2345 ktoe in 2010 (see *Figure 8*)[58]. Over the 2010–2023 period, final energy consumption grew at an average annual rate of approximately 0.4%. At the same time, the country's energy intensity dropped in 20 years by 40.6%. Yet, the country's energy intensity remains high relative to EU benchmarks[59], signalling low energy efficiency and high costs. In the last decade, Electricity production has been heavily reliant on the MGRES (Moldova thermal power plant or Cuciurgan power plant) in the Left Bank region, which operates with a low efficiency of only 28%. The largest final consuming sector is the residential sector, accounting for nearly half of TFEC (*Figure 9*).[60] Biomass remains the primary local energy source, especially for heating in rural areas, underscoring the need for cleaner and more efficient alternatives to solid fuels (*Figure 10*). Biomass use increased heavily in the end of 2000s and in the early 2010s due to a need to reduce reliance on imported gas and large-scale projects like the Energy and Biomass Project (2011-2017).

[57] Moldova Ministry of Energy, https://energie.gov.md/sites/default/files/concept_strategia_enenergetica_act._-clean_1.pdf

[58] Moldova National Bureau of Statistics, https://statbank.statistica.md/PxWeb/pxweb/en/40%20Statistica%20economica/40%20Statistica%20economica__15%20ENE__serii%20anuale/ENE020100.px/chart/chartViewColumnStacked/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

[59] EU4Climate, https://eu4climate.eu/2022/02/23/moldova-has-one-of-the-highest-greenhouse-gas-intensities-in-europe-reported-to-gdp/

[60] International Energy Agency, https://iea.blob.core.windows.net/assets/dc881e93-9f82-4072-b8b4-a0d00a487f59/Moldova2022.pdf

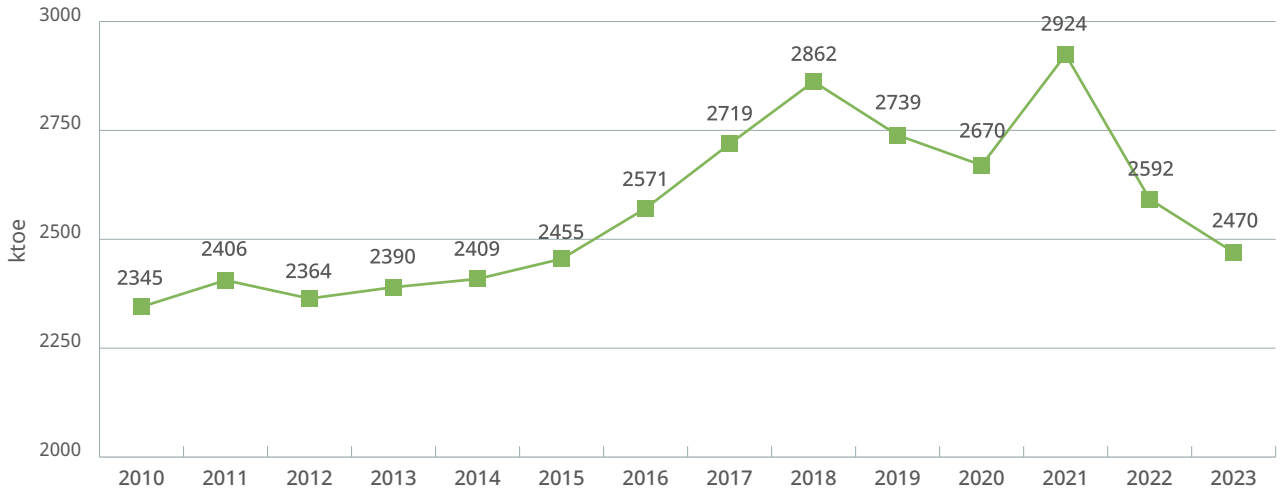


Figure 8: Moldova total final energy consumption (2010-2020).
Source: National Bureau of statistics of the Republic of Moldova

Figure 9: Energy balance by supply and consumption (ktoe) in different sectors, with Residential sector being the largest consumer in 2023.[61]

[61] Moldova National Bureau of Statistics, https://statbank.statistica.md/PxWeb/pxweb/en/40%20Statistica%20economica/40%20Statistica%20economica__15%20ENE__serii%20anuale/ENE020100.px/chart/chartViewColumnStacked/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

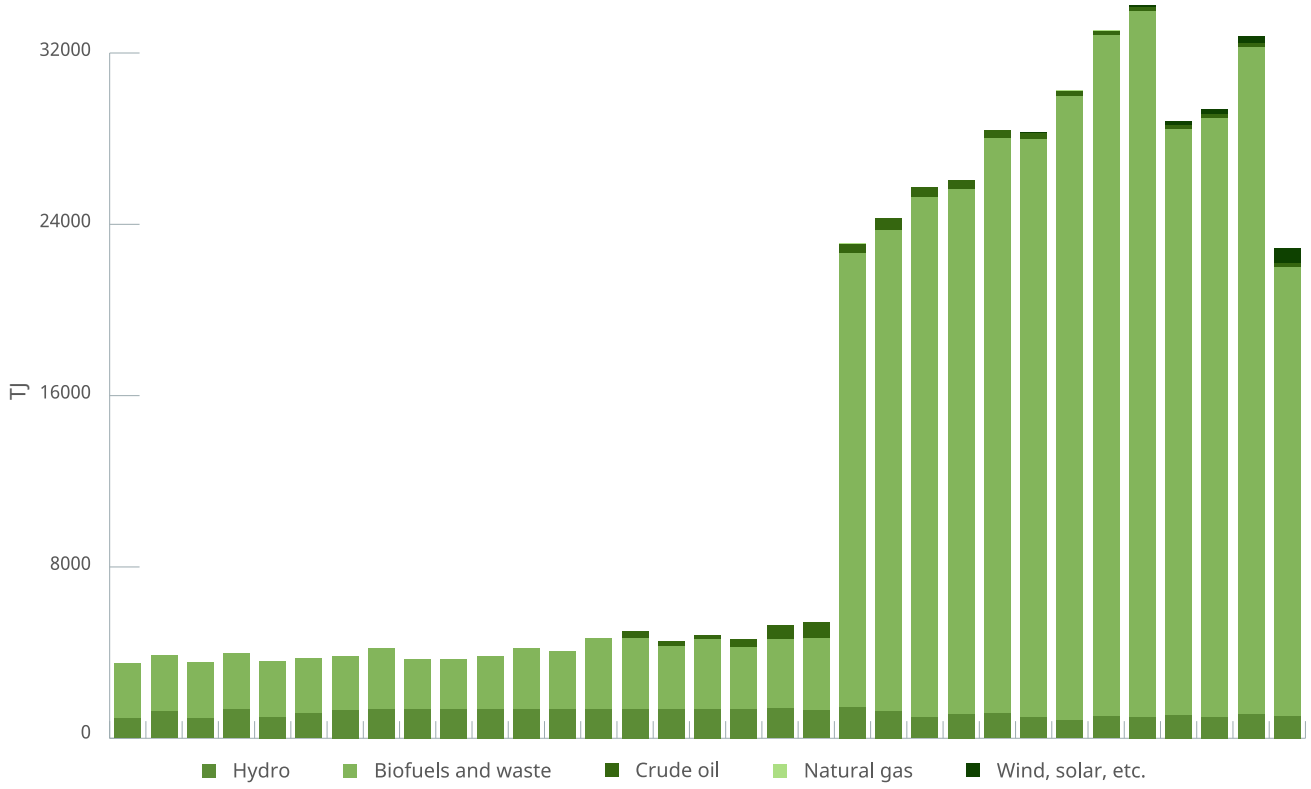


Figure 10: Moldova Domestic energy production by source (TJ),1990-2022.[62]

Moldova remains highly dependent on imported energy, increasing energy security risks. 75% of the country's total energy supply comes from abroad (*Figure 11*).[63] There is limited domestic electricity production. The country's main power generation facilities, located in Chișinău and Bălți, rely on natural gas (*Figure 12*)[64] and operate with low efficiency and high emissions. Even so, domestic production covers only 20% of national electricity demand. Therefore 80% of electricity for domestic consumption is imported, which exacerbates energy security concerns.

[62] International Energy Agency, https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=MOLDOVA&fuel=Energy%20supply&indicator=DomesticProduction

[63] Moldova National Bureau of Statistics, https://statbank.statistica.md/PxWeb/pxweb/en/40%20Statistica%20economica/40%20Statistica%20economica__15%20ENE__serii%20anuale/ENE020300.px/chart/chartViewBar/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

[64] IEA, https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=MOLDOVA&fuel=Energy%20supply&indicator=ElecGenByFuel

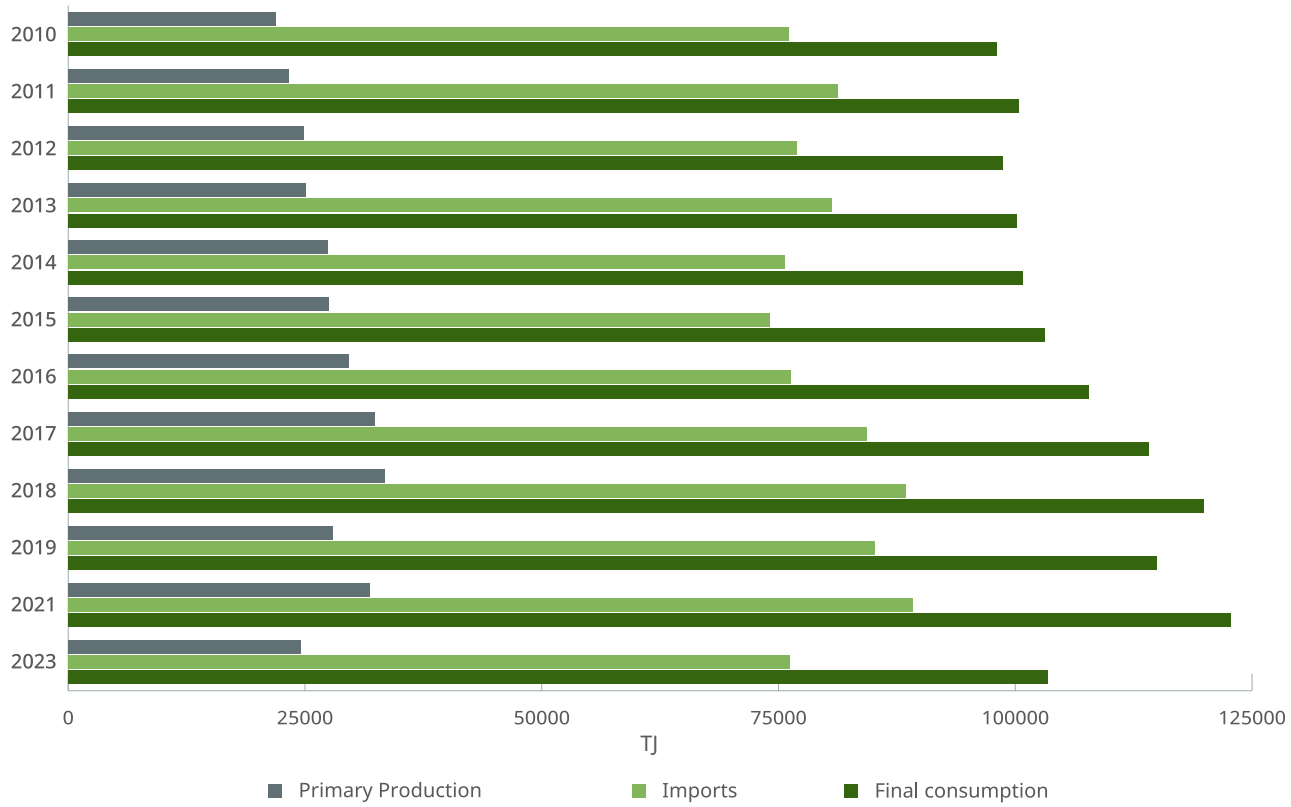


Figure 11: Moldova energy balance by supply (primary production and imports), consumption and years (2010-2023), in TJ (Information is presented without the data on districts from the left side of the Dniester river and Bender municipality).

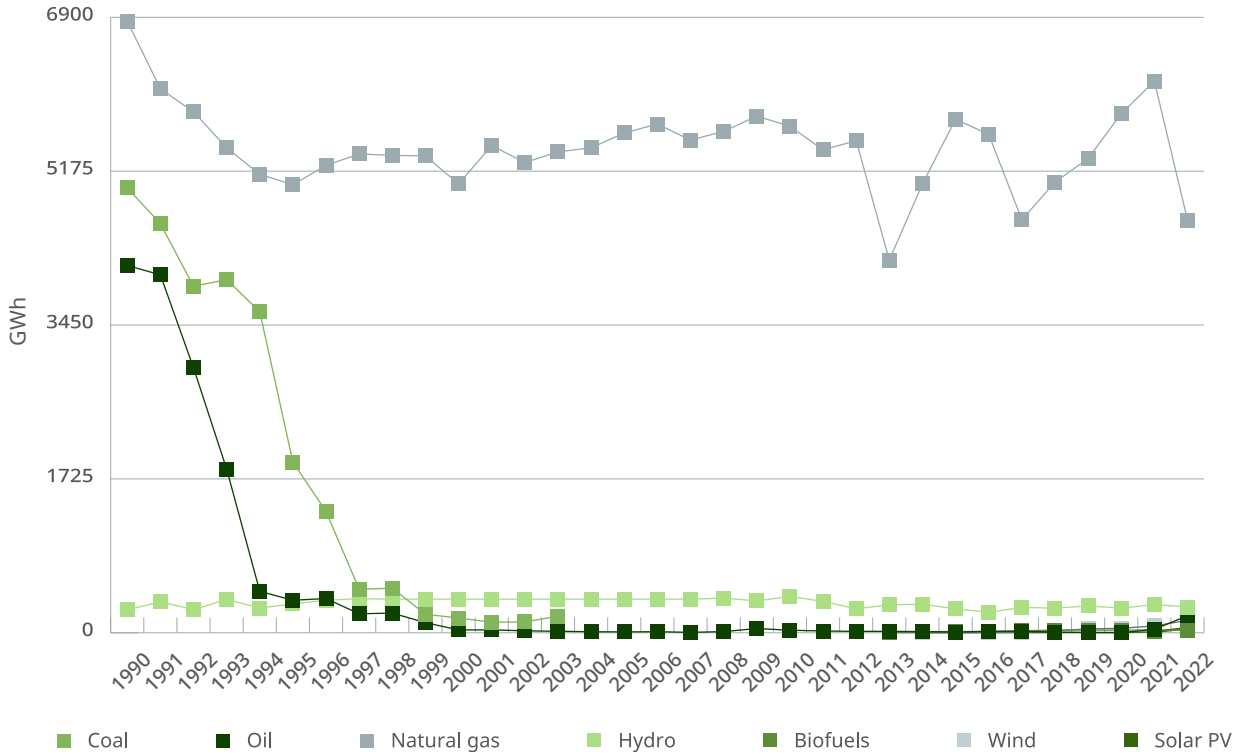


Figure 12: Moldova electricity generation by source (1990 – 2022).

Important progress has been made to integrate with ENTSO-E, but further interconnections are needed. The March 2022 synchronization with the European Network of Transmission System Operators for Electricity[65] allows Moldova greater access to the European grid, helping to diversify energy sources, enhancing energy security and reducing reliance on non-EU suppliers. However, further investments in cross-border interconnectors and grid upgrades are needed to ensure system stability, support cross-border trade and integration to regional power markets, and facilitate the large-scale integration of renewable energy sources. The Energy Strategy 2050 emphasizes the development of internal power lines, energy storage solutions, and cross-border electricity exchanges, which are essential for reducing vulnerabilities associated with import dependence and geopolitical risks. Strengthening these capacities will support the long-term sustainability of Moldova's energy sector.

Rising energy costs continue to exacerbate energy poverty, particularly for vulnerable households. Additional targeted measures required to ensure just transition. The sharp increase in gas prices has placed significant financial strain on low-income populations, pushing more Moldovans into energy poverty and increasing broader economic vulnerabilities. High energy costs have also contributed to food insecurity, as households are forced to prioritize essential expenditures. To address this challenge, Moldova has implemented social assistance mechanisms to support affected households *(Textbox 8)*.[66] However, additional targeted measures are required to ensure that vulnerable communities have access to affordable and sustainable energy solutions. Expanding renewable energy access in low-income areas, coupled with energy efficiency improvements, can play a vital role in reducing household energy costs and increasing resilience to future price fluctuations.

Textbox 8: Example of social support mechanism implemented by Moldova Government to address energy poverty.[65]

In 2022, Moldova Government introduced a targeted energy poverty reduction mechanism (Law no. 241/2022 on the Energy Vulnerability Reduction Fund). The Law provided a mechanism to compensate households for energy costs (natural gas, thermal energy and electricity) based on a targeted, needs-based approach. Depending on individual income, on the income/energy expenditure ration, type of heating system, family composition and other criteria, each household was placed in one of five energy vulnerability categories: very high, high, medium, low and no energy vulnerability. Owing to this mechanism, over 895,000 households benefitted from subsidies for energy in the 2022/23 cold season. Due to unfavourable conditions in the energy market, most registered households (around 80%) have been placed in the very high vulnerability rating and had up to 60% of their bills compensated.

In the 2023/24 cold season, the system underwent several important changes. It was expanded to include higher monetary payments and payments for wood and other types of solid fuel. It was

[65] ENTSOE, https://www.entsoe.eu/news/2022/03/16/continental-europe-successful-synchronisation-with-ukraine-and-moldova-power-systems/

[66] Council of Europe, https://rm.coe.int/mda-ad-hoc-cost-of-living-2023/1680ae693b

further integrated into the single compensation system, and had the number of energy vulnerability categories expanded from 5 to 7, adding the "extreme" and "primary" energy vulnerability categories. Over 777,000 households have registered to receive energy compensation during the respective cold season, of which almost 260,000 benefitted from the monetary payment – 30,000 more than during the previous cold season.

Research and innovation are needed to develop and deploy technologies for renewables and energy efficiency, but funding problems are pervasive. The National Agency for Research and Development (NARD)[67] is a government institution that promotes and supports the country's research, innovation, and technological development. NARD has an important role in supporting the energy sector in deployment of innovative technologies and approaches, as well as setting next priorities for energy sector. The lack of consistent research funding hinders the domestic development of innovative technologies. In 2022, Moldova spent as little as 0.23% of its GDP on research and development – the lowest recorded allocation since 1996 (*Figure 13)*.[68]

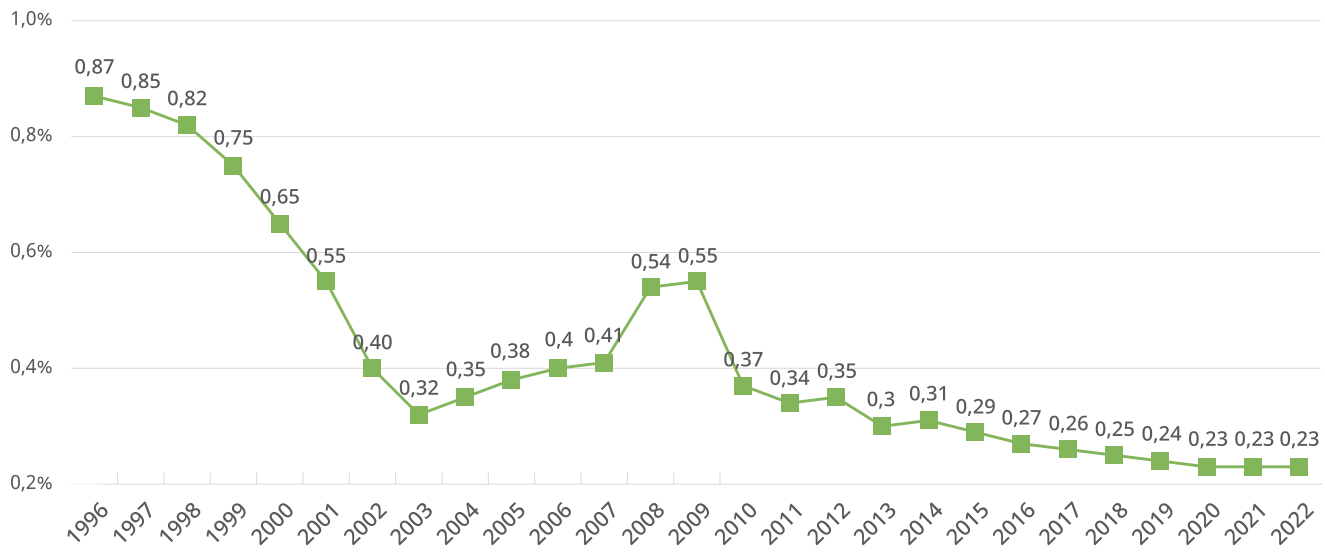


Figure 13: Moldova Research and development expenditure (% of GDP), 1996 – 2022.[42]

Green jobs and training accelerate, but the need is greater. Moldova prioritizes workforce training and capacity building in key areas such as solar PV installation, wind turbine maintenance, and energy efficiency auditing (*Textbox 9*).[69]

[67] NARD, https://ancd.gov.md/en

[68] World Bank Data, https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=MD

[69] Covenant of Mayors, https://com-east.eu/learning-energy-efficiency-network-launches-in-moldova/

Textbox 9: Example of impactful training and capacity building initiatives.[68]

In September 2024, Moldova officially launched LEEN – the Learning Energy Efficiency Network in Chisinau. The LEEN initiative will provide member towns and villages with a range of benefits, including energy planning tools, expert advice, and access to professional networks for project development. LEEN's primary focus is on cities who have developed Action Plans for Energy and Climate and are actively implementing them. By joining the LEEN network, local authorities get to share experiences, collaborate with peers, and access dedicated funding for reducing GHG emissions, thus becoming better equipped to implement their energy and climate action plans. Ultimately, this leads to reduced carbon footprints and improved quality of life for citizens.

This initiative is a collaborative effort involving the Ministry of Energy, GIZ Moldova, the National Centre for Sustainable Energy, Moldovan Congress of Local Authorities (CALM), and other local partners. This launch marks an important milestone in Moldova's commitment to capacity building in energy efficiency and sustainable urban development

Overall, Moldova's energy transition is progressing within the broader framework of European integration, with notable advancements in renewable energy deployment, energy efficiency initiatives, and market connectivity (*Table 3*)**. The commitment to reducing GHG emissions and enhancing energy security reflects the country's strategic alignment with the EGD and Energy Community objectives. While ongoing efforts are shaping a more sustainable energy sector, the pace and scale of transformation will be key factors in determining long-term success. Continued engagement with regional energy markets and the gradual adoption of innovative technologies are expected to further strengthen Moldova's position in the evolving European energy landscape.**

Table 3: Summary of how Moldova fares against EU energy goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Increase the share of renewables to at least 40% of final energy consumption by 2030	■ Target of 27% renewable in final energy consumption by 2030; Plans to change target to 30% by 2030; ■ As of 2023, only 23.66% has been achieved.
Increase the share of renewables to at least 47.5% of final energy consumption by 2050	■ Target of 47.5% renewables in final energy consumption by 2050; ■ Significant investment in wind and solar are required to meet this goal.
Reduce primary and final energy consumption through the 'Energy Efficiency First' principle by 2030	■ Aims to cap final energy consumption at 2.8 Mtoe by 2030; ■ Current energy consumption is growing at 2% annually, with high reliance on inefficient heating systems.
Achieve comprehensive energy efficiency improvements across all sectors by 2050	■ Energy efficiency improvements remain slow, with limited progress in public building renovation and industrial energy efficiency.
Fully integrate into the EU electricity market via ENTSO-E by 2030	■ Connected to ENTSO-E, but grid modernization and interconnectors are still needed for full integration into the European market.
Ensure a fully operational single energy market across the EU by 2050	■ Market liberalization is incomplete; ■ The electricity sector is still dominated by state-owned enterprises, limiting competition.
Diversify energy imports and reduce external dependency by 2030	■ Imports 75% of total energy; ■ Heavy reliance on Left Bank region (±70% of electricity supply) and Romania (±30% of electricity imports).
Achieve full energy independence with diversified sources by 2050	■ No clear roadmap for achieving full energy independence as of yet; ■ Grid constraints and reliance on gas imports persist.
Support vulnerable workers and communities affected by the energy transition by 2030	■ Some support mechanisms exist, but energy poverty remains widespread due to rising gas prices and affordability concerns.
Ensure social and economic equity in the energy transition by 2050	■ Efforts to develop green jobs and reskilling programs in renewable energy are ongoing but remain in the early stages.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's energy transition is confronted with multiple structural, financial, and institutional challenges that hinder its ability to align with European energy objectives. While there has been progress in policy development and market liberalization, key obstacles remain, including an incomplete regulatory environment, outdated infrastructure, limited investment, and a shortage of skilled labour. These constraints slow the deployment of renewable energy, energy efficiency improvements, and the modernization of Moldova's energy market. Addressing these barriers is important for ensuring a smooth and sustainable transition in line with the European Green Deal and Energy Community commitments.

Financial and Investment Challenges

Regulated tariffs remaining too low limit energy sector attractiveness for investors. Despite ongoing market liberalization efforts, regulated tariffs remain too low to ensure the financial viability of renewable energy projects. Furthermore, state-owned enterprises continue to dominate the electricity, gas, and heating sectors, restricting private sector participation and limiting competition. These conditions deter foreign and domestic investors who would otherwise support the expansion of renewable energy and energy efficiency initiatives.

Moldova faces a significant investment shortfall in its energy transition. The funding needs estimates vary between different strategic documents and studies (such as NDC, NECP, Low Emission Development Plan 2030, World Bank Climate and Development report). Nevertheless, they all highlight that only limited part of funding required to meet 2030 and 2050 goals has been secured so far. The gap in funding stems from both unfavourable investment conditions, regulatory bottlenecks and limited dedicated financial instruments for renewable energy projects. The gap is further deepened by the lack of specialists, and in some sectors – by outdated infrastructure.

High upfront costs for renewable energy technologies and energy-efficient renovations pose financial barriers, especially for low-income households and small businesses. Many energy consumers lack access to affordable financing mechanisms to support the adoption of clean energy solutions. Additionally, bureaucratic hurdles further complicate new project development, with at least 21 administrative steps required to authorize a renewable energy project.[70] This complex permitting process discourages investments in renewable projects.

Institutional and Policy Challenges

Incomplete alignment results in legislative gaps. Moldova has made progress in aligning its policy and regulatory framework with EU standards, yet some legislative gaps persist. While the

[70] World Bank, https://documents1.worldbank.org/curated/en/099110724132515011/pdf/P5006151ced4940a019c7111a2a01c1a08a.pdf

country has transposed many of the relevant EU directives, certain secondary legislation—such as grid codes and net-metering rules—remains incomplete or lacks proper enforcement. The Energy Strategy 2050, which is intended to provide a long-term roadmap for Moldova's energy transition, is still under development, delaying the adoption of crucial measures in areas such as building energy performance, biofuels, and energy efficiency.

Market unbundling remains incomplete, **which further delays making the energy market competitive.** Some retail, distribution and transmission activities are still only partially unbundled. This slows the development of a fully competitive energy market and prevents new entrants from gaining a foothold. Furthermore, inter-ministerial coordination remains weak, and the regulatory responsibilities affecting the energy sector remain divided between the Ministry of Energy, Ministry of Environment, and Ministry of Infrastructure and Regional Development, leading to the risk of inconsistent policy implementation and delays in regulatory decision-making.

Controlling production facilities in the administrative territorial units on the left bank of the Dniester River poses challenges. While the NDC aims to achieve emission reduction also on the left bank, NECP acknowledges that it is complicated. However, Moldova has stated that it remains committed to developing policies that would both address both energy security and market stability concerns, as well as climate policy goals.

Energy Infrastructure and Technology Challenges

Aged grid infrastructure limits the development of renewables. Moldova's energy infrastructure is aging and requires substantial modernization to support the integration of renewable energy, storage and demand side management. The power grid is outdated and lacks the flexibility needed to accommodate a high share of intermittent renewable sources, such as wind and solar. Without adequate investments in grid reinforcement, renewable energy expansion will remain constrained by balancing and storage limitations.

The country's regional energy integration is underway, but still incomplete. Limited cross-border interconnections (*Figure 14*) cannot provide needed flexibility in electricity imports and exports. While Moldova has taken a major step forward by connecting to the ENTSO-E electricity system, further grid upgrades are necessary to facilitate full integration into the European energy market.

Technology development in alternative fuels and energy storage solutions also remains limited. There has been limited progress in the development of biogas, biofuels, and hydrogen technologies, which are all part of diversifying Moldova's renewable energy supply. The lack of advanced energy storage options further exacerbates grid stability concerns, as intermittent renewable energy generation is set to increase.

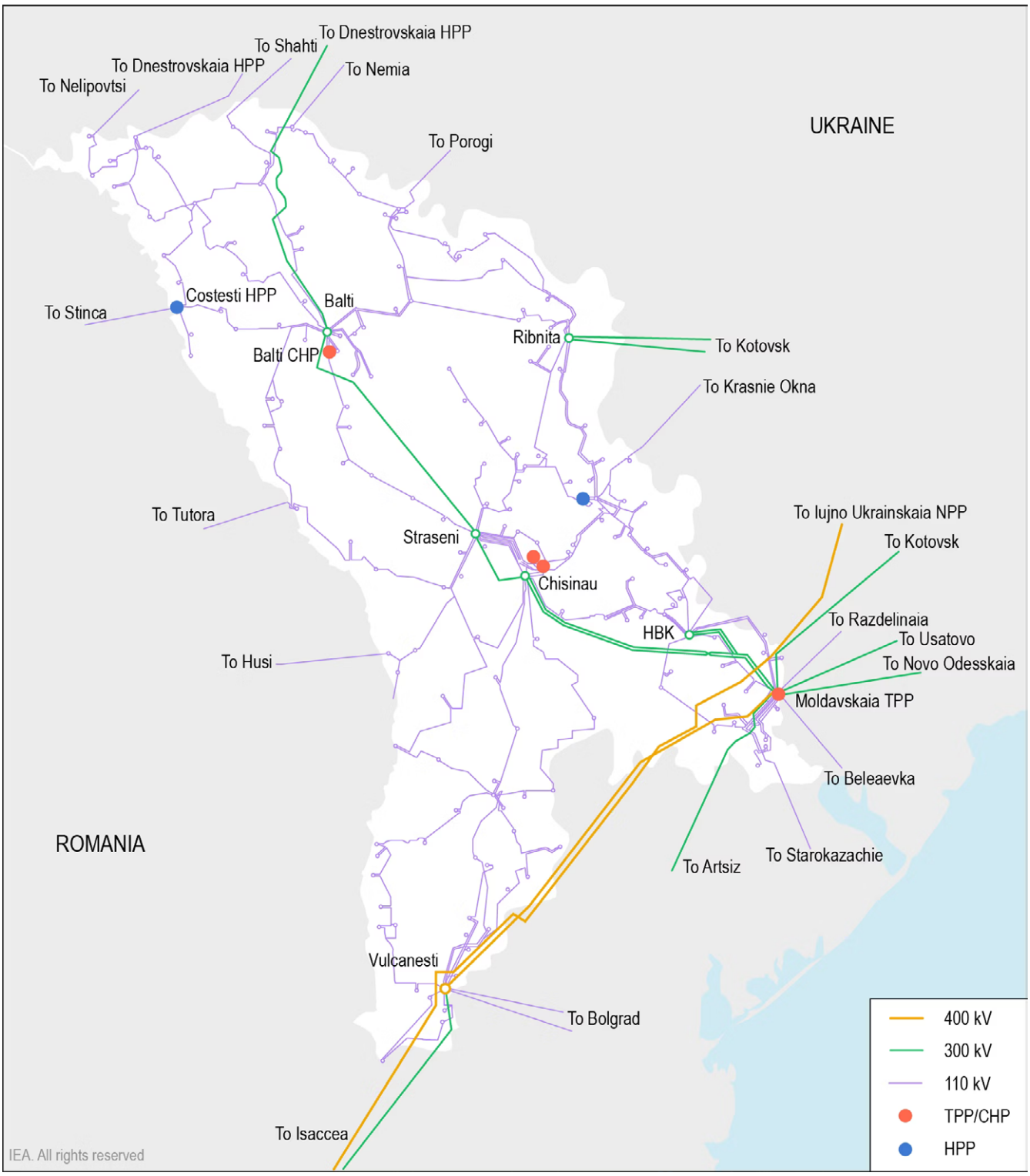


Figure 14: Existing electricity transmission network in Moldova and the development plan for the electrical transmission networks in the period 2018-2027.[71]

[71] National Energy and Climate Action Plan of the Republic of Moldova 2025–2030, https://www.energy-community.org/dam/jcr:bbaecb59-9e7e-40c7-b921-e82fe96f34a5/NECP%5EM2025-2030_EN%20final%20.pdf

Workforce and Skills Gaps

Despite investments in human capital, there is still a shortage of skilled workers in green technology areas. Moldova has launched several study programs in green energy and energy efficiency areas, but limited workforce in key areas such as energy auditing, photovoltaic and wind system installation, and energy-efficient building construction are a major barrier to Moldova's energy transition. The growing demand for skilled professionals in the renewable energy sector is outpacing the availability of trained specialists, risking delays in project implementation and increasing labour costs.

Brain drain results in a limited pool of domestic talent. Moldova faces the challenge of many young professionals seeking education and employment opportunities abroad. The ongoing talent loss reduces the availability of local expertise, further complicating efforts to develop a robust and technically proficient workforce for the energy sector.

Overall, Moldova's green transition is hampered by a combination of infrastructure deficiencies, policy gaps, financial constraints, and workforce shortages. These challenges slow the pace of renewable energy expansion, energy market liberalization, and the adoption of clean energy technologies. While progress has been made in regulatory alignment and market integration, addressing these structural barriers will be critical to achieving Moldova's long-term energy and climate goals.

Existing Enablers for Moldova's Progress Towards Energy Goals

Moldova has made tangible progress in aligning its energy sector with the European Green Deal and the Energy Community Treaty.[72] A combination of policy and regulatory advancements, financial support mechanisms, infrastructure development, technological innovation, and social engagement has created a foundation for accelerating the country's transition to clean energy. These enablers, though at varying stages of implementation, provide momentum for Moldova to advance its renewable energy goals, enhance energy efficiency, and strengthen energy security.

Policy and Regulatory Enablers

Moldova's commitment to aligning with EU energy policies is reflected in its adoption of key directives and strategies. The country has integrated the EU Renewable Energy Directive into its national policy framework, ensuring that legislative and institutional reforms are in line with European best practices. Central to this transition is the Energy Strategy 2050[73], which defines Moldova's long-term decarbonization roadmap and set ambitious targets for renewable energy adoption, emissions reduction, and energy efficiency improvements.

[72] Energy Community, https://www.energy-community.org/legal/treaty.html

[73] Moldova Ministry of Energy, https://midr.gov.md/files/shares/Concept_Strategia_Enenergetica__act__.pdf

At the same time, the National Energy and Climate Plan (2025-2030)[74] provides a structured approach to achieving renewable energy targets, enhancing energy efficiency, and meeting emissions reduction goals. These plans, alongside the Low Emission Development Program (GD No. 659/06-09-2023),[75] create a comprehensive policy architecture that strengthens Moldova's positioning within the European energy market. Furthermore, recent amendments to the Renewable Energy Law (Law No. 10/26-02-2016)[76] and Energy Efficiency Law (Law No. 139/19-07-2018)[77] have introduced self-consumption schemes and community energy projects, empowering local actors to participate in the green transition.

Financial and Market Enablers

International financial support is an invaluable enabler for Moldova's energy transition. The EU, USAID, and other international donors have provided both technical and financial assistance to accelerate renewable energy deployment and energy efficiency improvements. Key donor-backed programs, such as the Moldova Sustainable Energy Financing Facility (MoSEFF) and the Moldova Residential Energy Efficiency Financing Facility (MoREEFF), have played a vital role in financing residential and industrial energy efficiency projects. Combining domestic and international financing instruments can help leverage more capital for investments (see *Textbox 10*).[78]

Textbox 10: Example of impactful industrial energy efficiency projects financed through donor-backed programs.[77]

To strengthen its independence from Russian energy resources, Moldova ramps up investments in renewables and efficient use of energy. The Ministry of Energy launched the first renewable auction for PV and wind in August 2024 that would run until March 2025. Successful investors receive fixed price guarantees for the electricity generated for a period of 15 years. The first tranche includes 60 MW of photovoltaics and 105 MW of wind power. The capacity limit for solar parks is 1 MW and for wind parks 4 MW. The ceiling prices for wind power is 77.88 €/MWh and for solar 86.7 €/MWh. The guaranteed fixed price is to be determined through the auction procedure, but shall not exceed the ceiling price. Operational power plants are allowed to participate in the tender if the equipment is not older than 36 months from the commissioning date of the power plant. Large producers of renewable energy that win the auction will receive prioritized grid connection permits. This domestic instrument is complemented pledge by Development Corporation to provide political risk guarantees to lower the cost of capital for investors and by investments into grid and interconnectors via donor-led programs, thus combining local and international financing for boosting growth of renewables.

