National Agency for Public Health

MINISTERUL SĂNĂTĂȚII AL REPUBLICII MOLDOVA

World Health Organization

REPORT

SAFE MANAGEMENT OF INDIVIDUAL SANITATION SYSTEMS (SMOSS)

Republic Moldova 2025

CONTAINED

ACRONYMS AND ABBREVIATIONS

MS	Ministry of Health
ANSP	National Agency for Public Health
WHO	World Health Organization
MIDR	Ministry of Infrastructure and Regional Development
ANRE	National Agency for Energy Regulation
UNICEF	United Nations Children's Fund
RM	Republic of Moldova
SIS	Individual Sanitation Systems
EU	Uniunea Europeană
ODD	Sustainable Development Goal
APL	Local Public Authority
EIT	Early Childhood Education Institution
NBS	National Bureau of Statistics
SMOSS	The project "Safe management of individual sanitation systems"

1 Introduction

Safe and sustainable sanitation services are an essential pillar of the development of a healthy, equitable and resilient society. In the current global and regional context, the Republic of Moldova faces significant challenges in ensuring universal access to sanitation services that protect public health, reduce negative environmental impacts and contribute to the well-being of the population, especially in rural areas.

According to international estimates, the Republic of Moldova has one of the highest rates in the European Region of the World Health Organization (WHO) of use of individual sanitation systems (SIS), such as septic tanks, simple latrines, cesspools or storage tanks, which operate independently of centralized sewerage systems. Although these decentralized solutions provide a minimum of sanitation services, they are often not managed safely and can become sources of soil and water pollution, generating an increased risk to the health of communities.

The absence of a strengthened framework for monitoring the management of effluents from SIS, including emptying, transport and treatment activities, creates impediments in establishing a national baseline in relation to Sustainable Development Goal (SDG) 6.2, which aims to ensure universal access to safe sanitation services by 2030. At the same time, SDG 6.3 provides for the reduction of the volume of untreated wastewater and the significant increase of its reuse, objectives closely linked to the operation and integration of individual sanitation systems in the centralized wastewater management chain.

At the regional level, the process of Moldova's accession to the European Union requires a gradual alignment with EU legislation and standards, including the Urban Wastewater Treatment Directive. The Directive reaffirms and extends Member States' obligations to ensure not only the connection of the population to sanitation systems, but also the expansion of access to safe and sustainable solutions for municipalities without centralised infrastructure. This approach involves applying risk-based assessment throughout the health chain, setting minimum technical standards for decentralised systems, and continuously monitoring their performance.

In this context, the participation of the Republic of Moldova in the international project "Safely Managed On-Site Sanitation (SMOSS)", implemented by WHO and UNICEF through the Joint Monitoring Programme (JMP), represents a strategic opportunity. The project aims to strengthen national capacities for the collection, analysis and use of OSMS data, with the aim of guiding public policies and investments in sanitation infrastructure, especially in rural and vulnerable communities.

The data from this study will directly contribute to:

- Strengthen the national database on the safe management of sanitation systems, as a technical support for reporting progress under the 2030 Agenda (SDG: 6.2)."
- Generating concrete evidence for the formulation of public policies in the field of rural

sanitation and supporting the alignment of the Republic of Moldova with global monitoring indicators.

- Creating an updated overview of the management of individual sanitation systems, in support of the commitments made under the UN-ECE/WHO Protocol on Water and Health and the Water Supply and Sanitation Strategy ratified by the Republic of Moldova
- Strategic contribution to the development of health and environmental policies by providing baseline data on access to sanitation services in rural and small urban areas.

The SMOSS project was designed to respond to the needs identified at national level through a phased approach, including the analysis of the legal and institutional framework, the definition and piloting of a set of indicators and tools for data collection, as well as the development of an action plan for the institutionalization of a national system for monitoring SMOSS services. The study was carried out with the support of the World Health Organization Country Office, in partnership with the National Agency for Public Health as the technical implementation institution. The activities were carried out in collaboration with the Ministry of Health, the Ministry of Environment, the Ministry of Infrastructure and Regional Development, the Congress of Local Authorities of Moldova (CALM), the National Bureau of Statistics, as well as other relevant actors in the field of public health and sanitation services.

This report includes the main findings of the SMOSS study, key findings, lessons learned, and recommendations for next steps. By carrying out this study, the Republic of Moldova takes an important step towards strengthening the national capacity to monitor safe sanitation services and substantiate data-driven decisions, thus contributing to outlining a clear picture of the existing situation regarding access to sanitation services, providing the basis for future public health and environmental policies as an essential starting point for understanding the challenges related to sanitation. localities. Through these efforts, the Republic of Moldova reinforces its commitment to guaranteeing access to safe sanitation services for all, reducing inequalities and protecting natural resources essential for the country's future.

2 PROFILE OF THE REPUBLIC OF MOLDOVA IN THE FIELD OF WATER AND SANITATION

2.1 Geographical location of the Republic of Moldova

The Republic of Moldova is located in Southeastern Europe, a continental landlocked country. It is bordered to the west by Romania, bordered by the Prut River, and to the east and southeast by Ukraine.

Figure 1. Atlas of the position of the Republic of Moldova in the European and global context

The territory of the country has a total area of 33843 km² and is characterized by a predominantly hilly relief. The maximum altitude of the country is 429 meters, recorded in the area of the Bălănești Hill. Although it does not have direct access to the seas or oceans, the Republic of Moldova benefits from a narrow corridor to the Danube in the area of Giurgiulesti, where an international port is also located.

The most important parameter characterizing the water resources in rivers is the summary of accumulated surface waters, which has a volume of about 1.32 billion m3/year. The hydrographic network of the Republic of Moldova consists of 4 drainage basins, 91% being represented by the Dniester River and the Prut River. In total, the hydrographic network is presented by about 3621 watercourses with a total length of about 16000 km and an average density ranging from 0.12 - 0.48 km/km2 in addition to those mentioned, the hydrographic network also includes 3500 natural lakes. Thus , the Dniester and Prut rivers play an essential role in the water supply of localities, in agriculture, as well as in local ecosystems. However, the lack of centralized water supply and sanitation infrastructure in rural areas and diffuse agricultural pollution contribute significantly to the degradation of the quality of water resources intended for human consumption.

The country's geographical positioning, together with its natural and climatic characteristics, directly affects access to and quality of water resources, highlighting the need to implement safe and sustainable sanitation solutions, especially in rural areas with limited access to public infrastructure.

2.2 Demographic peculiarities and housing stock

The Republic of Moldova is going through a deep demographic transition, marked by a sharp decrease in population, aging age structure and massive external migration. These trends directly influence the planning and delivery of basic public services, including access to safe drinking water

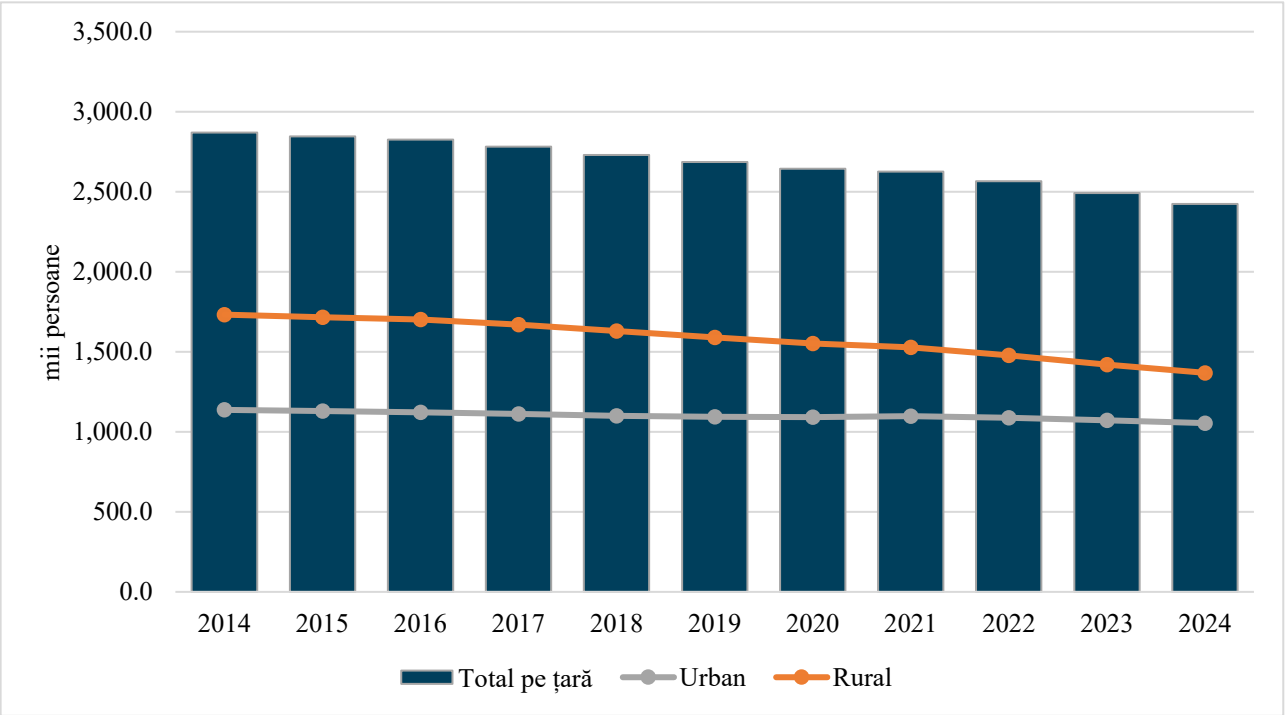

Figure 2. Number of population of the Republic of Moldova with habitual residence (thousand inhabitants)

and sanitation.

According to the 2024 census, the population of the Republic of Moldova reached about 2.4 million inhabitants, down by 600,000 compared to 2014. This decrease was determined by: (i) the continuous emigration of the population able to work; (ii) low birth rate; (iii) negative natural increase. The structure by means of residence shows that the Republic of Moldova continues to be a predominantly rural country, with over 56% living in rural areas and the urban population representing about 44%, concentrated especially in mun. Chisinau and Balti. This unbalanced distribution between urban and rural areas highlights persistent inequalities in access to essential water and sanitation services, especially in rural areas where public water supply and sanitation systems are either non-existent or insufficiently developed, and the population is highly dependent on individual sanitation systems.

Therefore, understanding the demographic context is essential for the development of effective policies on the management of water resources and sanitation systems, especially in rural areas, where an approach adjusted to the low number of users, high implementation and maintenance costs, as well as institutional and logistical constraints is required.

The housing stock of the Republic of Moldova clearly reflects the economic and social divisions between urban and rural areas, having a direct impact on the way the population accesses water and sanitation services. At the end of 2023, the total number of dwellings in the country reached 1,331.3 thousand, of which 580.0 thousand are in urban localities, and 751.3 thousand in rural localities. Thus, over 56% of the housing stock is located in rural areas, where the municipal infrastructure is considerably less developed (Fig. 3).

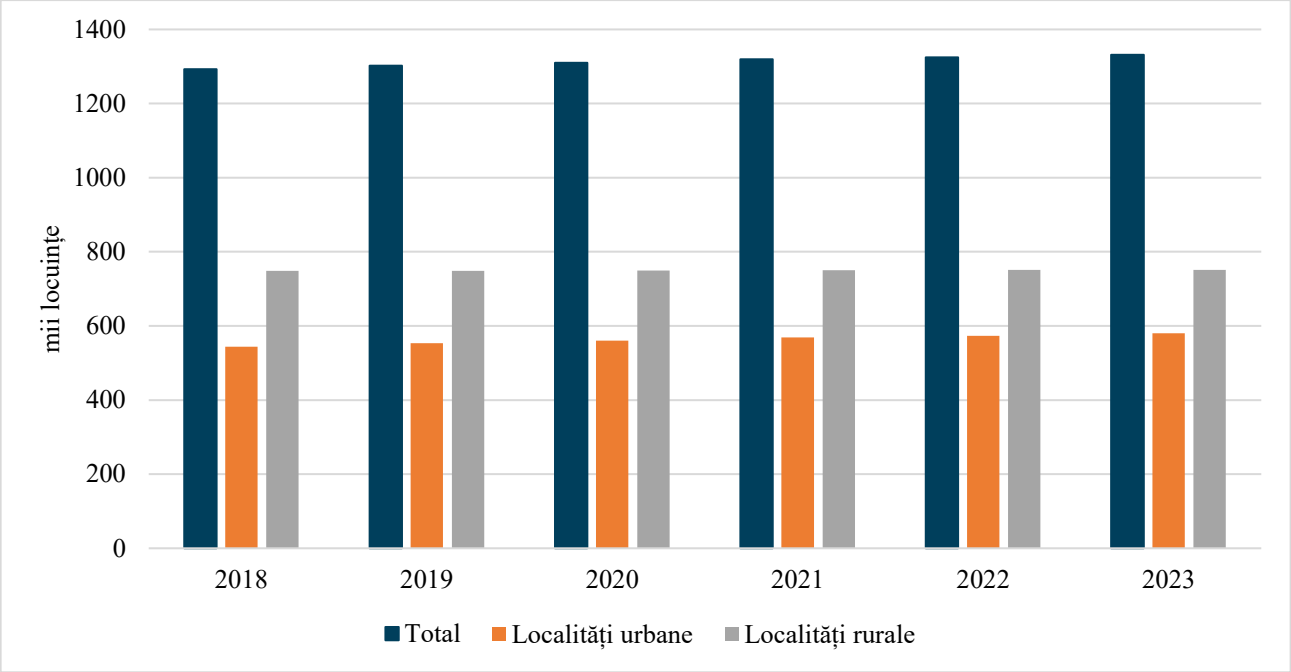

Figure 3. Housing fund by living environment (thousand dwellings)

In urban localities, multi-storey blocks predominate, most of them being connected to centralized water, sewerage and heating networks. In contrast, the rural environment is characterized by individual dwellings on the ground, which are rarely connected to public utility networks, over 90% of households are not connected to the public sewerage system and rely on improvised or outdated solutions, offering a low level of comfort, many not having an indoor bathroom or access to a toilet. As a solution, many homes still use yard latrines, makeshift pits or storage pits**,** without an efficient system of collection, treatment and purification. In many cases, improvised or damaged installations lead to the infiltration of effluents into the soil, contamination of drinking water sources and induce the risk of outbreaks of communicable diseases. This reality highlights the essential role of individual sanitation systems as the only feasible option.

The situation is also aggravated by the lack of coherent urban planning, for example the absence of the National Spatial Planning Plan. Currently, local public authorities have limited capacity to regulate, authorise and monitor the management of the SIS. Only in August 2026, the Government Decision no. 508/2024 on the authorization, construction, registration, control and operation of individual wastewater collection and treatment systems. Through the application of this regulation, institutional responsibilities, administrative procedures and technical requirements will be clearly established, which will allow for a unitary and efficient regulation of individual systems at local and national level. Therefore, the data generated within the SMOSS study will serve as a reference benchmark, a starting point, for monitoring the implementation and efficiency of Government Decision no. 508/2024, contributing to the assessment of progress in the regulation and management of individual sanitation systems at local level.

This situation makes it difficult to implement national health policies in areas where they are

most needed. Only in 2025, the Government , through the National Council for Spatial Planning, initiated the procedure for the elaboration of the specialized section "*Water and sanitation (or, water supply and sanitation)*", which will become mandatory for all types of planning and urban planning activities on the territory of the Republic of Moldova, a basis for the elaboration of regional and local spatial planning and urban planning plans, branch and socio-economic development programs, complex schemes for environmental protection and rational use of natural resources, national and regional schemes and projects of municipal and transport infrastructure, other documentation for the achievement of territorial objectives at regional and local level.

The housing stock of the Republic of Moldova, numerically dominated by the rural environment and marked by the lack of municipal equipment, requires an integrated approach for the safe management of wastewater. The development and effective implementation of the SIS is not only a public hygiene measure, but a strategic investment in the health of the population and in the protection of water resources and the environment.

2.3 Population's access to water sources and sanitation services

In 2024, 1006 localities (55 municipalities and cities and 951 rural localities) had access to public water supply systems, which represents 65.6% of the country's localities4. Of the total localities with access to public water supply systems, 963 have public water supply systems put into operation. Compared to 2021, in 2024 the number of localities with access to public water supply systems put into operation increased by 9.3%, and by 3.3% compared to 2023 (Fig. 4). These differences are due to both population density and the degree of urbanisation, as well as previous investment in infrastructure.

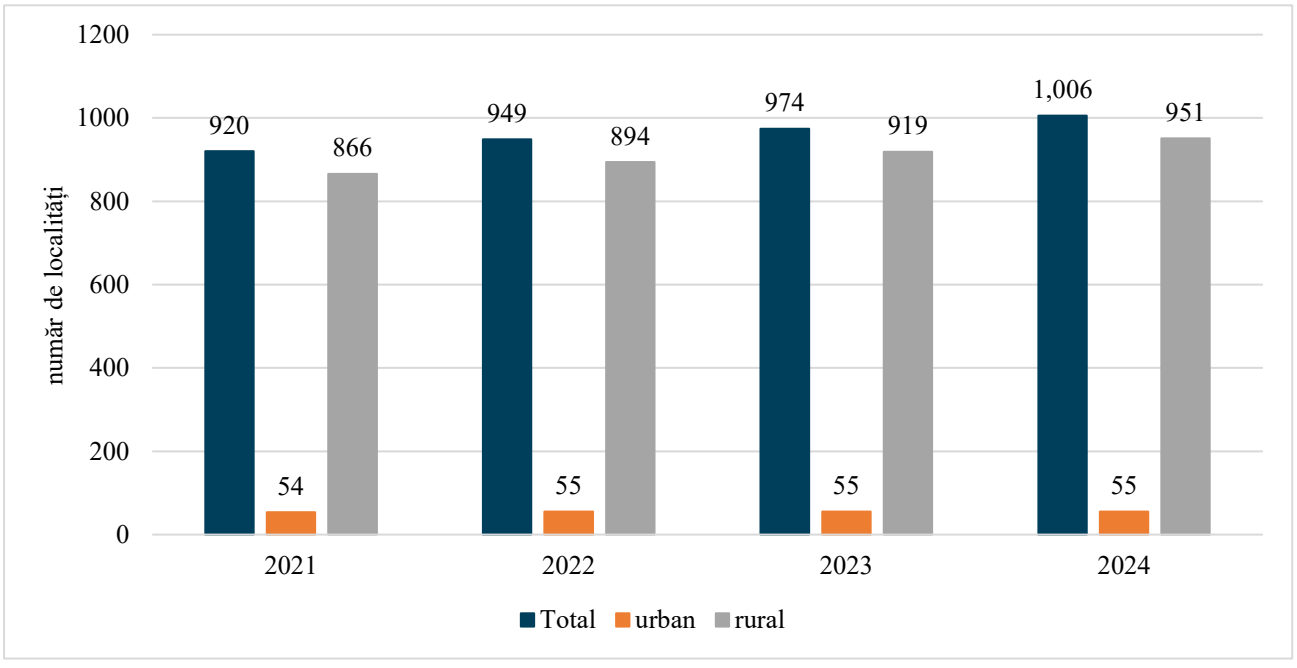

Figure 4. Number of localities with access to public water supply systems

Access to public sewerage systems is significantly lower. In 2024, 53 municipalities and cities and 99 rural localities had access to public sewerage systems, which represents 9.9% of the country's localities. Out of the total number of localities with access to public sewerage systems (152 localities), 136 have public sewerage systems put into operation (6 of them, in addition to the system put into operation, also have a system that is not put into operation). Compared to 2021, in 2024 the number

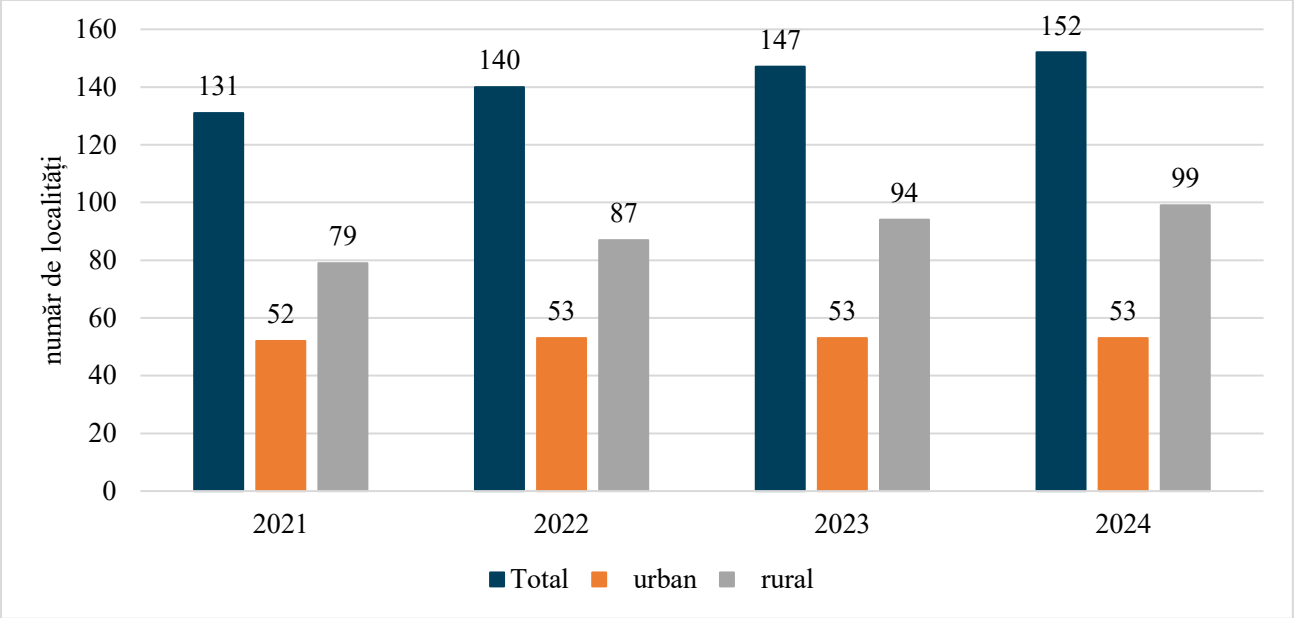

Figure 5. Number of localities with access to public sewerage systems

of localities with access to public sewerage systems put into operation increased by 16.0%, and by 3.4% compared to 2023 (Fig. 5[1]).

