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National Baseline Report of Wastewater Treatment Infrastructure in the Republic of Moldova

Executive Summary



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EU4Green Recovery East - Recovery through a Circular Economy and Pollution Reduction in
the Eastern Partnership countries
(700002623)

Implementing partners:



Executive Summary

This report presents a baseline assessment of the wastewater treatment sector in the Republic of Moldova, developed under Output 2.3 of the EU4Green Recovery East (EU4GRE) Programme. The assessment aims to establish an understanding of the current status of wastewater generation, treatment infrastructure, operational performance, regulatory framework and institutional capacity of the sector. It further seeks to identify opportunities for improving wastewater treatment performance, enhancing energy efficiency in wastewater treatment plants (WWTPs) and exploring the potential for energy recovery and by-product valorisation where feasible.

The preparation of this baseline assessment was significantly constrained by the limited availability of reliable and comprehensive operational data across the national wastewater sector. Moldova currently lacks centralised databases and standardised monitoring systems for WWTP performance. As a result, many critical parameters, such as influent and effluent pollutant concentrations, treatment process steps, sludge production volumes and energy consumption, are not systematically recorded or reported. These limitations required the assessment to rely primarily on fragmented data obtained from the Environmental Protection Inspectorate and supplementary consultations with sector stakeholders. Consequently, the findings and recommendations presented in this report should be interpreted within the context of these data constraints.

The assessment indicates that wastewater management services remain unevenly distributed across the country, with approximately 35% of Moldova's population connected to sewer networks and around 31% connected to centralised WWTPs. A pronounced disparity exists between urban and rural areas. In urban areas, approximately 76% of the population is connected to sewer networks and 68% to centralised treatment facilities, whereas in rural areas only about 3% of the population is connected to sewer networks and centralised WWTPs. Consequently, most rural households rely on on-site sanitation systems such as septic tanks or pit latrines, many of which operate under suboptimal conditions.

According to data obtained from the national reports, the country currently has 272 WWTPs of varying sizes and operational status. However, the performance of this infrastructure remains limited. Only 31 facilities are reported to achieve normative treatment performance in accordance with national discharge standards for key parameters such as biochemical oxygen demand (BOD), chemical oxygen demand (COD) and suspended solids. In addition, ageing infrastructure, insufficient operational capacity and incomplete sludge management systems contribute to persistent environmental and public health risks.

Moldova has demonstrated strong commitment to reforming its wastewater sector, particularly following its June 2022 designation as an EU candidate country. The November 2023 amendments to Water Law No. 272/2011 represent a significant milestone, strengthening permitting procedures, clarifying institutional responsibilities and aligning monitoring requirements with EU Water Framework Directive principles. Second-cycle River Basin Management Plans have been developed for the Danube-Prut-Black Sea District (2023–2028) and the Nistru District (2025–2030), providing spatial prioritisation frameworks for investment in pollution abatement, with more effective wastewater management having top priority in the Programmes of Measures. Governance reforms implemented in 2024–2025 extended the National Agency for Energy Regulation's (ANRE) authority to approve tariffs for water and sanitation operators, established a national water and sanitation information system and strengthened the Environmental Protection Agency's permitting and enforcement capabilities. The adoption of Law No. 227/2022 on industrial emissions in September 2022 introduced integrated environmental permits and Best Available Techniques requirements, aligning industrial discharge control with EU standards. However, the legal and regulatory framework is dispersed across many different texts, making it difficult to draw a coherent picture of roles

and responsibilities of all involved actors or to assess the alignment of this framework with the UWWTD (91/271/EEC).

Achieving full compliance with the recast Urban Wastewater Treatment Directive (EU) 2024/3019, which took effect in late 2024 and will be in force from August 2027, will therefore be complicated, as the transition from the original UWWTD to this new text cannot be clearly defined. In addition, several weaknesses can be identified: Moldova currently lacks explicit national frameworks for agglomeration mapping and obligations for settlements above 1,000 population equivalents, reclaimed water classification and reuse standards aligned with EU Regulation 2020/741, comprehensive sludge management regulations, quaternary treatment specifications for micropollutants with extended producer responsibility financing mechanisms and binding energy-neutrality pathways with progressive reduction targets.