[74] Moldova Government: https://gov.md/sites/default/files/document/attachments/nu-1069-cs-2024_0.pdf

[75] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=139980&lang=ro

[76] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=98936&lang=ro

[77] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=132904&lang=ro

[78] Economica, https://www.economica.net/prima-licitatie-petru-regenerabile-din-republica-moldova-cu-tinta-de-165-mw-noi-in-eolian-si-fotovoltaic_768477.html

Private sector interest in renewable potential demonstrates the growing trust in Moldovan market. The private sector has been showing increasing interest in Moldova's renewable energy potential, particularly in wind, solar, and energy storage technologies. This interest reflects a growing confidence in Moldova's regulatory and market conditions. However, to fully leverage private sector investments, the country must further develop blended finance mechanisms, allowing public-private partnerships to de-risk investments in clean energy projects (see *Textbox 11*).[79] As of September 2024, installed capacities for electricity generation from renewable sources have increased fivefold since 2018, more specifically from 61.6 MW at the end of 2018 to 346.76 MW by the end of 2023 and 577 MW by the beginning of 2025.[80]

Textbox 11: Example of a recent private sector interest that resulted in a renewable energy project[78]

Navitas, a Moldovan subsidiary of the Romanian power distributor Premier Energy has finalized the construction of a 10 MW PV plant near Moldova's southern town of Cismichioi. The solar park had a development cost of around 380,000 EUR (392,000 USD) per MW of capacity. The Cismichioi plant became fully operational at the end of December 2024, increasing Premier Energy's total electricity generation from PV sources in Moldova to 28 MW. Last year, the company developed 24 MW of solar power capacities in the country

Infrastructure Enablers

Energy interconnection with the ENTSO-E system enables Moldova to access the European electricity market. Moldova's integration into the ENTSO-E electricity system marks a major milestone in strengthening its energy security (see *Textbox 12)*[81] and market diversification. By synchronizing with the European electricity grid, Moldova has gained enhanced access to the EU energy market, improving its resilience against external supply disruptions. However, further investments in grid modernization and cross-border interconnections are required to fully capitalize on these benefits.

Textbox 12: An illustrative example of the advantage of having been connected to EU energy market through ENTSO-E integration.[80]

In January 2025, Moldova was faced with a severe energy crisis provoked by Gazprom. To tackle this crisis, the EU has proposed a €30 million emergency assistance package in a first step to support the country purchase and transport natural gas to the Transnistrian region and help restore electricity and heating for the regions 350,000+ inhabitants. This was possible due to the ENTSO-E interconnection being in place since March 2022.

[79] SeeNews, https://seenews.com/news/Moldovaanias-premier-energy-completes-10-mw-pv-plant-in-moldova-1269010

[80] National Center for Sustainable Energy, https://cned.gov.md/en/content/installed-capacities

[81] European Commission, https://ec.europa.eu/commission/presscorner/detail/en/ip_25_329

Digitalization initiatives are also underway, contributing to a better integration of renewables. With the deployment of smart meters and smart grid technologies set to enhance the efficiency of Moldova's energy system. A pilot project for smart meter installation, launched in June 2023, aims to integrate digital solutions into the energy market, improving renewable energy integration, energy efficiency, and supply security (see *Textbox 13*).[82] As Moldova expands its smart grid infrastructure, its ability to absorb higher shares of variable renewable energy will significantly improve.

Textbox 13: How can the Power System Development Project (PSDP) be scaled, making use of smart metering to increase capacity and improve reliability of the power transmission system in Moldova.[81]

The PSDP is an initiative aimed at enhancing Moldova's electricity transmission infrastructure and ensuring energy security. While the project primarily focuses on grid modernization and interconnections, smart metering presents an opportunity to further scale its impact by increasing system capacity and reliability.

The integration of smart meters into the PSDP framework can provide real-time consumption data, enabling better demand-side management and grid balancing. This would allow transmission operators to optimize energy flows, reduce losses, and enhance the integration of variable renewable energy sources (e.g., solar, wind). Additionally, by improving load forecasting and grid responsiveness, smart metering supports greater resilience in energy supply, minimizing disruptions and ensuring efficient cross-border electricity trade as Moldova strengthens its regional interconnections.

***Scaling potential:** Expanding the use of smart metering can enhance the stability of Moldova's power system by providing **accurate, real-time insights** into consumption patterns. This facilitates more **flexible grid management**, reduces transmission bottlenecks, and enables a smoother transition towards a **higher share of renewable energy** in the national energy mix. Strategic deployment of smart metering, combined with ongoing grid modernization, can play a big role in advancing Moldova's energy transition while improving efficiency and security across the power sector.*

Technological and Workforce Enablers

The development of green skills and workforce training programs is gaining momentum. Universities and vocational institutions are expanding their curricula to include training in photovoltaic and wind energy system installation, energy auditing, and energy-efficient building design (see *Textbox 14*)[83]. These programs are crucial for building the domestic expertise needed

[82] Moldova Energy Projects Implementation Unit, https://mepiu.md/eng/current-projects/power-system-development-project-psdp-1

[83] Moldova Ministry of Energy, https://energie.gov.md/en/content/new-pilot-project-include-energy-and-environment-education-materials-moldovan-schools

to support Moldova's clean energy transition and to counteract the ongoing shortage of skilled workers in the renewable energy sector.

Textbox 14: Examples of strengthening Moldova green workforce through education and training[82]

As Moldova accelerates its transition to clean energy, educational and vocational institutions are stepping up to equip the workforce with essential green skills. Recognizing the need for trained professionals in the renewable energy sector, universities and technical schools have introduced specialized programs tailored to the industry's demands.

For example, the Technical University of Moldova launched a new course on "photovoltaic system installation and maintenance", providing students with hands-on training in solar energy technologies. Meanwhile, several vocational schools have expanded their curricula to include "wind turbine maintenance and energy auditing", ensuring a pipeline of skilled workers ready to contribute to the country's energy transition.

Complementing these efforts, a national pilot project led by the Ministry of Energy, in collaboration with the Ministry of Education and UNDP Moldova, introduced energy and environmental education materials into school curricula for grades I-XII. This initiative, supported by the European Union, aims to build awareness and foundational knowledge of sustainable energy from an early age, fostering future professionals in the field.

By investing in specialized education and training, Moldova addresses the shortage of skilled workers in the renewable energy sector, and it also lays the groundwork for a resilient and self-sufficient clean energy economy.

Additionally, Moldova has initiated research and innovation projects focused on alternative fuels, including biogas, biofuels, and hydrogen technologies (see *Textbox 15*)[84]. Expanding research capacity in these areas can provide long-term opportunities for diversifying Moldova's energy mix and reducing its reliance on fossil fuel imports.

Textbox 15: Expanding research capacity in renewable energies[83]

Tetra Tech, a provider of consulting and engineering services in water, environment and sustainable infrastructure, has been awarded 85 million USD to integrate a battery energy storage system (BESS) in Moldova to strengthen the country's power grid infrastructure. The funding comes courtesy of the USAID to increase Tetra Tech's single-award contract to strengthen energy security in the Republic of Moldova.

[84] Smart Energy Int., https://www.smart-energy.com/industry-sectors/smart-grid/tetra-tech-awarded-85m-to-support-the-moldova-power-grid/

California-based Tetra Tech's energy specialists will integrate what they call an innovative, utility-scale BESS into Moldova's electricity system to help strengthen Moldova's national power grid and facilitate greater electricity trade with Romania, Ukraine and the broader European market.

Community and Social Enablers

Public interest in clean energy solutions is on the rise, paving the way to large scale engagement. Public awareness and engagement play an essential role in supporting Moldova's energy transition. Public participation in energy efficiency programs and community-led renewable energy projects has steadily increased, reflecting growing interest in clean energy solutions (*Textbox 16*)[85]. Awareness campaigns emphasizing the economic and environmental benefits of renewable energy and energy efficiency have contributed to greater public support for green transition policies.

Textbox 16: The first community-led renewable energy project in Moldova.[84]

Starting in 2025, the Republic of Moldova is testing its first energy community with renewable energy sources. The National Agency for Energy Regulatory, with support from UNDP, has developed a regulation to outline the process of forming, managing, and distributing electricity within these communities, emphasizing transparency, accountability, and sustainability. The regulation was adopted on 19 December 2024. The first energy communities with renewable energy sources in Moldova will start with the support of Sweden, Norway, UNDP and other development partners, in collaboration with the Ministry of Energy.

Efforts to promote community energy projects, particularly in rural areas, offer opportunities to improve energy access and affordability while fostering local economic development (*Textbox 17*).[86] By strengthening public-private partnerships and engaging communities in renewable energy production, Moldova can further accelerate progress toward a more decentralized and participatory energy system.

Textbox 17: Community energy projects in rural areas.[85]

In 2022, Moldova launched a pilot project to subsidize the purchase of solar panels to farmers. The project, with a budget of MDL 16 million, provides a tool to co-finance the purchase of photovoltaic panels by farmers for the purpose of producing electricity for the farmers' own needs. It is part of

[85] UNDP, https://www.undp.org/moldova/press-releases/sweden-norway-and-undp-will-support-authorities-creating-first-energy-communities-renewable-energy-sources-republic-moldova

[86] InfoMarket, https://infomarket.md/en/analitics/285907

the :Future Technologies" project and has been implemented by the Agricultural Development and Modernization Agency in partnership with the USAID and the Swedish government. The maximum amount offered per beneficiary will be 2.5 million lei, which is enough to cover investments in a 200 kW photovoltaic park. Subsequently, farmers will be able to apply to AIPA for subsidies of up to 50% of the investment value.

To conclude, Republic of Moldova's energy transition is supported by a strong policy framework, international financial assistance, infrastructure improvements, technological advancements, and growing public engagement. While challenges remain, these enablers provide a solid foundation for achieving the country's renewable energy and energy efficiency targets. Ensuring continued progress will require sustained policy commitment, increased investment in infrastructure, and expanded workforce development efforts to fully harness the opportunities presented by Moldova's integration into the European energy market.

Key Priorities for Strengthening Moldova's Green Transition

Moldova's transition to a green energy system requires a strategic and coordinated approach across multiple policy, financial, infrastructure, and social dimensions. While the country has made progress in adopting European energy policies and increasing renewable energy capacity, several key priorities must be addressed to ensure a sustainable, inclusive, and competitive energy transition. Strengthening the regulatory framework, enhancing financial instruments, modernizing infrastructure, building human capital, and addressing social equity concerns are essential to Moldova's long-term energy transformation.

1. Policy and Regulatory Priorities

Finalize the Energy Strategy 2050 and put in place detailed implementation plan both for long-term strategy and the newly adopted NECP. A well-defined Energy Strategy 2050 is crucial to setting clear pathways, milestones, and targets for Moldova's energy transition. The government needs to make sure that it is finalized and implemented, ensuring that it provides a comprehensive framework for renewable energy expansion, emissions reductions, and energy efficiency improvements. Complementing this effort, the necessary secondary legislation must be enacted, particularly to ensure full compliance with the Third Energy Package and to provide legal clarity for market participants.

Focus on removing market barriers and facilitating competition. Further regulatory reforms should focus on removing market barriers and facilitating competition. Reforming public service obligations to enable market entry, fostering competition in electricity generation and retail supply, and enhancing transparency in energy pricing mechanisms will attract private sector participation and improve overall market efficiency. This would also most likely require further

just transition mechanisms (social protection measures such as social assistance to vulnerable energy consumers) to cushion price shocks resulting from market adjustments.

2. Financial and Market Priorities

Strengthen financial mechanisms and market incentives. These are essential to mobilizing investments in the country's energy sector. Moldova should develop dedicated financial instruments, including public-private partnerships, risk mitigation mechanisms, and targeted incentives, to reduce its dependence on donor funding and attract sustained private investment.

Expand financial instruments for energy efficiency in buildings. Develop a building sector-specific approach to expand financial instruments. Incentives across residential, commercial, and industrial energy efficiency projects should be structured to encourage private sector investments in renewables, including grants, tax benefits, and guarantees to lower capital risks. The Energy Efficiency Fund should be expanded, with clear eligibility conditions to ensure it supports bankable projects in energy efficiency and renewable generation.

Refine renewable energy auction design and pricing mechanisms. Moldova's renewable energy auctions will demonstrate the potential to attract investment, but further refinement is needed. The Government must evaluate the results of current auction and integrate lessons learned to improve auction design and pricing mechanisms to build investor confidence in future rounds.

3. Infrastructure and Technological Priorities

Upgrade energy infrastructure and invest in storage solutions. Modernizing Moldova energy infrastructure is a key enabler for the transition to renewable energy and energy market integration. Upgrading the national power grid, including completing key interconnectors such as the Vulcănești-Chișinău transmission line, will improve grid stability and facilitate the integration of variable renewable energy sources. Additionally, investments in energy storage solutions will be crucial to ensuring grid reliability and flexibility.

Leverage biomass and develop green hydrogen research and pilot projects. The country should capitalize on its biomass potential to develop both combined heat and power (CHP) and biogas projects, and explore opportunities for green hydrogen production as a means of diversifying its renewable energy mix. Expanding research and pilot programs in hydrogen and alternative fuels will help Moldova prepare for long-term decarbonization.

Advance digitalization and smart grid technologies. Advancements in digitalization and smart grid technologies should also be prioritized. The ongoing rollout of smart meters and real-time grid monitoring systems will enhance grid management, improve energy efficiency, and reduce losses. Further efforts should focus on expanding data analytics capabilities to optimize power system operations and enhance demand-side energy management.

4. Capacity Building and Skills Development

Expand training programs for renewable energy workforce development. Expanding training are vital to addressing the country's labour shortages in the renewable energy sector. The government should work with universities and vocational institutions to develop specialized curricula for solar PV installation, wind turbine maintenance, energy auditing, and smart grid management.

Implement workforce retention and public-private training partnerships. To retain skilled professionals, Moldova could implement incentive schemes to prevent workforce migration and ensure that energy professionals have competitive employment opportunities domestically. Establishing public-private partnerships in training and workforce development can help bridge skill gaps and prepare Moldova's labour market for a greener, more digitalized energy system.

5. Social and Equity Priorities

Ensure an inclusive and socially equitable energy transition. A successful green transition must be inclusive and socially equitable, ensuring that all citizens benefit from cleaner energy solutions. Addressing energy poverty remains a critical priority, as rising energy costs continue to disproportionately impact low-income households. Moldova should expand its social support mechanisms, including targeted subsidies, energy efficiency assistance programs, and direct financial aid to help vulnerable households cope with high utility costs.

Strengthen social support mechanisms for vulnerable households, communities and workers. Further support is needed for vulnerable communities and workers affected by the energy transition. The government should implement reskilling and reemployment programs to assist workers from fossil fuel-dependent industries in transitioning to jobs in renewable energy, energy efficiency, and digital grid management.

Enhance public awareness and outreach on energy efficiency and financial support. To promote an inclusive transition, Moldova must also enhance public awareness campaigns on energy-saving measures, efficiency improvements, and available financial support mechanisms. Outreach programs tailored to vulnerable communities and rural populations can help ensure that all citizens have the knowledge and resources to participate in the energy transition.

Moldova's transition to a low-carbon, energy-efficient economy requires stronger policy coordination, expanded financial instruments, modernized infrastructure, skilled labour development, and inclusive social policies. By implementing these key priorities, Moldova can accelerate its energy transition, enhance energy security, attract investment, and align with European Green Deal objectives. Achieving these goals will position Moldova as an integrated and resilient player within the European energy market.

3. Buildings and Renovation

Understanding Moldova's Status and Progress

The European Green Deal establishes a transformative agenda to achieve climate neutrality by 2050, with the building sector playing an important role in reaching this objective. Given that buildings account for approximately 40% of total energy consumption and 36% percent of greenhouse gas emissions in the European Union,[87] significant reductions in energy use and emissions are essential. The European Commission has developed a range of policies, targets, and regulatory measures to ensure a transition towards energy-efficient, decarbonized, and resilient buildings across member states. The building sector in Moldova accounts for approximately 60% of the country's total final energy consumption,[88] with a significant portion of the building stock predating 1990 (*Figure 15*) and lacking modern energy efficiency standards.

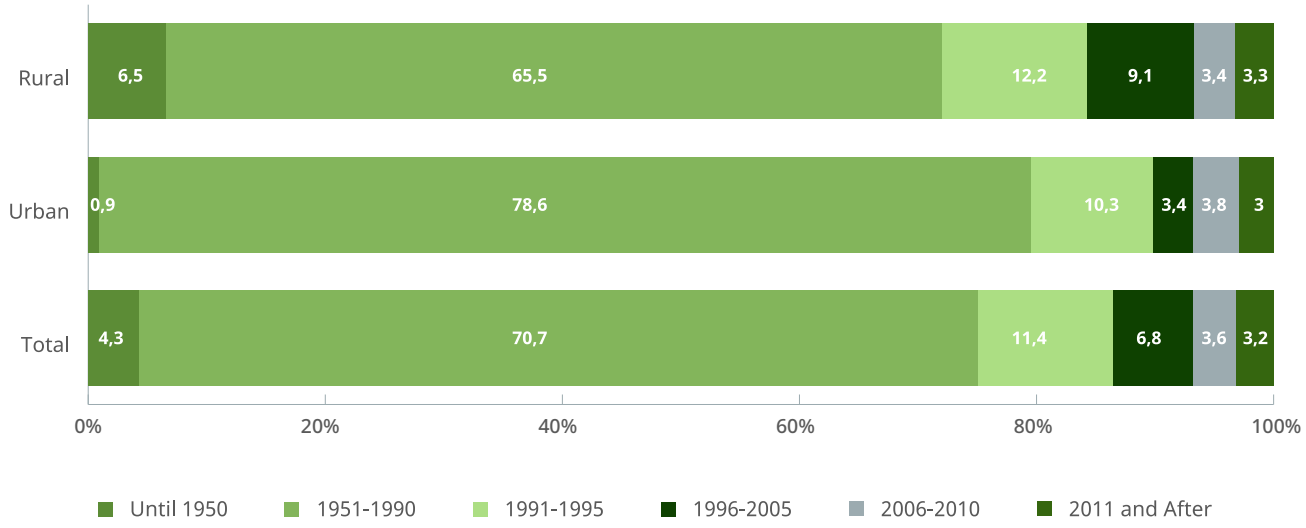


Figure 15: The structure of residential buildings by year of construction and residential area.[89]

Residential buildings drive high energy consumption, while renovation progress remains slow. Residential buildings alone represent 44% of TFEC (*Figure 16*), with energy usage exceeding European Union benchmarks. The country's renovation rate target of 3% (defined in the NECP), is allocated only for public buildings with a total useful area of 250 m^2, and therefore remains low, considering the total building stock. While Moldova has made progress in aligning its legislative

[87] European Climate Foundation, https://europeanclimate.org/wp-content/uploads/2022/03/ecf-building-emissions-problem-march2022.pdf?utm_source=chatgpt.com

[88] EBRD,https://www.ebrd.com/what-we-do/project-information/board-documents/1395303510659/Moldova_Buildings_Energy_Efficiency_Board_Report.pdf

[89] National Bureau of Statistics, 2022, "Energy Consumption in Households", https://statistica.gov.md/files/files/publicatii_electronice/Consum_energie_gospoda/Consumul_energie_gospodariile_casnice_editia_2022.pdf

framework with EU directives, key policy documents such as the Long-Term Renovation Strategy (substituted by the Building Renovation Plan, in accordance with the EPBD from 2024) remain incomplete. Financing initiatives, such as the Fund for Energy Efficiency in Residential Buildings (FEERM) and the Energy Vulnerability Reduction Fund, have been introduced to support energy efficiency measures, but several structural and financial barriers persist.

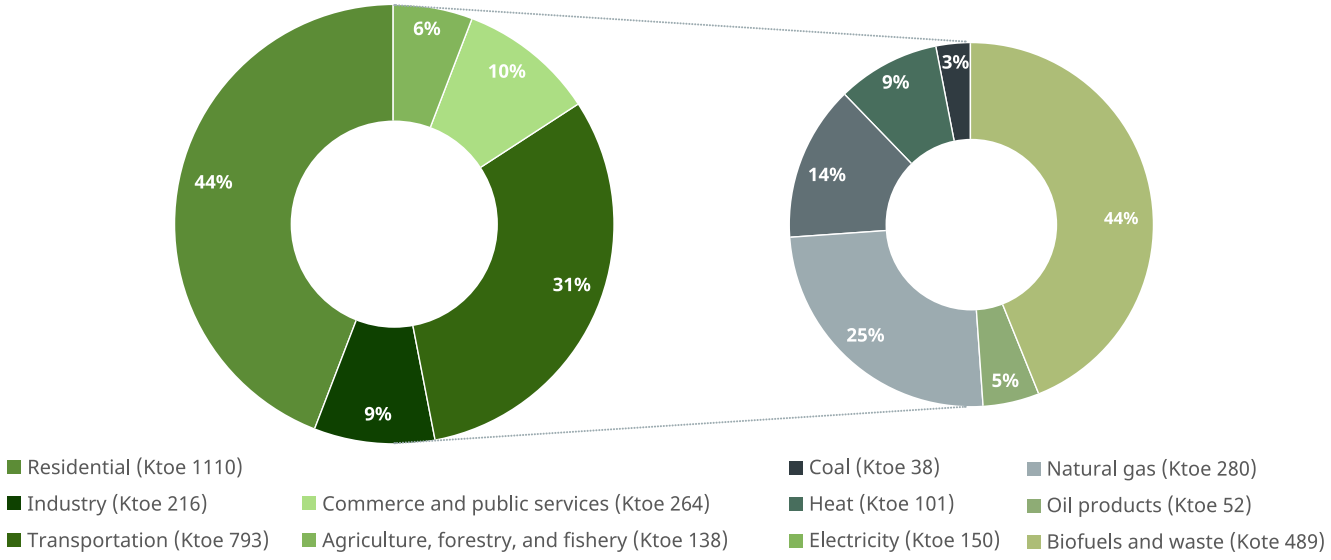


Figure 16: TFEC in the Moldova by sector and the FEC in the residential sector by type of energy carrier, 2022.[90]

Buildings are major energy consumers, with inefficient heating and limited emissions tracking. Buildings in Moldova constitute one of the largest energy-consuming sectors (*Figure 9*), with residential buildings consuming between 260-290 kWh/m² annually, while public buildings exhibit even higher usage, ranging from 170-325 kWh/m². These figures exceed EU energy efficiency standards. Heating infrastructure is outdated, with district heating systems operating inefficiently and many residential buildings continuing to rely on traditional, inefficient heating methods. Moldova has committed to reducing GHG emissions by 74% by 2030.[91] However, the absence of a comprehensive MRV system limits the ability to track progress and measure the impact of implemented policies.

Despite running several funding programs, renovation efforts are still slow, with limited number of deeper renovations, falling short of energy savings targets. Moldova's renovation efforts remain limited. The current renovation rate stands below 0.8%[92] and with an annual

[90] Moldova National Bureau of Statistics, https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica__15%20ENE__serii%20anuale/ENE020100.px/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

[91] UNDP, https://www.undp.org/moldova/press-releases/low-emissions-development-programme-was-approved-bringing-moldova-one-step-closer-towards-carbon-free-economy

[92] Moldova Ministry of Energy, https://www.energie.gov.md/en/content/victor-parlicov-increasing-energy-efficiency-buildings-eu-average-would-save-equivalent

renovation of 3% of the total area of central public authority buildings, significantly trailing the EU's target to double annual renovation rates by 2030 of the entire building stock of a country. Renovation activities are primarily focused on lower hanging fruits with limited projects doing deep renovations, which leads to modest energy savings. In 2020, Moldova recorded energy savings of 37.31 ktoe,[93] below the national target of 72.2 ktoe. The extent of deep renovations remains minimal, limiting the impact on overall energy efficiency improvements.

Energy poverty persists, with inefficient heating and limited support for renovations. Energy poverty remains a widespread issue, particularly in rural areas where many households rely on inefficient wood stoves for heating (*Figure 17*). These outdated systems contribute to high energy costs and indoor air pollution, further affecting household welfare. The Energy Vulnerability Information System (EVIS) provides heating subsidies to assist low-income households[94], but it does not extend financial support for energy-efficient renovations. Without targeted renovation programs, vulnerable households continue to experience high energy costs and inefficient energy consumption.

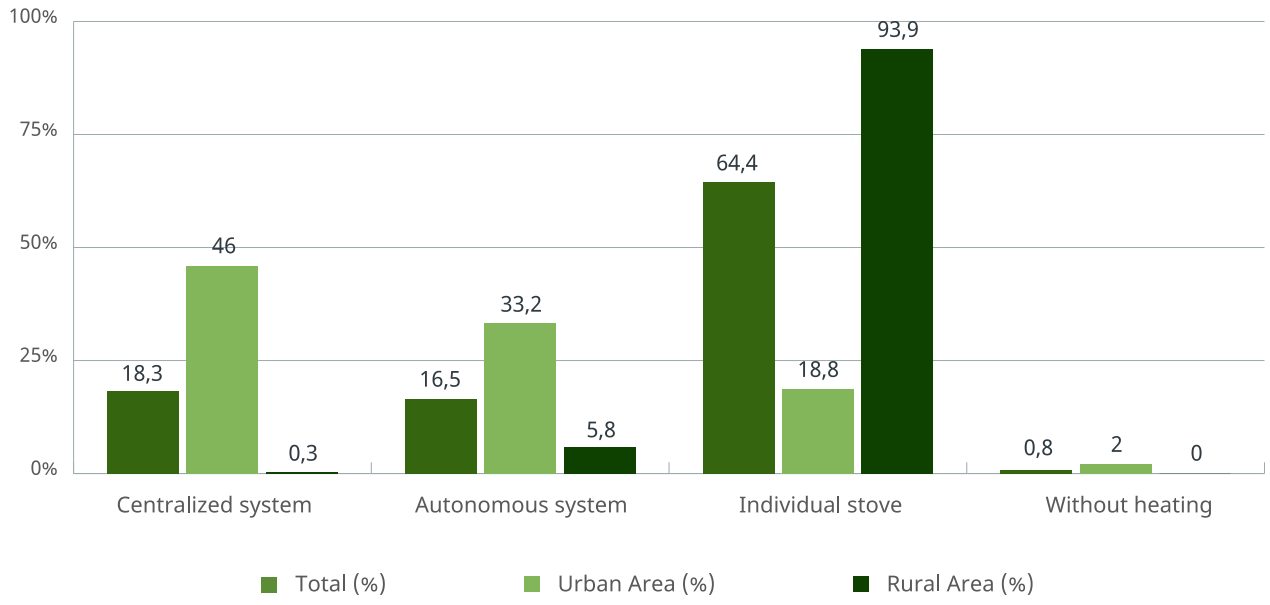


Figure 17: Distribution of residential buildings by used heating systems and by area of residence.[95]

Massive investment is needed, with limited domestic funding and low private sector involvement. The estimated investment needed to meet Moldova's renovation and energy

[93] Energy Efficiency Agency, Energy Efficiency Agency, https://aee.gov.md/storage/Rapoarte/Raport%20Privind%20EE%20SER%202020.pdf

[94] UNDP, https://www.undp.org/moldova/press-releases/registration-has-started-energy-compensation-2024-2025-cold-season

[95] National Bureau of Statistics, 2022, "Energy Consumption in Households", https://statistica.gov.md/files/files/publicatii_electronice/Consum_energie_gospoda/Consumul_energie_gospodariile_casnice_editia_2022.pdf

efficiency requirements ranges between €11-22 billion. Domestic funding remains limited, with most financial support coming from international development partners such as the EBRD and the European Investment Bank (EIB). The private sector has yet to play a significant role in financing energy efficiency projects. The Energy Service Company (ESCO) model is not widely adopted, and Moldova lacks a revolving fund mechanism to reinvest energy savings into future renovation initiatives.

Renovation efforts lag across all building sectors, with residential and commercial buildings facing the greatest challenges. Public buildings receive the most policy attention, with some financial mechanisms in place, yet renovations remain slow, although the NECP targets an annual renovation rate of 3% as required per EU directives and targets. Residential buildings face the greatest challenges due to outdated infrastructure, high energy consumption, and limited deep renovation efforts, with energy poverty further compounding the issue. Commercial buildings receive the least focus in policy and financial support, with energy efficiency improvements largely dependent on private sector engagement, which remains underdeveloped.

Regulatory gaps persist, with incomplete renovation strategies and undefined efficiency standards. Moldova has partially transposed key elements of the EU Energy Performance of Buildings Directive,[96] but significant gaps remain, especially given the fact that a new EPBD has been introduced in 2024. The Long-Term Building Renovation Strategy (Building Renovation Plan), essential for structuring future renovation efforts, is still incomplete. The absence of formal definitions for NZEB and ZEB (at the time of this assessment) further complicates the establishment of clear regulatory and financial frameworks for energy-efficient buildings.

Weak MRV systems and enforcement hinder tracking of energy efficiency progress. The implementation of an effective MRV system remains incomplete. Without a structured methodology for tracking energy savings and emissions reductions, it is difficult to measure the effectiveness of ongoing policies. The enforcement of Energy Performance Certificates is weak, reducing transparency in energy efficiency assessments. Additionally, Moldova has yet to introduce renovation passports, which could enable building owners to document and plan energy efficiency improvements over time.

Low awareness, skills shortages, and high costs slow the adoption of energy-efficient solutions. Public awareness of energy efficiency remains low, with many building owners and municipalities lacking knowledge of the long-term benefits of renovation. The construction sector also faces a shortage of professionals trained in modern energy efficiency techniques, including NZEB and ZEB solutions. Demand for energy-efficient building materials and technologies remains limited, partly due to high upfront costs and the weak enforcement of energy efficiency standards (including the relatively low MEPS). However, it is experiencing a shift towards energy-efficient solutions, driven by increasing awareness and government initiatives.[97]

[96] European Commission, https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en

[97] Statista, https://www.statista.com/outlook/cmo/diy-hardware-store/heating-cooling/moldova

Building sector digitalization is advancing but remains in its early stages. Efforts to digitalize Moldova's building sector are in progress, with initiatives focusing on energy efficiency improvements and the integration of renewable energy technologies. Several digital platforms have been developed to enhance regulatory compliance and energy monitoring (e.g., e-Monitoring Information System[98], Energy Vulnerability Information System[99], and others). However, these initiatives remain in the early stages, with further technological advancements required to maximize the efficiency and resilience of the building sector.

In conclusion, Moldova has made initial progress toward aligning its building sector with EU energy efficiency, GHG emission reduction and renovation targets, yet several challenges persist (*Table 4*)**. The slow pace of renovations, outdated heating infrastructure, and gaps in regulatory and financial frameworks continue to shape the sector's performance. The availability of financial resources, regulatory clarity, and technical capacity to implement NZEB and ZEB measures will play a crucial role in determining future progress in Moldova's transition toward a more energy-efficient and sustainable built environment.**

Table 4: Summary of how Moldova fares against EU goals and targets for buildings and renovation sector

EU Goals and Targets	Moldova's Current Targets and Status
Achieve climate neutrality in the building sector by 2050	■ No specific climate neutrality target for the building sector. ■ General commitment to reduce emissions by 77% by 2030.
Reduce GHG emissions by at least 55% by 2030 (compared to 1990 levels)	■ Target of 77% reduction in GHG emissions by 2030 but lacks an MRV system to track progress.
Double the annual renovation rate of buildings by 2030	■ No national target. ■ Current renovation rate is 3% for public buildings only, although this should be for all buildings (including residential and commercial.
Ensure all new buildings are Nearly Zero-Energy Buildings (NZEB) by 2030	■ No national target. ■ No formal NZEB definition in legislation. ■ Most new buildings do not meet high energy efficiency standards.
Ensure all new buildings are Zero-Emission-Buildings (ZEB) from 2030	■ No national target. ■ No formal ZEB definition in legislation.

[98] EU4Digital, https://eufordigital.eu/eu-supports-new-moldova-e-monitoring-system-for-policy-implementation-reform/

[99] European Commissio, https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/NIFO_2024%20Supportive%20Document_Moldova_vFinal_Final_rev.pdf

EU Goals and Targets	Moldova's Current Targets and Status
Renovate 35 million buildings by 2030	■ No national target for total number of buildings to be renovated. ■ Existing renovation efforts are limited.
Achieve a 3% annual renovation rate for public buildings	■ Current public building renovation rate is around 3%.
Phase out fossil fuel-based heating systems	■ 42.5% in GFEC (gross final energy consumption) for heating and cooling, including 2.3% for heat pumps, by 2030. ■ Many buildings still rely on outdated, inefficient heating systems, with no clear roadmap for phasing out fossil fuels.
Increase the share of renewable energy in buildings	■ No national target in place. ■ Net billing for small renewable energy sources for own electricity consumption (less than 200 kW) is defined as a measure in the NECP. ■ Limited progress in integrating renewable energy in buildings. ■ Dependence on fossil fuels remains high.
Improve the energy performance of the worst-performing buildings	■ No national target in place. ■ No systematic plan for targeting the worst-performing buildings. ■ Deep renovations remain rare.
Reduce energy poverty and increase affordability of sustainable housing	■ No national targets in place. ■ High levels of energy poverty persist, especially in rural areas. ■ Current policies focus on subsidies rather than efficiency improvements.
Implement Minimum Energy Performance Standards (MEPS)	■ MEPS are not fully implemented and do not meet EPBD (2024) requirements. ■ Energy efficiency enforcement remains weak.
Ensure Energy Performance Certificates (EPCs) for all buildings	■ No national target in place. ■ EPC enforcement is weak, and there is no clear system for tracking or monitoring energy performance.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's transition towards a sustainable and energy-efficient building sector faces significant structural, financial, regulatory, and technical challenges. While the country has taken steps to align its policies with the European Union's energy and climate objectives, several persistent obstacles hinder progress. High upfront costs, weak institutional frameworks, fragmented policies, and limited public awareness collectively impede the pace of renovation and modernization. Addressing these barriers is essential to advancing Moldova's green transition in the buildings and renovation sector.

High upfront costs and limited financial support hinder energy-efficient renovations. One of the most pressing challenges is the high upfront cost of energy-efficient renovations. Building owners, including homeowners' associations and public institutions, often lack the financial resources needed to undertake large-scale renovation projects. Limited access to domestic financing further exacerbates this issue, as Moldova relies heavily on international donors for energy efficiency investments. The absence of well-structured financial incentives, such as grants, subsidies, or blended financing models, discourages stakeholders from investing in energy-efficient upgrades. Without a stable and attractive financial support framework, the rate of renovation remains low, and deep energy retrofits are rare.

Regulatory gaps and weak enforcement undermine energy efficiency policies. Despite Moldova's efforts to align its legislative framework with EU standards, regulatory weaknesses persist. The enforcement of energy performance regulations, including Energy Performance Certificate requirements, remains inconsistent, undermining the effectiveness of existing policies. Moldova has yet to establish clear definitions and criteria for NZEB and ZEB, limiting the ability of policymakers and developers to set clear standards and targets. Additionally, secondary legislation necessary for implementing building energy efficiency laws is incomplete, leaving gaps in enforcement and compliance mechanisms.

Lack of a long-term renovation strategy hinders planning and investment. A critical gap in Moldova's regulatory framework is the absence of a Long-Term Renovation Strategy (LTRS), i.e. a comprehensive Building Renovation Plan with a roadmap until 2050. Without a clear policy direction, it is difficult to define annual renovation targets, prioritize interventions (identify worst performing buildings), or mobilize investments. Moreover, there is a lack of integration between renovation policies and digital solutions that could optimize energy efficiency improvements, such as smart building management systems and automated monitoring technologies.

Workforce shortages and lack of technical support could slow energy-efficient renovations. Moldova faces a considerable shortage of skilled labour in energy-efficient construction and renovation[100]. There are insufficient training programs to equip construction workers, engineers, and energy auditors with the expertise required for high-performance building renovations.