The largest share of localities with access to public sewerage systems is in mun. Chisinau (65.7%). About 28.1% of the localities in ATU Gagauzia and 11.5% of the localities in the Centre region have public sewerage systems, while the localities in the South and North regions have the lowest rates of access to this type of public utilities - 7.5% and 5.1%, respectively.

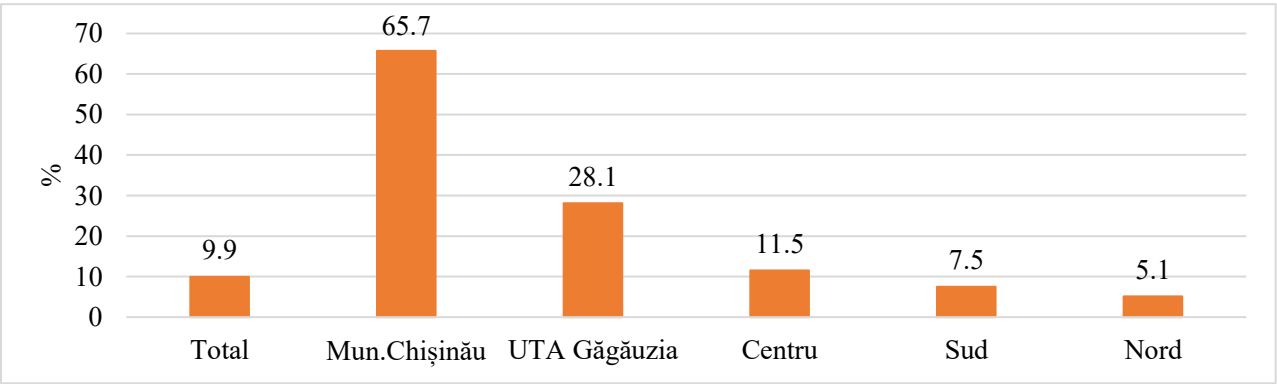

Figure 6. Share of localities with access to public sewerage systems, by development regions, in 2024

[1] National Bureau of Statistics. The activity of public water supply and sewerage systems in 2024. Data from Figure 5 and Figure 6 taken in full. Link.

In 2024, about 77.6% of all public sewerage systems were equipped with wastewater treatment plants. No locality in Soroca and Rezina districts has a wastewater treatment plant. Of the 125 treatment plants, 116 units were functional. The best situation regarding the functionality of the wastewater treatment plants was in mun. Chisinau (100.0%) followed by the Centre region (96.6%), North (92.6%), ATU Gagauzia and South (87.5% and 83.3% each). 69.2 mln. m3 of treated wastewater (97.0%). Of the total volume of treated wastewater, 94.5% was mechanically treated, 94.9% biologically, and 2.1% - was discharged without treatment.

This reality highlights the priority need to expand and modernise health infrastructure, especially in rural areas that are poorly developed in the area concerned. Without constant investments and rigorous strategic planning, ensuring equitable access to water and sanitation services will continue to be a major challenge for the sustainable development of the Republic of Moldova.

2.4 Risks associated with the use of individual sanitation systems in rural areas of the Republic of Moldova

In the Republic of Moldova, the problem of sanitation in rural areas continues to represent a major challenge, both from the perspective of public health and from that of environmental protection. In the absence of centralized sewerage networks, the vast majority of households, public institutions and educational establishments in rural areas resort to individual sanitation systems (SIS), such as pit latrines, small capacity septic tanks or leaky storage tanks. Although these solutions are, to a certain extent, adapted to local economic and infrastructural realities, they present a number of significant risks, often underestimated or ignored in the decision-making process at local and national level.

The first and most serious risk derives from the potential of these systems to contaminate drinking water sources. A large part of the rural population uses mine wells, dug by hand, often without adequate sanitary protection areas, located in the vicinity of effluent collection facilities. If the minimum safety distances are not respected, and the sanitation systems are not watertight, effluents contaminated with pathogens and toxic substances can be infiltrated into the groundwater. This reality is also aggravated by the fact that, in the absence of administrative structures regulating the construction, operation and maintenance of these installations, each household or institution autonomously manages the associated risks, without having the necessary information or resources.

Studies conducted by public health institutions in the Republic of Moldova highlight an increased incidence of waterborne diseases in rural areas, especially among children and the elderly. Intestinal infections, viral hepatitis A and bacterial enterocolitis are common in regions where individual sanitation systems are not built or managed according to minimum hygiene standards.

In addition to the impact on public health, the use of SIS, without an integrated effluent managmenet or sludge collection, transport and treatment system, contributes to serious pollution of soil and surface water. In the absence of accessible wastewater or sludge treatment plants or regulated

emptying services, the resulting sludge is often disposed of uncontrollably, either directly into fields or into open pits, without protection from soil or runoff water. Thus, organic compounds, nitrogen and phosphorus accumulate in the environment, affecting soil quality, ecosystem balance and agricultural productivity. This phenomenon is aggravated during the period of heavy rainfall, when effluents can easily reach rivers, lakes or water sources intended for human consumption.

Another worrying aspect is the lack of technical knowledge and training of staff in public institutions that administer these systems, especially in EITs, schools and medical institutions. In many cases, the facilities are maintained superficially, without a clear emptying or disinfection plan, and the process of handling effluents is carried out empirically. This creates conditions conducive to accidental exposure of staff and children to pathogens. In addition, the absence of handwashing facilities leads to the perpetuation of poor hygiene practices, contributing to the cycle of disease transmission.

In this context, the need for a coherent and cross-sectoral national strategy that addresses the use of SIS from a sustainable perspective, based on the principles of public health, environmental protection and social equity, is obvious. The interventions require clear technical and normative regulations, significant investments in sanitary infrastructure, staff training, public information and the development of functional public services for the collection, transport and treatment of fecal sludge.

Without such an integrated approach, the long-term use of individual sanitation systems will continue to be a latent source of risk for the health and sustainable development of rural communities in the Republic of Moldova, fostering territorial inequalities and irreversibly affecting the country's natural and human capital.

3 REGULATORY FRAMEWORK

Access to safe drinking water and adequate sanitation services is internationally recognised as a fundamental human right, essential for ensuring healthy living and improving the quality of life. The importance of these services is reflected in multiple international regulations, being directly associated with protecting public health, preserving the environment and supporting sustainable economic development.

In this context, Moldova has assumed international and national commitments to guarantee universal, equitable and safe access to drinking water and adequate sanitation services, in accordance with the Sustainable Development Goals and the provisions of the Association Agreement with the EU.

However, the sanitation sector continues to face significant challenges, in particular in terms of infrastructure development, considerable differences in access between urban and rural areas, and difficulties related to efficient wastewater management. Despite these constraints, national authorities have made constant efforts to strengthen the regulatory and institutional framework, stimulate investments in infrastructure and optimise governance and control mechanisms.

The Republic of Moldova currently has an extensive legislative framework in the fields of water and sanitation, environmental protection and public health, developed in accordance with European principles and standards. This framework creates the necessary prerequisites for the development of coherent policies and for the gradual advancement in the process of alignment with the norms and standards of the European Union, thus supporting the modernization of the sector and increasing the quality of services provided to the population.

3.1 International law

The Republic of Moldova, although it is not a member of the EU, is in an active process of harmonization with its legislation and standards. Within this framework, several legislative and institutional reforms have been initiated in the field of environment and sanitation. Thus, Moldova has started the gradual alignment with the following relevant European directives:

Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, in particular of the soil, when using sewage sludge in agriculture - lays down rules on the use of sewage sludge in agriculture, in order to prevent adverse effects on soil, vegetation, animals and human health. In national legislation, this is partly reflected in the provisions governing the management of sludge from wastewater treatment plants, in particular through rules on quality and controlled application on agricultural land.

Directive 91/271/EEC of 21 May 1991 on urban waste water treatment regulates the collection, treatment and discharge of urban and industrial waste water in order to protect the aquatic environment against the adverse effects of waste water discharges. The Republic of Moldova initiated

the transposition of this directive through the legislation on the authorization and operation of public and individual sewerage and treatment systems.

Directive 91/676/EEC of 12 December 1991 on the protection of waters against pollution by nitrates from agricultural sources aims to reduce and prevent water pollution caused by nitrates from chemical and organic fertilisers, in particular in vulnerable areas. It promotes the application of good agricultural practices and the monitoring of nitrate content in groundwater and surface water. In the Republic of Moldova, this directive is reflected in the national actions on the protection of waters from agricultural pollutants and the designation of sensitive areas.

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community policy in the field of water, which requires an integrated river basin approach to water resources management. Countries are obliged to draw up river basin management plans and to achieve 'good environmental status' for all waters. In the Republic of Moldova, it was partially transposed by the Water Law no. 271/2011 and through the strategies related to water protection.

Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption, lays down strict requirements for the quality of water intended for human consumption, including standards for chemical, microbiological and monitoring parameters, in order to protect public health and ensure access to safe drinking water.

The implementation of these directives is essential for the modernization of the regulatory and operational framework in the field of sanitation, contributing to the protection of public health and the environment, but also to the alignment of the Republic of Moldova with the European standards in the field of municipal operating services in the sanitation sector (SMOSS).

3.2 National legislation

The Water Law, no. 271/2011, regulates the sustainable management of water resources, ensuring the population's access to safe drinking water and adequate sanitation services. It sets strict rules on wastewater collection and treatment, sanitary protection of water sources and delineates the responsibilities of key institutions, such as the Ministry of Environment, the Ministry of Health, the Moldovan Water Agency and the Environmental Protection Inspectorate, imposing clear sanctions for pollution.

The Law on State Surveillance of Public Health, no. 10/2009, coordinates the monitoring of water sources through the establishment of sanitary protection zones, while also managing the authorization and supervision of projects with potential environmental impact, including public water supply and sanitation systems.

The Law on the public water supply and sewerage service, no. 303/2013, ensures equal

access to these services, regulating the obligations of operators in terms of continuous and safe supply, maintenance of infrastructure and compliance with quality standards, as well as pricing and control mechanisms.

The Law on the quality of drinking water, no. 182/2019, establishes quality standards for water intended for human consumption, with the objective of protecting public health by ensuring its purity and harmlessness, including by regulating the monitoring and compliance of quality parameters.

The Government Decision on the collection, treatment and discharge of wastewater into sewerage systems and water bodies, no. 950/2013, regulates the requirements, quality parameters and responsibilities for operators and consumers, as well as strict mechanisms for monitoring and sanctioning non-compliance.

Government Decision on the regulation of the authorization, construction and operation of individual wastewater collection and treatment systems, no. 508/2024, applicable in situations where the extension of public networks is not feasible, imposing periodic controls and strict obligations to prevent pollution and protect public health.

Government Decision on Small Drinking Water Supply Systems, no. 1466/2016, sets out the objectives and measures for improving access to safe drinking water and sanitation services, promoting infrastructure development, sustainable management of water resources and reducing inequalities, especially in rural areas

Government Decision no. 663/2010 on hygiene conditions for medical and sanitary institutions, establishes requirements for the discharge of wastewater from infectious disease wards.

Government Decision on the management of domestic water in educational institutions, no. 492/2024, regulates the need to connect to sewerage systems or use authorized local systems to prevent environmental pollution.

Government Decision for the approval of the Regulation on the authorization, construction, registration, control and operation of individual wastewater collection and treatment systems, no. 508/2024 establishes the requirements and procedures for the authorization, construction, registration, control and operation of individual wastewater collection and treatment systems, establishes the register of individual systems in the administrative-territorial unit and provides that the obligation to the proper operation and maintenance of the individual systems is the responsibility of the owner of these systems.

***The Order of the Ministry of Health on the monitoring of sanitary conditions in institutions for children and adolescents, no. 328/2018*,** provides, including access to the aqueduct and sewerage, the endowment with treatment plants and the existence of adequate sanitary groups.

Construction regulations (NCM G.03.02:2015, NCM G.03.03:2015, NCM G.03.01:2012),

establish the requirements for the design and operation of water supply, sewerage and wastewater treatment plants, ensuring compliance with national standards on safety, quality and durability.

Thus, this legislative and normative set creates a coherent and integrated framework for the responsible management of water resources. At the same time, the national legislative framework contains partial regulations on individual sanitation systems, without establishing specific technical requirements applicable to them so far. In the absence of mandatory minimum standards and control mechanisms, unsafe practices continue to be tolerated and perpetuated in rural areas. It is important to mention that at the beginning of 2026 the Government Decision no. 508/2024 for the approval of the Regulation on the authorization, construction, registration, control and operation of individual wastewater collection and treatment systems.

National strategies and plans in the field

The National Development Strategy "European Moldova 2030" sets the country's sustainable development directions until 2030. It is aligned with both the Sustainable Development Goals of the 2030 Agenda and the commitments made through the Association Agreement with the European Union, reinforcing Moldova's commitment to long-term sustainable and integrated development.

2030 Agenda for Sustainable Development, in September 2015, the Republic of Moldova made a commitment, together with 192 other UN member states, to implement the goals aimed at eliminating poverty, reducing inequalities and combating climate change. The formal adoption of the Agenda in 2016 was followed by the establishment of the National Coordination Council for Sustainable Development and a broad process of adapting the global goals to national specificity, involving all stakeholders and focusing on integrating the SDGs into national strategies, as well as establishing a robust system for monitoring and reporting progress.

The "European Village, Second Edition, 2024" program, recently launched by the Government of the Republic of Moldova, aims to modernize the infrastructure of rural localities, by financing projects that improve access to quality public services, such as water supply, sanitation, public lighting, energy efficiency of public buildings, rehabilitation of cultural and social objectives, and promotion of local investments, in order to ensure better living conditions and prosperity in rural communities.

The Water Supply and Sanitation Strategy (2014–2030) approved by Government Decision no. 199/2014, together with the related action plan, aimed at expanding centralized systems and increasing the population's access to services, while promoting the principles of market economy and attracting private capital to the sector.

The National Programme for the implementation of the Protocol on Water and Health (2016–2025) approved by Government Decision no. 1063/2016, which aims to improve the quality

of life of the population by integrating water and health priorities into the sectoral planning process.

The National Strategy for Waste Management (2013-2027) aims to reduce the negative impact on the environment and public health by creating an integrated and efficient waste management system, in accordance with the requirements of the European Union. This strategy covers all stages – collection, transport, recycling and disposal – and promotes public accountability in the field of waste management.

The National Waste Management Plan for the period 2020–2025 details the measures necessary to achieve the European recycling targets and reduce the volume of waste generated. This plan provides for the development of recycling infrastructure, supporting the transition to a circular economy and promoting active collaboration between public authorities, the private sector and civil society.

3.3 Key institutional actors and their tasks

The management of water supply and sanitation services in the Republic of Moldova involves a number of central and local public authorities, each of which has specific attributions:

- **The Ministry of Environment** has the main role in developing environmental policies, managing water resources, regulating the sustainable use of water resources and protecting their quality. At the same time, it collaborates with the "Apele Moldovei" Agency and the Environmental Protection Inspectorate in terms of monitoring and controlling aquatic resources.
- **The Ministry of Health** is responsible for developing and enforcing sanitary standards, including those on drinking water quality, public health surveillance, and risk assessment related to sanitation and drinking water supply systems.
- **The Ministry of Infrastructure and Regional Development** coordinates the development of water and sanitation infrastructure at national level, especially by supporting projects for the modernization and extension of public services in rural localities.
- **Local public administration authorities (LPAs)** have an essential role in the direct implementation and management of water supply and sanitation services, including in the development and maintenance of local or individual sanitation systems in localities that are not connected to centralized networks.
- **The National Agency for Energy Regulation (ANRE)** regulates the tariff aspects and licensing of operators providing water and sewerage services. ANRE ensures compliance with the principles of transparency and fairness in setting prices.
- **The National Bureau of Statistics (NBS)** collects and publishes relevant data on the population's access to water and sanitation systems, providing a solid basis for public policy planning.

- **The Moldova Apa-Canal Association** represents the interests of regional water and sanitation operators, being a platform for dialogue between authorities, service providers and development partners.
- **The National Council for Spatial Planning**, is established by the Government on the principle of parity and coordinates the activities of the central and local public administration authorities in order to develop the spatial planning documentation, ensures the monitoring of the capitalization of the financial means allocated for the elaboration of the National Spatial Planning Plan and the regional spatial planning plans.

3.4 Gaps and barriers in regulation and implementation

Although the Republic of Moldova has a relatively well-defined legislative framework in the field of water and sanitation services, its implementation faces numerous gaps and structural obstacles, which limit the efficiency and equity of access to these services.

The lack of the National Spatial Planning Plan (PATN) – especially of the specialized section dedicated to water and sanitation – has generated a systemic vacuum in the coordination and regulation of the development of the municipal infrastructure at national and local level. In the absence of this integrative strategic framework, sectoral policies related to water supply and sanitation were implemented in a fragmented manner, without a coherent territorial vision and without correlation with other areas (urban development, agriculture, environmental protection, risk management, etc.). This has led to situations where the expansion of centralised systems has been chaotic or limited, and in rural areas the population has remained largely dependent on individual sanitation systems that are unauthorised, uncontrolled and potentially dangerous to health and the environment.

The impact of this omission is visible in the major inequalities of access to basic services, in the contamination of water sources due to the lack of regulation of discharges and in the absence of a national system for monitoring the SIS. Without a clear strategic map and a mandatory normative-territorial framework, local authorities did not have clear tools to plan or authorize the development of water and sewerage networks, which perpetuated improvised solutions and sanitary risks. Thus, the non-elaboration and non-adoption of the "Water and Sanitation" section of the PATN has directly contributed to the current systemic crisis regarding wastewater and sanitation management in the Republic of Moldova, especially in peri-urban and rural areas. This gap is amplified by the high costs of connection, the low level of awareness of the population, the insufficiency of investments and the existing gaps in the legal framework.

Another major barrier is the limited capacities of local public authorities, which are legally responsible for organising and delivering water and sanitation services. They have very limited financial and human resources, and excessive administrative-territorial fragmentation and the lack of

real financial decentralisation seriously affect the capacity to manage the infrastructure effectively. Most local authorities are critically dependent on government and foreign funds to make the necessary investments.

At the same time, the low level of economic development of the country directly influences the population's ability to pay in full the tariffs for services. In rural areas, where population density is low and the rate of depopulation is increasing, unit costs for service delivery are significantly higher and infrastructure projects often become unsustainable. The lack of up-to-date technical rules, especially for small-scale systems, frequently leads to oversized and inefficient solutions.

4 PURPOSE AND OBJECTIVES OF THE STUDY

4.1 Justification of the SMOSS study for the Republic of Moldova

In the Republic of Moldova, a significant proportion of the population, especially in rural areas, does not have access to centralized sanitation services, being forced to resort to improvised systems for wastewater and effluent management, systems that are used without technical supervision, clear design standards and inefficient from the perspective of health and environmental protection.

The lack of a coherent regulatory, monitoring and support framework for households using the SIS constitutes an important gap in national environmental and public health policies. In this context, the study on the assessnment of safely managed onsite (individual) sanitation systems (SMOSS) is necessary to understand the current situation, identify good practices and support authorities in developing effective and sustainable solutions.

The results of the study will contribute to strengthening institutional capacities for monitoring and evaluating individual sanitation systems in the Republic of Moldova, especially on behalf of the Ministry of Health, the National Agency for Public Health, the Ministry of Environment and the Ministry of Infrastructure and Regional Development. These results will provide credible, applied research-based evidence that will support the strategic and operational planning of health and environmental surveillance activities at household level. In addition, the study will propose a set of sustainable and relevant indicators, which can be integrated into the national permanent statistical reporting system, thus contributing to the improvement of the information base for public policies.

4.2 Purpose of the SMOSS study

The purpose of the study is to argue the need to develop a harmonized set of indicators and data collection methods for national authorities in order to assess and monitor the safe management of individual sanitation systems.