Within the EU4GRE programme, emphasis is placed on improving the treatment and energy performance of wastewater treatment facilities, including the promotion of energy efficiency measures and the exploration of energy recovery opportunities from sewage sludge. However, the assessment indicates that the current operational conditions of many WWTPs in Moldova may limit the immediate feasibility of advanced energy recovery technologies. Many facilities operate below their design capacity or have insufficient operational data. As a result, the report adopts a cautious and phased approach, recognising that energy recovery solutions may become viable primarily after improvements in basic plant operation, monitoring and infrastructure rehabilitation have been achieved. However, feasibility studies on these options can support the mobilisation of funds for modernisation activities by demonstrating that improvements in WWTP would not only enhance wastewater treatment performance but also enable energy recovery.

To support future interventions under EU4GRE, the assessment establishes a structured methodology for identifying potential pilot sites where improvement of operation, energy efficiency and energy recovery concepts can be further evaluated. Due to data limitations, the initial evaluation was restricted to 112 WWTPs for which basic operational information was available. From this group, facilities were screened according to several criteria, including treatment capacity, operational status, strategic relevance and the absence of overlapping development assistance. Approximately 80% of WWTPs in Moldova have very small treatment capacities, below 1,000 m³/day (approximately 6,000 PE).

Following the criteria-based evaluation process and consultation with national stakeholders, three pilot sites were selected for further feasibility studies: Căușeni, Ungheni and Fălești WWTPs. These facilities were selected as they represent different operational scales and contextual conditions within Moldova's wastewater sector.

Căușeni WWTP was selected due to its adequate treatment performance and its potential to complement ongoing activities on treated wastewater reuse conducted by the Stockholm Environment Institute (SEI). Integrating energy efficiency improvements with water reuse initiatives could demonstrate a more holistic approach to sustainable wastewater management.

Ungheni WWTP was selected primarily due to its substantial treatment capacity of approximately 15,000 m³/day (approximately 100,000 PE), making it one of the largest municipally operated treatment plants in the country. Its connection to a nearby industrial park further increases the strategic importance of improving operational efficiency at this facility.

Fălești WWTP was selected as a representative medium-scale treatment plant, with relatively better access to operational data compared with other candidate facilities. Including this site also allows the programme to demonstrate that operational improvements and energy optimisation measures may also be applicable to smaller and medium-sized treatment facilities, which constitute the majority of WWTPs in Moldova.

The selection of three pilot sites does not imply that implementation of energy recovery technologies is viable at all of them. Instead, the detailed assessments will aim to verify

operational conditions, assess sludge production characteristics, evaluate current energy consumption patterns and identify opportunities for energy efficiency improvements and potential by-product valorisation where technically and economically feasible.

As a general recommendation, nature-based solutions, notably constructed wetlands, are important options for many rural areas in Moldova to improve treatment and reduce local pollution with rather simple and low-cost solutions.

Overall, the analysis suggests that Moldova's wastewater sector faces significant structural and institutional challenges but also presents opportunities for improvement. Strengthening monitoring systems, modernising infrastructure, improving operational practices and introducing energy efficiency and recovery measures can significantly enhance the performance and sustainability of wastewater treatment services. In this context, the pilot activities proposed under EU4GRE can generate practical evidence of achievable improvements, build technical capacity and demonstrate replicable approaches for broader application across the country's wastewater infrastructure.

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About EU4Green Recovery East

The [EU4Green Recovery East programme](#) is a regional programme supporting the EU's Eastern Partnership countries on their path towards a greener, more resilient, and competitive economy. With an EU-contribution of EUR 21.3 million (2025-2028), it builds on the results of a decade of EU support for better water management and green economy adoption and focuses on five key components : circular economy, water resources, legal approximation with EU environmental acquis, environmental data, and cross-border environmental cooperation. The programme is implemented by five partners: Expertise France with the French International Office for Water (OiEau), OECD, UNECE, UNIDO, and the Environment Agency Austria (UBA), as the consortium coordinator.