[100] World Bank, https://thedocs.worldbank.org/en/doc/1ec6c88ebadf43eb174efb8bab3d8452-0080012024/original/Moldova-Economic-Update.pdf

The limited availability of technical assistance services further complicates the renovation process, as building owners lack guidance on project planning, financing options, and compliance with efficiency standards. These capacity constraints could slow down the adoption of modern energy-efficient technologies and limit the effectiveness of policy measures aimed at promoting deep renovations.

Low public awareness limits adoption of energy-efficient renovations. Public awareness of the benefits and requirements of energy-efficient renovations remains low. Many building owners and municipalities lack accessible information about cost-effective renovation solutions, available financial incentives, and long-term savings associated with energy efficiency improvements. This information gap contributes to reluctance in undertaking renovation projects, particularly in the residential sector, where investments in energy efficiency are often perceived as costly and unnecessary.

Behavioural practices slow the adoption of EE solutions. Behavioural practices also play a role in delaying the adoption of modern building technologies and sustainable practices. Many homeowners continue to prefer traditional construction materials and heating methods, making it difficult to transition towards innovative, energy-efficient solutions. Without targeted public awareness campaigns and educational initiatives, achieving behavioural change and fostering a culture of sustainability will remain a significant challenge.

All in all, Moldova's transition to an energy-efficient and decarbonized building sector is hindered by a combination of financial, regulatory, technical, and societal barriers. The high upfront costs of renovation, weak enforcement of energy performance standards, an underdeveloped institutional framework, and a lack of skilled labour all contribute to the slow pace of progress. Additionally, low public awareness and resistance to change further delay the adoption of sustainable building practices. Addressing these roadblocks will be critical in aligning Moldova's building sector with EU climate and energy goals, ensuring long-term sustainability and resilience in the country's built environment.

Existing Enablers for Moldova's Progress Towards Building Sector Goals

Despite many challenges, Moldova's path towards achieving its building sector goals is supported by several existing enablers, including its status as an EU candidate country, international financial assistance, policy alignment with European energy directives, and emerging digital tools that enhance energy efficiency monitoring. These factors provide a foundation for advancing renovation activities, improving building energy performance, and increasing stakeholder engagement.

International assistance provides crucial funding and technical support for energy efficiency. Moldova benefits from substantial international assistance, primarily from the European Union and global financial institutions. As an EU candidate country, Moldova has access to European financial mechanisms and technical assistance programs that facilitate energy efficiency improvements.

The European Bank for Reconstruction and Development, the European Investment Bank, and the Green Climate Fund play a critical role in providing funding for building renovations, capacity-building initiatives, and policy development. These international partnerships help mitigate the financial constraints associated with large-scale energy efficiency projects and support the implementation of best practices in sustainable construction.

A well-developed policy framework underpins Moldova's efforts to modernize its building sector. The National Energy Efficiency Action Plan (NEEAP) 2016-2018 established a clear structure for defining energy efficiency targets and measures, ensuring alignment with EU standards. Since then, Moldova has developed a National Energy and Climate Plan (NECP) for 2025-2030, which consolidates previous plans, including the NEEAP. Legislative developments, such as the adoption of the Urbanism and Construction Code (434/28-12-2023)[101], are gradually improving regulatory clarity and enforcement mechanisms in the sector. Moreover, Moldova is making strides in integrating energy performance criteria into national legislation,[102] helping to facilitate better oversight and compliance with energy efficiency standards.

Expanding financial instruments and a growing green building sector drive investment. The increasing availability of financial instruments, including the Fund for Energy Efficiency in Residential Buildings,[103] is helping to stimulate investment in building renovations. Donor-supported initiatives also play a key role in expanding financial access, particularly for large-scale efficiency projects. Additionally, Moldova's emerging green building sector presents significant opportunities for private-sector engagement. Investors and developers are increasingly recognizing the economic benefits of sustainable construction (e.g., NEFCO,[104]EBRD and GCF,[105] and others), including long-term cost savings from reduced energy consumption and improved building performance.

Digital tools improve energy efficiency monitoring, planning, and enforcement. Moldova is leveraging digital tools to enhance energy efficiency monitoring and planning. Platforms such as the Energy Management Information System (EMIS)[106] and online energy efficiency calculators (e.g. the one provided by the National Centre for Sustainable Energy)[107] provide building owners and policymakers with valuable insights into energy consumption patterns, helping to identify areas for improvement. The introduction of digital solutions in the energy efficiency sector supports better planning, oversight, and enforcement of building energy performance requirements.

[101] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=144810&lang=ro#

[102] European Commission, https://build-up.ec.europa.eu/en/news-and-events/news/mandatory-energy-efficiency-requirements-new-and-renovated-buildings-moldova

[103] Moldova Government, https://cned.gov.md/en/content/residential-energy-efficiency-fund

[104] NEFCO, https://www.nefco.int/news/new-energy-efficiency-project-in-moldova/

[105] GEFF, https://ebrdgeff.com/ebrd-and-gcf-pMoldovaote-green-financing-in-moldova

[106] UNDP, https://www.undp.org/moldova/press-releases/energy-and-water-consumption-over-3000-public-institutions-be-monitored-through-energy-management-information-system

[107] CNED, https://cned.gov.md/EECalculator/EECalc/index.html?fbclid=IwAR17G8mdOLe6SFpghsf0qhCip3785yXWAzd-WmCXOW11_6HVZ4U_qP56Irp0_aem_AYjcTNhLry7fuLVPncViFmq476k4-VB2PRYUCrG9uDHqglN5vQ_Vp_BaIAAaG62m-dcaJYCyJfHp_smk6guYO5gh4

Rising public interest and awareness initiatives drive demand for energy-efficient renovations. Interest in energy security, security of supply, and affordability is contributing to increased stakeholder engagement in building renovations. Awareness campaigns and educational programs are helping to inform building owners about the long-term benefits of energy-efficient renovations. Demonstration projects and pilot initiatives serve as tangible examples of successful energy efficiency upgrades, encouraging further adoption of best practices across the sector. These efforts, combined with regulatory developments, are helping to shift market behaviour and drive demand for energy-efficient materials and technologies.

To conclude with, Moldova's progress in the building sector is supported by a combination of international financial assistance, policy initiatives, market incentives, digital innovations, and increased public awareness. While challenges remain, these enablers provide a solid foundation for accelerating renovation activities and improving energy efficiency in buildings. Continued alignment with EU directives, expansion of financial mechanisms, and leveraging technological advancements will be crucial in maintaining momentum towards achieving Moldova's long-term sustainability goals in the building sector.

Key Priorities for Strengthening Moldova's Green Transition

Moldova's transition towards a more sustainable and energy-efficient building sector requires targeted policy interventions, regulatory enhancements, and financial mechanisms that align with European Green Deal objectives. While the country has made some progress in developing national strategies, challenges remain in implementing effective measures to accelerate renovation rates, improve building efficiency, and ensure that the transition is both socially inclusive and economically viable. The following key priorities outline the necessary steps to strengthen Moldova's green transition within the buildings and renovation sector.

1. Policy and Strategy Development Priorities

Finalize and adopt key policy frameworks for building sector transformation. The successful transformation of Moldova's building sector depends on the finalization and adoption of critical policy frameworks, including the National Energy and Climate Plan, the Building Renovation Plan with a Roadmap until 2050, and legally binding Nearly Zero-Energy Building (NZEB) and Zero-Emission Building (ZEB) definitions.

Set clear targets and operational plans to guide energy efficiency and decarbonization. Establishing clear quantitative targets and operational plans for both public and residential buildings, as well as commercial buildings over the next decade will create a structured pathway for achieving the country's long-term energy efficiency and decarbonization objectives

2. Strengthening the Regulatory Framework

Enforce MEPS and update technical norms. Ensuring regulatory alignment with EU directives requires the implementation and enforcement of Minimum Energy Performance Standards (MEPS) for both new and existing buildings. This includes updating technical norms for solar-ready buildings and defining energy consumption thresholds for NZEBs and ZEBs.

Reform EPC issuance, establish a centralized registry, and introduce renovation passports. The Energy Performance Certification issuance process must be reformed to guarantee consistency in certification, along with the creation of a centralized EPC registry to track compliance and performance improvements. Introducing renovation passports for long-term building energy performance tracking will further reinforce compliance and facilitate future improvements. Additionally, mandating a minimum share of renewable energy in new and renovated buildings will help ensure a sustainable shift away from fossil fuel reliance.

3. Expanding Financial Mechanisms and Support

Expand domestic funding and establish a national revolving renovation fund. Access to financial resources remains a key determinant of Moldova's ability to scale up energy-efficient renovations. Increasing domestic funding through mechanisms such as a polluter-pays principle or Energy Efficiency Obligation Scheme (EEOS) contributions could create seed capital for a national revolving renovation fund. Scaling up existing programs such as the Fund for Energy Efficiency in Residential Buildings, alongside the introduction of concessional loans, performance-based incentives, and blended finance tools, will help attract investment for large-scale renovations.

Continue leveraging international funding for renovation programs. Collaboration with international financial institutions, including EBRD, EIB, and GCF, should be further leveraged to align Moldova's renovation strategy with donor-funded programs. Moreover, in this regard it is of crucial importance that Moldova increases its allocation of funds towards investments into the decarbonization of the building stock and uses these funds to leverage and further increase funding of IFIs and other funds (such as GCF).

Prioritize funding for worst-performing buildings and support vulnerable households. Targeted grant co-financing and soft loan schemes should prioritize the worst-performing buildings to maximize energy savings and economic benefits. Dedicated financial and administrative assistance should be made available to vulnerable households to ensure equitable access to renovation support measures.

4. Increasing Energy Efficiency and Renovation Rates

Create a National Building Renovation Plan with annual targets until 2050. To accelerate Moldova's building sector transformation, a National Building Renovation Plan must be

established, setting clear yearly operational targets for public, residential, and multi-apartment buildings.

Prioritize deep renovations with big energy savings per building; identify the worst performing buildings. Deep renovations should be prioritized, aiming for at least 60% energy savings per renovated building to align with EGD objectives. Strengthening financial incentives and ensuring regulatory enforcement will be necessary to support these ambitious energy efficiency improvements.

5. Decarbonization and Emission Reduction

Define NZEB and ZEB with clear energy requirements. Achieving long-term climate neutrality in the building sector requires the introduction of quantitative definitions for NZEBs and ZEBs, detailing energy consumption limits and renewable energy requirements.

Establish a centralized MRV system. A centralized MRV system should be developed to systematically track energy savings, GHG emissions reductions, and renovation progress. This will enable policymakers to monitor the impact of implemented measures and adjust strategies accordingly.

6. Addressing Energy Poverty

Ensure an inclusive green transition with targeted support for vulnerable households. Moldova's green transition must be socially inclusive, ensuring that vulnerable households benefit from energy efficiency improvements. Targeted financial support programs should be introduced to assist low-income homeowners in undertaking building renovations, reducing reliance on direct energy bill subsidies. The promotion of renovation passports can further facilitate access to future support while ensuring that energy efficiency measures align with NZEB and ZEB objectives.

7. Priorities for Capacity Building and Market Development

Expand training programs to build a skilled workforce. A well-functioning green transition requires a skilled workforce capable of delivering high-performance renovations and new construction in line with NZEB and ZEB standards. Training programs for engineers, auditors, designers, and construction workers should be expanded to enhance technical capacity. Updating the curriculum of technical universities and vocational training institutions will ensure a sustainable pipeline of professionals equipped with the expertise required for the sector's modernization.

Empower homeowner associations. Further efforts should be made to strengthen the homeowner associations' capacity to manage renovation projects, particularly in multi-apartment buildings.

Enforce technical norms. Additionally, increasing enforcement of technical norms will help stimulate market demand for energy-efficient materials and solutions, further supporting the sector's long-term sustainability.

8. Improving Data, Digitalization, and Awareness

Enhance digital tools for energy tracking. Developing robust digital tools for energy performance tracking is essential to ensuring transparency and accountability. Improving MRV systems with digital platforms such as the Energy Management Information System and smart metering technologies will provide accurate insights into energy consumption and savings.

Increase public awareness of renovation benefits. Public awareness campaigns must be intensified to inform building owners about the economic and comfort benefits of energy-efficient renovations. Demonstration projects showcasing successful renovations should be used to illustrate best practices and inspire replication. Providing easy access to information on cost savings and available financing will help generate demand for energy-efficient building materials and technologies.

To conclude, Moldova's green transition in the building sector requires an integrated approach that combines strong regulatory enforcement, innovative financial mechanisms and increased allocation of funding for renovation of buildings, enhanced technical capacity, and widespread public engagement. By prioritizing deep renovations of worst performing buildings, increasing renovation rates, and leveraging digital tools for monitoring progress, Moldova can accelerate its alignment with EU Green Deal objectives. Strengthening domestic funding sources, expanding training programs, and ensuring inclusive access to financial support will further solidify Moldova's path toward a resilient, low-carbon, and energy-efficient built environment.

4. Industry and Circular Economy

Understanding Moldova's Status and Progress

The EU has established a comprehensive framework for industry transformation and circular economy development under the European Green Deal. This framework aims to decarbonize industry, enhance resource efficiency, and implement circular economy principles to minimize environmental impact and drive sustainable growth. The EU's vision is to create a competitive, climate-neutral, and resource-efficient industrial sector while ensuring that waste management aligns with the principles of circularity. These goals are outlined in multiple strategic initiatives, directives, and regulations, forming a legally binding roadmap for Member States and candidate countries to follow.

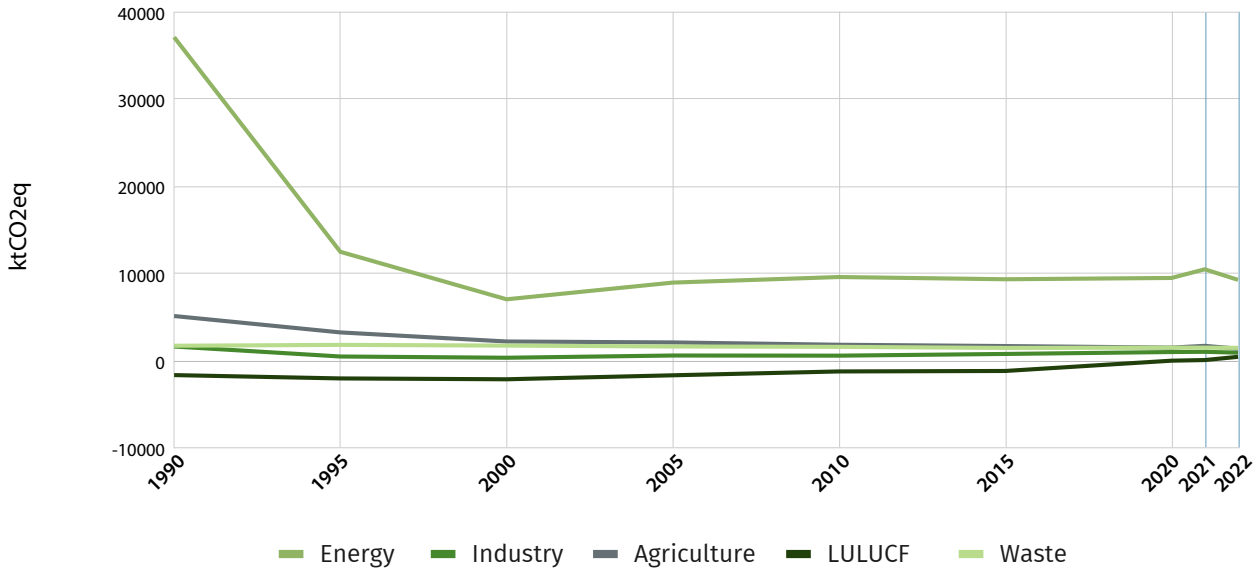
Moldova's industrial sector continues to face structural limitations, characterized by low-value production, limited diversification, and declining product complexity. Manufacturing contributes approximately 9% to the national GDP, with a significant portion driven by agro-industrial activities that generate considerable waste. The sector also struggles with informality, low labour productivity, and a heavy reliance on imported energy and raw materials, which constrains its overall competitiveness.

While GHG emissions from industry have decreased by approximately 43.9% in 2022 compared to 1990 (*Figure 18*), this decline is largely attributed to reduced industrial output rather than systematic decarbonization efforts. In 2022, emissions from the industrial processes and product use (IPPU) sector accounted for 7.3% of Moldova's total GHG emissions, with cement production representing the largest contributor at 46.8% of sectoral emissions.[108]

Waste management remains largely linear, with over 90% of municipal waste being landfilled and less than 10% undergoing recycling.[109] The absence of reliable data on circular material use, resource productivity, and comprehensive waste streams further complicates strategic planning and monitoring progress.

[108] National Inventory Report, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

[109] National Environmental Centre, https://environment.md/



* *The intervals are uneven and variable.*

Figure 18: GHG emissions from industry sector in Moldova.[110]

Industry Decarbonization

Moldova has set industrial decarbonization targets, but weak enforcement limits progress. Moldova has taken initial steps toward aligning with European industrial decarbonization policies, including the adoption of the Climate Action Law and the Industrial Emissions Law (Law No. 227/30-09-2022).[111] The Low Emissions Development Program (LEDP)[112] establishes a national target of a 27% reduction in industrial GHG emissions by 2030. However, enforcement mechanisms remain weak, limiting the impact of these policy frameworks on actual industrial practices. Although industrial GHG emissions have decreased since 1990, this decline is primarily due to economic contraction rather than proactive emissions reductions.

Manufacturing sector dominates industry, with food and beverage processing leading. As of 2023, Moldova had 5009 registered industrial enterprises[113], demonstrating the broad scope of entities that must transition toward sustainable operations. Manufacturing sub-sector has the largest share (*Figure 19*). In 2023, manufacturing sector contributed to 8.2% of GDP[114]. The most prominent sub-sector is food and beverage processing, which constitutes 50% of total manufacturing output, followed by textiles, apparel, and footwear.

[110] National Inventory Report, https://unfccc.int/sites/default/files/resource/NIR9_EN_241227.pdf

[111] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro

[112] EU4Climate, https://eu4climate.eu/download/low-emissions-development-programme-ledp-of-moldova-until-2030/

[113] National Bureau of Statistics, https://statistica.gov.md/en/news_release?domains%5B0%5D=22

[114] Trading Economics, https://tradingeconomics.com/moldova/manufacturing-value-added-percent-of-gdp-wb-data.html

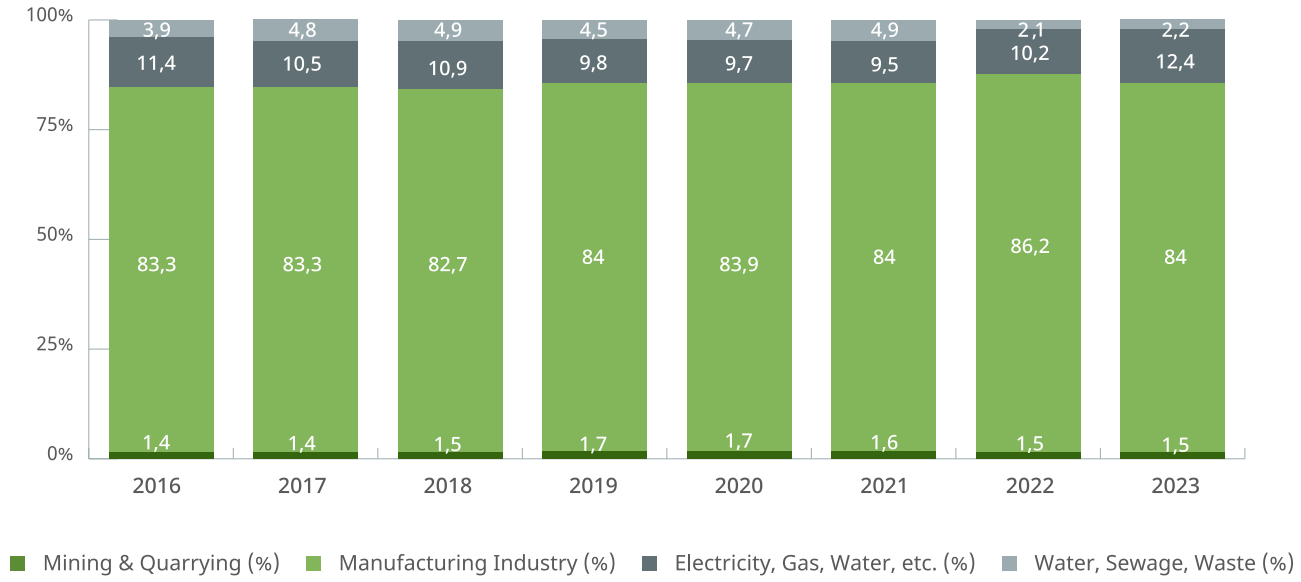


Figure 19: Structure of industrial production, by economic activities.[115]

Circular Economy and Waste Management

Moldova's waste policies lack key economic instruments, with Deposit Refund System (DRS) set for 2027. Moldova has partially aligned its waste management policies with EU directives, but key economic and regulatory instruments remain absent. The country has not yet implemented gate fees, differentiated waste stream tariffs, or landfill taxes, which are critical for incentivizing waste reduction and resource efficiency. The DRS is scheduled for implementation by 2027, but secondary legislation is still under development.

Moldova's waste generation is rising, with 90% landfilled and limited hazardous waste treatment. Municipal solid waste generation per capita in Moldova stands at ±400 kg per year, with over half of it being municipal waste (*Table 5*).[116] Waste generated is lower than the EU average of 513 kg per year,[117] but waste generation has been on a continuous rise along with economic growth and growth of domestic consumption. However, Moldova's waste management remains predominantly linear, with 90% of municipal waste being landfilled—often in unregulated sites. Additionally, the country lacks facilities for hazardous waste treatment, leading to the export of hazardous waste to Romania and Ukraine for disposal.

[115] National Bureau of Statistics, https://statistica.gov.md/files/files/publicatii_electronice/Anuar_Statistic/2024/Anuarul%20_statistic_2024.pdf

[116] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=141680&lang=ro

[117] European Commission, https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240208-2

Table 5: Municipal waste generation in Moldova between 2017 and 2021

Indicator	2017	2018	2019	2020	2021
Total population (*thousand people*)	2780.8	2729.6	2684.8	2643.7	2626.6
Served population (*thousand people*)	1092.5	1152.6	1284.6	1441.9	1531.9
Total waste generated (*thousand tons*)	985.8	952.8	1033.6	1072.8	1055.9
Waste generated per person per year (*kg, total population*)	**354**	**349**	**384**	**405**	**402**
Waste generated per person per year (*kg, served population*)	900	826	804	744	689

Moldova's recycling rates remain low, with limited infrastructure and heavy reliance on landfilling. Recycling rates in Moldova remain critically low, with only 10% of municipal waste being recycled, far below the EU average of 48%.[118] Existing recycling infrastructure is limited, with only a handful of plastic recycling companies, glass recyclers, and paper and cardboard recycling facility (*Textbox 19)*[119] This modest waste processing capacity exacerbates reliance on landfilling, contradicting the objectives of the European Green Deal.

Moldova lacks circular economy data, hindering progress measurement. Absence of official calculations for its circular material use rate prevents accurate measurement of progress toward circular economy objectives. In contrast, the EU's circular material use rate stood at 11.5% in 2022,[120] underscoring the urgent need for improved data collection and reporting in Moldova.

Textbox 19: List of companies with permits for recycling of plastics, paper and glass in the Republic of Moldova (status per 31 December 2024)

Plastic recycling:
ABS SRL
Finplast – Prim SRL
SC Pandrim SRL
Recon Mac Plast SRL
Autovoiaj SRL
Gelibert SRL
Uniplast SRL

Glass recycling:
Î.S. Fabrica de sticlă din Chișinău
ABS SRL
Vetropack Chișinău SA

Paper and cardboard:
Candelux-Com SRL
SA Combinatul de Articole din Carton

Source: Environmental Agency – https://am.gov.md/ro/content/registrul-cererilor-%C8%99i-al-actelor-permisive-de-mediu-eliberate%C2%A0

[118] Statista, https://www.statista.com/statistics/1219551/municipal-waste-recycling-eu-by-country

[119] Source: Environmental Agency – https://am.gov.md/ro/content/registrul-cererilor-%C8%99i-al-actelor-permisive-de-mediu-eliberate%C2%A0

[120] European Commission, https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20231114-2

Sustainable Products and Industrial Practices

The country lacks circularity data, with low resource efficiency and limited SME support for cleaner production. Moldova's resource productivity and circularity rate remain low, with no systematic data available to assess material efficiency. Domestic material consumption is estimated at 11.6 tons per capita, but no official figures exist for the circular material use rate.

Financial and technical barriers limit SME adoption of cleaner production. The adoption of Best Available Techniques (BATs) for cleaner production remains limited, primarily due to financial and technical constraints among enterprises. SMEs, which make up a substantial portion of the industrial sector[121], face additional challenges in accessing funding and technical expertise necessary for sustainable transition. The absence of targeted support programs for SMEs further inhibits the widespread uptake of resource-efficient and low-carbon industrial practices.

Overall, Moldova has made initial policy strides in aligning with EU industrial decarbonization and circular economy objectives (*Table 6*)**. However, significant gaps remain in policy implementation, enforcement, and data availability. The industrial sector continues to operate with limited efficiency improvements, and waste management remains highly linear. Strengthening regulatory mechanisms, expanding recycling infrastructure, and improving industrial emissions monitoring will be essential to advancing Moldova's green transition. Continued efforts to align with EU standards and build institutional capacity will be critical for ensuring long-term sustainability and economic resilience.**

Table 6: Summary of how Moldova fares against EU industry and circular economy goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Reduce total greenhouse gas (GHG) emissions by 55% from 1990 levels by 2030.	■ **Target:** 27% reduction in industrial GHG emissions by 2030 under the Low Emissions Development Program. ■ **Progress:** Industrial emissions have decreased by 37.8% since 1990, mainly due to economic contraction rather than proactive decarbonization.
Achieve climate neutrality (net-zero emissions) across all industrial sectors by 2050.	■ No national target for net-zero industrial emissions by 2050. ■ Law on Climate Action (No. 74/2024) and Law on Industrial Emissions (No. 227/2022) have been adopted, but enforcement mechanisms remain weak.
Implement the EU Emissions Trading System (ETS) and Carbon Border Adjustment Mechanism (CBAM) to regulate carbon pricing.	■ No national Emissions Trading System in place. ■ CBAM preparations are limited, which may impact the competitiveness of Moldovan exports to the EU.

[121] OECD, https://www.oecd.org/en/publications/fostering-sme-development-in-the-republic-of-moldova_a81c45f1-en.html

EU Goals and Targets	Moldova's Current Targets and Status
Increase the EU's circular material use rate to at least 11.5% by 2030	■ No official measurement of Moldova's circular material use rate. ■ Lack of data prevents accurate tracking of progress.
Reduce municipal waste landfill disposal to a maximum of 10% by 2030.	■ No national target for municipal waste landfill disposal. ■ Over 90% of municipal waste is landfilled, with most sites being unregulated. ■ No landfill taxes or economic incentives to reduce landfilling have been implemented.
Achieve a minimum of 50% municipal waste recycling rate by 2030.	■ No national target for municipal waste recycling. ■ Only 10% of municipal waste is recycled, significantly below the EU average of 48%. ■ Limited recycling infrastructure, with only a few recycling facilities operational.
Ensure all products meet Ecodesign for Sustainable Products Regulation, emphasizing durability and recyclability.	■ No national Ecodesign framework in place. ■ Minimal adoption of eco-design principles in product manufacturing.
Expand Extended Producer Responsibility (EPR) schemes to cover electronic waste, packaging, and batteries.	■ EPR legislation implementation is still deficient, with no comprehensive schemes for electronic waste, packaging, or batteries. ■ The Deposit Refund System is planned for launch by 2027, but secondary legislation is still pending.
Support Industry 4.0 technologies to enhance energy efficiency and circular economy practices.	■ Industry 4.0 technologies remain underutilized. ■ Limited adoption of digital tools for energy efficiency, emissions monitoring, and circular economy practices.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's transition to a green economy faces significant structural, financial, regulatory, and institutional challenges. While the country has taken steps to align its policies with the EGD and circular economy principles, progress remains hindered by weak enforcement mechanisms, limited financial resources, incomplete legislative alignment, and institutional fragmentation. This section outlines the primary barriers preventing the effective implementation of green transition policies in Moldova's industrial and waste management sectors.

Policy and Regulatory Challenges

No unified green industry strategy prevents full alignment with EU waste regulations. Moldova lacks a dedicated national strategy for industrial green development and circular economy integration. While the Circular and Green Economy Program 2024-2028 (GD 495/10-07-2024)[122] provides a partial framework, there is no overarching policy that consolidates industrial decarbonization and circular economy goals. Additionally, the transposition of the EU Waste Framework Directive[123] remains incomplete, with gaps in regulations on single-use plastics, microplastics restrictions, and eco-modulated fees. These regulatory shortcomings weaken Moldova's ability to implement the polluter-pays principle and other economic incentives for sustainable waste management.

Weak enforcement and policy inconsistencies hinder industrial sustainability efforts. The enforcement of existing legislation, such as the Climate Action Law[124] and Industrial Emissions Law[125] is constrained by a lack of implementation mechanisms. Without clear operational guidelines, industries struggle to comply with new environmental requirements. Furthermore, inconsistencies in economic development planning result in conflicting priorities between industrial growth and environmental sustainability, leading to weak alignment between industrial policies and circular economy targets.

The absence of economic incentives sustains Moldova's reliance on landfilling. Another critical issue is the absence of a comprehensive policy mix that integrates economic and regulatory instruments to support sustainable waste management. The lack of landfill taxes, gate fees, and differentiated waste tariffs reduces incentives for industries to adopt circular practices, perpetuating Moldova's reliance on landfilling as the primary waste disposal method.

Financial and Economic Challenges

Limited financial capacity hampers industrial transition to green and circular practices. The transition to green industry and circular economy practices requires substantial investment in cleaner technologies, energy efficiency measures, and waste processing infrastructure. However, Moldova's industrial sector, particularly SMEs, lacks the financial capacity to adopt Best Available Techniques for emissions reduction and resource efficiency.

Weak domestic financing and economic incentives slow Moldova's circular transition. Moldova relies heavily on external financing from institutions such as the EBRD and the EIB for green infrastructure projects. However, domestic financing mechanisms, including government-backed loans and green credit programs, remain underdeveloped. Limited access to green

[122] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=144384&lang=ro

[123] European Commission, https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

[124] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=143228&lang=ro

[125] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro

finance, high-interest loans from local banks, and slow disbursement of donor-funded grants further inhibit the private sector's ability to transition to sustainable production models.

Underdeveloped waste pricing mechanisms discourage recycling and resource recovery. Economic incentives to promote circular economy practices are also underdeveloped. The absence of an operational system for landfill gate fees or differentiated fees for recyclable versus non-recyclable materials weakens market incentives for waste prevention and resource recovery. Additionally, municipal waste collection fees are too low to cover the costs of waste management services, discouraging investment in recycling and waste treatment infrastructure.

Incomplete Extended Producer Responsibility limits private investment in waste recovery. EPR systems have been introduced but remain incomplete. Coverage for certain product categories, such as textiles, is lacking, limiting private sector investments in waste recovery systems. Without a fully operational EPR system, Moldova risks falling behind in meeting EU circular economy objectives.

Institutional and Capacity Challenges

Institutional fragmentation weakens policy coordination and sustainability implementation. Moldova's green transition efforts are hampered by institutional fragmentation and limited administrative capacity. Multiple government agencies share overlapping mandates for environmental policy, industrial regulation, and waste management, leading to inefficiencies in decision-making and policy implementation. Without a centralized governance framework, coordination among ministries remains weak, delaying the adoption and enforcement of sustainability measures.

Limited regulatory capacity and weak enforcement allow non-compliance to persist. The capacity of regulatory and enforcement bodies is also insufficient. Ministries and inspection agencies lack the necessary technical expertise and financial resources to monitor compliance with industrial emissions standards and waste management regulations. Weak enforcement further undermines the effectiveness of existing policies, allowing non-compliant industries to continue operating without facing penalties.

Skills gaps in industry and public institutions hinder green transition efforts. A significant skills gap also exists within the industrial sector. Many enterprises lack the technical know-how to adopt BAT and implement circular economy practices. Similarly, public sector institutions – local municipalities in particular – face challenges in planning and executing waste management investment projects, limiting their ability to leverage available funding sources for infrastructure development.

Data and Monitoring Challenges

Data gaps hinder policy evaluation and circular economy progress tracking. Reliable data is essential for tracking Moldova's progress toward green transition objectives. However, significant gaps exist in data collection and reporting on key circular economy indicators, such as the national circular material use rate. Without robust data systems, policymakers lack the necessary information to evaluate the effectiveness of existing policies and adjust strategies accordingly.

Lack of monitoring systems and undocumented informal sector complicate waste management. The informal sector, which plays a role in waste collection and recycling, remains largely undocumented, further complicating efforts to develop comprehensive waste management strategies. Additionally, there is no centralized monitoring system to track recycling rates, resource productivity, or industrial emissions, making it difficult to align national policies with EU reporting requirements.

Low adoption of digital solutions limits industrial sustainability and emissions tracking. The readiness of Moldova's industrial sector to adopt digital solutions is also low. Industry 4.0 technologies, which can support emissions monitoring and circular economy implementation, are not widely used. Without investment in digital infrastructure, Moldova may struggle to meet future EU regulatory requirements for industrial sustainability.

All in all, Moldova's transition to a green economy is constrained by significant policy, financial, institutional, and data challenges. The absence of clear regulatory frameworks, limited access to green finance, weak enforcement capacity, and inadequate data collection mechanisms impede progress toward circular economy goals. Addressing these barriers will require coordinated efforts from policymakers, financial institutions, and industry stakeholders to enhance regulatory clarity, increase investment in sustainable infrastructure, and strengthen enforcement mechanisms. Without urgent action to overcome these roadblocks, Moldova risks lagging behind in its European integration and green transition ambitions.

Existing Enablers for Moldova's Progress Towards Circular Economy Goals

Moldova is steadily advancing towards a circular economy, equipped with key enablers that support its alignment with EU standards. As an EU candidate country, it has strong external incentives to modernize industry, enhance sustainability, and integrate circular economy principles. Recent policy advancements, such as the Industrial Emissions Law and the Circular and Green Economy Program 2024-2028, provide a solid regulatory foundation, while donor-backed financing and digitalization efforts accelerate progress.

By leveraging these enablers, Moldova can strengthen environmental resilience, boost economic competitiveness, and drive long-term sustainability. This chapter highlights the opportunities that will shape the country's transition towards a resource-efficient, low-carbon future.

Policy and Regulatory Enablers

Strengthening EU-aligned regulations supports industrial decarbonization and circular economy goals. Moldova has made progress in aligning its regulatory framework with EU environmental directives. The adoption of the Industrial Emissions Law[126] and the Climate Action Law[127] lays the groundwork for enforcing industrial decarbonization and environmental compliance. Additionally, the draft Circular and Green Economy Program 2024-2028[128] is set to provide a strategic framework for advancing circular economy principles. These legislative developments partially transpose the EU Industrial Emissions Directive[129] and European Climate Law,[130] reinforcing Moldova's commitment to meeting EU environmental standards.

CBAM and EPR schemes drive industrial sustainability and market competitiveness. The introduction of the Carbon Border Adjustment Mechanism[131] presents an opportunity for Moldova's export-oriented industries to accelerate their decarbonization efforts. By aligning with CBAM requirements, industrial enterprises can maintain competitiveness in EU markets while reducing their carbon footprint (*Textbox 20*).[132] Additionally, the ongoing development of EPR schemes for electronics, packaging, and batteries is expected to enhance recycling infrastructure and reduce reliance on landfilling, supporting the broader objectives of the circular economy.

Textbox 20: CBAM impact on Moldovan companies.

CBAM could accelerate industrial modernization and energy efficiency investments in Moldova. Under the newly established EU Carbon Border Adjustment Mechanism, carbon pricing will begin affecting Moldova as early as 2026, with initial reporting during the transitional period of the CBAM starting in 2023. CBAM will impose carbon costs on energy-intensive products exported to the EU, affecting Moldovan industries that rely on fossil fuel-intensive production. Under a national ETS aligned with the EU ETS, Moldova should expect carbon pricing to impact the cement, steel, brick, glass, lime, and power/heat sectors. Moldovan firms active in these sectors will need to invest in monitoring, reporting, and verification (MRV) systems to meet EU standards. Low-carbon alternatives, such as renewable energy integration in manufacturing and efficiency improvements, could help mitigate CBAM-related costs. Investing in sustainable production could turn Moldova into a more attractive trade partner for EU buyers seeking carbon-neutral supply chains.