4.3 Specific objectives of the study

a. Assessment of the current state of individual sanitation systems at the level of rural households in the Republic of Moldova, aimed at analyzing their functionality, safety and compliance with public health standards, as well as identifying gaps and areas for improvement, in order to ensure safe and sustainable sanitation services.
b. Development and implementation of monitoring tools by adjusting standardized questionnaires for households, early childhood education institutions, local public authorities, and water supply and sewerage service operators, in order to collect consistent and reliable data on the processes of isolation, emptying, transport and treatment of effluents from individual sanitation systems.
c. Develop a coherent and efficient system for the collection and management of data on the

technologies and practices used in the processes of management, storage, emptying, transport, treatment and safe disposal of effluent and sludge from individual sanitation systems, in order to support the formulation of public policies and monitor progress towards the achievement of Sustainable Development Goals 6.2 and 6.3.

d. Arguing the usefulness of the set of indicators provided by the SMOSS tools for monitoring the safety and security of individual sanitation systems at national level, in order to integrate them into national and international statistical data collection mechanisms.

5 STUDY METHODOLOGY

5.1 Study type

The SMOSS study was conceived as a cross-sectional descriptive study, with applicability at community level. This type of research is suitable for describing and analysing the situation existing at a given time, without involving direct interventions on the population. The methodological objective of this study design is to document, analyze and interpret the infrastructure characteristics of individual sanitation systems and related practices in a sample of households and early education institutions in rural localities in the Republic of Moldova. The study focuses on areas where centralized sewerage systems are absent or non-functional, and households and institutions are forced to resort to individual sanitation management solutions, such as pit latrines, simple septic tanks or other types of improvised systems.

To provide a comprehensive and balanced picture, the study combines:

- Quantitative approach, through the application of standardized, structured questionnaires, addressed to a large sample of households, local public authorities, early education institutions and service operators. These questionnaires generate measurable data, which can be statistically analysed across regions or types of systems used.
- Qualitative approach, through semi-structured interviews with relevant actors (LPA representatives, EIT directors, operators), which allow obtaining detailed information about administrative challenges, perceptions regarding health risks and difficulties in implementing health services.

Thus, the study not only quantifies, but also contextually analyzes the collected data, providing a solid basis for the development of public policies, intervention recommendations and the development of a permanent monitoring framework.

The choice of descriptive design and cross-sectional method is justified by:

- **exploratory nature** of the study - data on SIS at national level are insufficient or non-existent;
- **available resources** — logistical and financial constraints limit the applicability of longitudinal or experimental studies;
- **The need to develop monitoring indicators** derives from the imperatives of an objective and continuous evaluation, based on empirical data, which would allow the precise reflection of the conditions on the ground and the orientation of public policies in the field of health.
- **lack of data attributed to the SIS -** since in the Republic of Moldova there is no national database on the safe management of individual sanitation systems, therefore, in the absence of previous data and a reference line, the main objective was to document the current situation and generate useful records to substantiate future policies and interventions**.**

The SMOSS study is part of the paradigm of applied public health research and supports both

the production of data and knowledge relevant to health policies, as well as the strengthening of evaluation and planning capacities at local and national level.

5.2 Study object and population (study target group)

The main object of the study is the individual sanitation systems used in rural households, in early childhood education institutions, as well as how they are managed at community and operational level. The study analyzes:

- available infrastructure (types of toilets, pits, latrines, etc.);
- the frequency and manner of emptying them;
- methods of transport, treatment and disposal of effluents;
- involvement of local public authorities and operators;
- safety and public health protection measures.

The target population of the study is structured into four distinct categories, each contributing to a complementary understanding of the current situation about SIS:

1. Members of individual households in rural localities, these are basic units where the questionnaire on sanitary infrastructure and effluent management practices is applied.
2. Representatives of local public authorities (LPAs), interviewed to provide information on the sanitation services offered in the community, existing contracts with operators, sanitary surveillance measures and resource planning.
3. Representatives of the EIT, determined by the vulnerability to health risks, given the large number of children and the increased volume of effluents.
4. Representatives of water supply and sewerage service operators, where they exist, to collect data on the capacity to collect, transport and treat faecal sludge from SIS.

5.3 Sample and geographical distribution

The sample of the study consists of 810 households in the rural sector with different shares of connection to centralized sewerage systems, 30 in each of the 27 localities in 9 districts of the Republic of Moldova, selected so as to be representative of the North, Center and South geographical regions.

The criteria for choosing the districts included the level of sewerage coverage, using official statistical data and a classification on three levels: low access (<10%), medium (10-20%) and relatively high (>20%). Thus, the aim was to obtain a diversity regarding the situation of the sewerage infrastructure (Fig.6).

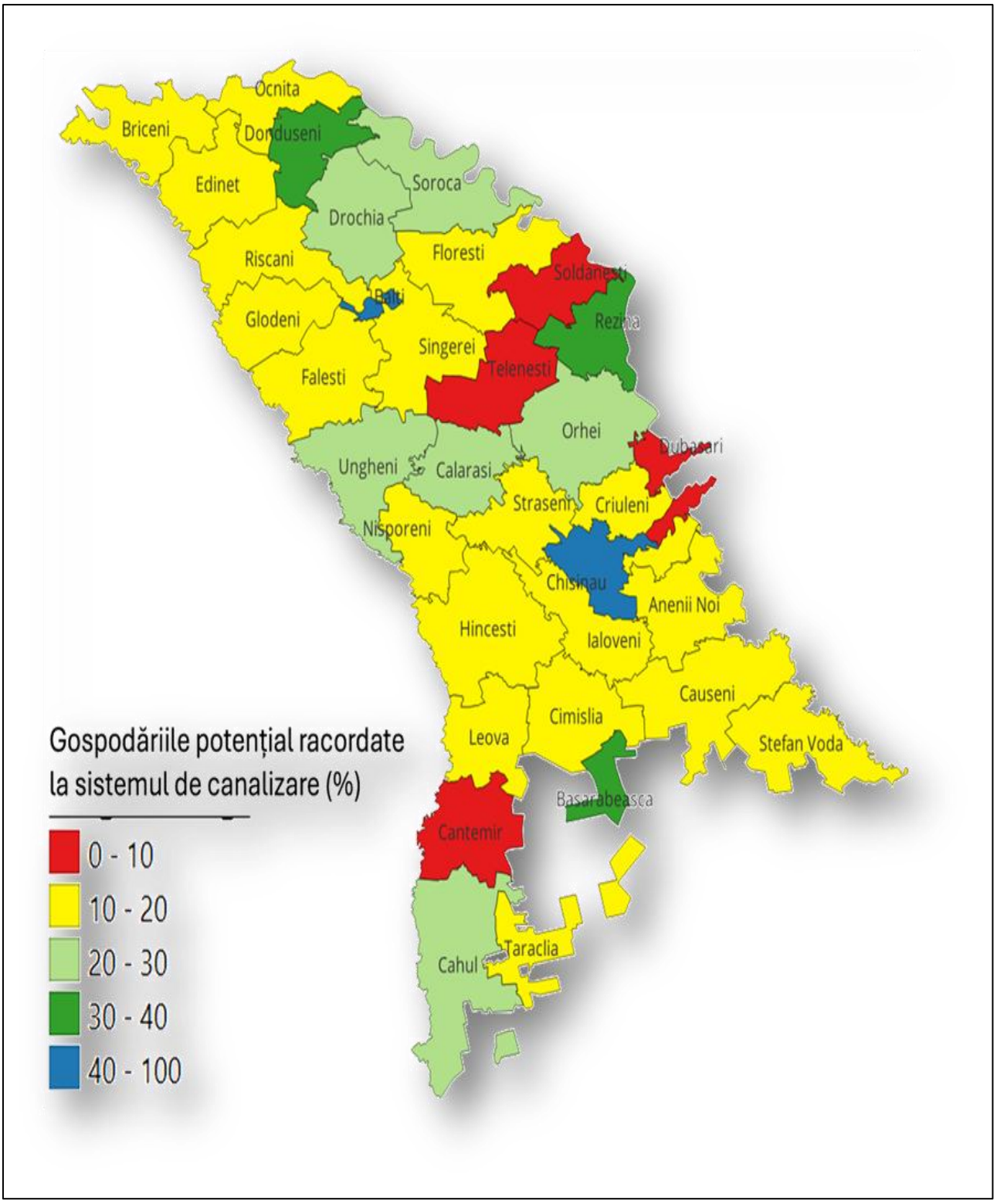

Figure 7. Distribution of the share of households with access to sewerage systems (2023)

In addition to households, interviews were included in each locality:

- 1 APL representative,
- 1 representative of an EIT,
- 1 operator of water supply and sewerage services (where applicable).

Within the SMOSS study, the data collection was organized on the basis of a well-defined territorial distribution, covering 27 localities from 9 districts of the Republic of Moldova, grouped by

the three geographical regions: North, Center and South. The responsibility for conducting the interviews was divided between four teams of field operators, each in charge of households, local public authorities, kindergartens and service operators. This structuring allowed for an efficient and balanced implementation of activities, ensuring a representative geographical coverage and an even distribution of tasks between teams (Table 1).

Table 1. List of localities and groups responsible for data collection within the SMOSS study in the Republic of Moldova"

Region	District	Locality	Number of questionnaires per category	
			Household	LPAs/Operators/Kindergartens
North	Falesti	Năvarneți	30	3
		Expensive	30	3
		Sărata Veche	30	3
	Drochia	Pelinia	30	3
		The white eye	30	3
		Maramonovca	30	3
	Edinet	Brînzeni	30	3
		Hlinaia	30	3
		Gaspar	30	3
Center	Șoldănești	Dobrușa	30	3
		Cobîlea	30	3
		Cotiujenii Mari	30	3
	Ungheni	Negurenii vechi	30	3
		Cornești	30	3
		The Bushel	30	3
	Straseni	Codreanca	30	3
		Vorniceni	30	3
		Micăuți	30	3
South	Cantemir	Cantemir	30	3
		Goteşti	30	3
		The Gypsy	30	3
	Cahul	Alexanderfeld	30	3
		Moscow	30	3
		Slobozia Mare	30	3
	Taraclia	Taraclia	30	3
		Valea perjii	30	3
		Albota de sus	30	3
Total	9 districts	27 localities	810	81

5.4 Selection criteria

Inclusion criteria for households:

- Be located in one of the selected localities.
- Have an individual sanitation installation.
- The household representative is at least 18 years old and has full capacity to communicate.
- They gave their consent to fill in the questionnaire.

Inclusion criteria for LPAs, EITs and operators:

- The interviewees must be employed with direct responsibilities in the field of health or administration.
- Minimum age of 18 years.
- Informed consent
- Full capacity for participation.

Exclusion criteria for households:

- People who are under the age of 18 will not be included, even if it is certified that they are the main representative of the household.
- Not agreeing to fill in the questionnaire.
- Not in full capacity (under the influence of drugs, consumed alcohol, behavioral diseases, suspicious behavior for various reasons - aggressive, uncooperative, etc.) at the time of the interview.

Exclusion criteria for LPAs, ETIs and operators:

- Persons/representatives who are under 18 years of age.
- They hold positions that do not certify the knowledge of the information attributed to the sewerage system within the LPA (doorman, guard, etc.); IET (doorman, security guard, educators, etc.); operator (the doorman, security guard, persons who have not been directly appointed by the administrator to provide the respective information, etc.).
- They did not agree to fill in the questionnaire.
- Is in complete incapacity (drugged, drunk or under the influence of alcohol, suspicious behavior, aggressive or uncooperative, etc.) at the time of the interview.

All study participants were informed about the purpose and nature of the research. The ANSP interviewers applied a standardized process for obtaining informed consent, consisting of:

1. Verification of eligibility through a selection questionnaire.
2. Reading the full consent form.
3. Providing answers to the participant's questions.
4. Signing of the agreement by the participant and keeping a copy by him.

The refusals to participate were noted in a separate form, with no negative consequences for the

participant. Each respondent was identified by an anonymous unique code automatically generated to prevent direct identification. The collected data is kept in a secure system, accessible only to the analysis team, and will not be made public in individualized form.

5.5 Data collection tools

In order to ensure the relevance, consistency and comparability of the data collected in the SMOSS study, four distinct standardized questionnaires were developed, each adapted to the specifics of the categories of respondents included in the research: individual households, local public authorities (LPAs), early childhood education institutions (ETIs) and operators of water supply and sanitation services. The questionnaires were applied face-to-face by teams of interviewers from the National Agency for Public Health (ANSP), who benefited from prior training to ensure a uniform, correct and ethical application of the tools.

5.5.1 Questionnaire for households

This questionnaire was designed to collect detailed and direct data from households using individual sanitation systems. The structure of the questionnaire includes the following sections:

- General data about the household (composition, location, type of dwelling, water source);
- Type and characteristics of the sanitary installation used (water toilet, pit latrine, septic tank, improvised systems);
- Information on emptying and maintenance of installations (frequency, responsible, emptying method);
- Effluent transport (existence of services, operators, frequency);
- Effluent treatment and disposal (final disposal site, applied treatment);
- Possibilities of reuse (in agriculture, compost, other uses);
- Safety measures and health risks identified (for family members, especially children).

The tool has both closed-ended questions and a few semi-open-ended questions, to capture unforeseen variations in practices as well.

5.5.2 Questionnaire for Local Public Authorities (LPAs)

Given the essential role of local public administration in the supervision and provision of sanitation services, this questionnaire aims to identify institutional capacity, local regulations and available resources. The sections included are:

- Identification data of the local authority (district, locality, position of the respondent);
- Existing sanitation services and their organization (service providers, existing contracts, licenses);
- Health planning (local strategies, development plans);
- Verification and sanitary control of the SIS (inspection mechanisms, frequency, sanctions);
- Human resources involved in health management;
- Financial and investment aspects (allocated budget, funding sources, costs);

- Collaboration with authorized operators and the local population.

The questionnaire shall be structured in such a way as to allow for the identification of systemic gaps and to support the formulation of evidence-based recommendations.

5.5.3 Questionnaire for Early Childhood Education Institutions

Given the increased vulnerability of children to inadequate sanitary conditions, the questionnaire for kindergartens explores the measures implemented for safety and hygiene in the educational environment. The structure of the instrument includes:

- General data about the institution (capacity, staff, number of children);
- Type and characteristics of sanitary facilities (including the existence of age-appropriate toilets);
- Frequency of maintenance and cleaning (procedures, responsibilities);
- Effluent collection and disposal system;
- Use of emptying and treatment services (existence, frequency, operator involved);
- Measures to protect and prevent health risks for children and staff;
- Identified needs for institutional support or investments in health infrastructure.

The questionnaire facilitates the collection of information comparable to that in households, but adapted to the specifics of educational institutions.

5.5.4 Questionnaire for water supply and sewerage service operators

This category of respondents plays a priority role in the effluent management chain, from collection to treatment or disposal. The questionnaire was developed to assess the operational capacity and compliance of the activity of these operators with technical and legal standards. Sections of the questionnaire include:

- Identification data of the operator (name of the entity, legal form, locality);
- Technical capacity and logistics (vehicles, personnel, equipment);
- Types of services offered (collection, transport, treatment, recycling, disposal);
- Data on the frequency and territorial coverage of services;
- Licensing mechanisms and compliance with the regulations in force;
- Record of activities (records of emptying, routes, treatment/disposal places);
- Staffing, financing and economic sustainability issues.

The information obtained through this questionnaire will allow a mapping of the current capacity of the effluent management system and the identification of areas with poor or non-existent services.

All questionnaires were applied through a direct interview, face to face, by the teams made up of ANSP specialists, selected and trained in advance to:

- understanding the purpose and content of each tool;
- compliance with ethical procedures, including obtaining informed consent;

- uniform and standardised application of questions;
- correct and complete recording of responses;
- ensuring confidentiality and neutrality in the interaction with respondents.

This professionalised approach to questionnaire application aims to maximise data quality and reduce recording or interpretation errors, thus providing a solid basis for further analysis.

5.6 Health risk assessment in households

Within the SMOSS study, a standardized mechanism for assessing the health risk associated with the use and maintenance of individual sanitation systems (SIS) at household level was integrated. The purpose of this assessment was to identify the level of exposure to health risks resulting from unsafe effluent management practices. To estimate the risk, we used a recommended risk matrix, built on the basis of five key questions from the questionnaire applied to households, considered relevant from an epidemiological and sanitary point of view. These questions (numbered 2.1, 2.2, 2.14, 3.1 and 4.1 in the collection tool) were labelled with codes R1, R2, R3, R4 and R5 and selected based on their potential to reflect non-compliant sanitation practices. Each of these questions shall contain at least one predefined answer, marked [RISK], indicating a health practice considered hazardous or suboptimal. In the evaluation process:

- If the household has given a marked answer [RISK], 1 point is awarded.
- If the answer provided is not marked as such, 0 points are awarded.

The total score was calculated as the sum of the values of the 5 questions:

R1 + R2 + R3 + R4 + R5 = total score (between 0 and 5 points)

Depending on the total score obtained, the household was classified into one of the following three risk categories: (i) 0–1 points - "***Low risk***"**; (ii) 2-3 points – "*Medium risk*"; (iii) 4-5 points – "*High risk*".**

This classification allowed the teams involved in the data collection process to provide personalized feedback to each household. At the end of each assessment, the interviewer: (i) communicated the risk score to the interviewee; (ii) explained the questions and answers that led to that score; (iii) provided practical recommendations on safe, effective and accessible measures to reduce the identified risks; (iv) had an open dialogue about possible local solutions, adapted to the context of each household. All these interactions were carried out with full respect for the living conditions of the participants, avoiding any form of judgment or criticism, in accordance with the ethical principles of the study.

5.6.1 Analysis of safely managed sanitation for SDG 6.2.1 reporting

The above analysis of risk takes into account certain local indicators for sanitation risk that differ to the indicators used in global monitoring of safely managed sanitation. For global monitoring, the analysis is presented in Figure 8 below, that demonstrate the sanitation ladder used by the WHO

and UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation. This is assessed using the ratios shown in Table used to estimate the proportion of safely managed sanitation across the service chain.

Safely managed	Use of improved facilities that are not shared with other households and where excreta are safely disposed in situ or removed and treated off-site
Basic	Use of improved facilities that are not shared with other households
Limited	Use of improved facilities that are shared with other households
Unimproved	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
Open Defecation	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste

Figure 1. JMP sanitation ladder for SDG monitoring

Note that improved sanitation in global monitoring includes wet sanitation technologies such as flush and pour flush toilets connected to sewers, septic tanks or pit latrines, and dry sanitation technologies such as dry pit latrines with slabs and composting toilets. Unimproved facilities include pit latrines without a slab that completely covers the pit, as well as toilets discharging directly to drains or the environment, hanging latrines or bucket latrines.

For on-site sanitation to be classified as safely managed services, people need to be using an improved sanitation facility that isn't shared, but also which ensures that the excreta collected remain isolated from human exposure. This can be achieved in three ways:

1. **Treated and stored in-situ:** On-site sanitation are contained, not emptied
2. **Emptied and disposed in-situ**: On-site sanitation are contained, emptied and disposed in-situ
3. **Emptied and treated off-site:** On-site sanitation are contained, emptied, transported to treatment and receive both solid and liquid treatment

Table 2. Sanitation ladder and ratios to calculate safely managed sanitation

Ladder or ratio Definition	Definition used in global monitoring	Data from Moldova SMOSS study
Open defecation	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches, or other open spaces, or with solid waste	2.1 Type of main toilet = 7 (Open defecation)
Unimproved	Facilities that do not hygienically separate human excreta from human contact.	2.1 = Type of main toilet = 5 (Dry toilet without slab) + 6 (Buckets) Also consider 3.1 = 7 (with solid waste) + 8 (without individual collection plan)
Improved	Facilities that hygienically separate excreta from human contact.	2.1 = 2 (flush to sewer) + 3 (flush toilet) + 4 (dry pit with slab) Also consider 3.1 = 1,2,3,4,5,6 and 1.4=2 (sewer)

Limited (improved toiles that are shared)	Improved toilet facilities that are shared between two or more households.	% Shared = (2.2=2)/(2.2=all) Limited = % Shared * Improved (see above)
Basic (improved toilets not shared)	Improved toilet facilities that are not shared	% Not shared = (2.2=1)/(2.2=all) Basic = % Not shared * Improved
Improved on-site sanitation	Improved toilets excluding sewer	Improved OSS = (3.1= 1,2,3,4,5,6) – (2.1=5 pit without slab)
Contained	On-site sanitation facilities that do not overflow or discharge excreta directly to the surface environment	Uncontained = Max of flooded (3.5=2) or (4.6 =3,4,5,6) Contained = Improved OSS-uncontained
Emptied	On-site sanitation facilities that have previously been emptied	Ever emptied 4.4=1(emptied and reused)
Emptied and disposed of in-situ	Disposal of emptied excreta buried in a covered pit at or near household and covered and built new pit	Disposed in-situ = safely buried on property (6.3=3)
Emptied and transported to disposal site	Disposal of emptied excreta to a disposal or treatment facility off-site (i.e. not at the household and not to the environment).	Disposal to authorized disposal site 5.5 = 1 (WWTP), 2 (pubic sewer), 3 (authorized landfill), 8 (buried),10 (don't know) Or Local public authority 7.3=1,2,3 (also considering 7.7 disposal to environment) Or Service operator 4.3 =1,2,3 (also considering 4.7 disposal to environment)
Excreta transported to treatment	Excreta delivered to a treatment facility	Disposal to treatment only 5.5 = 1 (WWTP)
Excreta treated	Excreta that receive adequate treatment (secondary level for wastewater treatment plants, and solid and liquid treatment for sludge treatment)	Local public authority 7.1=2 (drying and liquid treatment) Or Service operators 4.1=2 Or 2.3 = indicates adequate treatment processes (dewatering and stabilisation of solids and secondary treatment of liquids)

6 RESULTS OF THE SMOSS STUDY IN THE REPUBLIC OF MOLDOVA

6.1 Assessment of rural households on access to drinking water and sanitation systems

This section of the study aims to analyze the current situation of rural households in the Republic of Moldova regarding access to drinking water, the types of sanitation systems used, as well as the maintenance and management practices of individual effluent storage facilities. The study reflects a reality in which most households with varying degrees of connection to public water and sanitation systems, relying on individual solutions, often improvised or not compliant with hygiene and safety standards.

Through the questionnaires applied, information was collected regarding the water sources used for drinking and domestic purposes, the characteristics of the existing toilets, their accessibility for children and people with disabilities, hygiene conditions, but also the way in which households manage the effluents resulting from individual installations. The perceptions and challenges faced by households in terms of access to WASH (Water, Sanitation and Hygiene) services, with a focus on the rural dimension, were also assessed.

The results presented below are structured by thematic components and provide an overview of the living conditions in the investigated areas, in order to highlight the urgent needs and potential directions of intervention.

6.1.1 General characteristic of the households selected in the study

To assess the access of rural households in the Republic of Moldova to drinking water supply and sanitation systems, 840 households from 27 villages were selected, divided into 9 administrative-territorial units. The selection of localities was made in such a way as to reflect representatively the main geographical regions of the country – South, Center and North (Table 2).

The distribution by regions was balanced: 32.1% of the households interviewed come from the South area, 34.1% from the Centre area, and 33.8% from the North area. The localities were selected based on geographical and socio-economic diversity, as well as accessibility at the time of the survey, in order to ensure the operational feasibility of data collection in the field.

Within each administrative-territorial unit, households were randomly selected from localities with a rural profile, depending on the availability of respondents and the presence of the minimum infrastructure necessary for the evaluation. Thus, the sample provides a solid basis for cross-regional analysis and for drawing general conclusions on rural households' access to sanitation.

As for the socio-demographic profile of the people interviewed in the analyzed households, women predominate, representing 63.2% of the total respondents, while men accounted for 36.8%. This distribution can be explained both by the general demographic structure of the rural population and by the fact that women are, in many cases, more available for home interviews.

Table 2. Territorial distribution of the surveyed households selected in the study

Areas	Territorial administrative unit	Absolute figures	%	%
South	Cahul	89	10,6	32,1
	Cantemir	93	11,1	
	Taraclia	88	10,5	
Center	Straseni	91	10,8	34,1
	Șoldănești	100	11,9	
	Ungheni	95	11,3	
North	Drochia	100	11,9	33,8
	Falesti	89	10,6	
	Edinet	95	11,3	
Total		**840**	**100**	**100**

The analysis by age groups shows that the majority of respondents fall into the middle and advanced age categories (Figure 8). The highest proportion was recorded among people aged 60–69 years (28.8%), followed by the 50–59 years (25.8%) and 40–49 years (13.1%) groups. The share of young respondents was considerably lower: only 3.6% were under 30 years old, and 11.4% were in the 30–39 age group. At the same time, 14.3% of the respondents were between 70 and 80 years old, and 3.0% were over the age of 80 years 90 *(n=840)*.

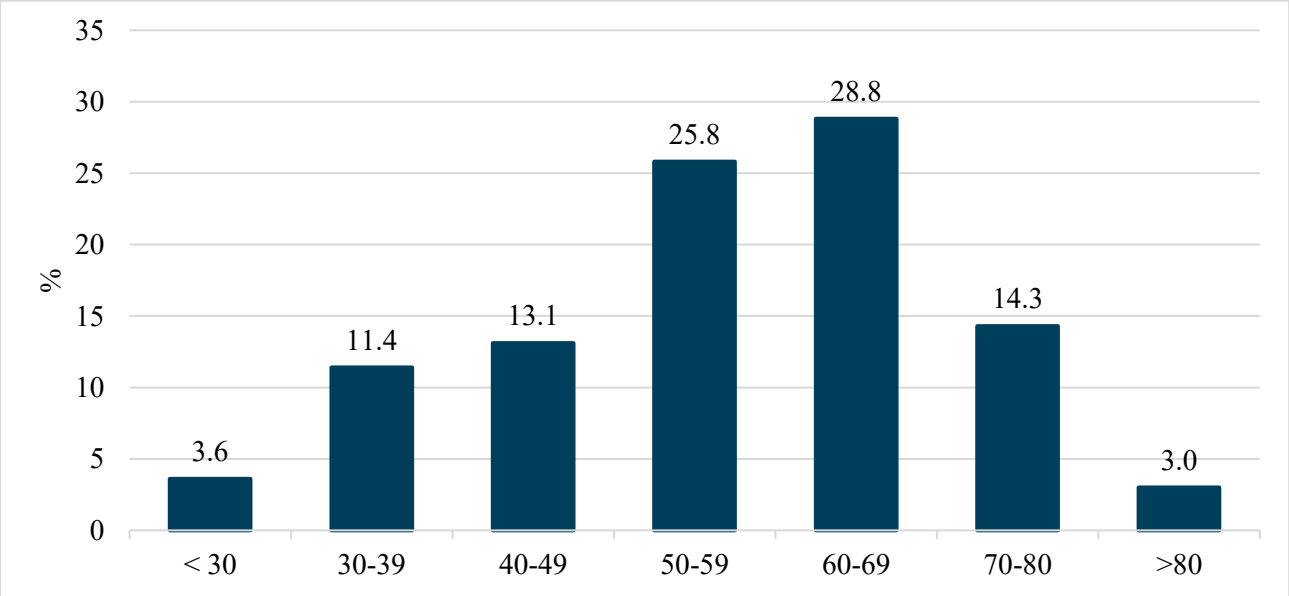

Figure 8. Distribution of respondents by age groups (%)

This age group structure reflects the demographic realities of the rural areas investigated, where the active population tends to migrate to urban areas or outside the country, and older people remain in households as the main respondents available for such research.

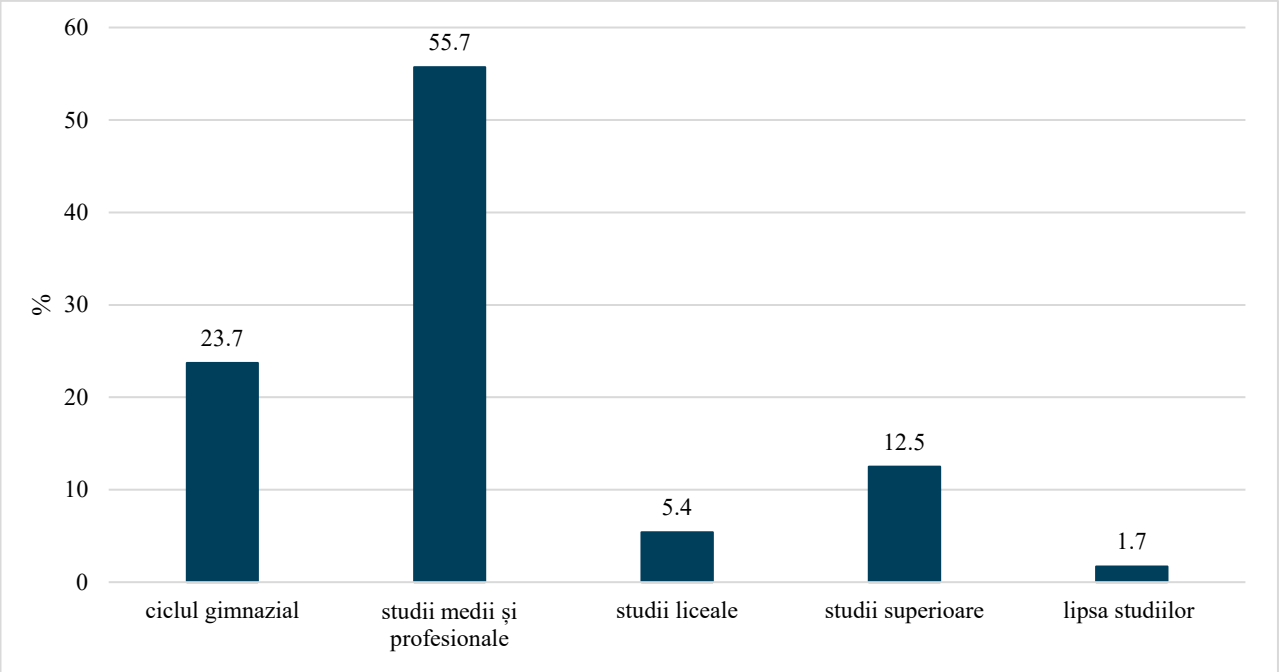

Figure 9. Distribution of the level of education of the interviewees

The graph on the distribution of the level of education of the respondents highlights a clear dominance of the secondary vocational education, graduated by more than half of the respondents (55.7%). The level of higher education is low, with only 12.5% of participants indicating a university degree, while 23.5% have only completed secondary school. The lack of studies was recorded in 1.7% of respondents. This educational profile has important implications for how households perceive the importance of safe sanitation, as a lower level of training can limit the understanding of health risks, the ability to make informed decisions about the management of individual facilities, as well as the adoption of appropriate hygiene practices.

The income distribution of the participating households shows a clear prevalence of low incomes, with 36.4% of respondents declaring less than 5,000 lei per month and another 27.5% between 5,000–10000 lei. Only a small part of households (3.3%) report incomes above 15000 lei, while 23.5% did not provide this information, possibly for reasons of confidentiality or financial

instability. These data reflect a high level of economic vulnerability among respondents.

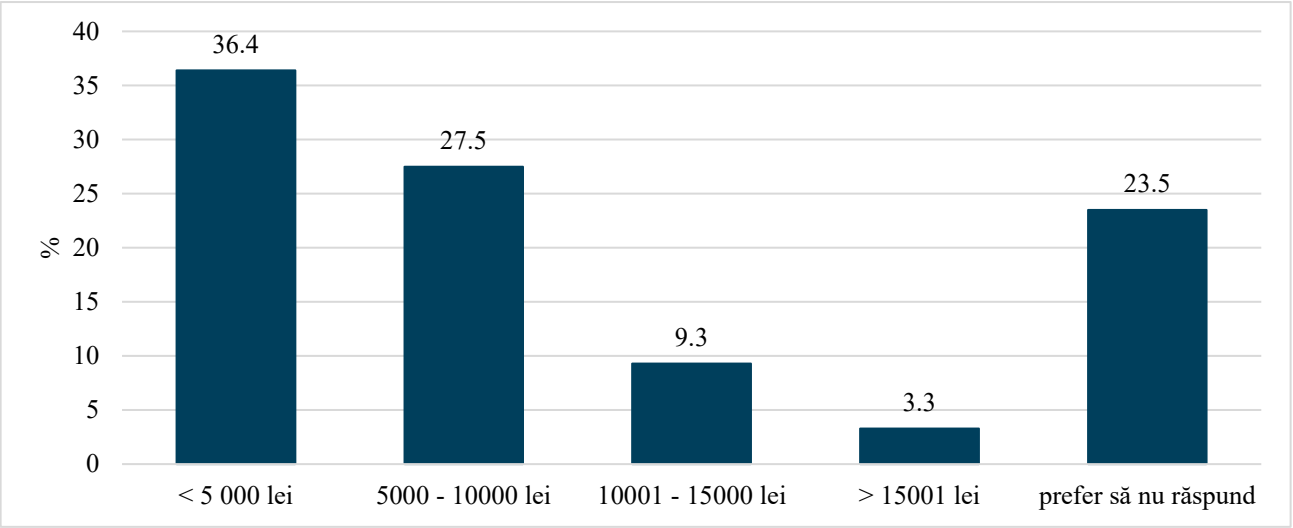

Figure 10. Share of households by declared monthly income

The occupational status of the respondents reflects a social structure typical of rural areas in the Republic of Moldova, marked by a high percentage of economically inactive people. Most of the respondents (40.6%) are pensioners, which confirms the ageing trend of the rural population and suggests a high degree of dependence on fixed and modest incomes.

Employees with formal forms of work account for 28.5% of participants, while 10.2% say they are self-employed (including informal, casual or subsistence farming). A significant 20.7% are outside the labor market and are not officially employed, which may include people who are looking for a job or without stable economic activity *(n=840)*.

This occupational distribution has important implications on the ability of households to financially support investments in water and sanitation infrastructure, especially in the context in which the majority of respondents have limited or insecure incomes, which can negatively influence both the quality of the services used and the adoption of sustainable solutions.

The analysis of the size of the households interviewed reveals a predominance of small family structures (Figure 11). Almost two-fifths of households (38.5%) are composed of two people, and 21.9% are made up of one person, indicating a significant presence of single-person households – most likely elderly people who remain single (Figure 8). Households with three members account for 18.3% of the total, and those with four to five persons – 18.0%. Only 3.3% of households include more than five members *(n=840)*.

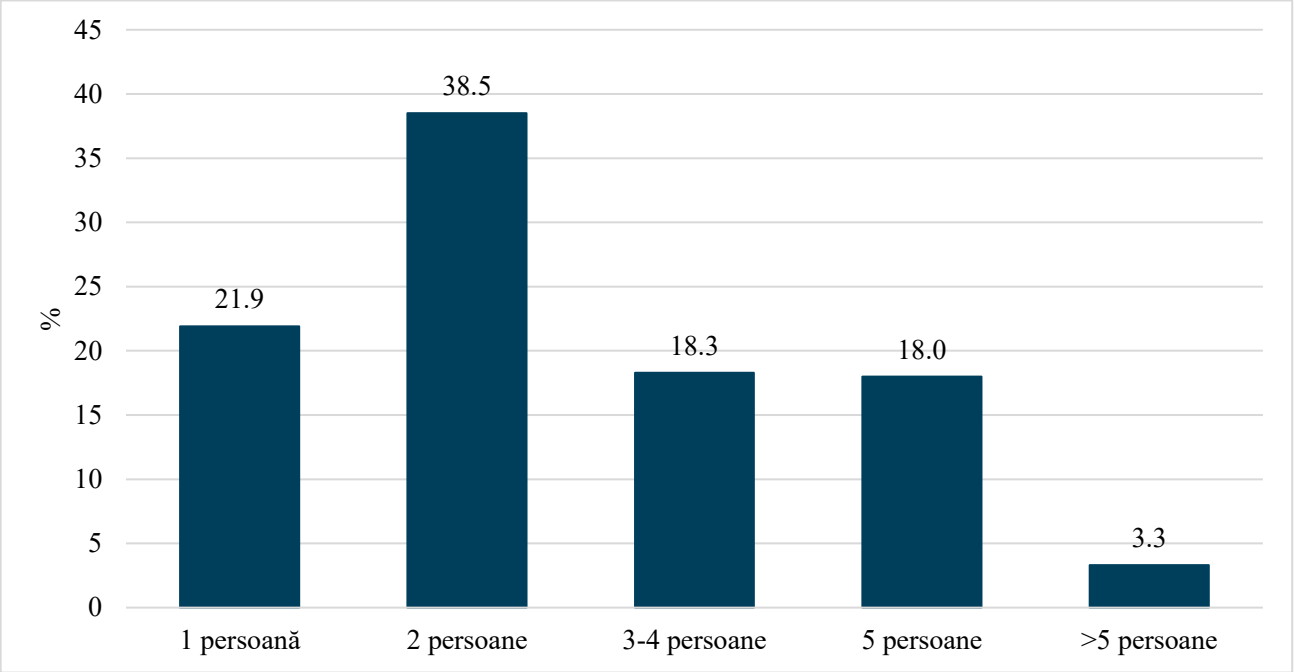

Figure 11. Distribution of households surveyed by number of members (%)

This demographic structure reflects the ageing and migration trends of the rural population, with a direct impact on the organisation of households and, implicitly, on their ability to manage individual water and sanitation infrastructure. The small number of members in a household can influence both the volume of water used and the amount of waste generated, as well as the frequency requirement of sanitation maintenance services.

In the questionnaire applied, respondents were asked about the presence of children under five years of age in the household. Of the households included in the sample, 13.3% (*n=110*) reported living with at least one young child. This proportion suggests that around one in six households care for children under the age of five, which is an important indicator for assessing special needs related to access to safe drinking water, hygiene and sanitation. The distribution of households according to the number of young children shows a prevalence of families with only one child under 5 years of age – 85 households (about 77.3% of all those with young children) fall into this category. Another 22 households (20%) have two children under five years old, and only 3 households (2.7%) declared the presence of three children in this age category.

These data reflect a general trend towards small family structures, even among young households, and underline the importance of monitoring access to water and sanitation services tailored to the needs of young children – a vulnerable category exposed to risks related to poor hygiene.

The data collected show that 10.2% of the households included in the study sample have people with physical or mental disabilities. This proportion, although not large, is significant from the perspective of the accessibility and adaptability of the health infrastructure in rural areas.

The qualitative analysis of sanitation conditions highlights the fact that, in the vast majority

of these households, the existing systems, predominantly simple latrines or cesspools, are not adjusted to the needs of people with disabilities. The lack of access ramps, sufficient space (ergonomics) for the use of support equipment, as well as the absence of adequate lighting or interior support elements (bars, chairs) cause a high degree of inaccessibility and expose these people to additional health and safety risks.

In the study, respondents were asked to identify the main source of drinking water used in their household. The data collected reveal a diversity of drinking water sources, reflecting the varied conditions of access in rural and urban areas (Figure 12).

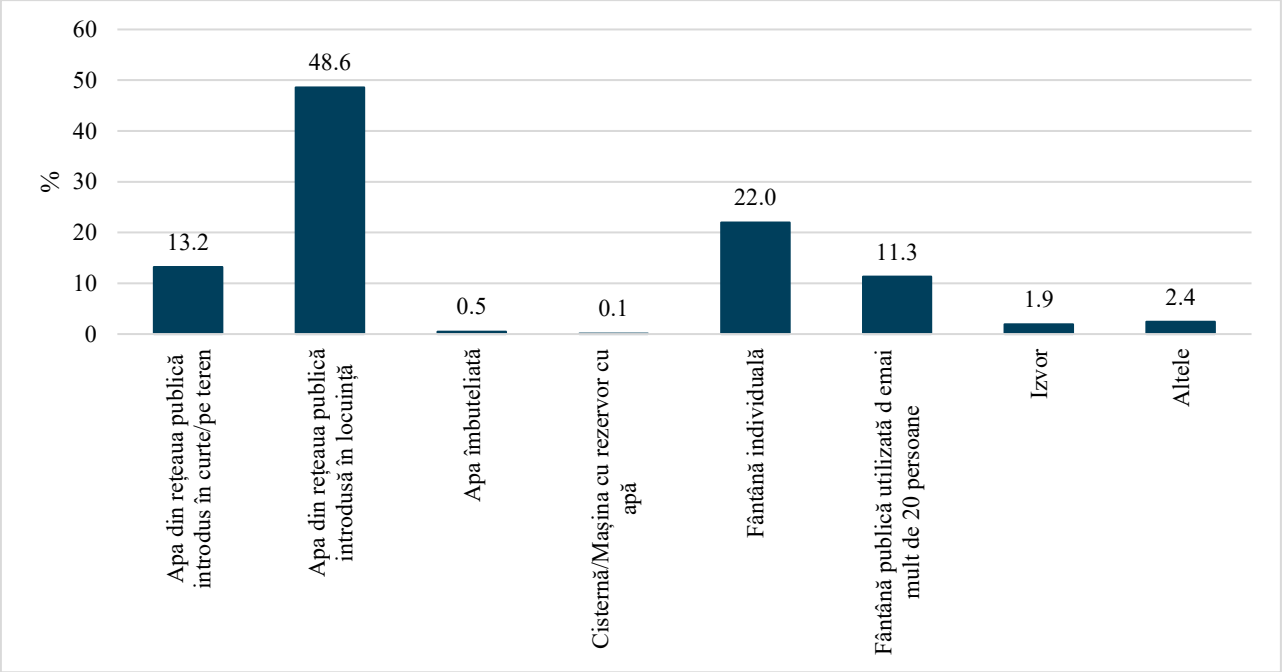

Figure 12. Main source of drinking water in the sampled households (%)

Thus, almost half of the households (48.6%) said that the main source of drinking water is water from the public network, introduced directly into the home, which indicates a relatively high degree of connection to the centralized infrastructure. Another 13.2% of households use water from the public network, but it is introduced into the courtyard or on the household land, which may imply more difficult access or separate storage conditions. Individual wells are the main source of water for 22.0% of households, and public wells are indicated by 11.3% of respondents. These traditional sources continue to account for a significant share in water supply, especially in rural areas. Access to other sources, such as springs (1.9%), bottled water (0.5%) or other unclassified sources (2.4%), is reduced, and the use of cisterns or machines with water tanks is negligible (0.1%) *(n=840)*.