[126] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro

[127] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=143228&lang=ro

[128] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=144384&lang=ro

[129] European Commission, https://ec.europa.eu/environment/stories/industrial-emissions/#group-section-The-IED-l3vu7jaiAi

[130] European Commission, https://climate.ec.europa.eu/eu-action/european-climate-law_en

[131] European Commission, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

[132] Moldova Ministry of Environment, https://mediu.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Case_Study_Moldova_ETS_CBAM_Assessment_25_September_2023_EN.pdf

Financial Enablers

International financing accelerates waste management and green infrastructure development. Moldova benefits from financial and technical assistance provided by international donors and development institutions. The European Bank for Reconstruction and Development plays a key role in financing waste management and green infrastructure projects. For instance, the EBRD Solid Waste in Moldova Project has allocated 25 million EUR in loans and 600,000 EUR in technical assistance to support modernized waste management systems[133]. These funds contribute to the development of waste treatment facilities, improving Moldova's recycling and resource recovery capabilities.

Expanding green finance and economic incentives can drive SME sustainability efforts. Establishing concessional loan programs and targeted grant schemes would provide SMEs with the financial resources needed to modernize production facilities and adopt Best Available Techniques. Additionally, the planned introduction of landfill taxes, gate fees, and eco-modulated fees could create a domestic revenue stream to support circular economy initiatives while discouraging unsustainable waste disposal practices.

Capacity-Building and Institutional Enablers

Strengthening institutional capacity enhances policy enforcement and regulatory oversight. It is fundamental to improving policy implementation and enforcement. Recent public sector reforms, including salary increases for civil servants, aim to attract skilled professionals to government agencies responsible for environmental oversight. This is expected to enhance regulatory enforcement, streamline policy coordination, and improve compliance monitoring.

Targeted training programs can bridge skills gaps in BAT, circular economy, and EU regulations. Investments in training and upskilling programs are equally important. Capacity-building initiatives that provide specialized training on BAT, circular economy principles, and EU climate regulations can bridge the skills gap among public officials, SMEs, and waste management companies. Differentiating between retraining, reskilling, and upskilling programs will ensure that professionals receive targeted support (*Textbox 21*), whether they are transitioning to new roles or enhancing their expertise in their current positions.

Textbox 21: Understanding Reskilling vs. Upskilling

Retraining and upskilling are both forms of skill development but serve different purposes:

***Reskilling** (or retraining) means learning entirely new skills to transition into a different role or career. It involves gaining competencies in a new field to adapt to changing job markets.*

[133] EBRD, https://www.ebrd.com/news/2023/better-solid-waste-infrastructure-for-moldova.html

Upskilling *enhances existing skills or adds new competencies within the same profession, enabling individuals to perform more effectively or take on advanced responsibilities.*

Choosing between reskilling and upskilling depends on whether the goal is a career shift or professional growth within the same sector.

Digitalization and Technological Enablers

Digital platforms improve waste management, emissions monitoring, and industrial accountability. The integration of digital tools into environmental governance strengthens transparency and facilitates data-driven decision-making. Moldova has made progress in digitalizing waste management and emissions monitoring through platforms such as the SIAMD Waste Management Information System[134] and the Pollutant Release and Transfer Register.[135] These systems enable real-time tracking of waste streams and emissions, improving accountability across industrial sectors.

Expanding digital permitting and tracking systems supports a data-driven circular economy. Public service digitalization also enhances regulatory efficiency. The introduction of digital permitting systems for waste management activities simplifies compliance procedures and reduces administrative burdens for businesses. Further expansion of digital solutions, particularly in industrial emissions tracking and material flow monitoring, could support Moldova's transition towards a data-driven circular economy model.

In conclusion, Moldova's progress towards circular economy goals is supported by a combination of policy alignment with EU standards, financial assistance from international donors, capacity-building initiatives, and digitalization efforts. The adoption of key legislative frameworks, investments in waste management infrastructure, and the expansion of Extended Producer Responsibility (EPR) schemes provide a strong foundation for further development. However, strengthening institutional capacity, expanding access to green finance, and accelerating the deployment of digital monitoring tools will be critical to ensuring long-term success in Moldova's transition to a circular economy. By leveraging these enablers, Moldova can enhance resource efficiency, reduce environmental impacts, and improve competitiveness within the EU market.

Key Priorities for Strengthening Moldova's Green Transition

Moldova has made notable progress in aligning its industrial and environmental policies with the EGD and circular economy principles. However, further efforts are required to bridge gaps in

[134] Moldova Government, https://siamd.gov.md/portal/despre-siamd.html

[135] Moldova Government, https://retp.gov.md/#/

policy implementation, infrastructure, financing, and institutional capacity. Strengthening these areas will be essential to advancing Moldova's green transition and ensuring compliance with EU environmental standards. This section outlines the key priorities that must be addressed to accelerate the country's shift towards a sustainable and circular economy.

1. Strengthening Policy and Legal Framework

Develop a National Green Industry Strategy. Establishing a robust regulatory framework is critical for Moldova's green transition. Developing a National Green Industry Strategy will set clear priorities for industrial decarbonization and the adoption of Best Available Techniques in manufacturing. This strategy should integrate concrete actions to modernize production processes, improve energy efficiency, and enhance resource management in alignment with EU sustainability goals.

Enforce EU waste directives and expand EPR systems. Moldova must transpose and enforce EU directives on single-use plastics, microplastics, and eco-design standards to limit waste generation and encourage sustainable product design. Strengthening Extended Producer Responsibility systems is another essential priority. The current system must be expanded to include additional product streams such as textiles and integrate eco-modulated fees to incentivize green product design.

Finalize and enforce secondary laws. To ensure the effectiveness of existing legislation, Moldova must finalize and enforce secondary laws supporting the Climate Action Law and Industrial Emissions Law. This includes amending secondary waste legislation to establish gate fees, differentiated tariffs for recyclable and non-recyclable waste, and eco-modulated fees based on product design.

2. Priorities for Waste Management Infrastructure

Upgrade waste infrastructure and enforce landfill compliance. Expanding and modernizing waste management infrastructure is a cornerstone of Moldova's transition to a circular economy. Ensuring the development of landfills compliant with EU regulations is necessary while avoiding excessive landfill capacity, which could undermine recycling efforts. Non-compliant landfills should be closed down, and all households must be integrated into a mandatory waste collection system. A well-structured waste collection tariff system will provide the financial foundation to support further development in waste recycling and treatment.

3. Strengthening Financial and Economic Instruments

Enforce landfill taxes and gate fees. Economic incentives play a vital role in accelerating sustainable industrial practices. Moldova must establish a landfill tax and differentiated gate

fees at a level high enough to encourage recycling and discourage landfill disposal. This measure will drive behavioural change among both businesses and households, ensuring that landfilling becomes the least attractive option.

Expand green financing for SMEs. Domestic financing mechanisms should be developed to support green investments, particularly for SMEs. Establishing green credit lines, concessional loans, interest rate subsidies, and grants will enable businesses to adopt cleaner technologies and integrate circular economy principles into their production models.

Implement eco-modulated fees and strengthen EPR. To enhance product sustainability, Moldova must introduce eco-modulated fees that encourage the use of recyclable materials and penalize the production of non-recyclable products. Aligning EPR systems with EU standards and linking fees to product circularity will ensure cost-effective waste management. Additionally, Moldova should strengthen access to external financing by improving project management capacities to secure and efficiently utilize funds from the EBRD, EIB, and EU programs.

4. Institutional and Capacity Building Priorities

Strengthen municipal capacity for waste management and regulation. Strong institutions and skilled professionals are essential for effective policy implementation. Moldova must build capacity within public institutions, particularly at the municipal level, to ensure that local authorities are equipped to manage waste collection, enforce environmental regulations, and oversee sustainable urban development.

Expand technical training for industry on BAT implementation. Capacity-building efforts should also extend to the private sector, particularly industrial actors, by providing technical training on BAT implementation. These efforts will help industries reduce emissions, optimize resource use, and comply with evolving regulatory requirements.

Enhance institutional coordination and environmental compliance monitoring. Improving institutional coordination is another key priority. Clarifying the roles of ministries and enhancing the Environmental Agency's capacity to manage waste data, inspections, and compliance monitoring will improve policy coherence and efficiency. Moldova must also invest in laboratories and accreditation systems to verify compliance with environmental and product standards, ensuring reliable data and enforcement mechanisms.

5. Market, Digitalization and Innovation Priorities

Promote integrated environmental permits and circular innovation. Encouraging businesses to adopt environmentally friendly practices requires both guidance and incentives. Moldova should promote integrated environmental permits for industries, ensuring that production processes align with BAT. Additionally, fostering innovation in circular solutions—such as ICT-driven resource

monitoring and the development of secondary raw material markets—will enhance resource efficiency and industrial sustainability.

Strengthen public-private partnerships to attract green investment. To attract investment, Moldova must strengthen public-private partnerships and create an enabling environment for foreign direct investment in green industries. As Moldova moves closer to EU integration, leveraging these opportunities will help diversify and upgrade its industrial base, improving economic resilience and competitiveness.

6. Stakeholder Engagement and Data Improvement Priorities

Engage civil society in policy planning and enforcement. A collaborative approach is necessary to drive Moldova's green transition. Engaging NGOs, professional associations, and civil society in policy planning and enforcement processes will enhance transparency and public support for sustainability initiatives.

Enhance data systems for tracking circular economy progress. A data-driven approach to policy implementation is equally critical. Moldova must invest in a comprehensive data system to track circular economy and industrial performance indicators. Enhancing the Waste Management Automated Information System (SIAMD), for example, will improve data collection, monitoring of recycling rates, and assessment of resource efficiency, ensuring better alignment with EU sustainability targets.

Overall, Moldova is well-positioned to strengthen its green transition, but strategic action is required across policy, infrastructure, finance, institutions, and innovation. By aligning legislation with EU standards, investing in modern waste management infrastructure, introducing financial incentives, and enhancing institutional capacity, Moldova can accelerate its circular economy transformation. Expanding digitalization, fostering industrial innovation, and strengthening stakeholder engagement will further enhance Moldova's sustainability efforts. These priorities will not facilitate Moldova's compliance with EU environmental requirements, and will help create long-term economic and ecological benefits, positioning the country as a regional leader in green transition.

5. Zero Pollution

Understanding Moldova's Status and Progress

The European Green Deal represents the European Union's strategic vision for achieving climate neutrality by 2050 while fostering economic resilience, social inclusion, and environmental sustainability. Within this framework, the 'Farm to Fork' (F2F) Strategy plays a critical role in transforming food systems to be fair, healthy, and environmentally sustainable. The strategy aims to reduce the environmental footprint of the agri-food sector while ensuring food security, economic viability, and consumer well-being.

As Moldova progresses in its EU accession process, aligning the national agri-food sector with the F2F Strategy is essential. This requires reducing chemical inputs, enhancing soil and water management, increasing organic farming, and improving food security. In addition, Moldova must address biodiversity loss, antimicrobial resistance (AMR), and the reduction of food waste. By meeting the EGD's key targets, Moldova can transition to a more competitive and resilient agricultural sector while ensuring compliance with EU policies and directives.

Moldova has taken steps to align its environmental policies with the European Green Deal (EGD) objectives, particularly in air quality, water management, industrial emissions, and chemicals regulation. While significant legislative progress has been made, many of the quantitative targets set under the EGD remain unaddressed. Persistent challenges include high levels of air and water pollution, soil degradation, gaps in noise pollution regulation, and limited enforcement of industrial emissions controls. Additionally, Moldova's environmental monitoring infrastructure is fragmented, and data collection mechanisms remain incomplete, posing challenges to effective policy implementation and compliance monitoring.

Air Quality

Urban air pollution exceeds WHO limits, with PM2.5 posing major health risks despite emission reductions. Air pollution remains a critical issue, particularly in urban areas such as Chișinău, exceeding the WHO air quality guideline value for PM 2.5T by a factor of three. 15% of deaths from stroke and ischemic heart disease were caused by air pollution in 2022.[136] The primary sources of air pollution include road transport, industrial emissions, and energy production. Since 1990, Moldova has seen reductions in key air pollutants, with nitrogen oxides (NOx) decreasing by 67.5%, sulphur oxides (SOx) by 97%, and carbon monoxide (CO) by 57%. Yet, fine particulate matter (PM2.5 and PM10) remains a major concern, particularly in urban areas.

[136] WHO, https://cdn.who.int/media/docs/default-source/country-profiles/environmental-health/environmental-health-mda-2022.pdf?sfvrsn=7ec4a328_4&download=true

Weak enforcement, outdated monitoring, and lack of a national strategy hinder air quality improvements. Moldova has adopted laws on atmospheric air quality and industrial emissions, but secondary legislation and integrated permitting systems are still pending. The air quality monitoring network is underfunded, with outdated equipment and gaps in data collection. Additionally, Moldova lacks a dedicated national air quality strategy, which limits its ability to meet EU Air Quality Directive standards.

Water Quality

Water Quality Laboratory of the Environment Agency carries out continuous monitoring of water quality in 54 monitoring sections located on 27 rivers, 6 reservoirs, and 2 natural lakes in both river basin districts (Dniester and Prut, Danube and Black Sea). According to recent findings, in 46.3% of the sections, the level of water pollution was determined to be class V (very polluted) according to certain parameters and only in 1.9% of the sections water quality was found to be good (class II).

Severe water pollution persists, with untreated wastewater and agricultural runoff contaminating rivers and groundwater. Water pollution is a significant environmental concern, with over 50% of Moldova's rivers classified as heavily polluted. The main sources of water contamination include untreated wastewater, agricultural runoff, and industrial discharges. Currently, 63% of wastewater remains untreated, and only 50% of groundwater reserves meet drinking water standards. The situation is aggravated by the state of wastewater treatment facilities in the country. According to data reported by EPI in 2021, out of the total number of 270 units, only 126 facilities had technical papers, 101 units (37.1%) complied with the regulations of the maximum allowable limit for discharge, 160 units (59.2%) were operated with insufficient treatment, and 9 systems (3.4%) didn't function. Transboundary water pollution also remains a challenge, particularly in shared river basins.

Moldova aligns with EU water policies, but funding gaps and weak enforcement limit progress. Moldova has made efforts to align its legislation with the EU Water Framework Directive, including the development of river basin management plans (RBMPs) for the Danube-Prut and Black Sea region.[137] The second cycle of RBMPs is currently being implemented. The Management Plan of the Dniester River Basin District, cycle II, for 2025-2030 was developed in compliance with WFD and approved in February 2025 by the Government as a comprehensive policy document guiding the sustainable management of water resources. However, financing gaps hinder full compliance with EU water quality objectives. Water quality monitoring remains fragmented, and enforcement mechanisms are weak.

Soil Quality

Intensive agriculture and fertilizer imbalance drive soil degradation in Moldova. Soil degradation is an ongoing issue due to intensive agricultural practices, excessive pesticide use,

[137] EUWI, https://www.euwipluseast.eu/images/2020/11/PDF/Full-RBMP-DPBS_ENG.pdf

and soil erosion. Moldova has seen a steep decline in organic fertilizer use—by a factor of 20—while the reliance on mineral fertilizers has increased (*Figure 20*). Agriculture occupies 75% of the country's land area[138], making it the primary contributor to soil pollution.

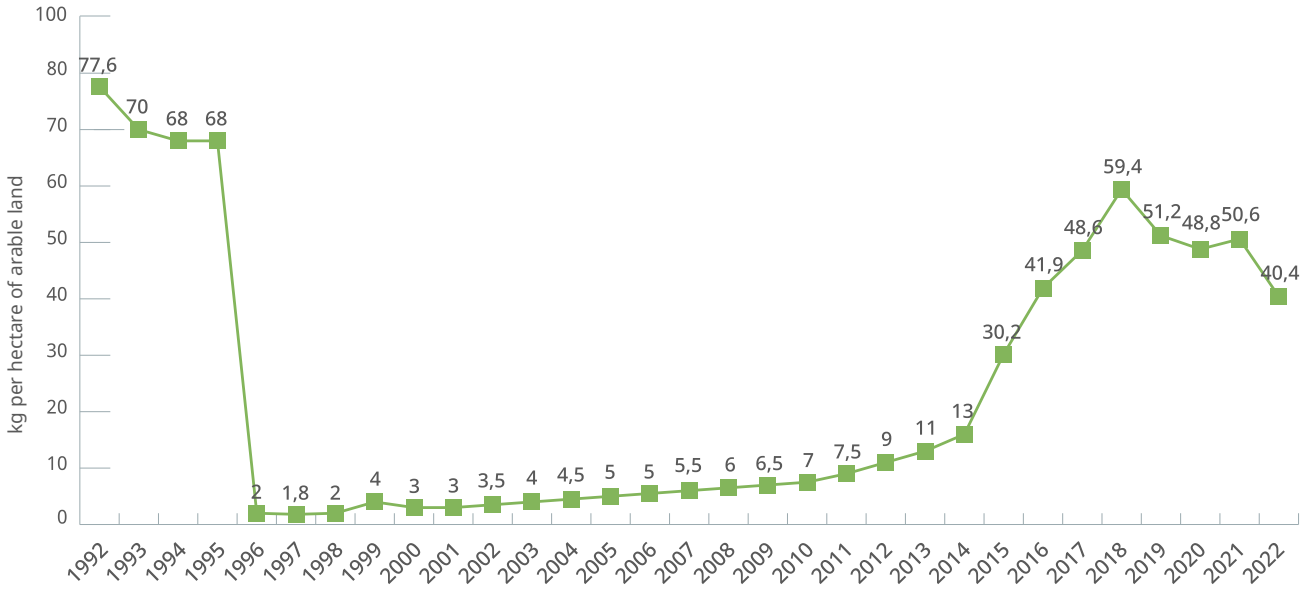


Figure 20: Fertilizer use, kg per hectare of arable land in Moldova.[139]

Soil conservation efforts are underfunded, with no EU-aligned monitoring system in place. Although Moldova has implemented soil fertility improvement programs (2012-2027)[140] and soil conservation initiatives, these efforts lack sufficient funding and institutional capacity. The country does not have a soil health monitoring system in place that aligns with the EU's targets under the EGD. Soil erosion is widespread (*Figure 21*).

[138] FAO, https://www.fao.org/family-farming/countries/mda/en/

[139] The Global Economy, https://www.theglobaleconomy.com/Moldova/fertilizer_use/

[140] IFAD, https://webapps.ifad.org/members/executive-board-online-review/docs/english/EB-2024-OR-22.pdf?attach=1

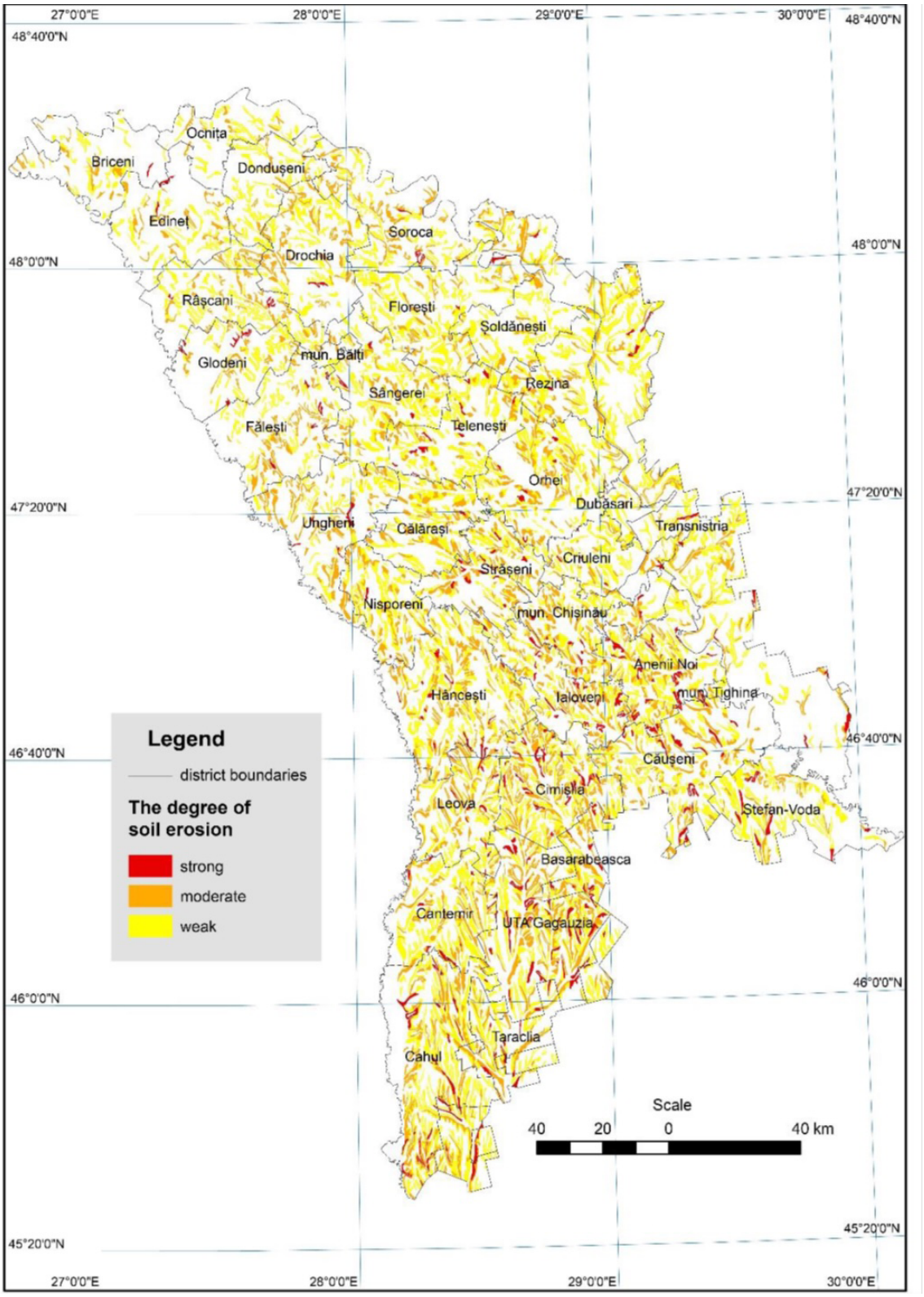


Figure 21: The Republic of Moldova: map of eroded lands (2020).[141]

Source: Bejan, I., Sochircă, V., Nagacevschi, T., & Ţîţu, P. (2022). Spatial study of soil erosion in the Republic of Moldova. Retrieved from https://www.researchgate.net/publication/366113996_Spatial_study_of_soil_erosion_in_the_Republic_of_Moldova. Licensed under CC BY-NC-ND 4.0.

[141] Spatial study of soil erosion in the Republic of Moldova, https://www.pesd.ro/articole/nr.16/nr.2/pesd2022162021.pdf

Noise Pollution

Noise pollution lacks regulation, monitoring, and data for effective policy development. Noise pollution remains largely unregulated in Moldova. While economic operators are required to limit noise emissions between 22:00 and 07:00, there is no national policy documents for noise pollution, nor is there a compliance monitoring framework. The absence of data on noise exposure levels presents a challenge for policy development in this area. Moldova has undertaken several important steps in the legal regulation of environmental noise. Although comprehensive national legislation on this issue is still under development, the country has initiated the process of transposing Directive 2002/49/EC on the assessment and management of environmental noise into its legal framework. Currently, the Ministry of Environment is working on drafting a Regulation on environmental noise, which aims to align national standards with EU requirements.

This process includes defining noise indicators, establishing methods for strategic noise mapping, and setting thresholds for noise exposure. Furthermore, public consultations and interinstitutional coordination mechanisms are being planned to ensure that the draft regulation reflects both technical best practices and the needs of affected communities.

Industrial Pollution

Industrial emissions persist due to weak enforcement and lack of integrated pollution permits. Industrial emissions from cement production, metallurgy, and manufacturing continue to contribute to environmental pollution. In 2022, Moldova adopted a new Law on Industrial Emissions (No. 227/30-09-2022),[142] partially aligning with the EU Industrial Emissions Directive. However, enforcement remains weak, and integrated pollution permits have not yet been issued.

PRTR system remains incomplete, with emissions reporting lacking real-time monitoring. Although Moldova has established a Pollutant Release and Transfer Register,[143] it is not fully operational. Many companies continue to report emissions based on permit conditions rather than real-time monitoring through the PRTR system.

Chemicals and Toxic-Free Environment

Chemical regulation remains weak, with slow implementation and gaps in enforcement. Moldova is highly dependent on imported chemicals, with limited domestic production. The Chemicals Law (No. 277/29-11-2018)[144] partially transposes EU regulations, but implementation has been slow. The National Program for Sound Management of Chemicals 2023-2030 (GD 816/27-

[142] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=133705&lang=ro

[143] Moldova Government, https://retp.gov.md/#/

[144] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=112668&lang=ro

10-2023)[145] has been launched, but key gaps remain, including the absence of a fully operational Register of Chemicals and the lack of enforcement mechanisms for the Classification, Labelling and Packaging (CLP) and REACH regulations.

Digitalization and Data Infrastructure

Environmental reporting is digitalizing, but monitoring coverage and data gaps remain. Moldova has made strides in digitalizing environmental reporting systems. The online Pollutant Release and Transfer Registry enables operators to report emissions data digitally, while the national waste reporting system (SIAMD) facilitates tracking of waste generation and management. Permit systems for air emissions, water use, and waste management have also been digitized. However, environmental monitoring coverage remains limited, and data gaps persist across multiple sectors.

All things considered, Moldova has made some progress in aligning its environmental legislation with EU standards, particularly in air quality, water management, and industrial emissions. However, substantial challenges remain in implementation, enforcement, and infrastructure development (*Table 7*)**.**

Table 7: Summary of how Moldova fares against EU pollution reduction goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Reduce premature deaths from air pollution by 55% by 2030 (compared to 2005).	■ No national air quality strategy or targets in place. ■ PM2.5 levels exceed WHO guidelines by a factor of three.
Reduce the share of ecosystems where air pollution threatens biodiversity by 25%.	■ No national targets in place. ■ Biodiversity remains threatened by pollution, particularly from industrial activities and agriculture.
Reduce by 30% the share of people chronically disturbed by transport noise.	■ No national noise pollution policy documents, targets or compliance monitoring framework exists.
Achieve 100% compliance with EU Water Framework Directive for water bodies.	■ Partial alignment with the EU Water Framework Directive. ■ 50% of rivers are moderately to highly polluted, and 63% of wastewater remains untreated.
Reduce nutrient losses (nitrates and phosphates) by 50%.	■ No national target for nutrient loss in place. ■ High nutrient pollution from agricultural runoff. ■ Limited enforcement of water protection measures.

[145] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=140301&lang=ro

EU Goals and Targets	Moldova's Current Targets and Status
Achieve zero soil degradation and restore polluted lands by 2050.	■ No national targets in place. ■ Soil degradation is a major issue. ■ 75% of land is used for agriculture, with a decline in organic fertilizer use by 20 times.
Reduce the use and risk of chemical pesticides by 50% by 2030.	■ No national targets in place. ■ Pesticide use remains high, with weak monitoring and enforcement mechanisms.
Move towards a toxic-free environment under the EU's Chemical Strategy.	■ 3. Chemicals Law (2018) partially aligns with EU regulations, but implementation is weak.
Ban or limit the use of Persistent Organic Pollutants (POPs) and hazardous chemicals.	■ The Register of Chemicals is not operational. ■ Weak enforcement of CLP and REACH regulations.
Reduce residual municipal waste by 50%.	■ No national target in place. ■ Waste management systems remain underdeveloped. ■ Limited recycling infrastructure and high reliance on landfilling.
Reduce plastic litter at sea by 50% and microplastics in the environment by 30%.	■ No national strategy or targets for plastic pollution. ■ Waste collection and recycling are limited, with significant plastic leakage into the environment.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's transition towards a green economy and alignment with the European Green Deal is hindered by several institutional, financial, technological, and capacity-related obstacles. While legal alignment with EU environmental directives has progressed, implementation and enforcement remain major challenges. The absence of clear EGD-related targets in national strategies, weak regulatory capacities, and financial constraints all contribute to the slow pace of transition. Additionally, Moldova faces structural difficulties in pollution monitoring, data collection, and inter-institutional coordination, further complicating efforts to achieve its green transition objectives.

Institutional and Regulatory Gaps

Weak enforcement and limited resources hinder Moldova's alignment with EU environmental policies. Despite Moldova's efforts to align its environmental policies with EU frameworks, regulatory enforcement remains weak. While laws transposing the Water Framework Directive[146]

[146] European Commission, https://environment.ec.europa.eu/topics/water/water-framework-directive_en

and Industrial Emissions Directive[147] have been adopted, enforcement mechanisms are underdeveloped. The Ministry of Environment, along with other relevant agencies, lacks the financial and technical resources to maintain digital monitoring systems without external support.

Slow permitting reforms delay compliance and investment in cleaner technologies. The transition to an integrated environmental permitting system has also been slow. Clear deadlines for full implementation are lacking, leading to uncertainty among businesses and regulatory authorities. Without a structured timeline, companies remain unclear about compliance expectations, delaying investments in cleaner technologies.

Fragmented monitoring and incomplete reporting hinder pollution tracking and policy development. A critical challenge is the lack of comprehensive and reliable data on air, water, and soil pollution. Monitoring systems remain fragmented, and data collection processes are inconsistent. The Pollutant Release and Transfer Register system, meant to improve emissions reporting, remains incomplete, with many industrial operators failing to report their emissions data. The absence of standardized, real-time reporting mechanisms weakens Moldova's ability to track progress toward EGD targets and formulate evidence-based policies.

Weak inter-agency coordination and overlapping mandates undermine policy enforcement. Inter-institutional coordination remains a pressing issue. The overlapping responsibilities of the Ministry of Environment, the Environmental Agency, and the Environmental Protection Inspectorate have led to inefficiencies and weak enforcement. Limited cooperation between environmental, economic, and sectoral authorities further hampers policy implementation, creating gaps in regulatory oversight and delaying the adoption of pollution control measures.

Financial & Technological Barriers

Limited funding slows environmental infrastructure development and EU compliance. Financial constraints pose one of the most significant barriers to Moldova's green transition. Limited public investment in environmental infrastructure has slowed the development of wastewater treatment facilities, modern air monitoring stations, and soil restoration programs. The lack of stable, long-term financing makes it difficult to ensure compliance with EU environmental standards and improve pollution control measures.

Lack of financial incentives prevents businesses from adopting green technologies. There are few financial incentives for businesses to adopt Best Available Techniques (BATs) and Best Environmental Practices (BEPs) for pollution reduction. The absence of targeted subsidies, tax breaks, or low-interest financing options discourages companies—particularly SMEs—from investing in green technologies. Without financial support mechanisms, businesses struggle to transition towards sustainable practices, further slowing progress on EGD compliance.

[147] European Commission, https://ec.europa.eu/environment/stories/industrial-emissions/#group-section-The-IED-l3vu7jaiAi

Outdated monitoring technology weakens pollution assessment and mitigation efforts. Moldova also faces a significant technological gap in environmental monitoring. The country lacks access to modern air quality sensors, advanced wastewater treatment technologies, and digital tools for soil health monitoring. Outdated infrastructure limits the accuracy of pollution assessments, hindering the development of effective mitigation strategies. Without technological modernization, Moldova will continue to face difficulties in meeting EU benchmarks for pollution reduction.

Capacity and Knowledge Gaps

Staff shortages weaken regulatory enforcement and policy implementation. Institutional capacity constraints present another major roadblock to Moldova's environmental reforms. Government agencies and environmental authorities struggle to attract and retain qualified personnel due to low salaries, limited career development opportunities, and resource constraints. Staff shortages within key institutions weaken regulatory enforcement and slow the implementation of new environmental policies.

Knowledge gaps on EGD compliance hinder business adaptation to EU standards. Such gaps are particularly pronounced among businesses and SMEs. Many companies remain unaware of the technical requirements and legal obligations associated with pollution reduction and resource efficiency. Without targeted training programs, awareness campaigns, and advisory services, businesses face difficulties adapting to EU environmental standards.

To conclude, Moldova's transition to a green economy is challenged by structural and systemic barriers that require urgent attention. Institutional weaknesses, financial constraints, outdated technological infrastructure, and capacity shortages all contribute to the slow pace of progress.

Existing Enablers for Moldova's Progress Towards Zero Pollution Goals

Moldova's progress towards achieving zero pollution goals is supported by several enabling factors, including its status as an EU candidate country, ongoing alignment with European directives, and the development of strategic policies. The implementation of key regulations, financial mechanisms, and technical monitoring systems provides a foundation for improving environmental quality and reducing pollution across sectors. Moreover, international cooperation and donor support contribute to strengthening Moldova's institutional and economic capacity for sustainable development.

Policy and Regulatory Enablers

Moldova has aligned key environmental laws with EU directives, strengthening pollution control. The country has made significant progress in aligning its environmental legislation with the EU Acquis. Key directives such as the Water Framework Directive, Waste Framework Directive, and the Industrial Emissions Directive have been transposed into national law. The Law on Industrial Emissions lays the groundwork for the implementation of integrated environmental permits and the adoption of Best Available Techniques, which are critical for pollution control.

New chemical regulations enhance compliance with EU REACH and CLP standards. In the area of chemicals management, the Law on Chemicals and the National Program for Sound Management of Chemicals 2023-2030 reinforce Moldova's efforts to align with EU REACH and CLP regulations. These legal instruments strengthen controls on hazardous chemicals, improving environmental safety and human health.

Strategic planning and international commitments support zero pollution and waste management goals. Strategic planning efforts also play a crucial role in Moldova's environmental governance. The National Environmental Strategy 2024-2030 (GD 409/12-06-2024)[148] aligns national objectives with the European Green Deal's zero pollution targets. Additionally, Moldova's commitments under international treaties, including the Stockholm,[149] Basel,[150] Rotterdam,[151] and Minamata[152] Conventions, reinforce its approach to controlling hazardous chemicals and waste.

Institutional and Governance Enablers

A structured institutional framework supports environmental permitting and enforcement. The Ministry of Environment, the Environmental Agency, and the Environmental Protection Inspectorate each have well-defined responsibilities for permitting, enforcement, and compliance monitoring. This institutional division supports regulatory oversight and enhances policy implementation.

Integrated permitting enhances industrial emissions regulation across air, water, and soil. A key advancement in environmental governance is the introduction of integrated permitting under the Law on Industrial Emissions (2022). This approach allows for a more comprehensive regulation of emissions across air, water, and soil, ensuring that industrial activities are subject to holistic environmental control.

[148] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=144295&lang=ro

[149] Stockholm Convention, https://www.pops.int/

[150] Basel Convention, https://www.basel.int/

[151] Rotterdam Convention, https://www.pic.int

[152] Minamata Convention, https://minamataconvention.org/en/documents/minamata-convention-mercury-text-and-annexes

Improved inter-agency coordination strengthens cross-sectoral pollution management. Inter-agency coordination has also improved, particularly in areas such as green industrial development and sustainable agriculture. Cooperation between the Ministry of Economy, the Ministry of Agriculture, and other stakeholders facilitates cross-sectoral policy alignment and enhances Moldova's capacity to address pollution challenges effectively.

River Basin Management Plans enhance water protection and pollution reduction efforts. The implementation of the River Basin Management Plans for Dniester and Danube-Prut strengthens the protection of Moldova's water resources by introducing structured measures for pollution reduction and water quality monitoring.

Technical and Monitoring Enablers

Digital tools like PRTR improve industrial emissions tracking and transparency. Moldova has developed several digital tools and monitoring systems that support pollution tracking and data collection. The PRTR provides a framework for tracking industrial emissions, promoting transparency and accountability. This system is aligned with EU environmental reporting requirements and facilitates compliance monitoring.

Water Cadastre[153] and air monitoring systems enhance pollution measurement and policy decisions. These tools systems enhance Moldova's capacity to measure and analyse environmental pollutants. Air quality monitoring stations track key pollutants such as PM2.5, supporting evidence-based policymaking.

Strengthened data reporting supports compliance with EU MRV and CLRTAP obligations. The development of robust data collection and reporting mechanisms ensures greater compliance with EU monitoring, reporting, and verification obligations. Moldova regularly submits reports under the Convention on Long-Range Transboundary Air Pollution (CLRTAP),[154] further strengthening its environmental accountability.

Financial & Economic Enablers

The National Environmental Fund finances wastewater treatment, waste management, pollution reduction, and research projects. Financial mechanisms play a critical role in supporting Moldova's environmental transition. The National Environmental Fund is a key instrument that provides funding for projects in wastewater treatment, waste management and pollution reduction. NEF activities have the potential to enhance Moldova's ability to invest in sustainable environmental solutions.