The people who mentioned other sources of water supply mainly indicated methods based on transporting and storing water in tanks or basins located in the yard, with or without the use of the hydrophore for pumping into the house. Thus, 38.9% of these households use water transported and stored in the basin, pumped with hydrophore, and another 11.1% mention water transported in the backyard basin. Smaller proportions, between 5.6% and 11.1%, reported variations in this method,

including water transported in domestic reservoirs, with or without the use of hydrophore, and water stored in various types of basins. These data reflect households' adaptations to limited or intermittent access to traditional drinking water sources. This distribution highlights important variations in access to drinking water and underlines the need to continue investing in the expansion and modernization of public networks, the unification of systems, but also in ensuring the quality and safety of traditional water sources.

Regarding access to the public sewerage system (Figure 13), the data show that only 2.9% of the households included in the sample are connected to a public sewerage network, while 97.1% do not benefit from this service. This extremely low proportion contrasts sharply with the level of connection to the public drinking water network, where almost 62% of households use water from the network (including in their homes or yards).

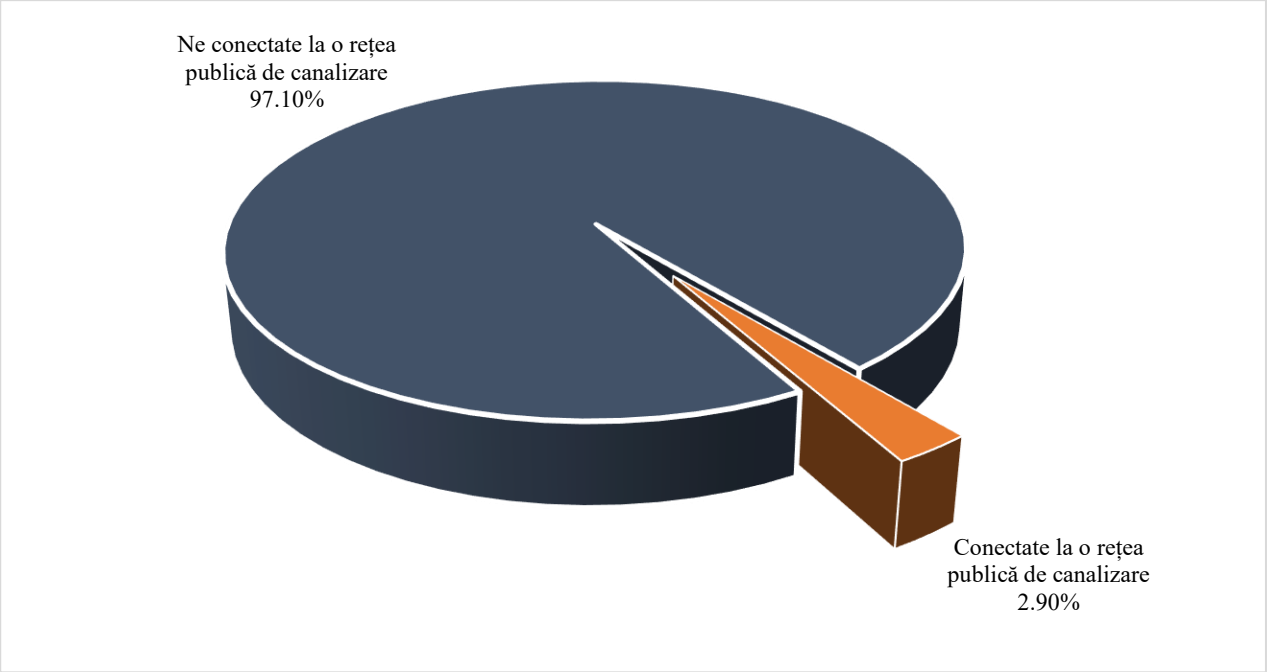

Figure 13. Degree of household connection to the public sewerage system (%)

This discrepancy highlights a major structural gap between the development of water supply and sewerage infrastructure in the studied localities. While the connection to centralized water sources has made progress, wastewater disposal services remain largely uncovered in rural areas, resulting in an almost exclusive dependence on individual systems (pits, latrines) with varying efficiency and sanitary safety.

The answers to the question regarding the existence of a public sewerage system in the locality of residence highlight a severely limited access to centralized sewerage infrastructure (Figure 14).

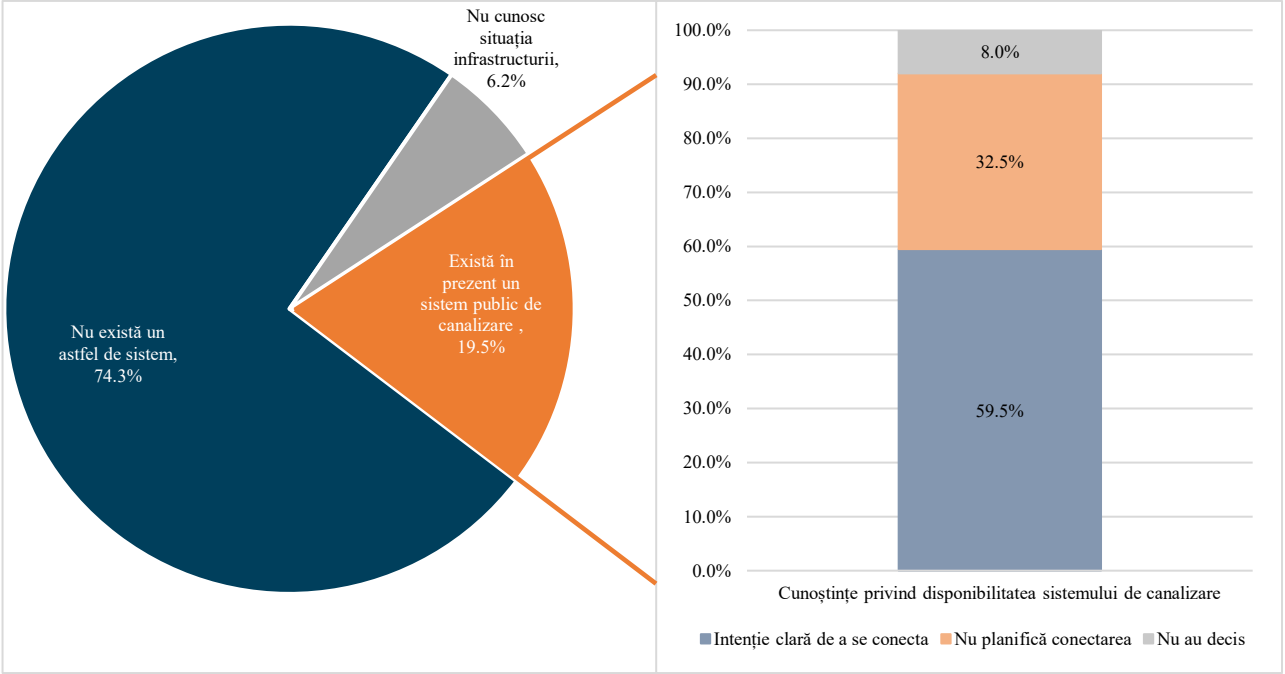

Figure 14. Population's perception of the existence of the public sewerage system and the intentions to connect to it

Only 19.5% of the surveyed households reported that they know about the existence of a public sewerage system currently available for connection, 74.3% said that there is no such system in their locality, and 6.2% do not know the infrastructure situation. Of the households that reported that there is a public sewerage system available for connection in their locality (19.5% of the total sample, *n=162*), 59.5% expressed a clear intention to connect to it. At the same time, 32.5% mentioned that they do not plan to connect, and 8.0% do not know or have not yet made a decision in this regard.

These data become all the more relevant in the context in which, among the households that are currently not connected to public sewerage, the vast majority (74.3% or three out of four households) do not even have the technical possibility to connect, due to the lack of a network available in the community. Thus, the lack of connection is not the result of an individual choice or economic constraints, but reflects a structural absence of sewerage infrastructure in the rural areas analyzed. This reality amplifies the health and environmental vulnerability of households, which remain dependent on individual effluent storage and discharge systems, which are often improvised, non-compliant and difficult to maintain safely.

These results suggest that although 2 in 3 households (59.5%) that have accessible infrastructure (19.5%) are willing to go online, almost a third (32.5%) do not intend to do so. This may reflect economic barriers (connection costs, monthly fees), lack of information, scepticism about the efficiency of the service or preference for existing solutions in the household. Therefore, in addition to expanding sewerage networks in localities, it is essential that public policies also aim to stimulate connection where the network is already available, through information measures, financial support and simplification of administrative processes.

The results in this compartment reveal a complex and deeply unequal picture of the access of rural households in the Republic of Moldova to drinking water and sanitation infrastructure. The socio-demographic structure of the surveyed population, characterized by a preponderance of women, older people, low-income households and a relatively low level of formal education, accentuates vulnerability to the risks associated with lack of access to basic services. At the same time, the small size of households and the presence of vulnerable groups (young children, people with disabilities) require increased attention in the design and adaptation of existing or future infrastructure. The results also require the need to further reorient the policy framework beyond the expansion of infrastructure and towards community information and involvement.

6.1.2 Access, conditions of use and characteristics of sanitary facilities in rural households

Access to safe and functional sanitation facilities is an essential element for ensuring public health and quality of life in rural areas. This sub-chapter analyses the typology, condition and conditions of use of existing toilets in the sampled households, as well as their degree of accessibility for children and persons with disabilities. Aspects of personal hygiene, frequency of handwashing, cleanliness and privacy offered by these facilities are also examined in order to assess not only the presence of the minimum infrastructure, but also its functionality and suitability for the needs of users. The results contribute to a clear picture of the health challenges in rural areas and highlight the areas where urgent interventions are needed to improve sanitation conditions.

The analysis of the type of toilet used by the included rural households reveals a predominance of traditional sanitary facilities, with a limited degree of hygienic safety (Figure 15).

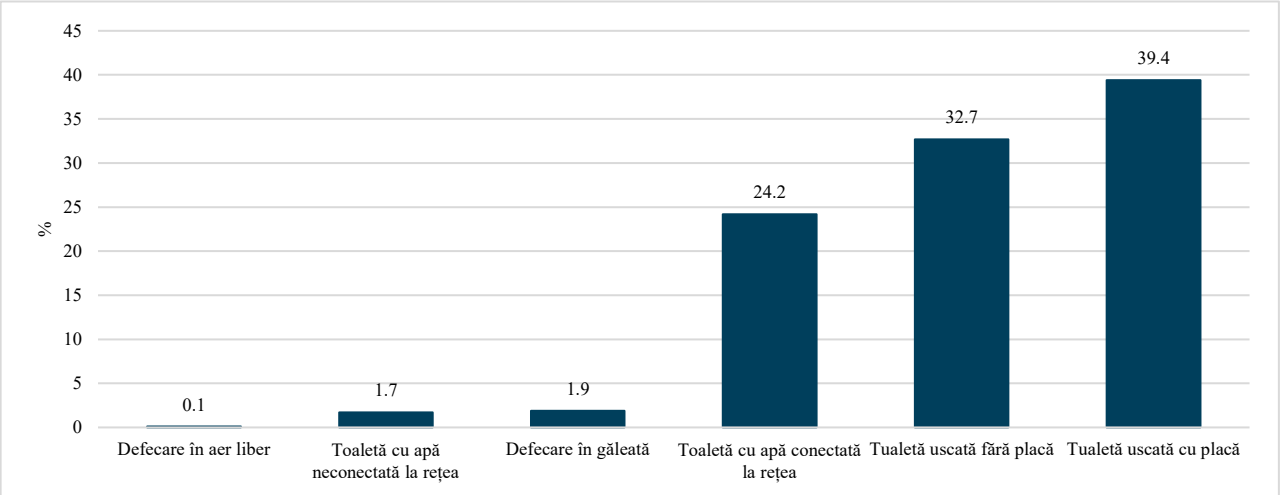

Figure 15. Distribution of types of toilets used in rural households (%)

Almost 40% of households use dry toilets equipped with a toilet plate, while a significant proportion – 32.7%, use dry toilets without a plate, considered precarious and unsafe. This type of infrastructure indicates both the persistence of outdated sanitation practices and the lack of access to modern alternatives. Only 24.2% of households have toilets connected to the water network, which reflects a low level of modernization of sanitation services in rural areas. Other improvised forms of

water use, such as toilets where water is poured manually from a bucket, are very rare. Worryingly, 0.1% said that defecation takes place outdoors and 1.9% in the bucket (*n=830*), so the population continues to resort to these informal methods of managing physiological needs. Practices that expose users to additional risks to their health.




The data collected indicate that 98.9% of households, the main toilet is not shared with people outside the household and in 1.1% cases sharing with non-family members was reported. This result suggests a high degree of individual use of toilets, which can contribute positively to maintaining hygiene and reducing the risks of disease transmission. 62.4% of households reported that the toilet is used by 1–2 people, reflecting the small size of many rural households, 30.6% indicated that the toilet is used by 3–4 people, and 6.0% mentioned 5–6 users. Only 0.9% of households reported the use of the toilet by more than 7 people. This distribution highlights a predominantly family and limited use of sanitary facilities, which can have positive implications on the maintenance of hygiene

and on the wear and tear of the infrastructure.

Figure 16 shows that 74.0% of households said that the toilet is in their own yard, 25.8% inside the house, signaling a more advanced degree of modernization and comfort, and 0.2% mentioned that they use the toilet located outside the property (*n=830*).

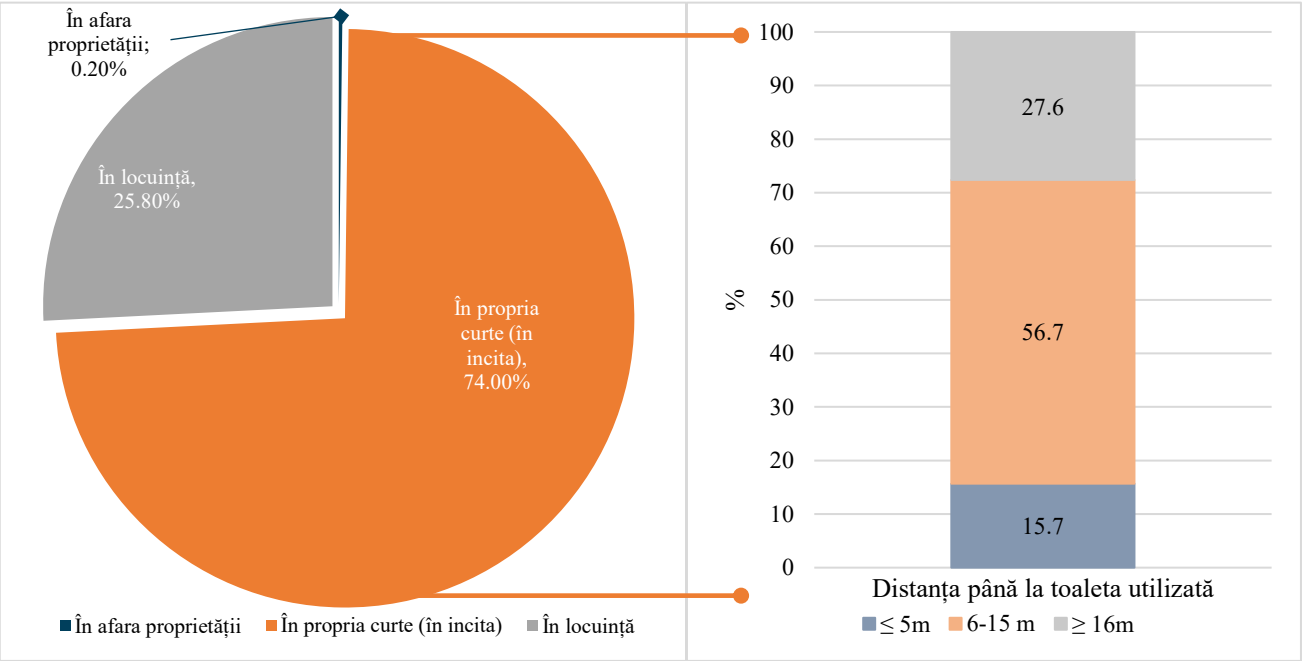

Figure 16. Distribution of households by location and distance to them

However, the distance of the toilet location in relation to the residential area is as follows: in 27.6 percent the toilet is at a distance of less than 5 meters, 56.7% at a distance of 6-15m, which suggests its placement in the yard, in an accessible perimeter, and 15.7% at a distance of more than 16m, which may represent a difficulty for some people, especially in the absence of arranged access roads or in dark conditions, mud or ice. This distribution highlights inequalities in the conditions of access to sanitation facilities and the need to support households in adapting sanitation infrastructure to minimum safety and accessibility standards.

The data analysed in Figure 17 reveal a complex picture of the accessibility and safety conditions of toilets used in rural households, especially for vulnerable categories such as young children and people with disabilities. Thus, only 6.5% of respondents considered that the household toilet is accessible and safe for children under 5 years old, while 18.15% consider it unsafe, and an overwhelming proportion of 75.4% did not know, most likely due to the lack of a small child because of the 830 households included in the sample, 110 (equivalent to approximately 13.3%) reported living with at least one young child in the household or due to lack of knowledge of safety assessment criteria.

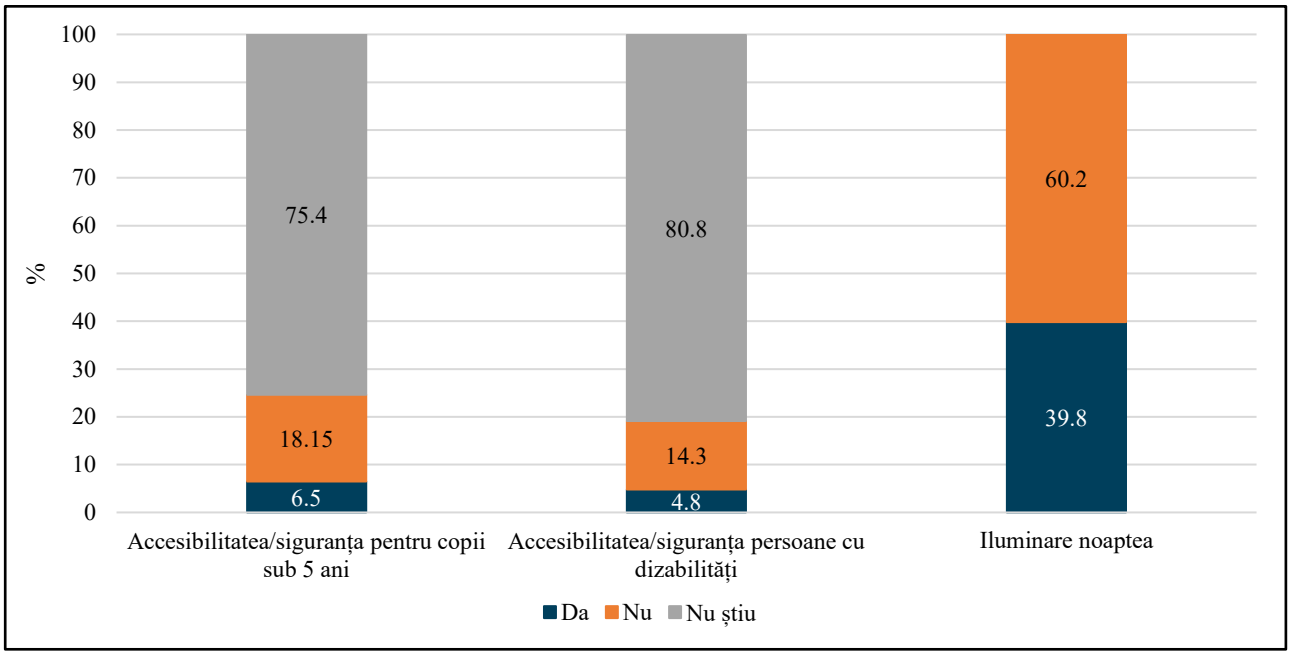

Figure 17. Accessibility and safety conditions of toilets in rural households

Regarding accessibility for people with disabilities, only 4.8% of households reported that the sanitary installation adjusted and safe for these people, while 14.3% of the total explicitly mentioned the lack of accessibility. 80.8% of the total suggest either the lack of an objective assessment or the absence of people with disabilities in the household – 10.2% of households said that there is a person with disabilities in the family.

Another important indicator is the presence of night lighting in the toilet. Only 39.8% of households have adequate lighting at night, while the majority (60.2%) do not have this facility, which can negatively affect the safety of users, especially children, the elderly or people with reduced mobility. These indicators highlight systemic weaknesses in rural health infrastructure and underline the need for interventions to ensure equity in access to safe health facilities tailored to the needs of all household members.

The data in Figure 18 show that only 22.3% of respondents have a handwashing tap located directly inside the toilet, which indicates an insufficient degree of hygiene ensuring and maintaining. At the same time, 13.3% of households have a tap located within a radius of up to 5 meters, which can be considered an acceptable compromise from a functional point of view. However, the highest proportion of 51.4% of the washing point is located at a distance of more than 5 meters from the toilet, which can discourage or delay correct hygiene practices, especially for vulnerable categories children, the elderly, people with disabilities. More worrying is the fact that 13.0% of households did not identify a place for handwashing near the toilet (*n=830*), which poses a major risk to public health by contributing to the spread of communicable diseases. It highlights the need to implement urgent measures to improve access to functional hygiene points in the immediate vicinity of toilets, and to

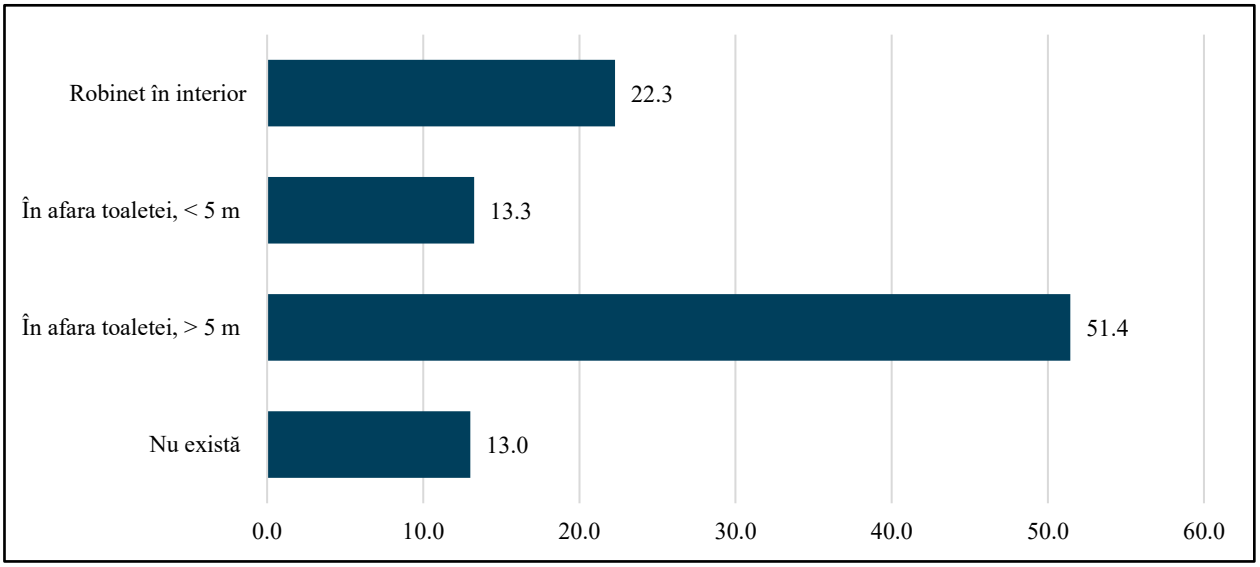

Figure 18. Nearest place for handwashing relative to toilet in rural households (%)

intensively promote good hygiene practices.

The data collected on the endowment of handwashing points with soap in rural households show that out of the 87.0% of households that have a handwashing point in only 68.4% of households (*n=722*), at the time of the inspection, had soap in the place intended for handwashing, which indicates an increased risk of disease transmission due to poor hand hygiene.

The lack of soap in the hygiene points, although apparently a minor detail, reflects both material constraints and possible deficiencies in health education. Promoting regular handwashing with soap, especially after using the toilet, should remain a priority in rural public health strategies, as one of the most effective preventive measures against gastrointestinal infections and other communicable diseases. Data on the frequency of handwashing with soap after toilet use in rural households highlight variable and, in some cases, insufficient hygiene practices. Although the majority of respondents (60.8%) say that household members always wash with soap after using the toilet, an encouraging percentage from a public health perspective, there is a significant segment (32.8%) that admits that this hygienic gesture is practiced only "sometimes". More worrying is the fact that 5.2% of

respondents admit that handwashing with soap takes place "rarely", and 0.5% say that they never wash, which indicates a clear vulnerability in the prevention of communicable diseases. Also, 0.7% of households cannot provide clear information on this practice, which may reflect either a lack of routine or a poor awareness of the importance of personal hygiene. These data highlight the need for health education interventions adapted to the rural environment, which promote correct and constant handwashing with soap as an essential behaviour for individual and community health.

In a significant number of rural households, representing 5.5% of the total sample, cases were identified where at least one family member does not use the main toilet. The analysis of the reasons stated highlights a combination of factors related to both individual preferences and structural or physical limitations (Table 2).

Table 3. Reasons for not using the main toilet (%)

Reasons	%
Some members do not want to use the latrine	34,8%
Lack of privacy and security	28,3%
Elderly / disabled / injured / reduced physical mobility	21,7%
Too long a distance	8,7%
Others	23,9%

The most common cause reported is personal reluctance, with 34.8% of respondents mentioning that "some members do not want to use the latrine". This attitude may reflect a negative perception of the hygiene, comfort or safety offered by existing latrines. Also, 28.3% of households indicated "lack of privacy and safety" as a major obstacle, which highlights deficiencies in the construction or maintenance of sanitary facilities, especially in the absence of adequate walls and doors. The physical conditions of the users also play an important role. Elderly, disabled, injured or disabled people are mentioned in 21.7% of cases, which indicates a clear need to adapt facilities for accessibility. Other combinations of factors, such as too long a distance to the toilet or other unidentified reasons (between 8.7% and 23.9%), but significant in the context of inadequate infrastructure.

The data on the period of operation of the main toilet used in rural households show a clear predominance of 53.7%, of sanitary facilities with considerable age > 11 years or which do not know their term of operation and 46.3% of toilets have been in use for less than 10 years.

The evaluation of the physical conditions of the sanitary facilities used (Table 3) shows that in 22.3% of the cases, the walls and/or door of the toilets were not intact or missing or damaged, in 22.8% fecal residues were detected on the bowl, walls or floor, and in 24.8% the presence of human feces in the yard or in its premises was found and documented , which represents a risk of contamination.

Table 4. Physical and hygienic conditions of sanitary facilities in rural households

Evaluated indicator	"Yes" (%)	"No" (%)
The walls and/or toilet door are intact and functional	77,7	22,3
The toilet is clean (no fecal residue on the bowl, walls or floor)	77,2	22,8
Presence of human feces in the yard or on the premises	24,8	75,2
Note – for details on the hygienic aspects of the inspected toilets you can see Annex 2		

6.1.3 Evaluation of individual effluent collection and discharge facilities

Regarding the ways of effluent discharge and storage, the data reveal a high prevalence of systems with a high risk of soil and water contamination (Figure 19).

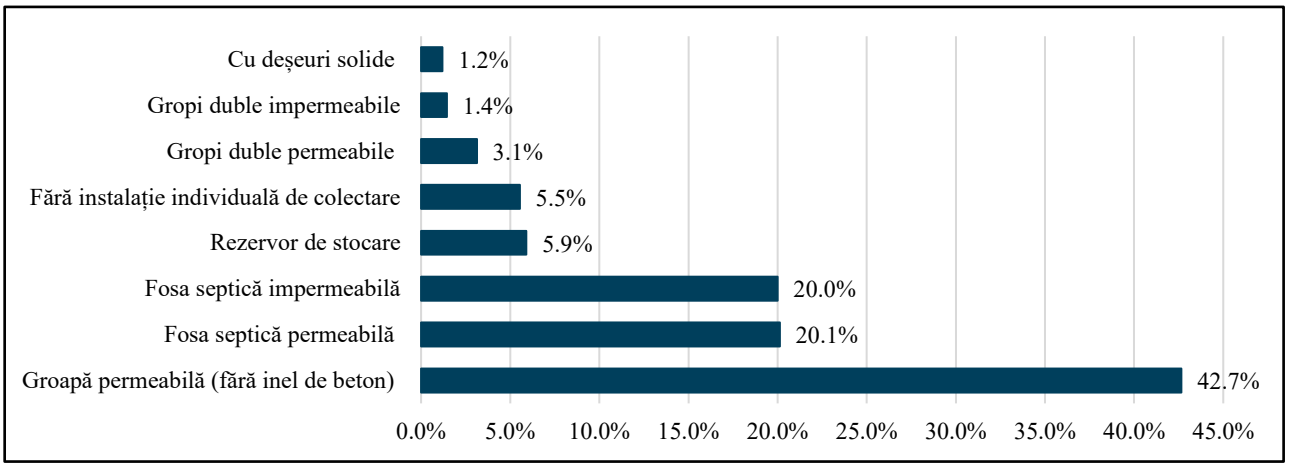

Figure 19. Ways of evacuating and storing effluents from toilets

The majority of households (42.7%) use permeable pits without a concrete ring, followed by permeable septic tanks (20.1%), both classified as high health risk solutions due to the possibility of effluent infiltration into the soil. Also, 5.5% of households do not have any individual collection facilities, which aggravates the potential impact on public health.

On the other hand, only 20% of households use waterproof septic tanks, which are a safer solution from a hygienic and sanitary point of view. The situation is completed by a minority (1.2%) that discharges effluents together with household solid waste (*n=830*), a practice with severe risks to the environment.

These data indicate that more than two-thirds of households rely on rudimentary and potentially hazardous solutions for effluent collection, underlining the need for interventions to improve rural sanitation infrastructure.

These responses can be assessed based on the JMP service ladder used for global monitoring of sanitation. Combining the responses to the type of toilet and connection, 36% are considered

unimproved which includes dry toilets without a slab (33%), use of buckets (2%) and disposal with solid waste (1%). Improved sanitation faiclities include both sewer (2.9%) and on-site systems (61%) that inlcude waterproof and permeable septic tanks (40%), single and double pits with slab (15%) and storage tanks (6%). Basic sanitation services inlcude use of an improved toilet that isn't shared (63%), while limited sanitation refers to use of an improved toilet that is shared (1%).

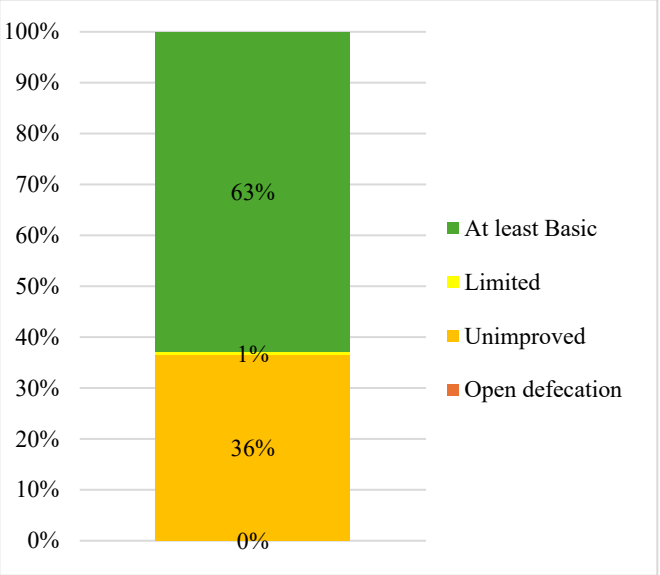

Figure 20. Sanitation service ladder

The data regarding the period of construction of individual effluent collection facilities in rural households show a heterogeneous distribution of the age of these systems (Fig. 20). The largest share is held by installations built in the last ten years (39.2%), followed by those built between 11–20 years ago (16.9%).

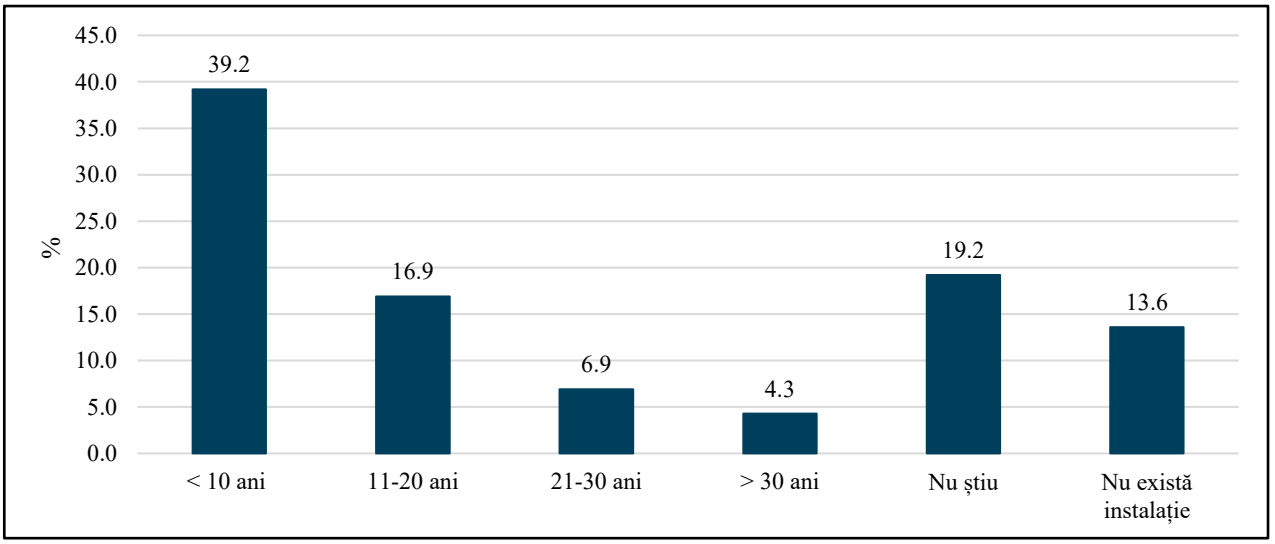

Figure 21. Share of households depending on the age of individual effluent collection facilities

Only a small percentage of the installations are built 21-30 years ago (6.9%) and over 30 years old (4.3%). Also, 13.6% of households do not have such an installation, while 19.2% of respondents do not know the year of installation (*n=830*). These results suggest a predominantly recently built health infrastructure.

The capacity of individual effluent collection facilities varies significantly in the households analyzed, but most of them (65.4%) are small, with a capacity of up to 10 cubic meters. Only a

marginal proportion of households have installations with a capacity of more than 10 m³ (3.5%). Remarkably, 31.1% of respondents were unable to provide an estimate of capacity, which may

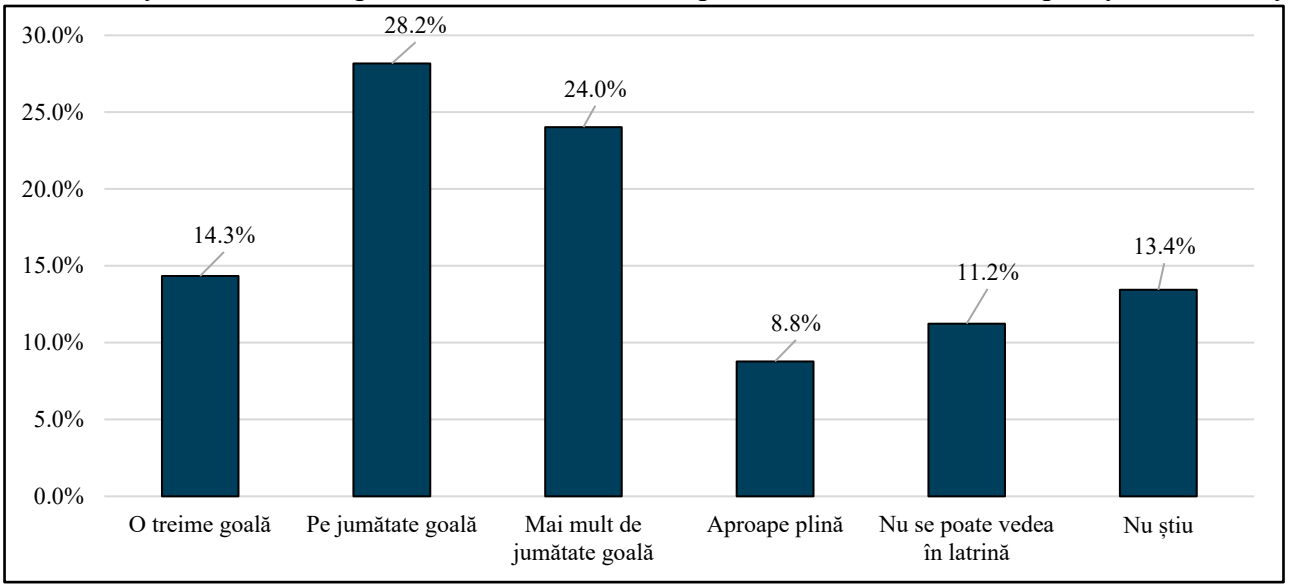

Figure 22. Distribution of the filling level of septic tanks and latrines

indicate either a lack of technical information or a lack of direct involvement in the management of these systems. These data reveal a predominantly modest infrastructure in terms of collection capacity, which could generate risks related to the frequency of emptying, overload or uncontrolled spills in the absence of proper management.

The current state of the filling of septic tanks or pits varies within the households analysed (Fig. 21). The most common situations reported are represented by half-empty pits (28.2%) and more than half empty (24.0%).

A significant percentage of households (14.3%) have empty pits about a third, while only 8.8% of the inspected pits were almost full. At the same time, 11.2% of respondents cannot observe the level of filling, and 13.4% do not have this information.

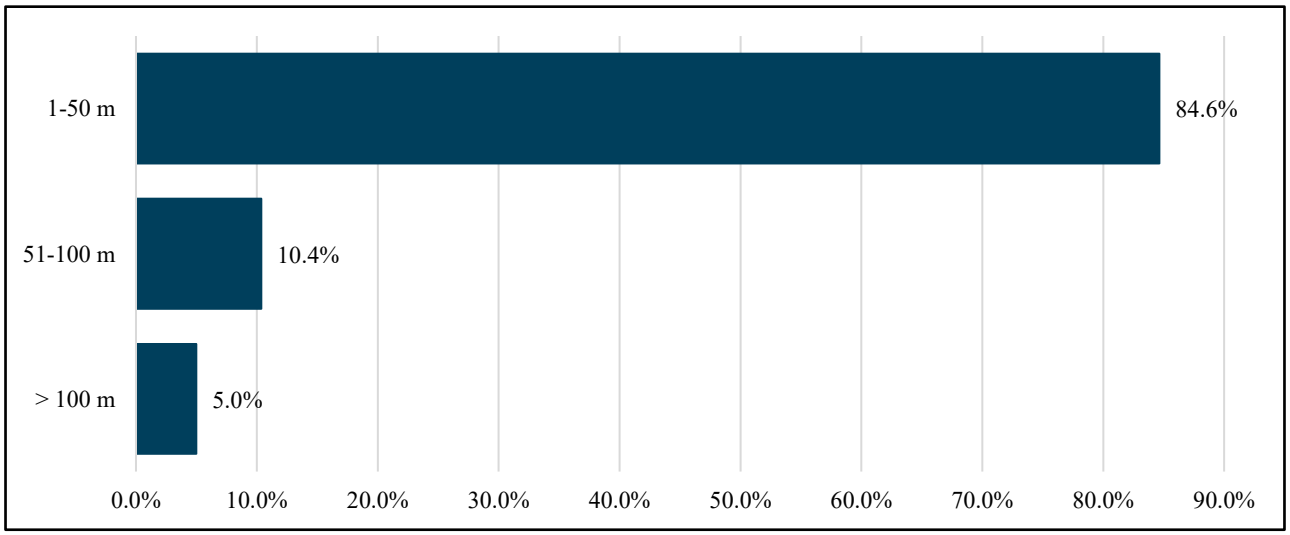

Figure 23. Distance to the nearest source of drinking water to individual effluent collection facilities

Following the analysis of the situation of individual effluent collection facilities in rural households, it was found that most of them functioned properly in the last year, without major incidents. Thus, only 1.9% of households reported leaks, overflows or floods, while 96.1% indicated that the installations did not have such problems. This indicates that almost 2% of all on-site systems are not containing excreta and cannot be considered safely managed.

Most households, 84.6% (*n=280*), have their drinking water source located at a distance of up to 50 meters from the individual effluent collection facility (Figure 22). Although this proximity facilitates access to water, short distances can generate significant risks of contamination of the drinking water source. To prevent water contamination, which is a major danger to public health

6.1.4 Management and emptying of individual effluent storage facilities: practices, frequency and accessibility

The efficient management of individual effluent storage facilities is an essential element in ensuring a healthy environment and preventing soil and water contamination. This sub-chapter addresses the issues related to the use, emptying and maintenance of these installations, highlighting the frequency with which they are emptied, the methods used, and the accessibility and quality of emptying services. Also, the practices adopted in the case of non-functional or abandoned installations, as well as the ways of evacuating effluents, are analyzed in order to understand their impact on public health and the environment.