[153] Moldova Government, https://www.geoportal.md/en/default/map

[154] United Nations, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-1&chapter=27&clang=_en

International donor funding accelerates environmental infrastructure and zero pollution efforts. International donor support is another significant enabler of Moldova's environmental progress. Funding from the European Union, United Nations, and international financial institutions has facilitated investments in air quality monitoring, wastewater infrastructure upgrades, and environmental data collection systems.[155,156,157,158] These financial contributions help address budgetary constraints and accelerate the implementation of zero pollution measures.

Green credit lines and subsidies promote sustainable business and farming practices. Economic incentives also support Moldova's transition to a cleaner economy. Green credit lines are available to businesses, enabling them to invest in clean production technologies. Additionally, agricultural subsidies can promote sustainable farming practices and pollution reduction, aligning Moldova's economic development with environmental goals.

EU market access incentivizes cleaner production and stricter pollution controls. Moldova's integration into the European single market offers further economic advantages. Compliance with EU environmental standards allows Moldovan industries to access European markets, incentivizing businesses to adopt cleaner production processes and adhere to stricter pollution controls.

All in all, Moldova's progress towards achieving zero pollution goals is supported by a combination of regulatory, institutional, technical, and financial enablers. The alignment of national policies with EU directives, the strengthening of monitoring systems, and increased financial investments provide a solid foundation for continued environmental progress. Leveraging these enablers effectively will be key to advancing Moldova's transition towards a cleaner, more sustainable future.

Key Priorities for Strengthening Moldova's Green Transition

Moldova's transition towards a sustainable, zero-pollution economy requires a comprehensive policy framework, institutional capacity strengthening, enhanced monitoring mechanisms, and financial support. The successful alignment with EGD will depend on the effective integration of quantitative targets, regulatory enforcement, business engagement, and international cooperation. The following key priorities outline the necessary steps to accelerate Moldova's progress toward achieving its green transition objectives.

[155] World Bank, https://documents1.worldbank.org/curated/en/760601643665383288/pdf/Moldova-Water-Security-and-Sanitation-Project.pdf

[156] World Bank, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/985531468060892242/moldova-environmental-infrastructure-project

[157] EuroAccess, https://www.euro-access.eu/en/calls/1009/Air-quality-and-environment

[158] EU4Environment, https://www.eu4environment.org/app/uploads/2022/03/Environmental-compliance-assurance-system-in-the-Republic-of-Moldova.pdf

1. Strengthening Policy and Governance

Implement the embedded EGD targets in the National Environmental Strategy. A critical priority is the implementation of embedded quantitative EGD targets from the approved National Environmental Strategy 2024-2030 and the other related strategic documents. Clear milestones for reducing air pollution, nutrient losses, pesticide use, microplastics, and noise exposure will provide a structured framework for progress tracking and accountability.

Enforce integrated permitting and strengthen environmental laws. The finalization and implementation of secondary legislation under the Industrial Emissions Law and other regulatory frameworks will operationalize integrated environmental permitting, facilitate the adoption of Best Available Techniques, and enhance enforcement. Strengthening Moldova's legal framework through the alignment of environmental impact assessment, strategic environmental assessment, and liability provisions with updated EU directives will further support compliance with European standards.

Elaborate national framework for Noise Pollution reduction and update soil protection policies. A key priority is the development of a policy approach for noise pollution reduction, which should outline monitoring requirements, reduction targets, and sectoral action plans. Additionally, Moldova's soil protection policy must be updated to ensure full alignment with EGD soil health objectives.

Additionally, Moldova's soil protection policy requires a comprehensive update to address growing climate-related challenges, mitigate soil degradation, and combat pollution. Existing policy documents must be revised to incorporate the soil health objectives of the European Green Deal (EGD), including sustainable land management practices, restoration of contaminated sites, and resilience-building against extreme weather events. Strengthening regulatory frameworks, integrating climate adaptation measures, and aligning monitoring and enforcement mechanisms with EU standards are critical steps toward safeguarding soil as a key natural resource in the context of climate change.

2. Priorities for Chemicals and a Toxic-Free Environment

Establish a Chemicals Agency or dedicated Chemicals department within Environmental Agency, and align regulations with EU standards. To strengthen chemicals management, Moldova must establish a Chemicals Agency/dedicated Chemicals department within Environmental Agency, and develop secondary legislation aligned with EU REACH and CLP regulations. Updating the National Program for Sound Management of Chemicals to reflect EGD indicators will be essential in improving hazardous chemical control measures.

Expand international cooperation for best practices in chemicals management. It should include seeking observer status in EU Chemicals Agency working groups to facilitate knowledge exchange and best practice adoption.

3. Data, Monitoring, and Enforcement Priorities

Operationalize the PRTR for real-time emission tracking. Moldova must fully operationalize the Pollutant Release and Transfer Register to enable real-time tracking of industrial emissions. Expanding its coverage to all relevant economic operators will improve transparency and strengthen compliance monitoring.

Upgrade monitoring and integrate environmental reporting. Investments in air, water, and soil monitoring infrastructure are required to modernize reporting systems and ensure high-quality environmental data collection. The development of integrated environmental reporting mechanisms will streamline data management across multiple pollution domains, improving policy evaluation and decision-making.

Adopt risk-based pollution control and strengthen enforcement. This approach should be integrated into environmental quality policies, mapping vulnerable regions and communities exposed to air, water, and soil pollution. Strengthening the Environmental Agency's Reference Laboratory, increasing penalties for non-compliance, and securing stable resources for online environmental databases will be key measures in reinforcing enforcement capacity.

4. Capacity Building Priorities

Expand training and improve institutional capacity. Building institutional capacity is fundamental to the enforcement of environmental regulations. Expanding training programs for regulatory authorities and public officials, offering competitive remuneration, and providing technical assistance on EGD compliance will enhance institutional effectiveness.

Boost EGD awareness and industry compliance. Raising awareness of EGD compliance obligations among public authorities and the private sector will facilitate a smoother transition to EU-aligned environmental practices. Targeted training and advisory programs should be developed to address knowledge gaps and promote industry compliance.

5. Strengthening Business Engagement and Private Sector

Expand SME access to training, technical support, and green financing. Supporting SMEs in adopting green technologies is crucial for Moldova's green transition. Expanding access to training, technical support, and financing opportunities will help businesses integrate BATs into their operations.

Develop credit schemes for cleaner production. Developing green credit schemes and increasing concessional loan availability will further incentivize businesses to transition to cleaner production processes. These financial instruments should be designed to support enterprises that meet pollution reduction targets and adopt sustainable innovations.

6. Financial Support

Invest in wastewater treatment, soil and waste management. Prioritizing investments in wastewater treatment infrastructure, soil restoration programs, and modern waste management facilities will significantly reduce pollution levels. Addressing both point source and diffuse pollution requires targeted funding strategies.

Introduce green subsidies aligned with EGD. Financial incentives such as green subsidies, grants, and fiscal incentives should be introduced to encourage businesses, particularly SMEs, to adopt pollution control measures. Aligning funding mechanisms with EGD priorities will strengthen Moldova's ability to achieve its environmental targets.

7. Stakeholder Engagement and Transparency

Enhance civil society engagement and transparency. Inclusive governance is essential for an effective green transition. Strengthening engagement with civil society, industry associations, and NGOs in policy formulation and consultation processes will enhance transparency and accountability.

Increase public access to environmental information and outreach. Expanding public access to environmental information and conducting awareness campaigns on zero pollution objectives will foster greater societal participation in Moldova's green transition efforts.

In conclusion, Moldova's green transition requires a multi-faceted approach that integrates regulatory improvements, capacity building, financial support, and stakeholder engagement. By addressing these priority areas and aligning strategic objectives with EGD targets, Moldova can accelerate progress toward a zero-pollution future while fostering sustainable and socially inclusive economic development.

6. Farm to Fork

Understanding Moldova's Status and Progress

The European Green Deal serves as the European Union's strategic framework for achieving climate neutrality by 2050. A key pillar of this vision is the Farm to Fork Strategy,[159] which establishes a roadmap for transforming food systems to be fair, healthy, and environmentally sustainable. Recognizing the critical role of food production and consumption in climate action, biodiversity conservation, and public health, the strategy sets clear objectives supported by quantifiable targets.

The Farm to Fork Strategy addresses multiple aspects of sustainability, ranging from food security and biodiversity preservation to climate impact mitigation and waste reduction. The following section outlines the core goals of the strategy, alongside the specific targets designed to measure progress and drive systemic change.

Fishing is part of the broader agri-food and fisheries sector, contributing about 13% of Moldova's GDP and approximately 45% of total exports. The fishing industry is primarily small-scale, with most farms ranging between 0.85 and 10 hectares. There is no specific data on the sustainability of fish sourcing, including imports and local production, indicating a gap in monitoring and reporting on sustainable fishing practices.

Moldova's agriculture is key to the economy but struggles with EU sustainability alignment. Moldova's agricultural sector plays a significant role in the national economy, covering approximately 75% of the country's territory[160] and contributing to around 12% of GDP. The agriculture sector also provides employment for over 27% of the workforce.[161] Despite its economic importance, Moldova faces challenges in aligning with the European Green Deal's F2F Strategy. Progress has been made in policy alignment, but implementation gaps remain, particularly in organic farming expansion, pesticide and fertilizer regulation, food waste reduction, and antimicrobial resistance.

Small farmers lack modern equipment and financial support, while climate risks and food insecurity persist. Agricultural productivity remains below EU averages, with smallholders—who account for 97.7% of Moldova's farms[162]—struggling with outdated equipment, a lack of training, and limited access to financial incentives for sustainability. The country's vulnerability to climate change, characterized by increasing droughts and floods, further exacerbates the sector's challenges. Food security remains a concern, with 19% of the population experiencing moderate

[159] European Commission, https://food.ec.europa.eu/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf

[160] FAO, https://www.fao.org/family-farming/countries/mda/en/

[161] FAO, https://www.fao.org/family-farming/countries/mda/en/

[162] FAO, https://openknowledge.fao.org/items/29393d5e-640b-4bc7-b929-c1b75a148fa8

or severe food insecurity[163]. Dietary patterns also pose health challenges, with high meat consumption and limited dietary diversity.

Policy Alignment with the European Green Deal

Moldova is aligning with EU Farm to Fork but lacks concrete targets and enforcement. Moldova is working to align its agricultural policies, including policies on fisheries, with the European Green Deal and its Farm to Fork Strategy as part of its EU accession process. However, gaps persist in setting national targets and enforcement mechanisms for key sustainability objectives. Additionally, the country lacks specific targets for sustainable fisheries management. There is no data on the quantity of fish sourced from sustainable fisheries or indicators on aquaculture practices, impacting the alignment with EU sustainability objectives.

Organic farming targets lag behind the EU, and pesticide use keeps rising. The National Strategy for Agriculture and Rural Development 2023-2030 (GD 56/17-02-2023)[164] sets a target of expanding organic farmland to 10% of total agricultural land, whereas the EU target stands at 25% by 2030. While the EU aims to cut pesticide use and risk by 50%, Moldova has not yet established a formal national reduction target, and pesticide consumption has risen from 4,742 tons in 2019 to 6,118 tons in 2022.[165]

Food waste law lacks targets; nutrient pollution persists. Moldova's Law on Food loss and wastage prevention adopted in 2022 (299/03-11-2022),[166] aligns with the EU goal to halve food waste by 2030. However, the law lacks specific waste reduction targets and a comprehensive tracking system for food loss across the supply chain. In the area of nutrient use, Moldova continues to experience significant nitrate and phosphorus pollution in water bodies, with nearly 50% of river sites classified as moderately to highly polluted. There is no policy framework in place that aligns with the EGD's target of reducing nutrient losses by 50%.

Agricultural Structure and Sustainability

Smallholders dominate agriculture but lack modern equipment and support. Agriculture remains a key sector in Moldova's economy, contributing significantly to GDP and employment. The prevalence of smallholders presents structural challenges, as 97.7% of agricultural holdings account for 63% of total agricultural output,[167] but many lack access to modern equipment, sustainable farming techniques, and financial support for climate-smart agriculture.

[163] FAO, https://reliefweb.int/report/moldova/giews-country-brief-republic-moldova-08-august-2024

[164] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=136318&lang=ro

[165] Environmental Agency, https://am.gov.md/ro/content/f4-consumul-de-pesticide

[166] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=143912&lang=ro

[167] FAO, https://www.fao.org/europe/resources/empowering-smallholders-and-family-farms-series/smallholders-and-family-farms-in-the-republic-of-moldova

Organic farming covers far below the EU target. Organic farming in Moldova has expanded from 21,000 hectares to 27,000 hectares in recent years. However, this still represents only 1.5% of total arable land, well below the EU's 25% target. An estimated 18-20% of agricultural land remains uncultivated,[168] presenting an opportunity for repurposing land toward agroecological practices, biodiversity conservation, or organic farming. There is limited adoption of sustainable practices in fisheries and aquaculture. Organic certification is minimal, with only about 1.5% of total agricultural land under organic management, including areas relevant to aquaculture.

Agricultural GHG emissions dropped; produced mainly from livestock and biomass burning. Moldova has recorded some progress in reducing GHG emissions from agriculture. In 2020, the sector accounted for 11.3% of Moldova's total GHG emissions,[169] driven primarily by livestock production and biomass burning. Emissions have declined from 1.99 million tons (2018) to 1.54 million tons (2020), due in part to increased adoption of no-till practices and organic farming methods.

Antimicrobial use in livestock is rising, with no national reduction target. The country faces challenges related to antimicrobial resistance in animal farming. The use of antimicrobials in agriculture has increased, with sales reaching 16,176 tons in 2022. Despite growing concerns over AMR, there is currently no national reduction target for antimicrobial use in livestock. This contrasts with the EU's goal of reducing antimicrobial use by 50% by 2030. In 2023, a National Program for Surveillance and Combating Antimicrobial Resistance adopted a One Health Program aimed at strengthening sectors including agriculture and food safety to combat AMR.[170] Despite this, the absence of comprehensive AMR monitoring and mitigation measures poses risks to public health and environmental safety.

Food Security and Health

Food insecurity affects 1 in 5 Moldovans, worsened by climate risks. Moldova remains highly vulnerable to food security risks, particularly those exacerbated by climate shocks. The 2023-2030 Food Security Strategy (GD 775/09-11-2022)[171] highlights the need for climate resilience in food production while recognizing that food availability remains stable. However, food insecurity disproportionately affects low-income households, with 19% of Moldovans classified as moderately or severely food insecure in 2024[172] – a 6% drop since 2020.

Obesity and overweight is rising, driven by high red meat consumption, increased consumption of sugars and fats and increased consumption of ultra-processed foods.

[168] UNEP, https://wedocs.unep.org/bitstream/handle/20.500.11822/22962/The%20Status%20and%20Potential%20of%20Organic%20Agriculture%20in%20the%20Republic%20of%20Moldova.pdf?sequence=1&isAllowed=y

[169] IMF, https://www.elibrary.imf.org/view/journals/002/2023/428/article-A004-en.xml

[170] Moldova Government, https://gov.md/ro/content/hg-proiect-de-hotarare-cu-privire-la-aprobarea-programului-national-pentru-supravegherea-si

[171] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=135003&lang=ro

[172] FAO, https://reliefweb.int/report/moldova/giews-country-brief-republic-moldova-08-august-2024

Nutritional health is also a concern. Obesity rates have risen, with 24% of adult women and 21.4% of adult men classified as obese as of 2024.[173] This trend is linked to red meat consumption, with per capita per year meat consumption expected to reach 40.4 kg in 2025, exceeding the recommended 15.6 kg per year outlined by the EAT-Lancet Commission.[174] Moldovans also consume five times more sugar than recommended, averaging 125 grams per day, thus exceeding the World Health Organization's advised daily limit of 25 grams.[175] Efforts to promote healthier, more sustainable diets are ongoing but require greater policy integration.

Water and Soil Quality

Nutrient runoff worsens water and soil pollution. Water and soil quality remain critical concerns for Moldova's agricultural sustainability. Nitrate and phosphorus pollution continue to degrade water bodies and fisheries, with nearly half of river monitoring sites classified as moderately to highly polluted.[176] Fertilizer management practices, such as precision fertilization, better use of organic manures, improved irrigation, and techniques such as cover cropping, remain insufficient, leading to excessive nutrient runoff.

Pesticide use is rising, while fertilizer supply remains volatile. Pesticide use in Moldova has increased despite EU efforts to reduce reliance on chemical inputs. Pesticide consumption rose from 4,742 tons in 2019 to 6,117.6 tons in 2022,[177] posing risks to both human health and ecosystems. Similarly, fertilizer consumption, which peaked at 399,000 tons in 2021, dropped sharply to 216,000 tons in 2022[178] due to supply chain disruptions following the war in Ukraine. This volatility highlights the need for greater resilience in Moldova's agricultural inputs and opportunities for more local fertilizer production including the use of local organic fertilizers.

Table 8: Summary of how Moldova fares against EU agri-food sector goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Ensure all EU citizens have access to sufficient, safe, nutritious, and sustainable food.	■ 19% of the population faces moderate to severe food insecurity. ■ High reliance on smallholder farms (97.7% of farmers) with limited financial and technical support.

[173] Global Obesity Observatory, https://data.worldobesity.org/country/moldova-141/

[174] EAT-Lancet Commission, https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/

[175] Chirsanova (Calcatiniuc) Aurica, https://ibn.idsi.md/ro/vizualizare_articol/194008

[176] European Environmental Agency, https://eni-seis.eionet.europa.eu/east/indicators/c112013-nutrients-in-freshwaters-of-the-republic-of-moldova

[177] Environmental Agency, https://am.gov.md/ro/content/f4-consumul-de-pesticide

[178] World Integrated Trade Solution, https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2022/tradeflow/Imports/partner/WLD/product/310520

EU Goals and Targets	Moldova's Current Targets and Status
Halve food waste per capita at retail and consumer levels by 2030.	■ Food Loss and Waste Law adopted in 2022, but lacks specific waste reduction targets and a comprehensive tracking system.
Reduce environmental footprint of agriculture, lower GHG emissions, and promote sustainable inputs.	■ Agriculture contributes 11.3% of Moldova's GHG emissions. ■ Emissions reduced from 1.99 Mt (2018) to 1.54 Mt (2020), mainly due to no-till practices and organic farming.
Promote biodiversity-friendly practices such as agroecology, crop rotation, and organic farming.	■ No national target. ■ 1.5% of total arable land is organic (EU target: 25%). ■ Some agroecological practices are present, but no national biodiversity-focused agricultural strategy.
Lower emissions across the food supply chain, promote low-carbon farming, and reduce deforestation.	■ No explicit national strategy for lowering emissions from agriculture. ■ GHG emissions from agriculture have decreased slightly, but livestock remains a major source.
Encourage plant-based diets, reduce excessive meat consumption, and improve food labelling.	■ No national policy incentivizing plant-based diets. ■ Meat consumption at 40.4 kg/year per capita (EU sustainable dietary recommendation: 15.6 kg/year).
Reduce both the use and risk of chemical pesticides by 50% by 2030.	■ No established national reduction target. ■ Pesticide use increased from 4,742 tons (2019) to 6,118 tons (2022).
Reduce nutrient losses by at least 50%, leading to a 20% reduction in overall fertilizer use by 2030.	■ No national target for reducing nutrient losses. ■ Nearly 50% of river monitoring sites moderately to highly polluted due to nutrient runoff.
Reduce the use of antimicrobials in animal husbandry by 50% by 2030.	■ No national target for reducing AMR ■ Sales of antimicrobials in agriculture reached 16,176 tons in 2022.
Ensure at least 25% of agricultural land is dedicated to organic farming by 2030.	■ Current organic farming target: 10% of agricultural land by 2030 (EU target: 25%). ■ Organic farming area expanded from 21,000 ha to 27,000 ha.
Lower methane emissions from livestock, improve soil carbon sequestration, and promote renewable energy in food production.	■ No dedicated methane reduction strategy for agriculture. ■ Soil carbon sequestration potential not yet assessed in national policies.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's transition toward sustainable food systems, in line with the EU's F2F Strategy, faces several systemic challenges. While the country has made efforts to align with EU sustainability targets, major obstacles continue to hinder implementation. These include the absence of clear and measurable national targets, limited financial resources allocated to sustainable agriculture, institutional fragmentation, and data monitoring deficiencies. Weak farmer awareness and insufficient access to modern technology, irrigation, and climate-smart agricultural techniques further exacerbate these challenges.

Institutional and Policy Barriers

Lack of SMART targets hinders progress on sustainability commitments. Moldova lacks clearly defined, measurable, and time-bound objectives aligned with EU Farm to Fork targets, including specific targets and monitoring systems for sustainable fishing. While the country has expressed commitments to sustainability, the absence of SMART objectives limits effective progress tracking. Additionally, national policies do not include formal reduction targets for pesticide use or antimicrobial resistance, which are critical components of EU sustainability goals. Furthermore, there is insufficient policy coherence and strategic integration of fisheries in national environmental and agricultural strategies.

Institutional overlap weakens policy coherence and implementation. Institutional fragmentation further complicates policy coherence. The responsibilities of the Ministry of Agriculture and Food Industry (MAFI) and the Ministry of Environment overlap, leading to inefficiencies in implementation. These ministries, already overstretched with the transposition of the EU acquis, face difficulties in focusing on domestic execution. As a result, sustainable agriculture remains underdeveloped, and coordination challenges persist among key stakeholders.

Data and Monitoring Deficiencies

Fragmented data collection limits effective F2F progress tracking. Moldova's agricultural data collection system is fragmented, making it difficult to monitor F2F progress effectively. Multiple institutions collect data without synchronization, leading to inconsistencies in tracking organic farming adoption, fertilizer use, and GHG emissions. The National Bureau of Statistics maintains a transparent data collection system; however, it does not track specific Farm to Fork indicators such as food loss, AMR reduction, or sustainable farming practices.

Lack of data systems and indicators hinder the understanding of the status of fisheries. The country does not have a unified system for collecting and reporting data on fisheries and aquaculture, nor does it have indicators for sustainable fish sourcing, aquaculture practices, and fish consumption patterns.

Lack of gender-disaggregated data hinders inclusive policymaking. Another challenge is the lack of gender-disaggregated data on employment in agriculture. [179]This gap limits gender-sensitive policymaking and hinders efforts to assess the gendered impacts of Moldova's agricultural transition. Without comprehensive and harmonized data collection, progress toward EU-aligned sustainability goals remains difficult to quantify.

Financial Barriers

Sustainable agriculture depends excessively on external funding, lacking domestic support. Moldova's reliance on external funding sources, including the World Bank, IFAD, USAID, and the EU, highlights the country's dependence on international financial support for its green transition. Domestic financial allocations for sustainable agriculture remain limited, and there is no structured mechanism to direct national resources toward long-term sustainability goals.

Short-term, activity-focused funding limits long-term sustainability progress. Additionally, funding in Moldova tends to be activity-focused rather than outcome-driven. Many initiatives prioritize short-term project-based funding—such as workshops and pilot programs—rather than structural investments that would lead to measurable increases in organic farming, biodiversity conservation, and climate-smart agricultural practices. Without dedicated long-term financing strategies, Moldova's ability to sustain progress toward a green transition remains constrained.

Sectoral Vulnerabilities

Climate change and economic shocks threaten agricultural resilience. Moldova's agricultural sector remains highly vulnerable to climate change and external economic shocks. Increasingly frequent extreme climate events, such as droughts and floods, significantly impact agricultural productivity and food security. Limited access to irrigation and soil degradation further exacerbates these vulnerabilities.

Geopolitical crises and price volatility hinder sustainable investments. Market volatility, particularly in the wake of geopolitical crises such as the Ukraine war, has led to sharp fluctuations in input prices, including fertilizers and seeds. This volatility creates uncertainty for farmers, making it more challenging to invest in sustainable practices and climate-smart technologies.

Farmer Knowledge and Technology Gaps

Limited farmer awareness slows adoption of climate-smart practices. A key challenge to Moldova's agricultural transition is the low level of awareness and knowledge among farmers

[179] https://openknowledge.fao.org/server/api/core/bitstreams/7688c353-c840-4d28-8d22-21fd1b77fd8d/content?utm_source=chatgpt.com

regarding climate-smart and sustainable agricultural practices. Many farmers lack access to training and advisory services that provide guidance on, for example, soil health management, crop rotation, transition to organic certification, and agrobiodiversity. As a result, the adoption of advanced climate-smart technologies, such as precision agriculture, conservation tillage, and drip irrigation, remains low.

Low awareness of farm-based renewables limits energy efficiency. Similarly, there is limited awareness of the financial and business opportunities associated with farm-based renewable energy, particularly solar power and biogas. Knowledge gaps in this area hinder the development of a more circular and energy-efficient agricultural sector.

Weak extension services hinder knowledge sharing and sustainability uptake. The lack of integrated agricultural extension services, which could facilitate farmer-to-farmer knowledge sharing and peer learning, further limits the uptake of sustainable practices. Without targeted awareness-raising and skills development programs, the transition to sustainable agriculture will remain slow and fragmented.

To conclude, Moldova's path toward a green transition in agriculture is constrained by multiple barriers, including policy misalignment, institutional fragmentation, data deficiencies, financial limitations, and sectoral vulnerabilities. Weak farmer awareness and the low adoption of climate-smart and biodiversity-friendly practices further hinder progress.

Existing Enablers for Moldova's Progress Towards Agri-food Sector Goals

Despite the challenges associated with Moldova's transition to sustainable food systems, several enabling factors provide a solid foundation for progress. The country's EU accession aspirations serve as a strong political driver for transposing the European Green Deal and Farm to Fork objectives into domestic policy. Moldova has already developed national strategies that align with sustainability goals, and institutional support for climate adaptation and agri-food modernization is growing. Furthermore, donor-backed projects, increasing farmer awareness, and emerging digitalization efforts create opportunities for advancing the sustainability agenda.

Political Will and Institutional Support

EU accession accelerates sustainability-focused agricultural policies. Moldova's commitment to EU accession provides a major impetus for integrating the EGD and F2F Strategy into national policy. The Moldovan government has explicitly prioritized alignment with EU sustainability objectives, reflected in its gradual adoption of key directives, such as the EU Nitrates Directive.[180] The National Strategy for Agriculture and Rural Development 2023-2030 and the National Food

[180] European Commission, https://environment.ec.europa.eu/topics/water/nitrates_en

Security Strategy[181] provide a policy framework that supports sustainability reforms. These strategic documents incorporate elements of climate resilience, sustainable food systems, and digital transformation, reinforcing Moldova's trajectory towards greener agri-food practices.

Stronger institutional coordination supports sustainability alignment. Institutional coordination is also improving, with the Ministry of Agriculture and Food Industry and the Ministry of Environment playing key roles in advancing policy alignment. Inter-ministerial coordination mechanisms, such as the task force within the Ministry of Economic Development and Digitalization, provide a platform for streamlining sustainability initiatives. Furthermore, Moldova's National Bureau of Statistics (NBS) maintains a transparent data collection and reporting system, which could be expanded to track F2F indicators, providing valuable insights into progress towards EU-aligned targets.

Technical Capacity and Sectoral Coordination

Research institutions support Moldova's shift to climate-smart agriculture. Moldova's transition to sustainable agri-food systems benefits from its growing technical capacity in research and academia. Although agroecology and climate-smart agriculture remain underdeveloped areas of study, several research institutions and universities (e.g., Technical University of Moldova, Comrat State University) have begun integrating sustainability-related topics into their curricula. The presence of scientific expertise in food systems and land management presents an opportunity to strengthen Moldova's transition through research-driven innovations.

Sectoral strategies link agricultural sustainability with health, food security, and climate action. In addition to academic contributions, sectoral strategies reinforce institutional coordination. The 2023-2030 National Health Strategy (GD 387/14-06-2023)[182] and the 2023-2030 Food Security Strategy integrate agricultural sustainability with broader health and nutrition objectives. These efforts support policy synergies between food security, climate action, and public health, facilitating a more holistic approach to Moldova's green transition.

Digitalization and Emerging Technologies

Digital tools are improving food safety and regulatory oversight in Moldova's agriculture. Digitalization is beginning to shape Moldova's agricultural sector, enhancing efficiency and monitoring capabilities. The National Strategy for Agriculture and Rural Development 2023-2030 outlines plans for integrating digital tools into farming systems. Currently, digital platforms such as the Laboratory Information Management System and the Management of Sanitary and Veterinary Measures platform have been developed to improve the management of food safety, laboratory data, and health protocols.

[181] FAO, https://faolex.fao.org/docs/pdf/mol215849.pdf

[182] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=138493&lang=ro

Expanding precision farming and smart irrigation can enhance sustainability. While the level of digital adoption in agriculture remains limited, these early advancements indicate a shift toward data-driven decision-making and regulatory oversight. Expanding the use of precision agriculture, remote sensing, and smart irrigation could further support Moldova's alignment with sustainable farming practices.

Access to Funding and International Support

International funding supports Moldova's shift to climate-smart and organic farming. Moldova receives significant international support for its agri-food sector transition, with funding from the World Bank, the EIB, FAO, and EU development programs. These financial mechanisms support projects focused on climate-smart agriculture, organic farming, and enhanced market access for smallholders. EU-funded initiatives provide technical assistance and investment grants that contribute to Moldova's gradual alignment with EU sustainability standards.

Civil society and academia support farmer training, research, and sustainability advocacy. In addition to government-led initiatives, civil society organizations and academia play a role in technical support, knowledge sharing, and capacity-building efforts. These actors contribute to farmer training programs, research collaborations, and advocacy for sustainable agriculture.

Growing Public Awareness and Civil Society Engagement

Public awareness of sustainable agriculture is growing, driven by NGOs, academia, and policy advocacy. Public awareness of sustainable agriculture and organic farming practices is slowly increasing in Moldova. While the transition toward greener agriculture remains in its early stages, the involvement of NGOs, farmers' associations, and academic institutions has contributed to greater public discourse on sustainability. Civil society engagement in policymaking and advocacy has helped shape discussions around agroecology, food waste reduction, and biodiversity conservation.

Growing demand for organic products is boosting sustainable farming. This shift in awareness is further supported by emerging consumer interest and growing demand for organic products, which has led to a modest expansion in domestic organic farming. While current organic farmland remains at only 1.5% of total agricultural land, demand for sustainably produced food is expected to grow,[183] providing incentives for further development in this sector.

All in all, Moldova possesses several key enablers that support its progress toward sustainable agri-food systems. The political commitment to EU accession, combined with national strategies that integrate sustainability goals, provides a strong institutional framework for transition. Technical capacity, though still developing, presents opportunities

[183] Moldova Organic Value Chain Alliance, https://movca.md/en/

for research-driven innovations, while digitalization initiatives signal a shift towards data-informed farming practices. The presence of international funding, civil society engagement, and increasing public awareness further contribute to Moldova's path toward alignment with the European Green Deal's Farm to Fork Strategy.

Key Priorities for Strengthening Moldova's Green Transition

Moldova's progress toward achieving the F2F Strategy targets requires a well-coordinated approach. While the country has made initial steps in aligning with EU sustainability objectives, and with EU's Common Agricultural Policy (CAP)[184] further efforts are needed to address policy gaps, strengthen institutional frameworks, and enhance financial and technical capacities. A comprehensive approach is essential to ensure measurable progress in sustainable food systems, climate-smart agriculture, and food security. This section outlines key priorities to accelerate Moldova's green transition.

1. Strengthening Policy and Governance

Adopt a Farm to Fork Action Plan with clear sustainability targets. Effective policy coordination and clear sustainability targets are critical for Moldova's transition. Establishing an inter-ministerial coordination committee would facilitate cross-sectoral alignment and enhance policy implementation. Moldova should adopt a National Farm to Fork Action Plan that sets clear SMART targets for sustainable food production, food waste reduction, pesticide reduction, organic farming expansion, and access to healthy and sustainable diets. These targets should be tailored to Moldova's specific conditions, such as increasing organic farmland from 1.5% to 10% by 2030 and reducing pesticide use by a measurable percentage.

Develop a national strategy for sustainable fisheries management aligned with the European Green Deal. Establish monitoring systems and indicators for sustainable fish sourcing and aquaculture. Enhance technical capacity and financial incentives for sustainable fishing practices. Strengthen interministerial coordination and stakeholder engagement in the fisheries sector. Promote public awareness and consumer education on sustainable fish consumption.

In addition to target setting, Moldova must align its multi-annual investment strategy with EGD objectives and EU accession requirements. Ensuring consistency between national policies, international commitments, and financial planning will strengthen implementation effectiveness and create accountability mechanisms.

[184] European Commission, https://agriculture.ec.europa.eu/common-agricultural-policy_en

2. Enhancing Data Collection and Monitoring

Designate a central agency for Farm to Fork monitoring. A robust monitoring system is essential for tracking Moldova's progress in sustainable agriculture. The designation of a central agency to coordinate data collection, reporting, and monitoring of Farm to Fork indicators would improve policy implementation and reporting accuracy. Moldova should develop a unified agricultural data system that tracks key indicators such as pesticide use, GHG emissions, soil health, and organic farmland share.

Integrate gender, social inclusion, and transparency in Farm to Fork data. To promote inclusive policymaking, Moldova should incorporate gender and social inclusion indicators into its sustainability reporting frameworks. Strengthening the National Bureau of Statistics' capacity to monitor F2F indicators will improve data transparency and allow for evidence-based decision-making. Additionally, increasing public access to information on sustainable consumption, organic food production, and healthy diets would facilitate greater engagement from consumers and stakeholders.

3. Scaling Up Financial Incentives and Investment

Increase sustainability-focused agricultural funding. Access to adequate funding remains a key determinant of Moldova's ability to implement the Farm to Fork Strategy. Increasing the share of agricultural funding for sustainability-focused projects from the current ~30% to at least 50% by 2025 would enable a shift toward greener agricultural practices.

Establish blended finance mechanisms and impact-based funding for climate-smart agriculture. Moldova should establish blended finance mechanisms to leverage public, private, and donor funding for climate-smart agriculture. A mix of targeted subsidies, concessional credit lines, and grants should be introduced to support investments in renewable energy, climate-smart irrigation, biodiversity-friendly practices, and organic certification. Engaging the Ministry of Finance in green budgeting and shifting public funding from activity-based to impact-based finance would align fiscal priorities with EGD objectives. Ensuring a dedicated budget for Farm to Fork outcomes, including organic farming and food waste reduction, would create long-term financial sustainability.

4. Building Institutional and Technical Capacity

Ensure targeted training for key agencies. To ensure successful policy implementation, Moldova must strengthen the institutional capacity of key agencies, including the Ministry of Agriculture and Food Industry, the National Food Safety Agency, and the Ministry of Environment. At least 50% of relevant ministry staff should receive training in climate-smart agriculture, environmental compliance, and EU regulatory alignment by 2025.

Expand farmer training on sustainable practices and climate resilience. Farmer training programs should be expanded to cover sustainable diets, pesticide-free production, biodiversity conservation, and soil and water management techniques. Increasing technical assistance for small and medium-sized farms would facilitate the adoption of agroecological practices and improve resilience to climate change.

Promote farmer field schools and peer-to-peer learning on sustainability. The establishment of farmer field schools and extension services should be promoted to foster knowledge exchange and practical learning. Creating platforms where farmers can share experiences on organic farming, regenerative agriculture, and efficient water use would enhance peer-to-peer learning and accelerate the adoption of sustainable practices.

5. Strengthening Market Incentives and Consumer Awareness

Expand financial incentives and outreach for sustainable farming and EU market alignment. Market-based mechanisms play a vital role in supporting Moldova's green transition. Expanding financial incentives for agroecological and organic practices, traceability systems, and quality certification would enhance Moldova's ability to meet EU market standards. Strengthening communication and outreach efforts to farmers on EU Green Deal opportunities, funding availability, and sustainability benefits would increase participation in green agricultural programs.

Encourage private investment in sustainable food production and expand export markets. Moldova private sector should invest in modern food processing, supply chain traceability, and organic product marketing. Developing new export markets for sustainable agri-food products will improve economic resilience and increase the competitiveness of Moldovan producers in the EU market. Furthermore, supporting dietary shifts to healthier, locally sourced food options will align domestic consumption with sustainability goals.

Moldova's transition towards a sustainable agri-food system requires a comprehensive approach, integrating policy reforms, financial incentives, technical capacity building, and market development. By adopting a National Farm to Fork Action Plan, improving data collection systems, expanding funding for sustainability-focused projects, and strengthening institutional capacity, Moldova will be better positioned to meet its EU accession requirements and the EU Green Deal objectives. A structured approach that fosters policy coherence, stakeholder engagement, and investment mobilization will ensure a resilient and sustainable agricultural transition.