Regarding the presence of individual abandoned effluent collection facilities within households (Figure 24), the data show that approximately 34.9% (n = 270) of households report the existence of such closed or non-functional facilities. Most households, 60.3%, say they do not have abandoned

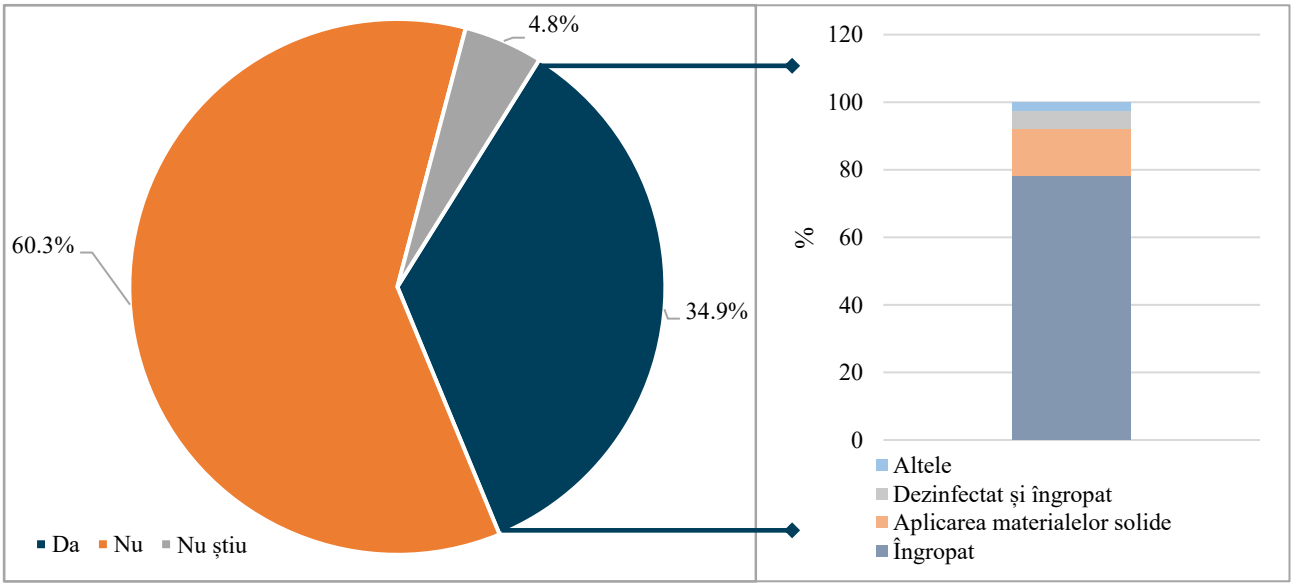

Figure 24. Share of households with individual wastewater storage facilities abandoned and burial methods applied

installations, while 4.8% do not know or cannot confirm the situation.

Of the 34.9% who said they have such buried facilities, when asked what method they applied

for burial, 78.1% said they covered them by burying. A lower percentage, of 14.1%, indicates closure with solid materials, and only 5.2% of the installations were disinfected and then buried. A small percentage of 2.6% did not perform any intervention at the closure.

The last time the individual effluent collection plant was filled varies significantly within the households analyzed. Thus, out of n = 774 households, 24.2% reported that the installation was filled in the last 1-2 years, while 10.2% indicated a period of 2-5 years. A percentage of 9.7% said that the last filling took place 5-10 years ago, and 14.1% claim that the installation has not been filled for more than 10 years. Notably, 37.7% of households say that the installation has never been filled, and 4.1% could not specify this information. These data reveal a diversity in the use and management of individual effluent collection facilities.

The data indicate that out of 482 households, when the individual effluent collection plant in households fills up, several management methods have been applied. Thus, 50.0% opted to dig a new pit, thus avoiding the emptying and maintenance of the existing installation, 42.5% of households emptied the installation and reused it, 3.3% did not take any action after filling the installation, which can lead to overflows, unpleasant odors and increased risk of infectious diseases.

For global monitoring, on-site sanitation systems that are contained and not emptied can be considered safely stored in-situ. Therefore for comparison with the global indicators of safely managed sanitation, 26% are considered to have emptied and 74% of respondents can be considered to have never emptied their on-site system which includes never filled, don't know as well as those that have filled but not emptied. Noting that this quesiton was asked to all respondents so includes bothimproved and unimproved sanitation facilities (i.e. pits without a slab/platform)

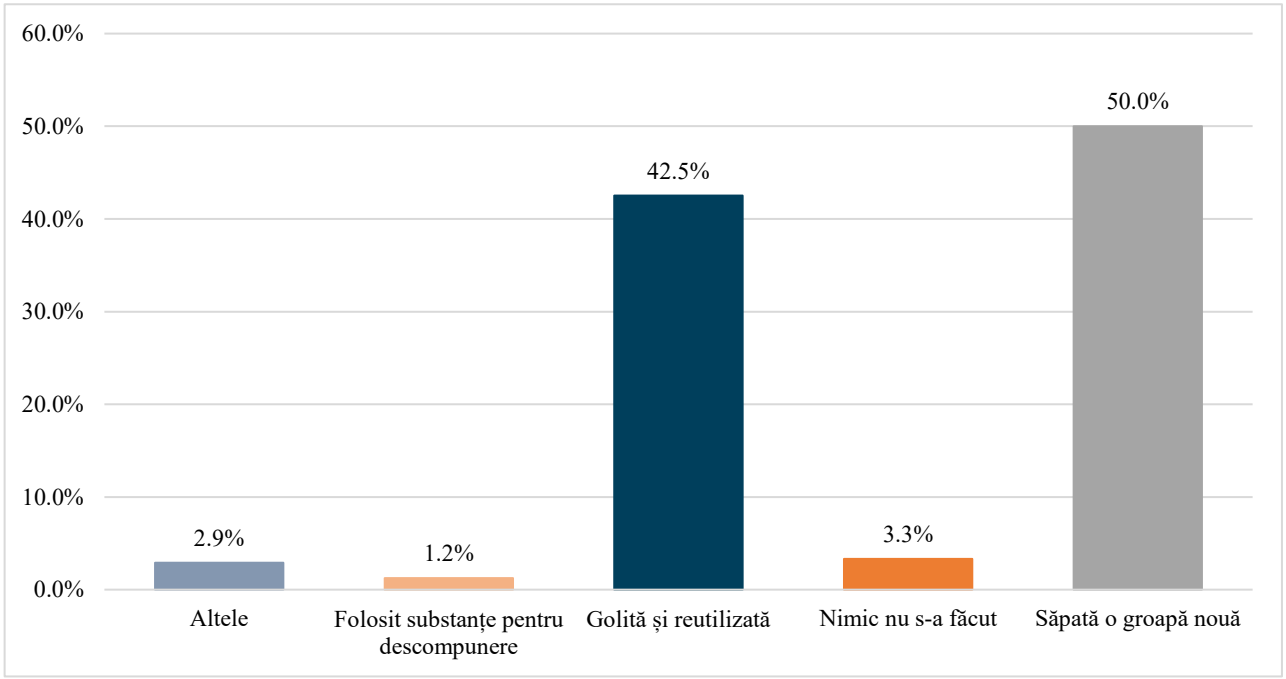

Figure 25. Ways to manage individual effluent storage facilities after filling

The diversity of management methods reflects both the variable level of information and the services available in the localities. To reduce risks, it is necessary to promote good maintenance and management practices for effluent collection facilities, as well as to support access to adequate effluent emptying and disposal services. This information highlights the need to implement appropriate and accessible practices for the maintenance of effluent collection facilities, as well as the importance of education and technical support for users, in order to reduce the negative impact on public health and the environment.

From households, which empty and reuse individual effluent collection facilities (*n=205*), the majority (86.3%) report accessing the services of specialised operators, which is an appropriate and recommended practice for the safe management of effluents (Figure 25). However, 2.4% discharge effluents through underground drainage into permeable pits and 4.0% discharge effluents to the surface. The discharge of effluent to the surface is considered not contained in the assessment of safely managed sanitation.

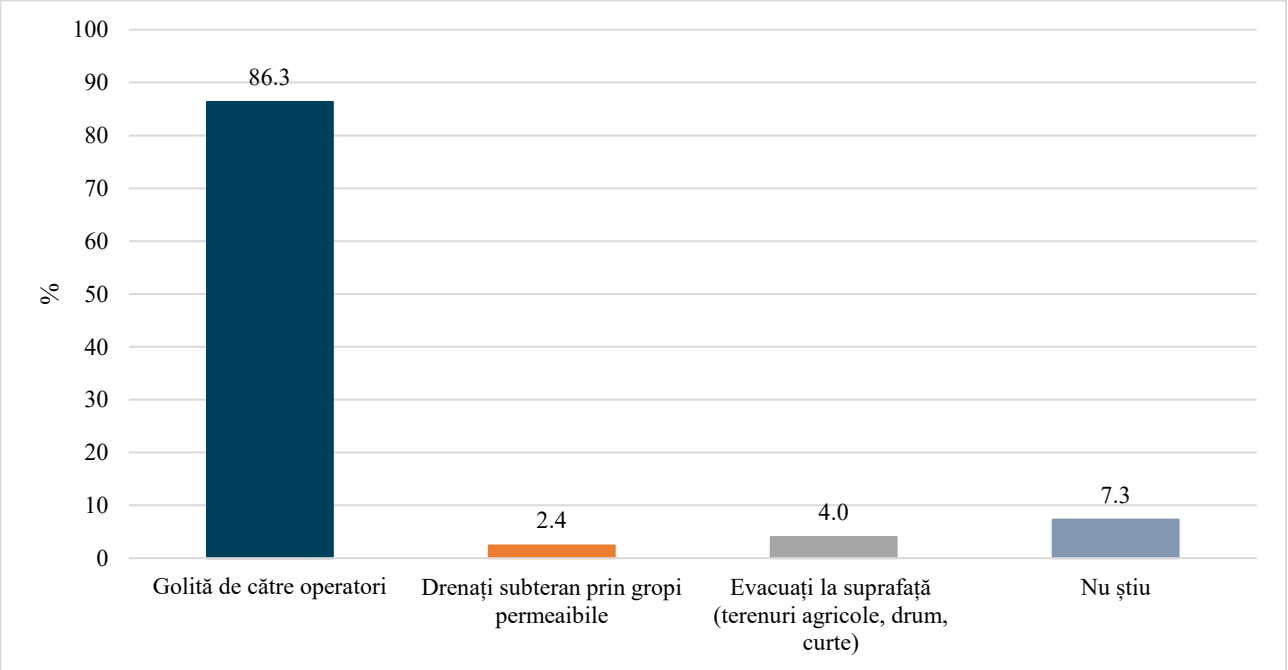

Figure 26. Ways of discharging effluents from individual storage facilities into households

These methods pose major risks of soil and water contamination, potentially impacting the health of local communities and ecosystems. The percentage of 7.3% who do not know the evacuation method indicates the need to improve information and supervision in the management of these facilities. The data highlight the importance of promoting safe effluent management and technical support for rural households to reduce pollution risks.

The data collected reveal that the emptying of individual effluent storage facilities in the 205 households is carried out predominantly by private suppliers (40%) and public companies (28.3%), which indicates a relatively high degree of professionalization of this service (Figure 26). However,

almost a fifth of households (19.5%) resort to their own solutions, emptying through household members, and another 8.3% use unqualified people from outside the household. The percentage of those who do not know who carried out the last emptying (3.9%) highlights a lack of information or involvement in the proper management of sanitary facilities. These practices can generate significant risks to human health in the absence of appropriate equipment and sanitary protection measures.

The majority of households (90.2%) reported that the individual effluent storage facility was easily accessible for emptying, 7.3% of the cases, the facilities were not easily accessible, and 2.4%

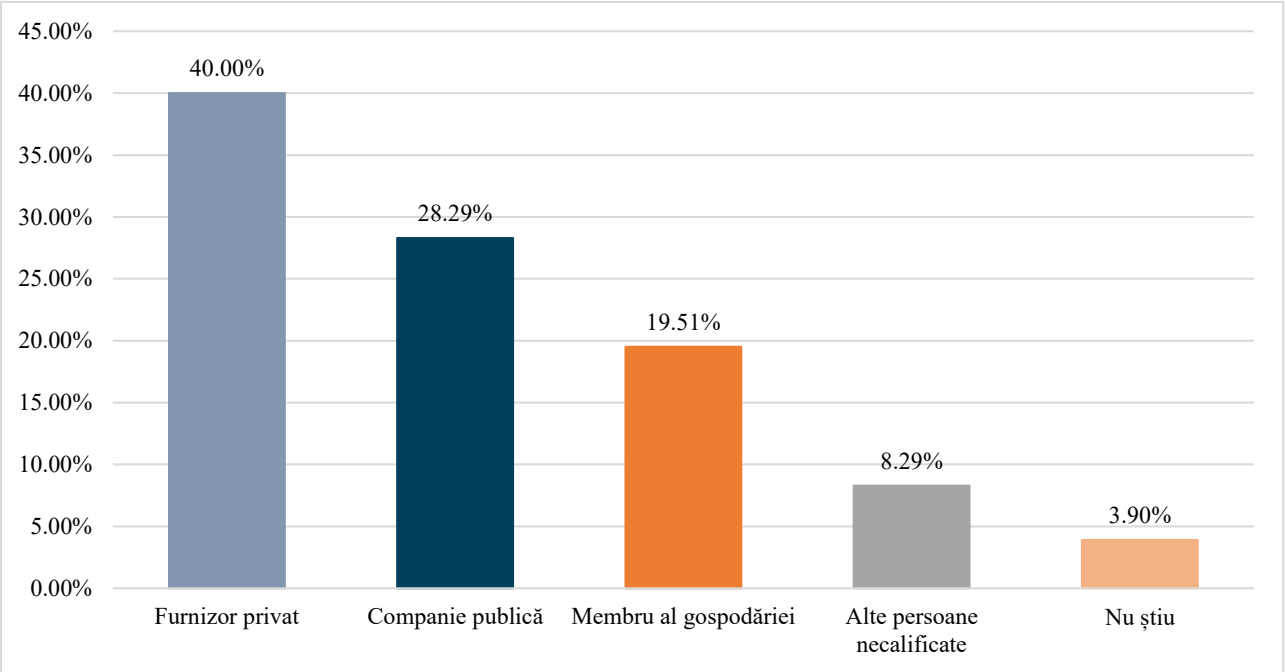

Figure 27. Actors involved in emptying individual effluent collection facilities in rural households

of respondents could not provide an answer. In 6.8% of households, it was necessary for a person to enter the individual effluent collection plant to empty it. Although the percentage is relatively low, this aspect implies a major risk to the health of the people involved. Human entry into such structures involves risks of exposure to pathogens, toxic gases and accidents, and stresses the importance of modernizing facilities, automating processes and involving specialized emptying services to ensure a safe sanitary environment.

The assessment of the accessibility of emptying services of individual sanitation facilities indicates a favorable level of availability and access to these services among households (n=205) (Fig. 32). About half of the respondents (43.4%) considered the service to be easily accessible, 42.4% rated it as having a moderate level of accessibility. Only 8.3% said that accessing emptying services is very easy, 5.9% consider that accessing these services is difficult or very difficult. These data suggest the existence of specific obstacles, possibly related to distance from service providers, lack of appropriate infrastructure or costs associated with travel.

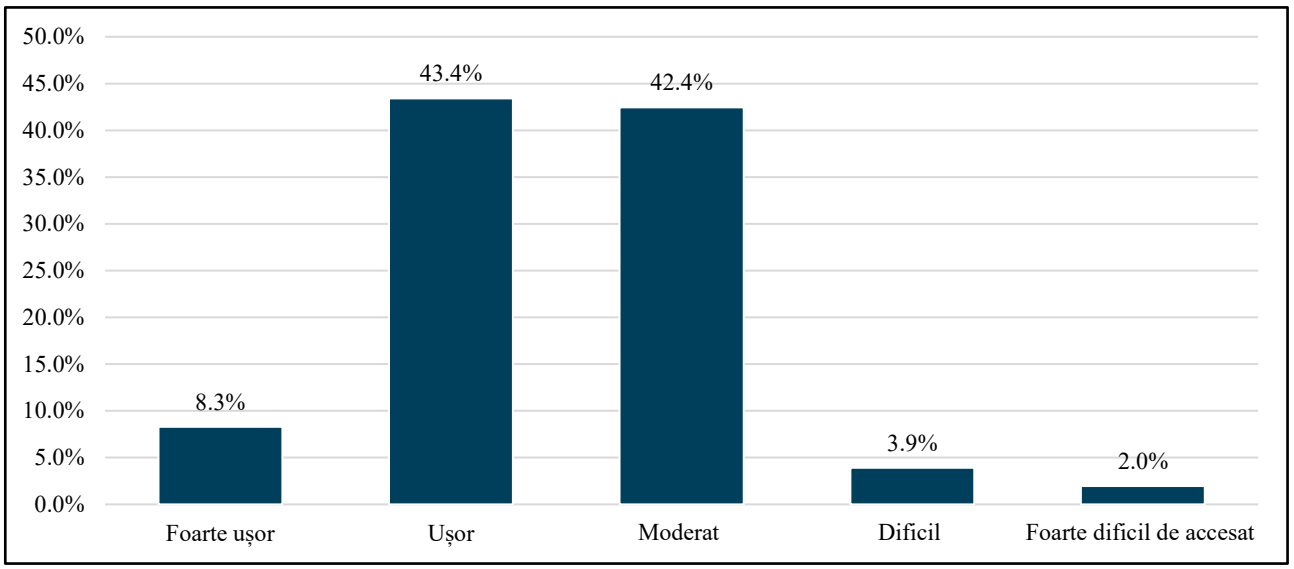

Figure 28. Households' perception of the accessibility (availability) of emptying services of individual effluent collection facilities

6.1.5 Transport and disposal of the contents of individual effluent collection plants

The transport and disposal of effluents from individual sanitation plants are critical steps in ensuring safe and standards-compliant management. This subsection analyzes the actors involved, the methods used, the safety of the transport and the final destination of effluent disposal, highlighting the efficiency and associated risks.

Of the 205 households, 86.8% answered that the effluents are transported to a place for disposal. A small percentage (5.9%) reported that transport was not carried out, which may raise questions about disposal practices at source or near the home, with potential contamination risks. Also, 7.3% of households could not provide a clear answer regarding transport and disposal.

Regarding the methods used to transport effluents after emptying individual sanitation facilities,

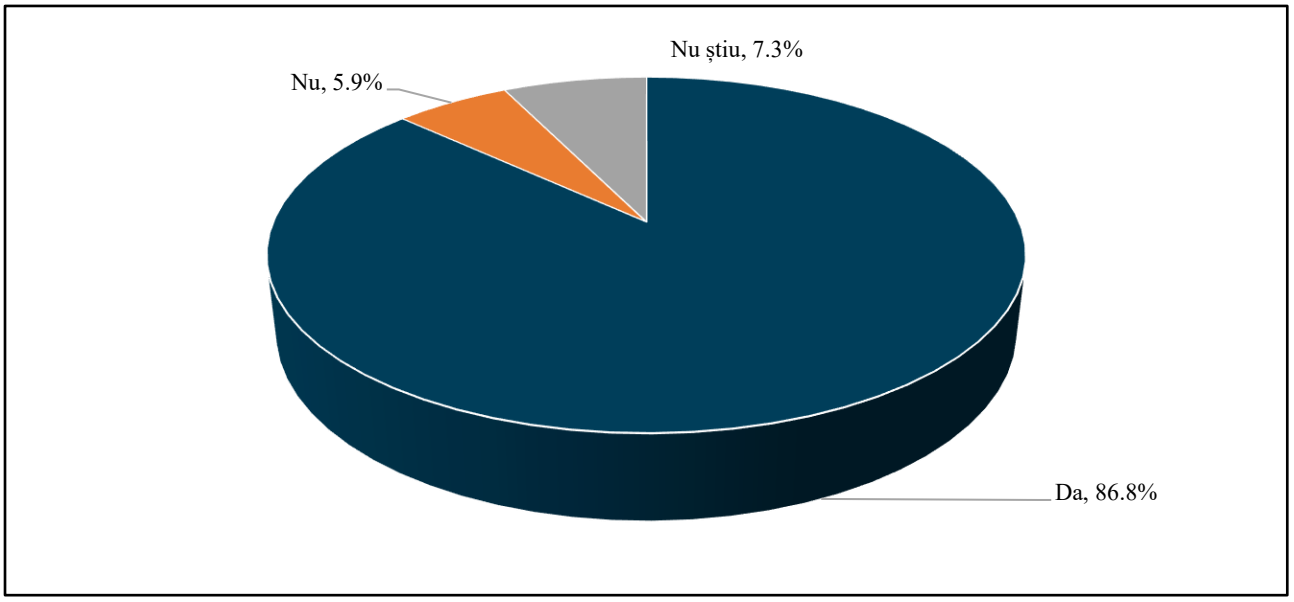

Figure 29. Proportion of households reporting effluent transport after emptying individual installations

the data reveal that 83.1% of the 205 households benefited from emptying services carried out with

specialized tanks, without leaks (Figure 29). However, 12.9% of the transports were carried out manually, a dangerous and inappropriate method, which increases the risk of exposure to pathogens and environmental contamination. Also, 2.8% of cases involve vehicles without pumping systems, suggesting improvised or partially mechanized practices, poorly regulated.