7. Transport and Smart Mobility

Understanding Moldova's Status and Progress

The European Union's transport sector is undergoing a profound transformation under the European Green Deal (EGD), which seeks to achieve climate neutrality by 2050. The transition towards sustainable, smart, and resilient mobility is a fundamental pillar of the EU's broader climate agenda, aiming to reduce greenhouse gas emissions, increase energy efficiency, and enhance digital integration across all transport modes. The EU's policy framework for transport aligns with the twin objectives of environmental sustainability and economic competitiveness, ensuring that mobility remains accessible and efficient while minimizing its ecological footprint.

As a candidate country for EU accession, Moldova must align its transport sector with the EGD's ambitious targets, which call for a 90% reduction in transport-related emissions by 2050. This requires reducing reliance on fossil fuels, modernizing infrastructure, and shifting to sustainable mobility solutions that enhance economic competitiveness, social inclusion, and environmental protection.

The transport sector in Moldova is vital for national connectivity and economic activity, yet it remains a major source of GHG emissions, infrastructural inefficiencies, and logistical bottlenecks. The sector accounts for 30% of the country's total GHG emissions,[185] making it the second-largest contributor to national emissions. Since 1990, the share of transport emissions has doubled[186] within the overall GHG profile.

Despite the adoption of strategic planning documents, such as the National Mobility Strategy 2030 (GD 589/28-08-2024),[187] Moldova continues to face significant challenges in its transitioning towards a sustainable and efficient transport system. The vehicle fleet remains largely outdated with limited incentives for modernization. Rail and water transport remain underutilized, while intermodal connectivity gaps hinder efficient freight and passenger mobility. Public infrastructure conditions vary widely across regions, exacerbating accessibility issues. Digitalization in mobility services – including ITS and e-ticketing – are still in their early stages, slowing progress toward smart and integrated transport solutions.

Currently, the use of renewable energy sources (RES) in the transport sector is very limited. The estimated shares in the scenarios with approved measures (WEM) and planned measures (WPM) are mainly based on transport electrification, primarily in road transport, but also on the use of biofuels and, at a more advanced stage, hydrogen.

[185] IEA, https://www.iea.org/countries/moldova/emissions

[186] National Inventory Report 1990-2020, https://unfccc.int/sites/default/files/resource/Moldova_NIR_1990-2020_EN_web.pdf

[187] State Registry for Legal Documents, https://www.legis.md/cautare/getResults?doc_id=145139&lang=ro

The WEM modelling results indicate that by 2050, electricity consumption in road transport would be 19% higher than in 2030, while in the WPM scenario, it would be five times higher, with the main growth occurring by 2040 in both cases. Under the WPM scenario, the gradual electrification of rail transport will also be implemented from 2030, potentially reaching a 7% share of total electricity consumption in transport by 2050. In both scenarios, the consumption of traditional petroleum products is expected to decline in the 2040–2050 timeframe.

So far, there have been only a few small energy efficiency projects in the transport sector (several donor-supported projects aimed at improving energy efficiency in the railway and public transport sectors have not yet yielded results).

The adoption of a draft regulation on the periodic technical inspection of road vehicles (which will replace the outdated 1999 regulation) has been developed and reviewed during the General Secretaries' meeting on August 19, 2024, and has been submitted for approval to the responsible institutions. However, the process is progressing very slowly.

In 2023, there were approximately 3,105 electric cars and 39,070 hybrid cars in the Republic of Moldova. However, vehicles with internal combustion engines still dominate the market. Therefore, achieving the goal of reaching a 6.9% share of RES in transport by 2030 will be difficult without clear policies and measures.

Emissions and Vehicle Fleet

Aging road transport dominates Moldova's emissions. Moldova's transport sector remains heavily dependent on road transport, making it the largest emitter of GHGs within the sector. The total number of registered vehicles has more than tripled since 1990, surpassing 1,000,000 in 2023. More than 80% of vehicles were over ten years old in 2019,[188] and around 45% of imported cars in 2022 were older than 16 years.[189] The continued reliance on aging, high-emission vehicles highlight the urgent need for stricter emission standards, fleet renewal programs, and incentives for cleaner and more fuel-efficient transport solutions.

Transport energy consumption on the rise despite use of EV increasing. The share of hybrid and electric vehicles remains low, now accounting for only 6% of Moldova's vehicle fleet, including 4,795 fully electric vehicles. In 2024, hybrid and electric vehicle registrations increased by 47% compared to 2023, yet their impact remains limited.[190] Meanwhile, transport sector energy consumption continues to rise, reaching 793 ktoe in 2022, reflecting ongoing reliance on fossil fuels.

[188] Environmental Agency, https://am.gov.md/ro/content/h4-v%C3%A2rsta-parc-de-autovehicule

[189] AutoBlog.md, https://autoblog.md/fapt-curios-numarul-masinilor-mai-vechi-de-10-ani-care-au-fost-inregistrate-in-moldova-in-2023/

[190] CNED, https://cned.gov.md/ro/content/progres-semnificativ-utilizarea-vehiculelor-electrice-si-hibride-republica-moldova

Passenger and Freight Transport

Public transport is key in Chișinău and Bălți; active mobility remains limited. Public transport plays a crucial role in urban mobility, particularly in Chișinău, where 49% of trips rely on public transport. However, aging fleets remain a major challenge, affecting reliability, efficiency, and emissions. Efforts are underway to modernize public transport, including the procurement of new articulated trolleybuses, but progress remains slow.[191] Beyond public transport, active mobility infrastructure remains underdeveloped, with cycling and pedestrian pathways still limited. Major cities have taken steps to improve urban mobility planning (e.g., Bălți, Cahul, Chișinău, Comrat, Edineț, Ungheni[192], Soroca[193]) having developed Sustainable Urban Mobility Plans (SUMPs) with support from the EU and other international partners. Chișinău and Ungheni have expanded their cycling infrastructure, signalling a growing but still insufficient focus on sustainable and multimodal urban transport across Moldova.

Freight transport is predominantly road-based, exacerbating emissions and congestion. In 2022, road transport accounted for approximately 84.5% of the total freight movement, while rail transport contributed about 15.5%. Inland waterways played a minimal role, with a share of 0.003%. This heavy reliance on road-based logistics contributes significantly to increased emissions and congestion.

Buses dominate; rail use is minimal. In passenger transport, buses account for 50.4% of total passenger kilometres travelled, while rail transport represents only 1%. In urban areas, trolleybuses (64.4%) and buses (29.6%) continue to be the primary modes of public transport.[194] Low rail usage, combined with limited intermodal connectivity both domestically and with neighbouring countries, reduces transport efficiency and hampers sustainable mobility efforts.

Digital and Intelligent Transport Systems

ITS regulation is absent; digital mobility remains limited Moldova is actively working to establish a regulatory framework for Intelligent Transport Systems (ITS). Efforts include developing legislation aligned with EU Directive 2010/40/EU to facilitate ITS deployment. In Chișinău, the "Strategy for Intelligent Transport and Mobility" was presented in 2020[195], focusing on traffic management, public transport, parking, active mobility, road safety, electromobility, and a central

[191] EU4Environment, https://www.eu4environment.org/app/uploads/2023/10/Facilitating-green-public-investments-in-Moldova-1.pdf

[192] UNDP, https://www.undp.org/moldova/press-releases/cahul-and-ungheni-aspiring-smart-cities-support-eu-and-undp-moldova

[193] Rupprecht, https://www.rupprecht-consult.eu/project/sump-comrat-and-soroca-moldova

[194] National Bureau of Statistics, https://statistica.gov.md/files/files/publicatii_electronice/Anuar_Statistic/2023/Anuarul_statistic_RM_editia_2023.zip

[195] Czech Foreign Affairs, https://mzv.gov.cz/public/d3/26/d9/4329565_2653808_PRESS_RELEASE_Trafic_and_Mobility_Strategy_ENG_revised.pdf

ITS. Additionally, the city developed its first Urban Mobility Plan[196] to enhance road and pedestrian infrastructure, public and private transport, parking facilities, and bicycle infrastructure. In Edineț, the EU has supported the implementation of an intelligent public transport system, including smart monitoring and management equipment for buses and intelligent traffic lights[197]. Despite these advancements, the widespread adoption of ITS and digital mobility solutions across Moldova remains limited, with significant disparities between urban and rural areas.

Rail, Aviation, and Shipping

Moldova's rail network is outdated, limiting EU connectivity. Moldova's railway system relies on broad-gauge, non-electrified tracks, restricting integration with the EU's standard-gauge network and limiting intermodal connectivity. Ongoing modernization efforts include €41.2 million in EIB funding and a €12 million EU grant to upgrade key railway sections. Additionally, the EU is investing €32 million to rehabilitate the 375 km North-South rail corridor, enhancing links to Trans-European Transport Network (TEN-T) routes.[198] However, full alignment with EU standards requires further investments, including track gauge conversion and electrification, to improve trade efficiency and regional connectivity.

Aviation mainly supports international passenger travel. Moldova's aviation sector plays a key role in international passenger mobility, with Chișinău International Airport handling 4.14 million passengers in 2024 – a 46% increase from 2023. The airport offers flights to 59 destinations in 24 countries. In contrast, aviation has minimal importance in freight transport, processing 3,390 tonnes of cargo in 2024, far below road and rail volumes. Chișinău remains the only airport with regular passenger flights, centralizing Moldova's air transport network.[199]

Water transport is minimal and poorly integrated. Water transport along the Prut and Dniester rivers, remains underdeveloped and plays a negligible role in Moldova's freight and passenger transport. Limited infrastructure and poor integration into broader logistics networks prevent inland waterways from serving as a viable alternative to road and rail transport. Despite past feasibility studies on enhancing river navigation, investment and policy support remain insufficient for its large-scale development.

[196] Transport Community, https://www.transport-community.org/wp-content/uploads/2024/08/Technical-Specifications-PS-SUP-PIU-004-2024.pdf

[197] EIT Urban Mobility, https://marketplace.eiturbanmobility.eu/opportunities/moldova-edinet-development-of-the-intelligent-public-transport-system

[198] https://www.eib.org/en/press/all/2023-513-eib-global-invests-eur41-2-million-in-moldova-s-railway-infrastructure-rehabilitation

[199] CAA, https://www.caa.md/en/statistica-si-indicatori-4-177

Data and Institutional Capacity

Transport data is insufficient for EGD tracking. Moldova lacks comprehensive and reliable transport data needed for effective monitoring of EGD targets. There are significant gaps in tracking modal share, emissions, and energy consumption across transport sectors. Existing reports highlight limited disaggregated data on passenger and freight transport emissions, making it difficult to assess climate impact and policy effectiveness. Strengthening data collection, transparency, and reporting mechanisms is crucial for aligning with EU standards and long-term sustainability goals.

Weak coordination and no national mandates hinder transport reforms. Institutional fragmentation and weak coordination between national and local authorities continue to impede transport reforms in Moldova. The lack of a unified transport governance framework results in overlapping responsibilities, slowing policy implementation. While the Mobility Strategy 2030 outlines reform priorities, no national-level mandates require municipalities to adopt sustainable mobility measures. Additionally, Moldova lacks a Public Transport Authority (PTA) system, which in other European countries coordinates service provision, financing, and policy enforcement. The absence of clear regulatory mandates for urban mobility planning delays intermodal integration and infrastructure development. Strengthening institutional coordination, defining local obligations, and establishing a national PTA framework are key priorities for advancing sustainable transport reforms.

To conclude, Moldova's transport sector continues to rely heavily on road transport, with aging infrastructure, and limited multimodal options. The National Mobility Strategy 2030 provides a policy framework for development, aiming to align Moldova's infrastructure with European standards. However, significant challenges persist in emissions reduction, transport electrification, digitalization, and data monitoring (*Table 9*)**. The sector's modernization is in its early stages, with slow implementation of ITS, gradual rail development, and low adoption of alternative fuels. Infrastructure challenges remain, particularly in freight transport, active mobility infrastructure, and intermodal connectivity.**[200]

[200] Moldova Government, https://gov.md/en/content/moldovan-government-sets-new-goals-development-transport-infrastructure-till-2030

Table 9: Summary of how Moldova fares against EU transport and smart mobility goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
By 2050, nearly all cars, vans, and buses should be zero-emission.	■ Moldova has no binding target for zero-emission vehicles. ■ In April 2024, Moldova enacted a climate action law committing to net-zero emissions by 2050. As of September 2024, over 49,000 electric and hybrid vehicles were registered, accounting for 6% of the total vehicle fleet.[201]
From 2027, road transport will be covered by the EU Emissions Trading System (ETS), putting a price on pollution.	■ Moldova is not yet part of the EU ETS and lacks a carbon pricing mechanism for road transport. ■ The new climate law provides a legal basis for future carbon pricing. ■ EU's Carbon Border Adjustment Mechanism (CBAM) will impact Moldova from 2026, increasing the need for ETS alignment.
By 2030, at least 30 million zero-emission cars should be in operation.	■ No national target. ■ EV adoption remains limited, but is growing. By September 2024, over 49,000 hybrid and electric vehicles were registered in Moldova, representing approximately 6% of the total vehicle fleet. In the first nine months of 2024, 12,889 new hybrid and electric vehicles were registered, a 47% increase compared to 2023.
By 2030, 100 European cities should be climate-neutral.	■ No national target. ■ Moldova does not have a national climate-neutral cities program. ■ Moldova participates in the MCR2030 initiative, promoting urban resilience
By 2050, nearly all heavy-duty vehicles should be zero-emission.	■ No national targets for zero-emission heavy-duty vehicles. ■ Fleet modernization remains slow.
Carbon-neutral collective travel for distances under 500 km by 2050.	■ No specific targets for carbon-neutral collective travel. ■ Intercity travel predominantly road-based. ■ Rail network is underdeveloped, limiting its role in domestic passenger travel.

[201] CE Energy News, https://ceenergynews.com/renewables/eco-friendly-transport-gains-momentum-in-moldova/

EU Goals and Targets	Moldova's Current Targets and Status
By 2050, rail freight traffic should double.	■ No national targets for increasing rail freight traffic. ■ Rail freight volume continues to decline, with its share falling to 8.7% in 2023, down from 9% in 2021 and 63.8% in 2007. ■ Rail freight volume is stagnant and remains low, accounting for 8.7% of total freight in 2023.
A significant portion of freight and passenger transport should shift from road to rail or waterways.	■ Road transport dominates freight, carrying 91% of total goods in 2023, while rail handled only 8.7%. ■ Water transport remains marginal, contributing just 0.3% of total freight movement. ■ No national targets exist to shift freight from road to rail or waterways, limiting progress toward EU sustainability goals.
From 2024, emissions from non-domestic flights to and from EU outermost regions will be covered under the EU ETS.	■ Moldova's aviation emissions remain unregulated under ETS. ■ New Climate Action Law (2024) commits to net-zero by 2050, but no sector-specific targets. ■ EU4Climate supports alignment with EU policies, but no ETS is in place yet.
By 2050, nearly all collective public transport (buses, trams, metro) should be zero-emission.	■ No official zero-emission public transport targets exist. ■ Public transport fleets are outdated.
Development of the Trans-European Transport Network (TEN-T) to facilitate multimodal transport.	■ Moldova participates in the TEN-T program but achieving full alignment with TEN-T standards will require significant investments in infrastructure, with only a small portion of the road network currently meeting these standards.
Expansion of sustainable aviation fuels and low-carbon aircraft technologies.	■ A draft national SAF regulation (aligned with ReFuelEU Aviation) introduces mandatory SAF quotas (starting at 2% in 2026, increasing to 70% by 2050. ■ Regulation requires mandatory airport refuelling, encourages national SAF production, and includes reporting and compliance measures, although implementation is pending.
By 2030, automated mobility should be deployed at large scale.	■ No national targets or large-scale projects for automated mobility. ■ Initial efforts, such as Chisinau's Urban Mobility Plan and the National Mobility Strategy, focus on infrastructure improvements but do not yet include automation..
Intelligent Transport Systems (ITS) to optimize traffic flow and reduce congestion.	■ ITS adoption is slow, limited primarily to initial efforts in Chișinău, with minimal nationwide deployment. ■ No regulatory framework established for ITS.

EU Goals and Targets	Moldova's Current Targets and Status
By 2050, the road transport fatality rate should approach zero (Vision Zero initiative).	■ No national targets. ■ No official Vision Zero strategy has been adopted. ■ Traffic fatality rates remain high, although recent local measures (e.g., 30 km/h zones around schools) show initial progress.
Widespread adoption of smart urban mobility solutions, including digital ticketing and real-time transport information.	■ Smart urban mobility solutions remain underdeveloped, with limited deployment mainly in Chișinău. ■ Digital ticketing system to be piloted in Chișinău, with no significant nationwide expansion yet.

Major Roadblocks on Moldova's Path to Green Transition

Moldova's transition to a sustainable and climate-resilient transport sector faces significant challenges. Despite commitments under the EGD and the EU-Moldova Association Agreement, progress remains slow due to fragmented policies, outdated infrastructure, and a lack of dedicated funding mechanisms. The country's current policies, infrastructure, and financial constraints present major roadblocks to progress.

Major obstacles include the absence of a long-term strategic vision, weak institutional coordination, and limited investment in sustainable mobility. The policy framework remains heavily road transport-focused, with minimal incentives for rail electrification, alternative fuels, and intermodal logistics centres – key elements for reducing emissions and improving transport efficiency. Limited data availability, regulatory gaps, and inadequate stakeholder engagement further hinder Moldova's ability to align with EU sustainability goals.

Furthermore, regulatory gaps persist, particularly in ITS, SAF, and public transport decarbonization. While recent legislation (e.g., National Mobility Strategy 2030, biofuels regulation,[202] draft SAF framework) marks progress, implementation capacity remains low.

Additionally, limited data availability and weak enforcement prevent effective tracking of transport emissions and progress toward EU sustainability goals. Without stronger policy enforcement, diversified infrastructure investments, and stakeholder engagement, Moldova risks falling behind in its green transition objectives.

[202] Ministry of Energy, https://www.energie.gov.md/ro/content/combustibilii-din-surse-regenerabile-mai-aproape-de-piata-republici-moldova-incepand-cu-1

Regulatory and Policy Barriers

Lack pf policy framework for sustainable urban mobility slows green transition. The absence of an integrated national policy for sustainable urban mobility makes it difficult to implement long-term decarbonization measures. While national strategies, such as the National Mobility Strategy 2030, address some aspects of transport sustainability, they do not fully align with EGD targets or establish clear 2050 mobility objectives. This gap limits Moldova's ability to transition toward a low-emission, multimodal transport system.

Slow EGD adoption and missing laws hinder low-carbon transport. The slow adoption of EGD-aligned policies creates inconsistent policy signals, such as the removal of incentives for electric vehicles while still permitting the import of high-emission, older vehicles. Additionally, the lack of legislation on Sustainable Urban Mobility Plans, electric vehicle charging infrastructure, and cycling networks further restricts Moldova's ability to promote low-carbon transport alternatives. Strengthening policy coherence and regulatory frameworks is essential to accelerating sustainable mobility adoption.

Institutional and Capacity Challenges

Slow EU-Moldova progress due to institutional fragmentation and weak local authority. The implementation of EU-Moldova transport commitments has been slow, with less than 50% completion of relevant provisions under the Association Agreement. Institutional fragmentation and unclear jurisdiction between central and local authorities complicates policy implementation. Local governments lack the legal mandate to develop and enforce sustainable mobility measures, while the central Government has limited tools to ensure that EGD-aligned transport policies are implemented at municipal level.

Capacity gaps in public institutions slow sustainable transport reforms. Additionally, Moldova's public institutions at both the central and local levels are understaffed and lack specialized training in EGD-aligned transport policies. No structured capacity-building programs exist to equip public officials with the necessary expertise to design, implement, and enforce sustainable mobility initiatives. This skills gap hinders effective governance and slows the adoption of EU best practices in transport decarbonization.

Limited transport data, weak data culture and slow 5G deployment hinder smart mobility expansion. Inadequate transport data and a lack of standardized data collection procedures and KPI utilization complicate policy planning and slow the rollout of smart mobility solutions. Additionally, underdeveloped 5G infrastructure limits the expansion of ITS, digital ticketing, and real-time traffic management – key enablers of modern, efficient urban mobility.

Infrastructure and Connectivity Issues

Aging vehicles, poor roads, and outdated rail limits low-emission transport. Moldova's aging vehicle fleets and deteriorating road infrastructure contribute to high air pollution and congestion, particularly in urban areas. The national rail network remains entirely non-electrified, limiting its capacity to support low-emission freight and passenger transport. Additionally, poor rail connectivity and lack of intermodal logistics centres further hinder Moldova's potential as a regional transit hub. Without modern intermodal freight terminals, efficient integration between rail, road, and waterways remains unachievable, further delaying transport decarbonization efforts.

Underdeveloped active mobility infrastructure slows low-carbon transport adoption. Active mobility infrastructure remains insufficient with cycling and pedestrian-friendly infrastructure largely concentrated in Chișinău. However, even within the capital, cycling lanes are limited, and pedestrian infrastructure is often fragmented or unsafe. Outside urban centres, sustainable mobility options are nearly absent. exists, sustainable transport options remain largely absent outside the capital. Without a nationwide strategy to expand safe, accessible cycling and pedestrian networks, Moldova faces significant barriers in promoting low-carbon urban mobility.

Financial Constraints

Moldova faces a significant funding gap for green transport transition. Moldova's shift toward sustainable and smart mobility is constrained by substantial investment needs, with EU-backed funding packages allocating up to EUR 1.885 billion between 2025 and 2027 to support economic and infrastructure development. However, a clear financing strategy for green transport projects remains lacking, limiting progress in electrification, rail modernization, and sustainable mobility initiatives.

Transport financing remains road-centric, with minimal investment in low-emission alternatives. Road infrastructure continues to dominate Moldova's transport investment, with road infrastructure investment per GDP increasing from 0.832 in 2021 to 0.900 in 2022. While recent EU-backed initiatives, such as a €41.2 million loan and a €12 million grant from the European Union, aim to enhance rail connectivity, funding remains disproportionately allocated to road infrastructure. This imbalance hinders the transition toward low-emission and multimodal transport solutions.

IFIs' funding is 40% of external funding, but it is insufficient, with no funding for sustainable mobility. Sustainable mobility remains underfunded. In 2023, international financial institutions contributed approximately EUR 100 million. However, this investment remains insufficient to address the country's infrastructure and policy needs for full alignment with EU sustainability goals. Despite increased EU and EIB support, including a EUR 12 million grant and a EUR 41.2 million loan for railway modernization, there are no dedicated funding mechanisms for sustainable mobility, further delaying the transition to low-carbon transport solutions.

Limited Awareness and Public Engagement

Low public awareness slows sustainable transport adoption. Public engagement in green mobility solutions remains limited, delaying behavioural shifts toward public transit, cycling, and walking. Although Chișinău has actively participated in European Mobility Week for several years,[203] awareness campaigns remain insufficient to drive large-scale adoption of sustainable transport habits.

EU-backed initiatives support awareness, but outreach remains limited. Projects like "MOVE IT like Lublin", funded by the EU, have helped promote public transport improvements and urban mobility awareness in Chișinău. However, nationwide outreach efforts remain weak, and the benefits of sustainable transport are not widely communicated. Without expanded public engagement campaigns and stronger incentives, progress in shifting to low-emission transport options will remain slow.

In conclusion, Moldova faces significant structural, financial, and institutional challenges in its transport sector's green transition. The absence of a long-term strategic vision, weak policy enforcement mechanisms, lack of fiscal incentives, and limited infrastructure investments continue to hinder the country's alignment with EU sustainability goals. Despite participation in EU-backed initiatives such as European Mobility Week and the "MOVE IT like Lublin" project, institutional fragmentation, lack of legislative clarity, and inadequate funding allocations slow progress. To achieve meaningful advancements in sustainable transport, regulatory reforms, improved data collection, and a shift in investment priorities are crucial. Without these strategic changes, Moldova risks falling behind in its commitments to decarbonization and EU transport policy integration.

Existing Enablers for Moldova's Progress Towards Transport Sector Goals

Despite significant challenges associated with the transition to sustainable and smart mobility, Moldova benefits from several key enablers that support its transition to sustainable and smart mobility. The country's EU accession process has driven political commitment to align with EGD principles, reinforcing the need for sectoral reforms.

National strategies, such as the National Development Strategy 'European Moldova 2030', the National Mobility Strategy 2030, and the Low Emission Development Program, provide a policy framework for low-carbon mobility. Fiscal incentives, improved institutional coordination, international financial cooperation, and the engagement of civil society also contribute to sustainable transport solutions. Strengthening these enablers will be crucial for Moldova's continued alignment with EU climate and mobility objectives.

[203] EU4Moldova, https://eu4moldova.eu/the-eu-funded-project-move-it-like-lublin-participated-in-the-alternative-transport-festival-organised-in-chisinau-2/

Institutional Enablers

EU accession drives EGD alignment and EU transport law adoption. Moldova's EU accession process has elevated the alignment of Moldova's transport policies with EGD objectives as a national priority. This has accelerated the adoption of key EU transport legislation and the gradual integration of EGD-aligned measures into national policies.

The Interministerial Working Group and National Council improve coordination. The Interministerial Working Group supports cross-sectoral coordination on sustainable mobility, while the National Council for Coordination of Regional Development[204] ensures that green mobility considerations are integrated into regional planning.

Digitized transport data is driving decision-making and smart mobility in Moldova. The National Bureau of Statistics has modernized data collection by integrating administrative and real-time sources, enhancing the accuracy and availability of transport-related data. Open data initiatives and digital reporting systems enable better planning and monitoring, supporting evidence-based policymaking. Additionally, emerging big data analytics, such as mobile network data, satellite imagery, and GPS tracking, are helping authorities optimize traffic flows, improve public transport efficiency, and develop intelligent mobility solutions. These advancements lay the groundwork for a fully integrated smart transport ecosystem aligned with EU digitalization standards.

Policy Instruments

Moldova's policy framework includes several key documents that support sustainable transport development.

National Mobility Strategy aligns with EGD and smart mobility goals. The National Mobility Strategy 2030 supports EGD objectives by promoting smart and green mobility solutions. It provides a guiding framework for improving transport efficiency, reducing emissions, and modernizing infrastructure in line with EU best practices.

The Low Emission Program strengthens climate commitments. The Low Emission Development Program 2030[205] sets a specific emissions reduction target of 55% by 2030 compared to 1990 levels, directly supporting Moldova's commitments under the Paris Agreement and emphasizing the need for transport sector decarbonization.

TEN-T integration enhances connectivity and infrastructure. Moldova's Memorandum of Understanding (MoU) on the Trans-European Transport Network[206] development facilitates

[204] North Regional Development Agency, https://adrnord.md/map.php?l=en&idc=347

[205] State Registry of Legal Documents: https://www.legis.md/cautare/getResults?doc_id=139980&lang=ro

[206] European Commission, https://enlargement.ec.europa.eu/news/commission-ukraine-and-moldova-sign-high-level-understandings-improve-transport-connectivity-2023-12-22_en

greater connectivity with the EU transport network, unlocking investment opportunities for railway modernization, cross-border mobility, and multimodal logistics development.

Financial and Fiscal Incentives

Fiscal incentives drive EV adoption and low-carbon transport. Fiscal incentives have significantly boosted the adoption of low-emission vehicles in Moldova. As of September 2024, over 49,000 electric and hybrid vehicles were registered, representing 6% of the national vehicle fleet. The uptake of electric vehicles has accelerated, with 12,889 units registered in the first nine months of 2024, marking a 47% increase compared to total registrations in 2023 (8,750 units). Import duty exemptions and other fiscal policies continue to support the transition toward sustainable transport, reflecting a growing shift away from fossil fuel dependence. Fiscal incentives and other advantages are expected to be cancelled starting from 1st of January 2026.

IFIs and EU funding accelerate Moldova's sustainable transport development. International financial institutions (IFIs) and EU-backed initiatives remain crucial in modernizing Moldova's transport sector. The European Investment Bank and other financial institutions have co-financed rail, public transport, and green corridor projects, supporting low-carbon mobility solutions.

Stakeholder Involvement

Civil society promotes cycling and clean transport. NGOs such as the Green City Lab and the Chișinău Bicycle Alliance play a key role in advocating for cycling infrastructure and clean urban transport solutions. Their engagement has influenced local transport policies and increased awareness of active mobility.

PPPs expand EV charging infrastructure and support green transition. Public-private partnerships (PPPs) are fostering investments in EV charging infrastructure, public transport digitalization, and green mobility solutions, demonstrating the private sector's role in Moldova's sustainable transport transition.

Interministerial coordination needs strengthening as cities advance ITS projects. While interministerial working groups have been established to enhance coordination in the transport sector, their effectiveness in policy implementation remains limited and requires further reinforcement. Meanwhile, several cities have launched Intelligent Transport Systems initiatives, including GPS tracking for public transport and e-ticketing systems.[207] These projects mark early steps toward digitalizing urban mobility, but wider adoption and regulatory support are needed for full-scale implementation.

[207] EU4Moldova, https://eu4moldova.eu/modern-solutions-to-enhance-safety-and-improve-traffic-flow-in-chisinau-a-new-traffic-monitoring-center-inaugurated-in-with-the-eu-support/

European Mobility Week and MOVE IT like Lublin raise awareness. Moldova has actively participated in European Mobility Week (EMW), organizing sustainable mobility campaigns with EU support. The "MOVE IT like Lublin" project, funded by the EU, has helped Chișinău improve public transport by sharing best practices from Lublin, Poland. These initiatives have enhanced public engagement in sustainable urban mobility.

All in all, Moldova's transition to sustainable and smart mobility is supported by a combination of institutional, policy, financial, and stakeholder-driven enablers. The EU accession process remains a key driver of transport sector reforms, while national policies like the National Mobility Strategy and Low Emission Development Program provide a clear framework for aligning with EGD goals.

Fiscal incentives, particularly for electric vehicles, have already yielded results, and international financial cooperation continues to unlock investment in sustainable transport projects. Civil society engagement, PPPs and awareness campaigns, such as European Mobility Week, underscore the importance of multi-stakeholder cooperation in advancing green mobility. As Moldova progresses toward its transport sector goals, leveraging these enablers will be essential for overcoming challenges and ensuring a coordinated and effective transition to sustainable mobility.

Key Priorities for Strengthening Moldova's Green Transition

Moldova's shift toward a sustainable and low-emission transport system requires an integrated approach that includes policy reforms, infrastructure development, financial mechanisms, capacity building, and digital transformation. To align with EGD and the EU sustainable mobility objectives, Moldova must establish clear sectoral strategies, improve institutional coordination, and prioritize targeted investments.

Addressing key gaps in multimodal transport, electrification, public transport modernization, and stakeholder is crucial for accelerating the green transition. This section outlines the key priorities for transforming Moldova's transport sector.

1. Priorities for Policy and Institutional Reform

Establish a structured policy framework with 2030 and 2050 goals to align Moldova's transport with EGD. A structured policy framework for smart and sustainable mobility is essential to ensure consistency in Moldova's green transition efforts. Defining clear mid- and long-term goals for 2030 and 2050 will help align national strategies with EGD objectives and provide a roadmap for implementation. The National Mobility Strategy 2023-2030 must be implemented through detailed sub-sectorial plans (rail, road, air, waterborne transport), ensuring that each mode has a dedicated action plan contributing to the overall strategy. Integrating these goals into

all transport-sector policies, regulations, and urban mobility plans will enhance coherence and ensure alignment with European standards.

Strengthen EGD coordination through a national mobility platform. Establishing a national platform to oversee EGD implementation will enhance coordination across ministries, municipalities, and private sector stakeholders. Clearly defining institutional roles and mandates will ensure effective policy execution. Clearly defining institutional roles and mandates will ensure effective policy execution.

Integrate land use and transport planning. A comprehensive legal framework should promote sustainable urban mobility planning (SUMPs) and intermodal transport. This should include policies that support the "avoid-shift-improve" approach, emphasizing public and active mobility.

2. Strengthening Infrastructure and Modal Shift

Prioritize multimodal transport and rail electrification. Moldova must shift investments from roads to multimodal transport, prioritizing rail electrification and EU connectivity. Rail funding has dropped to just 2% of total inland transport investment, while road spending reached 0.9% of GDP in 2022. The National Mobility Strategy and EU TEN-T framework emphasize rail modernization, yet progress is slow. EU-backed investments (EUR 41.2M loan, EUR 12M grant) support upgrades, but further funding is needed. The EU Rail Integration Strategy also stresses harmonization with EU standards to enhance regional connectivity.[208]

Expand EV charging, modernize fleets, and enforce SUMPs. EV adoption grew 47% in early 2024, yet charging infrastructure lags. The E-Mobility Strategy should accelerate deployment of charging stations and fleet renewal. Public transport electrification is key, with trolleybuses and e-buses supporting Sustainable Urban Mobility Plans (SUMPs). To advance clean transport, Moldova should:

- Expand EV charging stations in urban/rural areas.
- Renew public transport fleets with electric and fuel-efficient models.
- Mandate SUMPs for cities to ensure integrated urban mobility.

A balanced transport transition requires boosting rail investment, intermodal logistics, and clean mobility incentives, ensuring alignment with EU climate policies.

[208] EIB, https://jaspers.eib.org/knowledge/publications/a-strategy-for-the-eu-integration-of-the-ukrainian-and-moldovan-rail-systems

3. Enhancing Financial Mechanisms and Incentives

Rebalance transport funding for sustainable mobility. Moldova needs to allocate greater financial resources to rail, waterborne transport, and clean mobility solutions. Balancing transport investments will ensure accessibility for all while advancing decarbonization efforts.

Leverage IFI financing and fiscal incentives. Blended financing models through public-private partnerships and international financial institutions will help bridge funding gaps. Expanding tax incentives and grants for EVs, public transport electrification, and ITS deployment will accelerate adoption.

Ensure transport accessibility for vulnerable groups. Equity must be central to Moldova's transport transition. Inspired by EU Social Climate Fund initiatives, policies should address transport poverty by ensuring affordable mobility options for low-income and rural populations.

4. Capacity Building and Data Management Priorities

Enhance training for public officials and transport planners. Capacity-building programs for government officials, urban planners, and transport operators will improve the implementation of sustainable mobility policies. These initiatives should focus on EGD-aligned transport governance.

Improve transport data collection and monitoring. Expanding transport data collection will enable better tracking of emissions, modal shares, and other EGD indicators. Open access to data will enhance transparency and enable evidence-based policymaking.

Increasing public awareness and national coordination. Expanding public awareness campaigns is essential to encourage citizens to shift toward sustainable transport options, such as cycling, public transport, and active mobility. European Mobility Week (EMW) has been successfully organized in Chisinau for several years with EU support, but a nationally coordinated approach led by the government is needed to scale efforts across the country. Establishing a structured awareness program with clear government oversight will ensure consistent messaging, broader engagement, and alignment with EU best practices.

5. Priorities for Digital Transformation and Stakeholder Engagement

Expand ITS and real-time traffic management. Expanding ITS will enhance road safety, congestion management, and transport efficiency. Chișinău's Traffic Monitoring Centre developed with EU-support was launched in 2024 and optimizes traffic flow using smart cameras and sensors.[209] Nationally, the State Road Administration is developing an ITS platform with Czech

[209] IPN, https://www.ipn.md/index.php/en/traffic-monitoring-center-capital-suffers-from-severe-traffic-jams-head-7967_1109096.html

support. Implementing the ITS Directive and expanding digital tools such as e-ticketing, real-time traffic monitoring, and automated mobility solutions will enhance mobility services.

Scale up digital mobility solutions nationwide. E-ticketing and GPS tracking remain limited to pilot projects. A coordinated national rollout, aligned with the National Digital Strategy, should ensure full integration of smart transport solutions, real-time passenger information, and automated traffic control.

Strengthen ITS coordination and public-private partnerships. A national ITS coordination body is needed to streamline digital transport policies. PPPs should accelerate e-ticketing, ride-sharing, and last-mile mobility projects.

Expand European Mobility Week and awareness campaigns. Chișinău's EU-backed EMW should be expanded nationwide, with government-led campaigns promoting public transport, active mobility, and eco-driving. Partnerships with civil society and businesses will drive behaviour change.

Accelerating ITS deployment, digitalization, and public engagement will strengthen Moldova's smart mobility transition.

Overall, Moldova's green transition requires a coordinated approach integrating policy, infrastructure, financing, capacity building, and digital transformation. A clear policy framework with 2030 and 2050 targets will provide strategic direction, while multimodal investments will diversify transport options.

Strengthening financial mechanisms and ensuring inclusive transport investments will accelerate sustainable mobility. Expanding digital solutions and intelligent transport systems will optimize networks, cut emissions, and enhance urban mobility.

Finally, active engagement with government, private sector, and civil society will drive broad support and long-term sustainability in Moldova's transport sector.

8. Biodiversity

Understanding Moldova's Status and Progress

The European Green Deal and the EU Biodiversity Strategy for 2030 establish a transformative framework aimed at halting and reversing biodiversity loss across Europe. These policies set forth ambitious, legally binding commitments to restore ecosystems, enhance conservation efforts, and integrate biodiversity considerations into economic and development planning. Additionally, the Kunming-Montreal Global Biodiversity Framework (GBF) reinforces these objectives by setting a global pathway for biodiversity protection, restoration, and sustainable use.

Moldova's biodiversity remains under significant pressure due to land use changes, habitat fragmentation, climate change, and resource overexploitation. While some progress has been made in expanding protected areas and implementing conservation and restoration programs, many challenges persist. The following section provides a structured assessment of Moldova's current status and progress in biodiversity conservation and restoration, including its alignment with European and international commitments.

Protected Areas and Ecological Networks

Moldova's protected territory is below EU targets. National commitments remain well below the 30% target established under the EU Biodiversity Strategy for 2030 and Target 3 of the Kunming-Montreal Global Biodiversity Framework (GBF), both in terms of intended expansion of protected areas, as well as of the other conserved areas (e.g., Emerald network). Currently, there are 313 protected areas, 158 sites of ancient trees (total 429 trees) and 472 rare species of flora and fauna, classified under 12 different categories, such as national parks, scientific reserves, nature monuments, and Ramsar wetlands.[210] Furthermore, there is no national target for strict protection within these legally protected areas. Currently, protected areas cover 5.8% of Moldova's territory.[211] National commitments aim to increase this figure to 8% by 2025 and 10% by 2030.[212]

The relatively small share of state protected natural areas does not ensure effective conservation of biological diversity, as required by international treaties. Thus, as part of the response to the low share of protected natural areas, as well as to address threats to biodiversity, the National Ecological Network was established, covering 11,113 km^2. The National Ecological Network emphasizes the importance of the landscape-level approach as a mechanism for conservation of ecological processes and patterns (Law nr.94/2007).[213]

[210] Ministry of Agriculture and Food Industry, https://madrm.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Raport%20VI%20cu%20privire%20la%20diversificarea%20biologica%20ENG%20Web%20final.pdf

[211] Idem

[212] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=134582&lang=ro

[213] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=133945&lang=ro

Emerald Network covers only 8.1%, with limited protection. This network serves as Moldova's primary contribution to the Pan-European ecological network and currently covers 8.1% of the territory. Expanding the network and enhancing of the management of existing sites in planned.

Protected area management faces funding and capacity challenges. Management of existing legally protected areas faces significant challenges due to limited funding, outdated legal frameworks, and insufficient institutional capacity. There is currently no national target in place for effective management of conserved areas, although international standards such as the IUCN Green List[214] or the Management Effectiveness Tracking Tool[215] can support efforts in this regard.

Nature Restoration and Habitat Conservation

Moldova lacks a national target for habitat restoration beyond afforestation initiatives. The country has seen significant fragmentation of natural areas, especially in the southern region, where climate change-induced aridification poses further threats. While the upcoming National Biodiversity Program and Action Plan (NBPAP) 2025-2030 is expected to include habitat restoration targets, current efforts are primarily focused on forest restoration. Through the National Forest Extension and Rehabilitation Program (NFERP) 2023-2032, Moldova aims to decrease the degraded areas by 45,000 hectares, (re)afforestatate 110,000 hectares of degraded land, and rehabilitate/ restore 35,000 of them.[216] See textbox 21 for more definitions:

Textbox 21: key forestry and biodiversity definitions

degraded land *– land which, through erosion, pollution or the destructive action of anthropogenic factors, has permanently lost its agricultural production capacity, but which can be improved by afforestation and other works for the restoration of ecosystems. (Law nr.1041/2000)*

reforestation *– is the process of establishing forest vegetation on previously unforested or degraded land in order to restore the ecological balance, protect the soil and improve climatic conditions.,*

afforestation *– this refers to the process of planting trees or creating a forest on land that has not been forested for a long time or has never been a forest. It is often used as a strategy to combat desertification, climate change, or to create new green areas. (Law nr.1041/2000)*

forestation *– This is a more general term that refers to the process of establishing or increasing forested land, whether through afforestation (creating a forest where there was none) or reforestation*

[214] IUCN, https://iucngreenlist.org/

[215] Protected Planet, https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=METT

[216] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=135917&lang=ro

(restoring a forest that was lost due to deforestation, logging, or natural disasters). (Forestry Code nr.69/2024)

***restoration** – refers to the set of measures and practices applied to restore degraded or damaged forests to a healthy and functional state, thereby ensuring that their biodiversity, productivity and regeneration capacity are maintained. These measures include natural or artificial regeneration, ecological reconstruction and other silvicultural works necessary to restore forest ecosystems. (Forestry Code nr.69/2024)*

***conservation** – refers to the set of measures and practices aimed at maintaining and protecting the biological diversity and functionality of forest ecosystems. These measures include sustainable forest management, ecological reconstruction of stands and maintenance of forest biological diversity.*

***ecological corridors** – a linear or diffuse linear element that provides functional and terrestrial links between elements of the ecological network and their integrity at a large scale (Law nr.94/2007);*

To halt biodiversity loss, protect and conserve biodiversity and natural ecosystems several measures are planned to be undertaken: ensuring the protection and conservation of rare species of flora and fauna included in the Red Book of the Republic of Moldova, as well as those included in special protection lists at national and international level. Species included in environmental conventions to which the Republic of Moldova is a party are also considered for protection and conservation. Further, the development of the National Ecological Network is planned, alongside plans to reduce the fragmentation of natural ecosystems and to create connecting ecological corridors.

No national targets for soil and river restoration. No national targets exist for soil remediation or the restoration of free-flowing rivers, both included in the EU Biodiversity Strategy 2030. Given Moldova's reliance on transboundary water resources, particularly the Dniester River providing nearly 90% of surface water use, effective water management policies are essential for ensuring ecosystem health. Moldova has 3,621 rivers and streams, totalling more than 16,000 kilometres, along with 4,126 natural lakes and artificial basins, but comprehensive restoration programs are lacking. Nevertheless, the Management Pans on hydrographical basins on Dniester River and the ones on Danube-Prut and Black Sea[217] provide for certain measures to restore / revitalise water bodies.

The country has no drained peatland ecosystems, so the target for their restoration doesn't apply. No national targets have been set for fish stock sustainability in Moldova's major rivers, even though fish populations in the Dniester and Prut rivers are declining due to pollution and habitat degradation. The NBPAP 2030 is expected to address these gaps.

[217] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=132734&lang=ro

Species Conservation and Invasive Species Management

Moldova lacks national targets for species conservation and habitat recovery. This also applies to habitat deterioration prevention, or recovery efforts. The fourth edition of the Red Book, being developed by the State University of Moldova in collaboration with research institutes, is expected to provide updated flora and fauna conservation status assessments. The monitoring of common bird species is conducted by the Institute of Zoology, which belongs to the State University of Moldova, in collaboration with specialized ornithology NGOs. The results can be used nationally to report on species conservation trends and status.

No national target for invasive species management. There is no formal national target for the deterioration in species conservation trends and status. Similarly, there is no established national framework to systematically monitor and address the impact of invasive alien species, despite the identification of 149 such species within Moldova. The upcoming NBPAP 2030 is expected to introduce specific targets for invasive species management.

No national pollinator targets. Pollinators are another area of concern, as Moldova is not monitoring the Grassland Butterfly Index and has not adopted a national pollinator protection strategy.

Forest Expansion and Connectivity

Moldova aims to expand forests but lacks connectivity targets. Forests cover approximately 11.2% of Moldova's land area, with the NFERP 2032 aiming to expand forest coverage to 15% of the country territory.[218] In total, the program seeks to afforest and rehabilitate 145,000 hectares, including the reforestation of 35,000 hectares of degraded land. However, Moldova lacks national targets related to forest connectivity, a key factor in improving ecosystem resilience. The main afforestation goal is to establish ecological corridors linking fragmented forest patches, with NFERP 2032 expected to contribute to decreasing the forest fragmentation index by 0.75 units.

Structural Gaps

Moldova faces significant structural challenges in implementing effective biodiversity conservation measures. These challenges limited financial resources, outpaced legal frameworks, and gaps in institutional capacity. Current biodiversity data systems could benefit from updates, and local authorities require additional expertise and resources to implement conservation measures effectively. Additionally, land-use pressures, deforestation, and illegal logging continue to undermine conservation efforts.

[218] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=135917&lang=ro

All in all, Moldova has made incremental progress in biodiversity conservation, yet significant gaps remain in achieving alignment with EU and international targets. The country lags behind in protected area expansion, species conservation, habitat restoration, and the integration of biodiversity into sectoral policies. Strengthening legal frameworks, enhancing monitoring systems, and securing sustainable funding will be critical to addressing these challenges and ensuring long-term ecological resilience.

Table 10: Summary of how Moldova fares against EU biodiversity goals and targets

EU Goals and Targets	Moldova's Current Targets and Status
Legally protect at least 30% of EU's land and 30% of its sea areas.	■ Target for terrestrial areas and inland waters: 8% by 2025, 10% by 2030. Well below the EU's 30% target. ■ As of 2024, 5.8% of the country's territory are protected areas and 8.1% is the Emerald network.
Strictly protect at least one-third of the EU's protected areas, including all remaining primary and old-growth forests.	■ No national target for strict protection. ■ Currently, 1.23% of protected areas are strictly protected.
Establish and integrate ecological corridors to form a cohesive Trans-European Nature Network.	■ No national target for connectivity. ■ NFERP 2032 aims to reduce the forest fragmentation index by 0.75 units.
Implement legally binding restoration targets to restore degraded ecosystems.	■ No legally binding national restoration targets beyond afforestation efforts.
Restore 30% of degraded habitats to good condition.	■ No national target for degraded habitat restoration beyond afforestation efforts.
Restore at least 25,000 km of free-flowing rivers by removing artificial barriers.	■ No national target for river restoration.
Ensure no deterioration in conservation status, with at least 30% of species showing positive trends.	■ No national species conservation target. ■ Red Book 4th edition, indicating the trends in conservation status, is under development.
Reduce by 50% the number of Red List species threatened by invasive alien species.	■ No national target for reduction. ■ NBPAP 2030 expected to introduce measures. ■ 149 invasive species identified. [219]

[219] Ministry of Agriculture and Food Industry, https://madrm.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Raport%20VI%20cu%20privire%20la%20diversificarea%20biologica%20ENG%20Web%20final.pdf

EU Goals and Targets	Moldova's Current Targets and Status
Reverse pollinator decline by enhancing habitats and reducing pesticide use.	■ No national target for pollinator conservation. ■ NBPAP 2030 expected to introduce measures.
Plant 3 billion additional trees in the EU by 2030, respecting ecological principles.	■ No target on number of additional trees to be planted. ■ NFERP 2032 aims to afforest and rehabilitate 145,000 ha. ■ Forests cover 11.2% of land.
Enhance connectivity of forest ecosystems to reduce fragmentation and support species movement.	■ No national target for connectivity. ■ NFERP 2032 aims to establish ecological corridors.
Integrate biodiversity considerations into sectoral policies, including agriculture, urban planning, and infrastructure.	■ No comprehensive integration of biodiversity into sectoral policies. ■ Limited application of environmental impact assessments in infrastructure and urban planning. ■ The upcoming NBPAP 2030 is expected to introduce specific biodiversity integration measures.

Major Roadblocks on Moldova's Path to Green Transition

Moldova faces significant challenges in aligning its biodiversity policies with the European Green Deal and broader environmental commitments. These obstacles stem from legislative, financial, institutional, and environmental conditions that hinder progress in biodiversity conservation and the sustainable use of natural resources. Addressing these issues will require comprehensive policy adjustments, enhanced institutional coordination, and sustainable financing mechanisms.

Policy and Legal Challenges

Lack of strategic planning delays conservation and restoration efforts. Strategic planning for biodiversity conservation and restoration remains insufficient. Moldova lacks an approved Nature Restoration Plan aligned with EU 2024/1919 Nature Restoration Regulation.[220] While the National Forest Extension and Rehabilitation Program (NFERP 2032) provides some direction, the broader National Biodiversity Program and Action Plan (NBPAP 2030) is still under development, delaying the formulation of national conservation priorities and implementation strategies. Roadmap on the Emerald Network in Moldova needs to be developed and integrated into the Natura 2000 as part of Trans-European Nature Network.

Incomplete transposition of EU legislation hinders Moldova's green transition. One of the fundamental barriers to Moldova's green transition is the incomplete transposition of the EU

[220] EUR-Lex, https://eur-lex.europa.eu/eli/reg/2024/1991/oj

environmental acquis into national legislation. Critical gaps remain in biodiversity protection laws, forest management, and species conservation frameworks. Despite ongoing legal reforms, the country has yet to fully adopt the EU Regulation on invasive alien species, leaving gaps in its capacity to control and mitigate biodiversity threats from non-native species.

Law enforcement is weak. Enforcement of existing environmental laws is weak, particularly in species protection, forest policy implementation, and the sustainable management of natural resources.

Financial and Economic Challenges

Limited financial resources pose a significant challenge to Moldova's biodiversity conservation and restoration efforts. While the 2024 National Budget included allocations for biodiversity, these remained insufficient to scale up conservation and restoration initiatives. The country remains highly dependent on international funding, with limited domestic financing mechanisms to support long-term biodiversity protection.

Inadequate financial instruments and limited private sector participation hinder biodiversity efforts. Existing financial instruments for biodiversity conservation, such as payments for biodiversity use, remain inadequate to drive large-scale restoration efforts. Moreover, Moldova's capacity to access EU and international funding mechanisms, including the Global Environment Facility (GEF) and the EU LIFE Programme, remains underdeveloped. The private sector's participation in biodiversity conservation and restoration is also minimal, despite recent legislative reforms aimed at creating new investment opportunities for businesses in the green sector.

Institutional and Capacity Constraints

Weak institutional coordination further impedes Moldova's transition towards a greener future. There is no clear delineation of responsibilities and mandates among public biodiversity institutions, leading to inefficiencies in policy implementation. Although institutional reforms were initiated by the Ministry of Environment in 2022, progress has been slow, leaving many critical functions unaddressed.

Lack of technical capacity and outdated systems hinder biodiversity management. A lack of technical capacity exacerbates these challenges. Key institutions, including the Ministry of Environment and the Environmental Agency, face shortages of qualified personnel with expertise in biodiversity conservation, ecosystem management and restoration. Furthermore, data collection and monitoring systems remain outdated, with no operational Biodiversity Information System in place to facilitate reporting, analysis, and informed decision-making.

Other Sectoral Issues

Climate change and habitat fragmentation stress Moldova's ecosystems. Moldova's ecosystems are under increasing stress due to climate change, habitat fragmentation, and unsustainable land-use practices. The southern region of the country is particularly vulnerable to climate-related impacts, including aridification and habitat degradation, which further threaten local biodiversity.

Invasive species represent an escalating challenge. Moldova has identified 149 invasive alien species,[221] yet it lacks a national strategy to mitigate their impact on native ecosystems. Similarly, forest fragmentation continues to threaten biodiversity, driven by agricultural expansion, urbanization, and infrastructure development. The predominance of monoculture plantations, particularly acacia, which accounts for over 40% of Moldova's forested areas, reduces ecosystem resilience and limits habitat diversity.

Water stress further exacerbates biodiversity challenges. Moldova relies heavily on transboundary rivers for its freshwater supply, particularly the Dniester River, which provides nearly 90% of the country's surface water use. Climate variability, inefficient water management practices, and pollution further strain these critical water resources, posing risks to both biodiversity and human well-being.

All in all, Moldova's transition to a sustainable and biodiversity-friendly economy is hindered by a combination of legal, financial, and institutional challenges. The slow progress in setting the national policy and biodiversity targets, transposing EU environmental acquis, inadequate financing mechanisms, and weak institutional coordination all present significant roadblocks. Overcoming these challenges will require strengthened governance, enhanced biodiversity monitoring systems, and more robust financing mechanisms to ensure long-term ecological resilience and alignment with EU environmental objectives.

Existing Enablers for Moldova's Progress Towards Biodiversity Goals

Moldova's progress in biodiversity conservation and restoration is supported by a combination of political, strategic, financial, and institutional factors that enhance its capacity to meet EU and global biodiversity targets. As an EU candidate country, Moldova has strong incentives to align its environmental policies with the European Green Deal and the EU Biodiversity Strategy for 2030. The presence of national strategies, international funding opportunities, institutional reforms, and partnerships with NGOs further reinforce the country's ability to advance biodiversity conservation and restoration.

[221] Ministry of Agriculture and Food Industry, https://madrm.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Raport%20VI%20cu%20privire%20la%20diversificarea%20biologica%20ENG%20Web%20final.pdf

Policy and Strategic Framework

EU candidate status drives policy alignment with EU environmental directives. Moldova's EU candidate status serves as a driving force for policy alignment with EU environmental directives. The updated National Environmental Strategy 2024-2030 and the forthcoming National Biodiversity Program and Action Plan 2030 provide a structured approach for integrating biodiversity considerations into national development policies. These frameworks are designed to support the protection of species and habitats, ecosystem restoration, and sustainable resource management while ensuring compliance with EU regulations.

Several existing policies and legal documents support afforestation and biodiversity conservation. The National Forest Extension and Rehabilitation Program 2023-2032 is a cornerstone initiative for nature restoration. It prioritizes afforestation, forest rehabilitation, and ecological connectivity, contributing to Moldova's efforts to expand forested areas and enhance ecosystem resilience. National Development Strategy "European Moldova 2030" and National Environmental Strategy 2030 further support biodiversity conservation and restoration efforts. Additionally, the Law on Ecological Networks (No. 94/2007)[222] supports the expansion of the Emerald Network and strengthens the management of designated conservation sites, promoting better integration of protected areas into national land-use planning.

An online reporting tool is available for Moldova to report on its targets. Moldova has set and submitted preliminary national targets to the Convention on Biological Diversity (CBD), [223] but they need to be approved through the NBPAP 2025-2030.

Financial Resources

National and international funding supports biodiversity conservation and restoration efforts. Financial support for biodiversity conservation is secured through national and international mechanisms. Although not sufficient compared to the governmental commitments in the field of biodiversity and afforestation, the state funding allocated for biodiversity-related initiatives, demonstrates a certain level of governmental commitment to biodiversity priorities. Additionally, Moldova has access to external funding sources, including bilateral agreements and contributions from development agencies such as GIZ, SIDA, and the EIB. These resources enable the implementation of large-scale restoration projects, capacity-building initiatives, and improved biodiversity monitoring systems.

EU funding programs support Moldova's biodiversity objectives. Programs like the LIFE Programme, the European Neighbourhood Policy Instrument (ENPI), and the Global Environment Facility offer further financial opportunities for Moldova to advance its biodiversity objectives.

[222] State Registry of Legal Documents, https://www.legis.md/cautare/getResults?doc_id=14500&lang=ro

[223] Convention on Biological Diversity, https://ort.cbd.int/national-targets?countries=md

Efficient utilization of these funds will be crucial in scaling up conservation efforts and addressing biodiversity challenges at a national level.

Institutional Setup

Institutional reforms strengthen biodiversity policy implementation and coordination. Moldova's institutional framework for biodiversity conservation and restoration continues to evolve, with key agencies playing essential roles in policy implementation. The Ministry of Environment and "Moldsilva" Forest Agency oversee the execution of biodiversity-related policies, including forest management, species protection, and conservation planning. Ongoing institutional reforms aim to strengthen inter-agency coordination and improve enforcement mechanisms for biodiversity protection and conservation.

LULUCF integration boosts climate change mitigation and biodiversity. The LULUCF in Moldova holds significant potential for mitigating climate change impacts and promoting biodiversity conservation. Efforts to integrate biodiversity considerations into land-use planning can enhance ecosystem services, improve carbon sequestration, and contribute to Moldova's green transition objectives.

Capacity and Partnerships

International partnerships enhance Moldova's biodiversity conservation and restoration capacity. The country actively participates in the EU4Environment initiative,[224] benefiting from technical assistance, policy guidance, and capacity-building programs that support sustainable environmental governance. Engagement with international organizations facilitates knowledge exchange and strengthens Moldova's ability to meet EU biodiversity standards.

Local NGOs support biodiversity through expertise, advocacy, and community initiatives. Such initiatives promote sustainable land management practices. NGO role in raising awareness, conducting research, and implementing conservation projects complements governmental efforts and enhances the overall effectiveness of biodiversity policies

In conclusion, Moldova's progress towards biodiversity goals is underpinned by its EU candidate status, national policy frameworks, financial support mechanisms, and institutional reforms. Strategic investments in conservation and restoration initiatives, strengthened international partnerships, and effective stakeholder engagement provide a solid foundation for achieving biodiversity targets. Continued efforts to optimize funding utilization, enhance institutional coordination, and integrate biodiversity considerations into broader development policies will be essential in ensuring Moldova's successful transition to a sustainable and biodiversity-resilient future.

[224] EU4Environment, https://www.eu4environment.org/

Key Priorities for Strengthening Moldova's Green Transition

Moldova's efforts to advance its green transition require targeted policy, financial, institutional, and ecological actions aligned with European Green Deal and EU biodiversity objectives. Strengthening biodiversity governance, improving conservation and restoration financing, enhancing institutional capacity, and fostering ecosystem restoration are essential steps toward achieving Moldova's environmental commitments and securing long-term social-ecological resilience.

1. Enhancing Policy and Legal Framework

Fully transpose EU environmental acquis and strengthen law enforcement. A critical priority for Moldova is the full transposition of EU environmental legislation, including the Birds and Habitats Directives and the EU Nature Restoration Regulation, into national legislation. Strengthening regulatory measures on invasive species is also essential to align with EU requirements and mitigate biodiversity threats posed by non-native species. Legislative reforms should also facilitate stricter enforcement of environmental legislation, ensuring effective implementation across protected areas and ecological corridors.

Update national biodiversity targets. While the country has made progress in setting national biodiversity targets, some areas still require updates or further development to align with evolving conservation priorities. Such is the case for protected area coverage, including primary and old-growth forests conservation, legally binding EU nature restoration targets, habitats and species conservation, reduction in the number of Red List species threatened by invasive alien species, negative impacts on sensitive species and habitats.

2. Developing the National Ecological Network

Expand Emerald Network; integrate with Natura 2000. Expanding the Emerald Network and integrating it with the EU's Natura 2000 network is another key policy objective. Establishing a comprehensive roadmap for this integration will enhance habitat protection and contribute to Moldova's broader biodiversity conservation efforts.

Approve the restoration plan. The country must accelerate the approval of a national Nature Restoration Plan with clearly defined and measurable targets, ensuring compliance with EU biodiversity commitments.

Expand protected areas network, including strict protection of most vulnerable and(or) valuable areas, including intact forests. Expanding the Emerald Network and integrating it with the EU's Natura 2000 network is another key policy objective. Establishing a comprehensive roadmap for this integration will enhance habitat protection and contribute to Moldova's broader biodiversity conservation efforts.

3. Strengthening Financial and Economic Instruments

Increase budget allocations and establish a Biodiversity Fund. Adequate financial resources are vital for advancing biodiversity conservation. Moldova should increase domestic budget allocations for biodiversity within the State Budget and integrate biodiversity considerations into the Medium-Term Budgetary Framework. Establishing a dedicated Biodiversity Fund as a financial mechanism can provide sustained funding for restoration projects, conservation programs, and biodiversity-related research.

Mobilize international funding, leverage PPPs, and incentivize private sector investment. International financing remains a strategic priority. Enhancing Moldova's capacity to access external funding sources, including the EU LIFE Programme and the Global Environment Facility, can significantly bolster financial support for biodiversity initiatives. Additionally, leveraging public-private partnerships and introducing fiscal incentives for businesses engaged in conservation and restoration activities can drive private sector investment in Nature-based Solutions and ecosystem restoration projects.

4. Strengthening Institutional Capacity and Governance

Establish a protected areas institution and strengthen institutional capacity. To enhance governance and policy implementation, Moldova should establish a dedicated protected areas authority responsible for managing its protected areas and the Emerald Network. This entity would improve oversight, streamline conservation efforts, and facilitate cross-sectoral cooperation. Strengthening the technical and operational capacity of key institutions such as the Ministry of Environment, "Moldsilva" Agency, and the Environmental Agency is also necessary to ensure effective enforcement of biodiversity policies.

Invest in capacity-building programs for biodiversity specialists and authorities. Such programs for biodiversity specialists, forest specialists, future rangers, and local authorities will further support the implementation of conservation and restoration policies. Training initiatives should focus on habitat monitoring, species protection, and sustainable forest management practices to enhance institutional expertise and technical capabilities.

5. Priorities for Data Collection and Biodiversity Information System

Develop a digital Biodiversity Information System for improved data and decision-making. An essential component of Moldova's green transition is the development of a Biodiversity Information System to improve data collection, monitoring, availability and reporting. Current biodiversity data systems are outdated, limiting the ability to assess conservation and restoration progress and implement evidence-based policies. Establishing a centralized and digitized database will enhance transparency, facilitate cross-institutional data sharing, and improve decision-making processes.

Integrate GIS, remote sensing, and regular assessments for better policy evaluation. Strengthening data collection efforts should include the integration of Geographic Information Systems (GIS) and remote sensing technologies for habitat and species monitoring. Regular biodiversity assessments, coupled with public accessibility to relevant data, will enhance policy evaluation and adaptive management. Furthermore, ensuring compliance with EU reporting standards will strengthen Moldova's alignment with European biodiversity policies.

6. Ecosystem Restoration and Connectivity Priorities

Develop a national Nature Restoration Plan focusing on native forest rehabilitation and enhance the management of the existing and established protected areas. Expand protected areas network, including strict protection of most vulnerable and(or) valuable areas, including intact forests. The development and adoption of a national Nature Restoration Plan in alignment with EU legal requirements is fundamental to reversing ecosystem degradation and ensuring the long-term sustainability of Moldova's biodiversity. Restoration efforts should prioritize the rehabilitation of native forest ecosystems while reducing the dominance of monoculture plantations, which currently undermine habitat diversity and ecological resilience.

Enhance habitat connectivity and strengthen invasive species control. Creation of ecological corridors will support species migration and ecosystem stability. Invasive species control measures must also be strengthened by transposing and enforcing the EU Regulation on Invasive Alien Species. Effective monitoring, management, and control mechanisms should be introduced to mitigate the ecological impact of invasive species, particularly in protected areas and the Emerald Network sites.

Integrate green infrastructure and Nature-based Solutions into planning. Integrating this into urban planning and incorporating biodiversity considerations into agricultural landscapes will further enhance ecosystem resilience. Upscaling Nature-based Solutions, especially in urban green spaces and agroecosystems, can strengthen biodiversity conservation and restoration while promoting sustainable land-use planning.

7. Enhancing Stakeholder Engagement and Public Awareness

Ensuring broad stakeholder participation for effective biodiversity governance. Greater involvement of NGOs, academic institutions, local communities, and the private sector in policy development, implementation, and monitoring will enhance transparency and accountability. Collaborative approaches can facilitate knowledge-sharing, improve biodiversity outcomes, and increase public acceptance of conservation and restoration initiatives.

Promote public awareness campaigns. Such campaigns on the importance of biodiversity and ecosystem services can further strengthen community engagement and encourage citizen participation in conservation and restoration efforts. Supporting community-based conservation

models and citizen science initiatives will enhance data collection and improve biodiversity monitoring.

Support NGOs with resources and strengthen civil society-government partnerships. Providing NGOs with access to technical, financial, and training resources will further support their contributions to biodiversity conservation and restoration. Strengthening partnerships between civil society and government institutions will enhance Moldova's ability to achieve its biodiversity goals and align with EU environmental standards.

By prioritizing the transposition of EU environmental acquis, increasing conservation and restoration funding, strengthening institutional governance, improving biodiversity data systems, and advancing ecosystem restoration, Moldova can accelerate its green transition. Ensuring robust stakeholder engagement and fostering public awareness will be crucial in building a resilient and sustainable biodiversity governance framework. With targeted investments and policy reforms, Moldova can enhance its capacity to meet EU biodiversity objectives and secure the long-term ecological integrity of its natural landscapes.

9. Green Transition Finance

Moldova's green transition is mainly financed by foreign aid. Moldova requires a minimum of USD 8.3 billion to meet unconditional climate targets between 2024 and 2030, with an additional USD 2.6 billion needed for conditional targets. With foreign donors providing between 2017 and 2022 ODA-linked green transition finance (including adaptation and mitigation finance) of approximately USD 2.7 billion (*Figure 22*)[225], and an estimated domestic climate action finance of USD 400 million to USD 530 million[226], this presumably leaves a significant funding gap. Furthermore, the National Energy and Climate Plan (NECP), outlining a total investment need of USD 30.8 billion under current policies and instruments, and an additional USD 8.2 billion to meet Moldova's net-zero target from 2024 till 2050 (*Figure 23)*, allocates funding to domestic public (two third), foreign public (one tenth), and private (one fourth) sources. Specifically, the long-term financing of operational costs, ranging between USD 45.3 billion and USD 46.1 billion, remains undefined (*Figure 24*). Thus, large parts of the financing remain donor-dependent, raising concerns over long-term financial and fiscal sustainability.

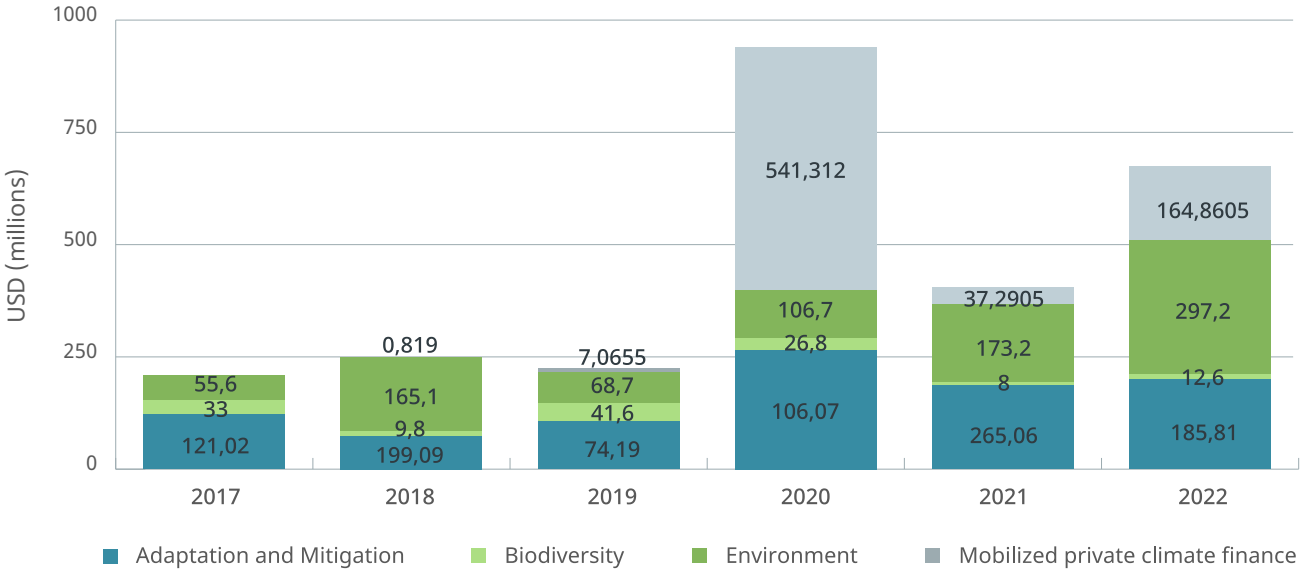


Figure 22: Moldova – ODA received environmental and mobilized private climate finance 2017-2022.

[225] OECD Data Explorer, https://data-explorer.oecd.org/?fs%5b0%5d=Topic%2C0%7CEnvironment%20and%20climate%20change%23ENV%23&pg=0&fc=Topic&bp=true&snb=64

[226] Estimate based on IPU Parline, https://data.ipu.org/parliament/MD/MD-LC01/law-making-oversight-budget/budget/

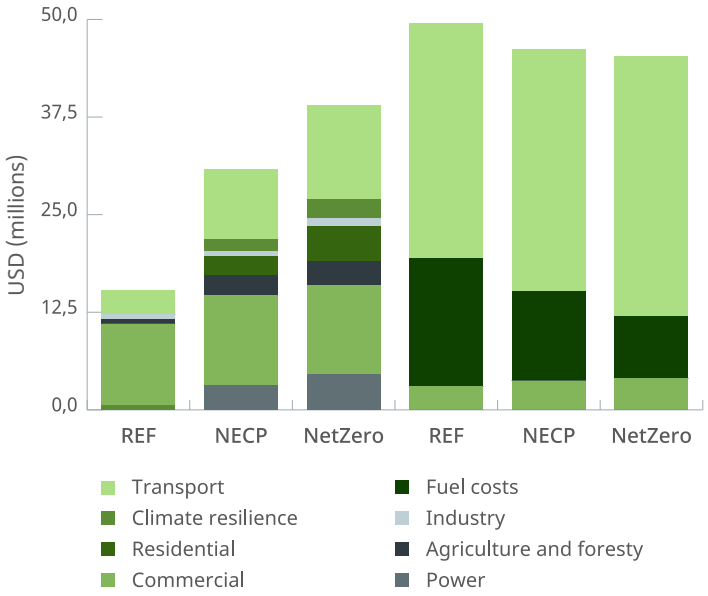


Figure 23: Total NECP and Net Zero investments and operational costs, by sector and scenario, cumulative over 2024–2050.

Note: REF = reference scenario (no climate action), NECP = National Energy and Climate Action scenario (with current policies and instruments), Net Zero scenario = achieving GHG neutrality by 2050 with additional policies and instruments.[227]

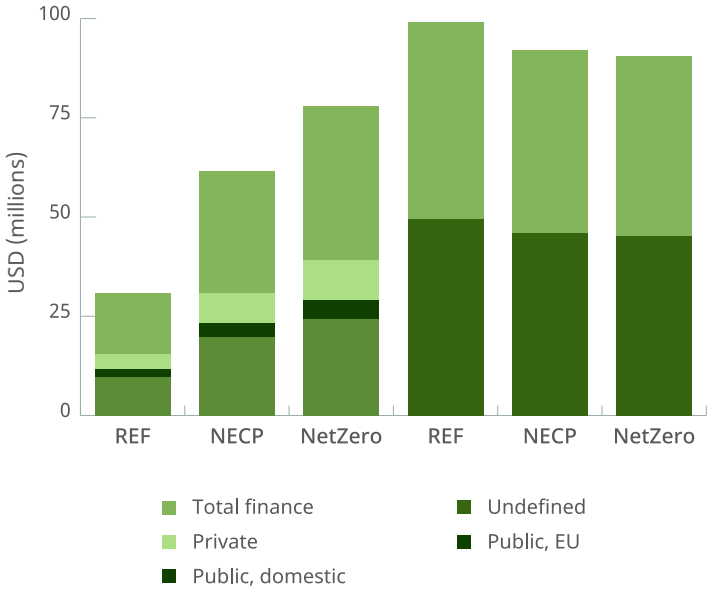


Figure 24: Financing sources under REF, NECP and Net Zero scenarios, cumulative over 2024-2050.

The main sectors receiving funding. The primary sectors receiving ODA climate finance in Moldova include energy, agriculture and irrigation, banking and financial services, transport and storage, as well as industry, mining & construction (*Figures 25 and 26*). The energy sector, which accounts for nearly 70% of GHG emissions, has been a major focus, with investments aimed at expanding renewable energy capacity and improving energy efficiency. Agriculture, which contributes significantly to GHG emissions and environmental degradation, has also received substantial funding to promote irrigation infrastructure, sustainable farming practices, and reduce pollution.

[227] World Bank, https://openknowledge.worldbank.org/server/api/core/bitstreams/268abc8d-8e0e-437b-9615-3fe8aa395693/content

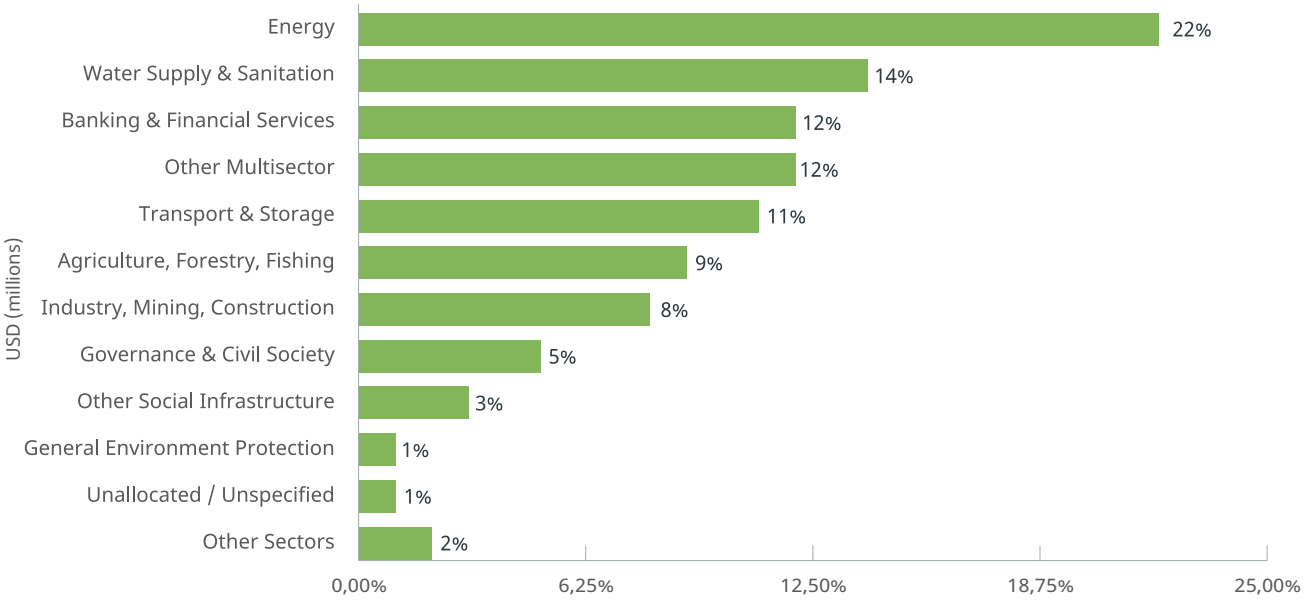


Figure 25: Moldova – ODA for climate action 2017-2021 by sectors.[228]

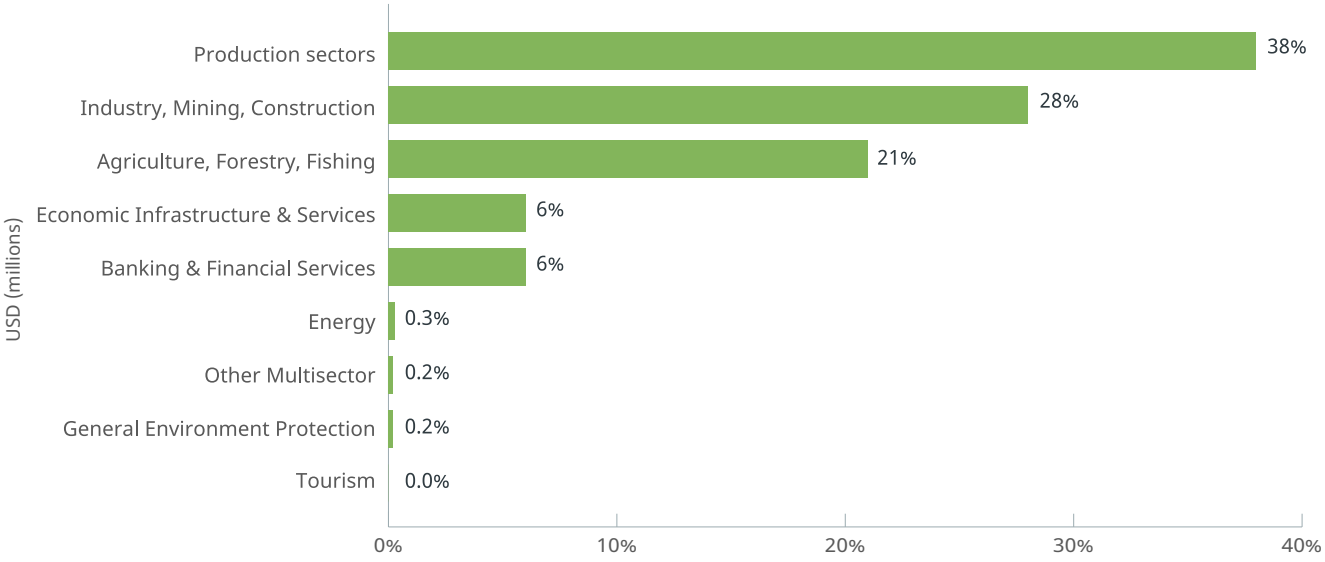


Figure 26: Mobilized private climate finance 2018-2022 by sectors.

Primary ODA funding sources. The primary donors supporting climate finance in Moldova include the European Bank for Reconstruction and Development (EBRD), the International Bank for Reconstruction and Development (IBRD), the European Investment Bank (EIB), other EU Institutions, as well as bilateral development partners such as Germany, Japan, Austria, and Sweden (*Figure 27)*. These donors have provided a mix of grants, loans, and technical assistance to support various climate-related projects.

[228] OECD Data Explorer, https://data-explorer.oecd.org/?fs[0]=Topic%2C0%7CEnvironment%20and%20climate%20change%23ENV%23&pg=0&fc=Topic&bp=true&snb=66

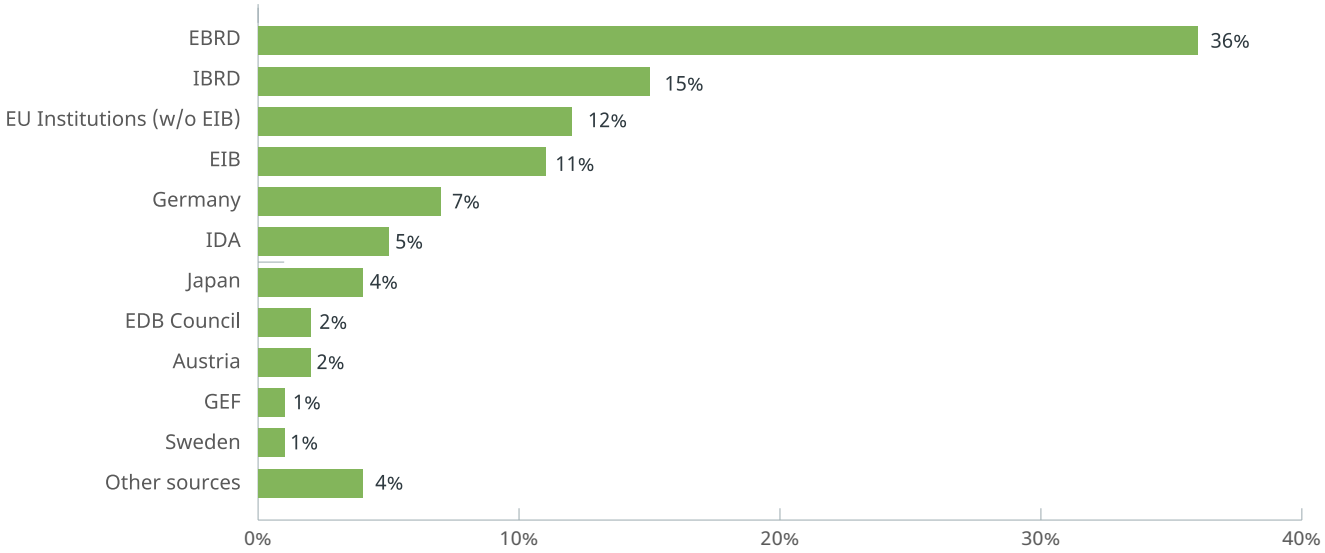


Figure 27: Moldova – ODA for climate action 2017-2021 by sources.[229]

Funding from multilateral and bilateral sources and financing modalities. Between 2017 and 2022, most of the climate finance in Moldova came from multilateral (62%) and bilateral (38%) sources (*Figures 28 to 31*), with limited additional contribution from national funding. During that time, 34% of ODA related to climate finance had been provided through grants, while 66% were provided as (concessional) debt. This heavy reliance on external funding highlights the need for Moldova to develop domestic financing mechanisms to ensure long-term sustainability. Specifically, ODA that intends to mobilize private climate finance in Moldova is overwhelmingly contributed by multilateral development partners. Modalities of ODA that mobilizes private climate finance predominantly encompass direct investments and SPV (35%), co-financing (28%), credit lines (17%), and syndicate loans (17%). Guarantees (3%) have been less common but are essential for de-risking private investments in green projects.

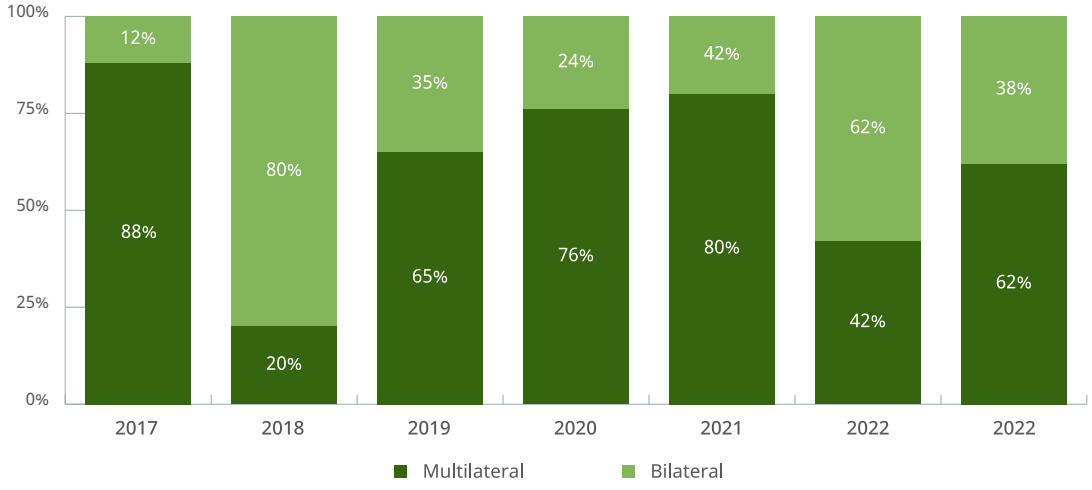


Figure 28: ODA sources for climate action 2017-2022.[230]

[229] OECD Data Explorer, https://data-explorer.oecd.org/?fs[0]=Topic%2C0%7CEnvironment%20and%20climate%20change%23ENV%23&pg=0&fc=Topic&bp=true&snb=66

[230] OECD Data Explorer, https://data-explorer.oecd.org/?fs[0]=Topic%2C0%7CEnvironment%20and%20climate%20change%23ENV%23&pg=0&fc=Topic&bp=true&snb=66

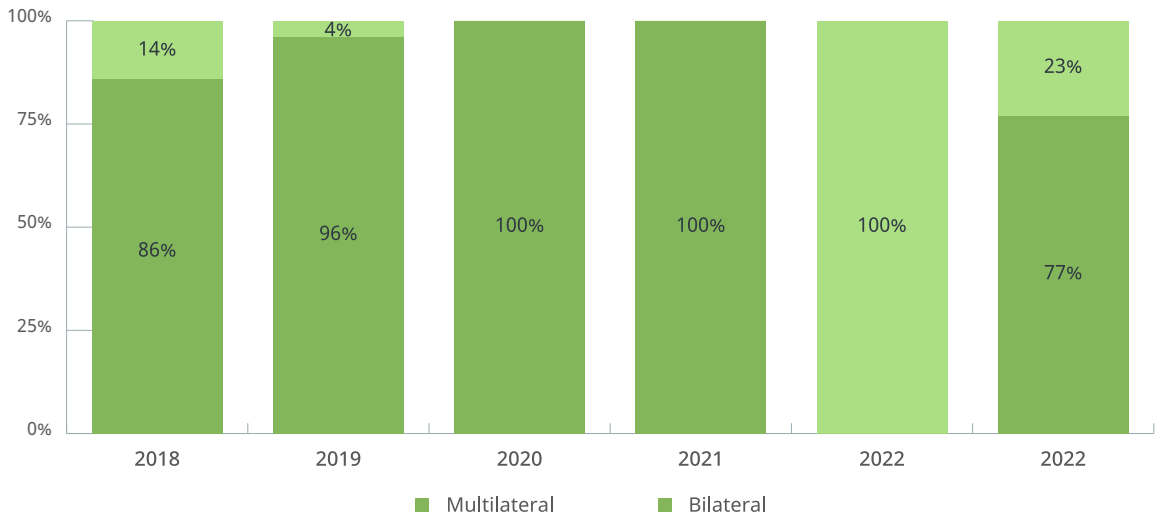


Figure 29: ODA sources for mobilized private climate action 2017-2022.[202]

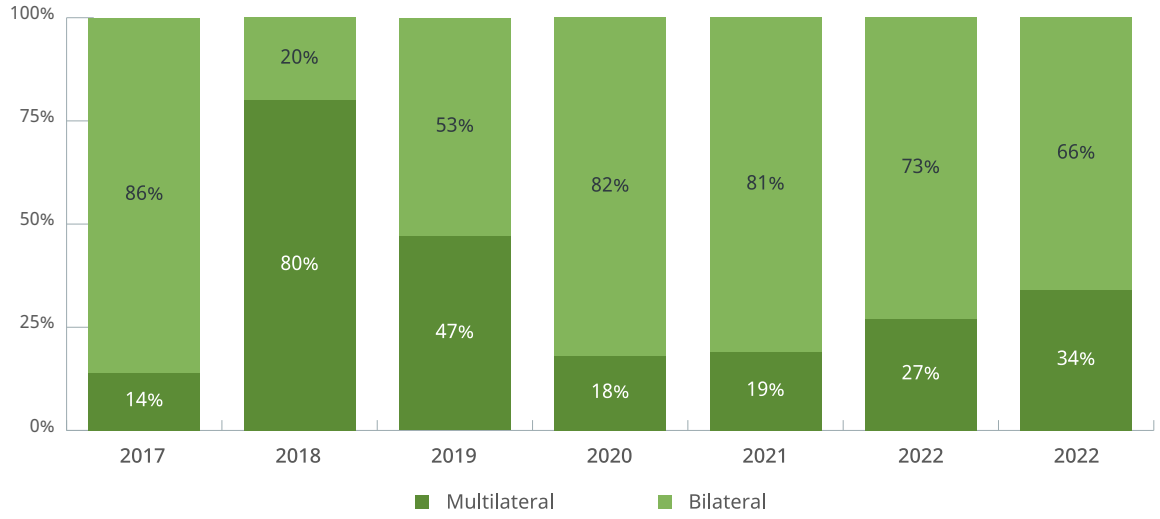


Figure 30: ODA modalities for climate action 2017-2022.[202]

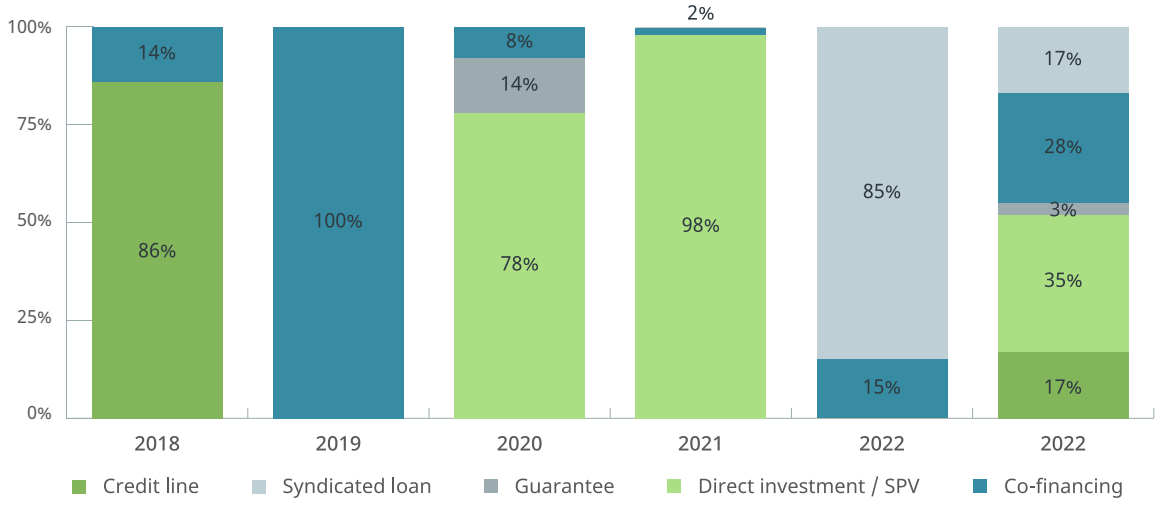


Figure 31: ODA modalities to mobilize private climate action 2017-2022.[202]

Private sector engagement is limited but steadily growing. Private climate finance has become pivotal in Moldova's transition towards sustainability, currently mobilizing in average USD 100 million to USD 200 million annually to address the climate investment gap. Driven by energy security imperatives and EU alignment requirements, private capital concentrates in renewable energy (42% share), climate-smart agriculture (33%), and urban resilience projects, leveraging blended finance models that blend public guarantees or grants with private equity. The EU's Growth Plan 2025-2027 catalyses investments through risk-sharing facilities and currency hedges, while municipal climate bonds and diaspora crowdfunding platforms channel capital into infrastructure projects like the Bîc River rehabilitation. Despite such progress, high loan collateral demands (i.e., 145% loan-to-value ratios) and currency risks hinder private investment to accelerate.

Green financing in Moldova's banking and microfinance sectors. Moldova's commercial banking and microfinance sectors have increasingly prioritized green financing as part of broader efforts to align with EU climate goals and decarbonize the economy. Leading banks such as Moldova Agroindbank (MAIB) and ProCredit Bank have introduced dedicated green lending programs, supported by international partnerships with institutions like the European Bank for Reconstruction and Development (EBRD) and the Green Climate Fund (GCF). MAIB's green lending activities, backed by a EUR 20 million credit line, focus on energy efficiency upgrades, renewable energy installations, and sustainable agricultural practices. ProCredit Bank has similarly expanded its green loan portfolio, targeting SMEs investing in energy-efficient technologies and circular economy solutions, with 70% of its EU4Business-EBRD Credit Line funding allocated to green projects. In the microfinance sector, OCN Microinvest S.R.L. has emerged as a key player, leveraging donor credit lines totalling EUR 25 million to support small businesses and rural enterprises in adopting low-carbon technologies. Victoriabank issued a EUR 5 million portfolio for green mortgages and eco-friendly SME investments. However, concessional green financing facilities, provided by multilateral development partners are insufficient compared to the demand, while the regulatory framework, as well as national sustainability and green finance reporting and disclosure standards, are still fragmented and in early stages of development.

Transition finance from capital markets. Moldova's thematic bond market remains in an early stage of development, with limited corporate participation. Between 2017 and 2024, no corporate entities in Moldova issued bonds explicitly labelled as green, sustainability-linked, or social under international standards. However, sovereign and municipal thematic bonds have been explored, and regulatory frameworks for sustainable finance are emerging (see *Table 11*).

Table 11: Corporate bonds issued in Moldova between 2017 and 2024 (examples)

Entity	Instrument Type	Vol. (USD)	Maturity	Interest Rate	Listing Status
MAIB Bank	Corporate Bonds	~$235M	3 years	Floating (Ref. Rate + 2%)	MSE
Chisinau Municipality	Municipal Bonds	~$28.9M	3–5 years	5–8%	MSE
Energocom S.A.	Equity Issuance	~$2.4B	N/A	N/A	2ndary Market

Notes: MSE = Moldova Stock Exchange

Alignment of taxation and budgeting policies with climate finance needs. Moldova's taxation and public budgeting policies are not fully aligned with climate finance needs. The country lacks a comprehensive environmental taxation system and has not yet implemented Climate Budget Tagging (CBT), a critical tool for tracking and optimizing climate-related public expenditures.[231] However, it is in the process of developing the draft of a CBT methodology that was presented for endorsement to the Ministry of Finances and the Ministry of Environment. Developing and implementing these policies will be essential for ensuring that public financial flows align with green transition targets and support sustainable development.

Carbon certification and emission trading. The Republic of Moldova has made incremental progress in developing carbon project certification frameworks and Article 6.2 mechanisms under the Paris Agreement; yet, operational challenges persist. The 2024 Climate Action Law established foundational structures for emissions monitoring, reporting, and verification (MRV) systems, aligning with EU ETS principles, while the Environmental Agency oversees GHG permits for 12 major industrial emitters. Preliminary steps toward ITMO development include feasibility studies on carbon pricing mechanisms. However, Moldova's domestic capacity to certify carbon projects remains constrained by fragmented institutional coordination, limited technical expertise in verification protocols, and delays in finalizing national legislation for emissions trading.

Fiscal focus and incentives to finance transition in key EGD sectors. To secure transition financing across EGD's technical priority areas, policy reform, blended finance, and further extended international collaboration are essential. For climate action, Moldova needs to establish a classification system for green economic activities (taxonomy), establish a carbon pricing system to incentivize clean investments and mobilize domestic climate finance, and implement Climate Budget Tagging (CBT) to track expenditures and leverage EU accession funds. In the energy sector, renewable auctions with de-risking guarantees need to be scaled up and must prioritize cross-border electricity interconnectors for regional integration. Buildings require

[231] NDC Partnership: https://ndcpartnership.org/knowledge-portal/climate-toolbox/climate-budget-tagging#:~:text=-Climate%20Budget%20Tagging%20(CBT)%20is,decisions%20and%20prioritize%20climate%20investments

dedicated renovation funds and green mortgage programs to incentivize deep retrofits. The industry sector needs Extended Producer Responsibility (EPR) schemes and circular economy bonds, while pollution control demands Pollutant Release Transfer Register (PRTR) enforcement fees and wastewater treatment PPPs. The agricultural sector requires subsidy reallocation toward climate-smart practices and food waste reduction technologies. The transport sector mandates carbon tax reinvestment in EV infrastructure and PPPs for intermodal hubs. Biodiversity financing should link reforestation to carbon credits and expand eco-tourism revenue. All sectors benefit from aligning fiscal policies with EU taxonomy criteria to unlock green bonds and Just Transition Mechanism support.

Table 12: Overview about financing recommendations for Moldova's green transition process.

EGD Thematic Area	Key Financing Recommendations
Climate	■ Identifying funding sources for operational costs of the NECP and Net-Zero scenarios. ■ Strengthening domestic funding mechanisms, such as the National Environmental Fund. ■ Enhance assess to and utilization of global climate and environmental funds (i.e., GCF, GEF, AF etc).
Energy	■ Expand renewable auctions with storage incentives. ■ PPPs for RE investment projects and grid-balancing battery systems. ■ Further adjust consumer utility prices to enhance competitiveness of RE investments. ■ Expand the Energy Efficiency Fund, with clear eligibility conditions to ensure its support to bankable projects in energy efficiency and renewable generation.
Buildings	■ Establish MEPS-linked renovation subsidies. ■ Launch green mortgage programs with rate discounts. ■ Deploy EU structural funds for district heating upgrades. ■ Scaling up the Fund for Energy Efficiency in Residential Buildings (FEERM). ■ Encourage private sector investments in renewables, including grants, tax benefits, and guarantees to lower capital risks. ■ Increasing domestic funding through the polluter-pays principle or Energy Efficiency Obligation Scheme (EEOS).
Industry	■ Mandatory EPR fees for packaging/waste streams. ■ Circular economy project bonds with guarantees from MDBs/IFIs. ■ Landfill tax escalation (5% annually until 2035) and enforcement of gate fees.

EGD Thematic Area	Key Financing Recommendations
Zero Pollution	■ PRTR compliance fines for industrial emissions. ■ Polluter-pays levies on chemical fertilizers. ■ IFI loans for rural wastewater treatment plants. ■ Expand SME access to green financing. ■ Financial incentives such as green subsidies, grants, and fiscal bonuses shall encourage businesses to adopt pollution control measures.
Farm to Fork	■ Expand financial incentives for sustainable farming and EU market alignment. ■ Redirect CAP-aligned subsidies to organic/agroecology. ■ VAT exemptions for food waste valorisation technologies. ■ Develop climate resilience insurance pools for smallholders.
Transport	■ Allocate funds to rail, waterborne, and low-emission transport. ■ Reinvest 50% of carbon tax revenue into EV charging network. ■ Fiscal incentives and import duty exemptions for electric and hybrid vehicles to increase electric vehicle (EV) uptake. ■ PPPs for urban public transport feasibility studies. ■ EuroVelo route development grants.
Biodiversity	■ Increase budget allocations and establish a Biodiversity Fund. ■ Emerald Network conservation trust fund. ■ Reforestation carbon credits under EU LULUCF. ■ Eco-tourism concession fees for protected areas.

Institutional bottlenecks for green transition finance in Moldova. The Republic of Moldova faces specific institutional bottlenecks that inhibit green transition finance. The following overview reflects policy recommendation aiming to facilitate green transition finance.

- Development of a national green / sustainable taxonomy.
- Development of a national ESG reporting and disclosure framework for public and private corporate entities.
- Enhance the capacity and development of local commercial and investment banking to provide green finance.
- Development of regulatory requirements for issuance of thematic bonds and securities by public and private corporate entities.
- Development of a carbon pricing, carbon certification, and ITMO policy framework.
- Revision and removal of public subsidies for fossil fuel energies.
- Revision and adjustment of consumer utility prices, enabling the private investment in renewable energy, energy efficiency, as well as efficient water supply solutions.
- Harmonization of the MRV standards with EU methodologies.
- Development of a climate budget tagging (CBT) framework to align public financial flows with climate targets.

- Development of a comprehensive environmental taxation system and align public financial flows with environmental targets.
- Financial incentives such as green subsidies, grants, and fiscal bonuses should be introduced to encourage businesses, particularly SMEs, to adopt environment protection and pollution control measures.
- Blended financing and risk sharing models in partnership with MDBs/IFIs, as well as PPPs should be deployed to mobilize the private sector bridging funding gaps in critical sectors.

Methodology

Purpose of analysis

Moldova's national report on alignment with the European Green Transition Agenda, and the research materials it is based on, have been developed with the aim to:

1. provide a transparent, evidence-based assessment of Moldova's current policies, legislation, and implementation capacities as they relate to the European Green Deal; and

2. identify areas where targeted measures, technical assistance, or capacity-building efforts could facilitate Moldova's closer alignment with EU standards and practices.

By synthesizing multiple data sources and benchmarking Moldova's progress against key EU frameworks, the analysis underpins the report's policy-oriented recommendations and supports informed decision-making within Moldovan ministries and related institutions.

Analytical framework

The analytical framework for this assessment effort is rooted in the European Green Deal's core pillars, including climate neutrality, sustainable resource use, biodiversity protection, and the transition to clean energy and a circular economy. Each thematic area—such as climate action, energy, agriculture, industry, transport, and waste management—was evaluated using benchmarks derived from EU directives, regulations, and strategies, notably the European Climate Law, the Circular Economy Action Plan, the Farm to Fork Strategy, the Biodiversity Strategy, and related documents.

A stepwise approach guided the evaluation:

1. Identification of Relevant EU Benchmarks: Relevant policy targets, thresholds, and best-practice guidelines were extracted from official EU legislation, European Commission communications, and secondary analytical reports.

2. Comparative Analysis: Moldova's national policies, legal frameworks, and implementation measures were mapped against these benchmarks. Progress was assessed in terms of policy adoption, institutional capacities, data availability, and preliminary implementation results.

3. Gap Analysis: Deviations from EU policies, regulations, standards or gaps in readiness and implementation were identified. These served as the basis for pinpointing priority areas for intervention, capacity building, or further research.

To synthesize the key messages, common challenges, opportunities, and enabling factors identified throughout the analysis were distilled into concise, actionable findings. This synthesis

process considered the frequency, magnitude, and relevance of gaps and achievements across all thematic areas, balancing the need for clarity with the underlying technical complexity.

Green Transition Readiness Assessment

Readiness in the scope of this report is defined as the complex interaction of parameters and conditionalities needed for an uptake of an issue – in the context of this report, a green transition. Readiness assessment in this report is the assessment of a list of themes and aspects ("parameters and conditionalities") on the progress towards green transition in the country.

Green transition country readiness was assessed according to the following criteria that represent a specific level of development or progress towards the green transition, as follows:

- **Little Progress** indicates that first steps for green transition have been initiated, and the thematic area's policies or practices remain largely misaligned with relevant EU or international policies. There may be isolated pilot projects or scattered legal provisions, but no strategies or widespread implementation is evident. Institutional capacities, budget allocations, and stakeholder engagement in this area are notably low, limiting the sector's readiness to transition effectively.
- **Some Progress** suggests that basic measures have been introduced, and certain institutional structures, policies, or regulatory frameworks are beginning to align with green transition goals. Though reforms have taken hold in selected regions or sub-sectors, gaps still exist in full-scale enforcement, financial incentives, and cross-sector coordination. In this category, progress is evident, but implementation is uneven, and the impacts are not yet broad or transformative.
- **Significant Progress** demonstrates advanced alignment with the EU policy and related international commitments. Robust legal frameworks, clear targets, and strong institutional capacities are in place. Stakeholders (government, private sector, civil society) actively collaborate, and tangible results—such as measurable emissions reductions or increased biodiversity protection—are already visible. Although there may still be room for refinement or scale-up, the foundational elements for a successful green transition are largely well-established in this category.

Data sources and data collection methods

Data were collected from a combination of primary and secondary sources, focusing on information that reflects Moldova's status as of mid-2024 with a subsequent update in late 2024. Key sources included:

- National Government Reports and Policy Documents: Official strategies, legislative acts, action plans, and progress reports from the Government of the Republic of Moldova, including Ministry of Environment reports, sectoral development plans, and energy transition roadmaps.
- EU Policy and Reference Documents: European Commission regulations, directives, guidance notes, thematic strategies (e.g., Farm to Fork, Biodiversity Strategy), and assessments published by EU institutions.
- Stakeholder Consultations: Input from technical experts within Moldovan ministries, local government agencies, academia, civil society organizations, and the private sector. These consultations were conducted through virtual workshops, interviews, and written questionnaires between March and May 2024.
- International and Regional Studies: Analytical outputs from organizations such as the Energy Community, United Nations agencies, the World Bank, and the European Environment Agency, providing additional context and third-party validation of national data.

Data collection took place in two stages to ensure currency and relevance:

1. Initial Thematic Assessments (November 2023–May 2024): In-depth reviews of policies, legislation, and implementation measures were completed by May 2024, serving as the baseline for the report's main analysis.

2. Update Checks (June 2024–January 2025): A final round of verification and updates was conducted through January 2025 to incorporate any recent policy changes, newly published government data, or European Commission evaluations.

All source materials were examined for their reliability, consistency, and alignment with international best practices. Wherever possible, multiple data points were triangulated to verify accuracy and reduce the risk of relying on single-source information. Discrepancies were clarified through direct communication with stakeholders or by referencing authoritative secondary analyses.

Limitations

The methodology and findings presented in this report are subject to certain limitations:

- **Cut-off Dates**: The primary thematic assessments were completed by May 2024, and only one round of updates and checks was carried out until December 2024. Any substantive policy changes, data releases, or sectoral developments beyond these cut-off dates could not be fully reflected in the analysis.
- **Data Gaps and Quality**: In some thematic areas, data availability and quality varied. Expert input was used to compensate for issues with reliable data availability. While efforts were made to confirm information through multiple sources, certain statistics or policy documents may have remained incomplete or pending official release during the assessment period.
- **Contextual Shifts:** External factors, such as economic or geopolitical changes, may influence Moldova's capacity to align with the European Green Deal. This analysis cannot fully account for rapidly evolving circumstances beyond the defined data collection window.

By acknowledging these constraints, readers can more appropriately interpret the findings and recommendations. Nevertheless, the methodology's careful design—grounded in reputable data sources, EU reference frameworks, and stakeholder input—ensures that the results offer a reliable and policy-relevant basis to guide Moldova's green transition efforts.

List of Acronyms and Abbreviations

AIPA	Agency for Intervention and Payments in Agriculture
AMR	Antimicrobial Resistance
ATULBD	Administrative-Territorial Unit on the Left Bank of the Dniester River
BAT	Best Available Technique
BEP	Best Environmental Practice
BESS	Battery Energy Storage System
BRP	Building Renovation Plan
CALM	Moldovan Congress of Local Authorities
CAP	Common Agricultural Policy
CBAM	Carbon Border Adjustment Mechanism
CBD	Convention on Biological Diversity
CBT	Climate Budget Tagging
CHP	Combined Heat and Power (also known as 'cogeneration')
CLP	Classification, Labelling and Packaging
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CNED	National Centre for Sustainable Energy
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CSE	Commission for Exceptional Situations
DRS	Deposit Refund System
EBRD	European Bank for Reconstruction and Development
EED	Energy Efficiency Directive
EEOS	Energy Efficiency Obligation Scheme
EGD	European Green Deal
EIB	European Investment Bank
EMIS	Energy Management Information System
ENPI	European Neighbourhood Policy Instrument
ENTSO-E	European Network of Transmission System Operators for Electricity
EPBD	Energy Performance of Buildings Directive
EPCs	Energy Performance Certificates
EPR	Extended Producer Responsibility
ESCO	Energy Service Company

ETS	Emissions Trading System
EU	European Union
EUR	Euro
EV	Electric Vehicles
EVIS	Energy Vulnerability Information System
F2F	Farm to Fork
FAO	Food and Agriculture Organization of the United Nations
FEC	Final Energy Consumption
FEERM	Fund for Energy Efficiency in Residential Buildings
GBF	Kunming-Montreal Global Biodiversity Framework
GCF	Green Climate Fund
GD	Government Decision
GDP	Gross Domestic Product
GERD	Gross Expenditure on Research and Development
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	German Development Agency
ICT	Information and Communications Technology
IFAD	International Fund for Agricultural Development
IFIs	International Financing Institutions
IPPU	Industrial Processes and Product Use
ITS	Intelligent Transport Systems
IUCN	International Union for Conservation of Nature
kt	Kiloton
ktoe	Kiloton of Oil Equivalent
kW	Kilowatt
LEDP	Low Emissions Development Program
LEEN	Learning Energy Efficiency Network
LTRS	Long-Term Renovation Strategy
LULUCF	Land Use, Land-use Change and Forestry
M&E	Monitoring and Evaluation
MAFI	Ministry of Agriculture and Food Industry
MDL	Moldovan Leu
MEPS	Minimum Energy Performance Standards
MGRES	Gas-fired Cuciurgan Power Station

MOLDAC	National Accreditation Centre
MoREEFF	Moldova Residential Energy Efficiency Financing Facility
MoSEFF	Moldova Sustainable Energy Financing Facility
MoU	Memorandum of Understanding
MRV	Monitoring, Reporting, and Verification
Mt	Megaton
Mtoe	Megaton of oil equivalent
MW	Megawatt
MWh	Megawatt-hour
NARD	National Agency for Research and Development
NBS	National Bureau of Statistics
NBPAP	National Biodiversity Program and Action Plan
NCCAP	National Climate Change Adaptation Programme
NCCC	National Climate Change Commission
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan
NEEAP	National Energy Efficiency Action Plan
NEF	National Environmental Fund
NEFCO	Nordic Environment Finance Corporation
NFERP	National Forest Extension and Rehabilitation Program
NGOs	Non-Governmental Organisations
No.	Number
NOx	Nitrous Oxides
NZEB	Nearly Zero Energy Buildings
OHL	Overhead Line
PM10	Particulate Matter with diameters that are generally 10 micrometres and smaller
PM2.5	Particulate Matter with diameters that are generally 2.5 micrometres and smaller
PPPs	Public–Private Partnerships
PRTR	Pollutant Release and Transfer Register
PSDP	Power System Development Project
PTA	Public Transport Authority
PV	Photovoltaic
R&D	Research and Development
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
RES	Renewable Energy Sources
Moldova	Republic of Moldova

SAF	Sustainable Aviation Fuel
SAPs	Sectoral Adaptation Plans
SIAMD	Waste Management Information System
SIDA	Swedish International Development Cooperation Agency
SMART	Specific, Measurable, Achievable, Relevant, and Time-bound
SME	Small and Medium Enterprises
SOx	Sulphur Oxides
SUMP	Sustainable Urban Mobility Plans
TEN-T	Trans-European Transport Network
TFEC	Total Final Energy Consumption
TJ	Terajoule
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollar
ZEB	Zero Emission Buildings

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GREEN AGENDA MOLDOVA

SEI Stockholm Environment Institute

Sweden Sverige