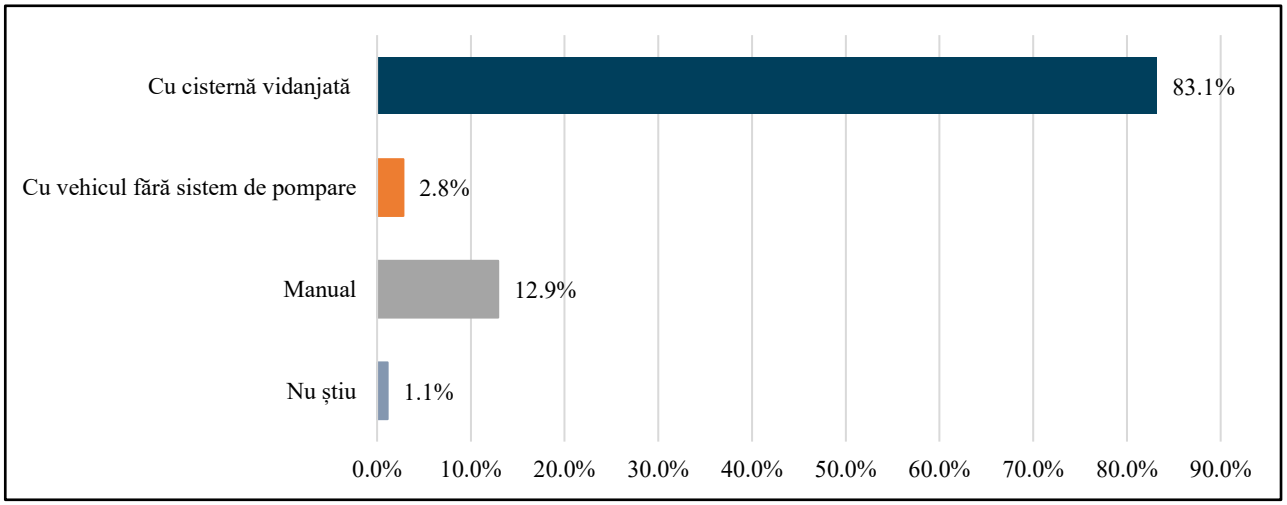

Figure 30. Ways of transporting effluents after emptying individual sanitation facilities

46.6% of households (*n=178*) stated that they did not know the location of the final discharge, which denotes a lack of transparency and information regarding the post-emptying route (Figure 30).

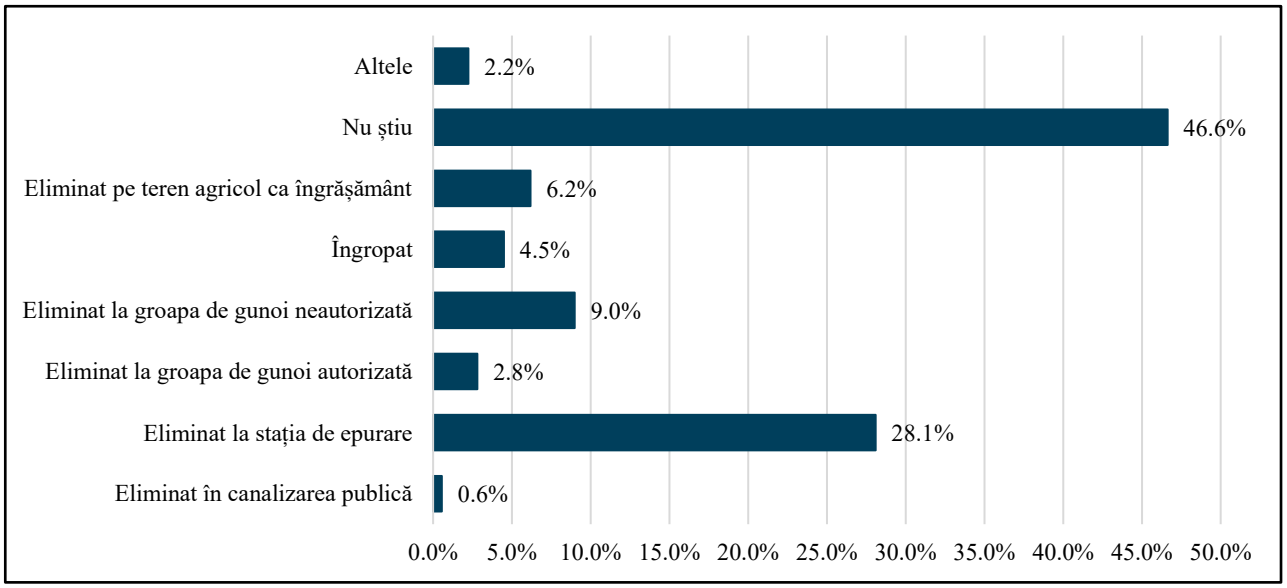

Figure 31. Place of disposal of the contents of the individual effluent collection plant after emptying and transport

Worryingly, 9% of the cases involve disposal in unauthorized landfills, and 6.2% mention the use as fertilizer on agricultural land, practices that can be major sources of pollution and health risk for the population, especially in the absence of adequate treatment of effluents. On the other hand, 28.1% of households report disposal at wastewater treatment plants, which indicates an important segment that follows the institutionalized effluent treatment circuit. Other practices, such as burial (4.5%) or disposal in authorised landfills (2.8%), are less common.

The analysis of the approximate distance between the household and the effluent disposal site highlights an essential logistical aspect in sustainable effluent management. The data show that more than half of the respondents (57.3%) report a distance of more than 50 km to the disposal site, generating accessibility problems and high costs. Also, only 26.4% of households are located within 10 km of the spill site, indicating an excessive centralization of facilities. Long distances can in practice lead to informal or illegal disposal solutions, such as dumping in uncontrolled environments, due to operational difficulties and the costs involved. In this context, it is essential to develop a decentralised network of treatment plants, as well as to improve the regulatory and monitoring framework.

6.1.6 Risk assessment conditional on the use of SIS in households

Based on a set of epidemiologically relevant questions, a risk score was constructed and the results were analysed against factors such as age, income, education level and occupational status. This analytical stage allows the highlighting of vulnerable groups and supports the development of specific intervention recommendations, depending on the profile of each household. The results obtained are presented in the following tables and figures.

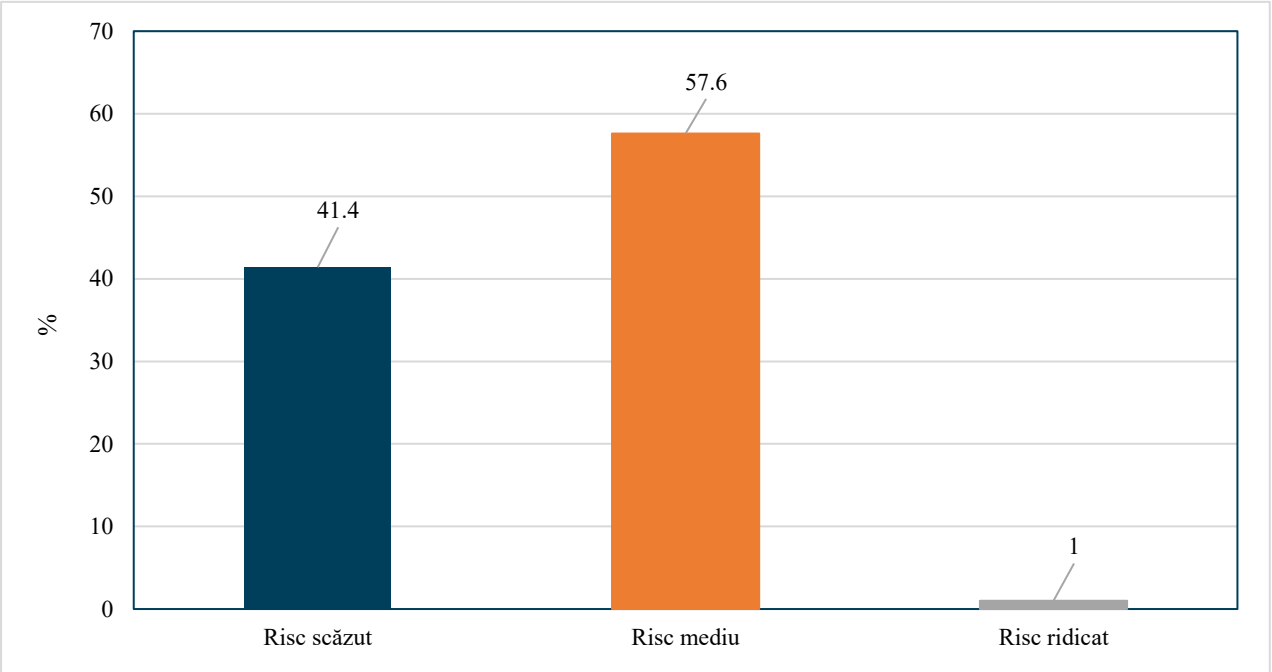

Figure 32. Distribution of households by levels of health risk associated with the use of individual sanitation systems

The analysis of the general distribution of the level of health risk (Figure 31) reveals that the majority of households in rural areas (57.6%) fall into the medium risk category, which suggests the existence of partially non-compliant sanitary practices and sanitation systems that, although functional, present significant vulnerabilities. These vulnerabilities may include, for example, the use of permeable septic tanks, the absence of sludge treatment mechanisms or the inadequate location of installations in relation to drinking water sources, the lack of infrastructure for controlled effluent

discharge, non-compliance with minimum sanitary protection distances. 41.4% of households were classified as low risk, indicating relatively good compliance with hygiene and liquid waste management norms. This proportion reflects the existence of a segment of the population that either has adequate technical resources or has adopted correct sanitation behaviours, which can provide a solid basis for the promotion of good practices at Community level. However, a small number of households (1%) classified as high risk is a wake-up call from a public health perspective.

The analysis of health risk by age (Figure 32) reveals significant differences between population categories, which highlights the impact of demographic factors on sanitation practices. The most vulnerable category is the elderly (over 65 years old), of which 66.1% fall into the medium risk area. This increased exposure can be explained by a combination of factors: age-related physical

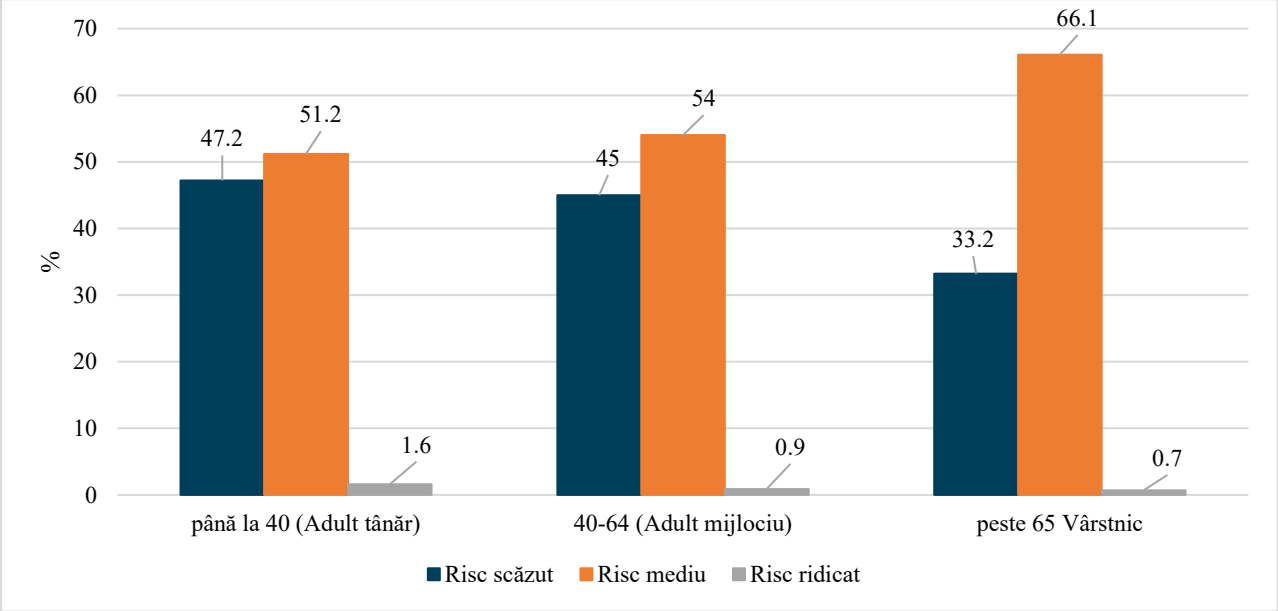

Figure 33. Distribution of health risk according to the age category of the population in the investigated households

limitations, low income, lack of access to family or community support. On the other hand, young adults (under 40 years of age) have the highest low risk share (47.2%), which suggests a better adaptation to hygiene and sanitation requirements. This behaviour can be correlated with higher levels of education, greater digitalisation, increased social mobility and better awareness of health risks. Middle-aged adults (40–64 years) occupy an intermediate position, with a relatively balanced risk distribution between the low and medium categories, suggesting a transition between the vulnerability of the elderly and the preventive behaviors of young people. These data support the need to integrate the principle of "age-sensitive sanitation" into public health policies, by adapting interventions to the specifics of each age group. In particular, it is justified to promote support programs for older people, including technical assistance, financial support and individualized counseling, thus contributing to reducing health risks and increasing equity in access to decent living conditions.

The health risk profile in relation to monthly income (Fig. 43) highlights the direct relationship

between the socio-economic status of the household and the level of health risk associated with the management of individual sanitation systems. Households with monthly incomes below 5000 lei are the most vulnerable category, registering the highest proportion of medium risk (72%) and 1.3% high risk. This exposure can be attributed to the lack of financial resources necessary for the implementation and maintenance of safe sanitary systems, as well as the impossibility of accessing specialized emptying, waterproofing or technical maintenance services of the installations.

As household income increases, a significant reduction in the level of risk is observed. For example, in the case of households with incomes between 10,001 and 15,000 lei, 65.3% are low risk, and only 1.3% fall into the high risk category, households with incomes over 15,000 lei per month do not register high risk at all, and 80.8% of them are included in the low risk area.

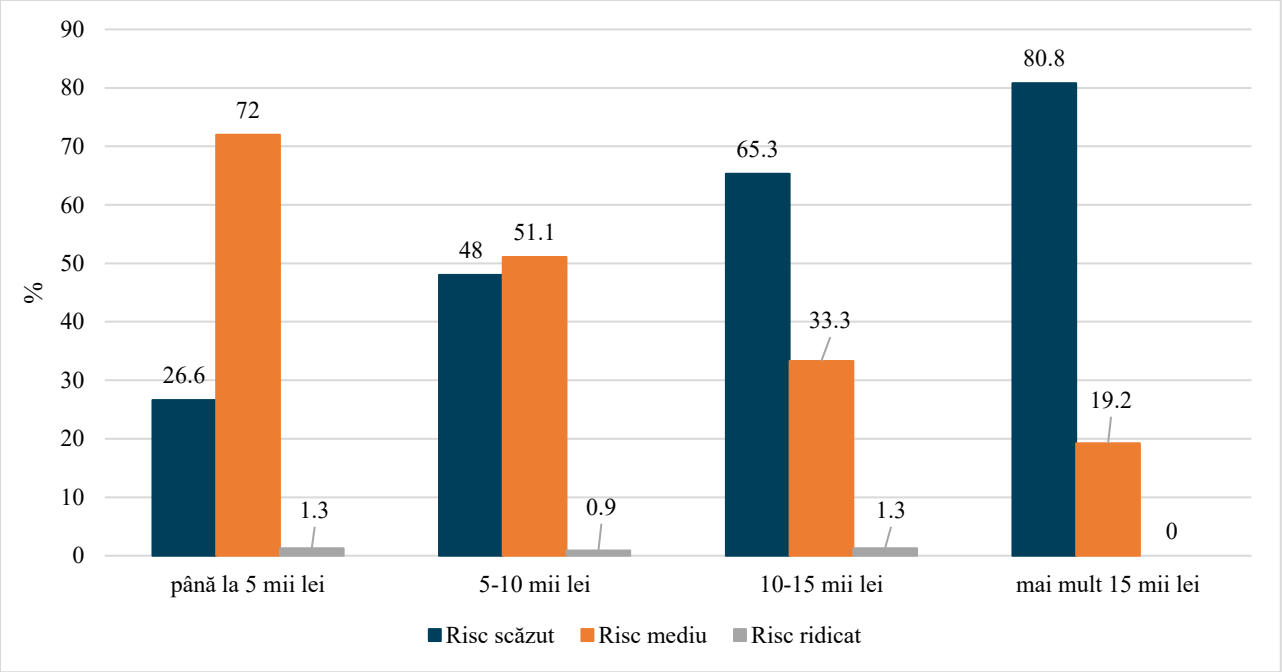

Figure 34. Health risk profile in relation to monthly household income

This distribution suggests that access to financial resources is a key determinant of households' ability to adopt compliant sanitary practices and avoid exposure to health and environmental risks.

The analysis of the health risk according to the level of education (Fig. 44) confirms its decisive role in shaping sanitation and hygiene behaviors. People without professional education register the highest share in the medium risk category (70.8%), and 1.5% of them are in the high risk category, which reflects the health vulnerability associated with the lack of formal training. This risk profile can be explained by limited access to information about health risks, lack of knowledge of minimum

hygiene standards, or lack of necessary skills maintenance of safe plumbing.

In contrast, households in which at least one member has a higher education have a favorable health profile, with 63.4% of cases classified in the low-risk category and without any high-risk cases. This significant difference underlines the clear link between the level of training and the ability to understand and apply measures to prevent environmental contamination or exposure to pathogens.

The data presented justify the need to implement educational campaigns adapted to groups with

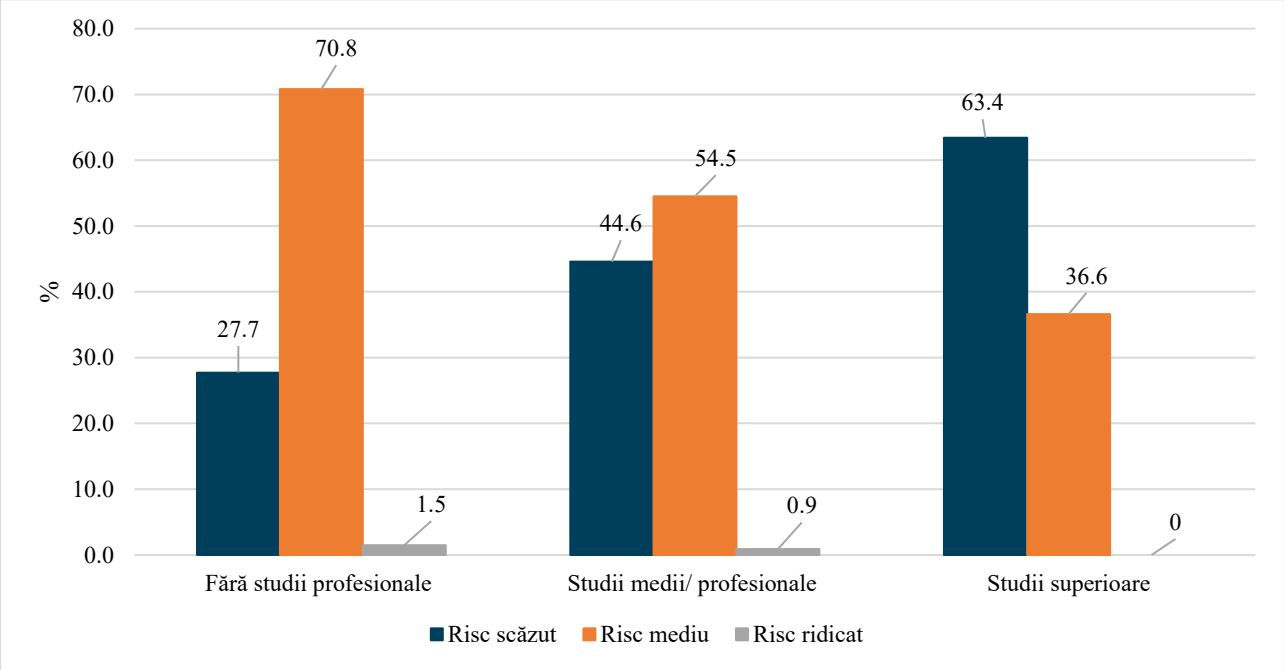

Figure 35. Distribution of health risk according to the level of education of the population in households

a low level of education, which convey clear, accessible and culturally appropriate messages about the risks associated with inadequate sanitation. It is also important to integrate health education into community programmes, especially in rural areas, where educational and infrastructure gaps overlap and amplify the risk to public health.

The distribution of the level of health risk according to occupational status (Figure 35) shows that households in which at least one member is officially employed have the most favorable risk profile, with 60.1% in the low-risk area and 0% in the high-risk area. This result can be explained by

stable access to financial resources, higher levels of education, but also through contact more

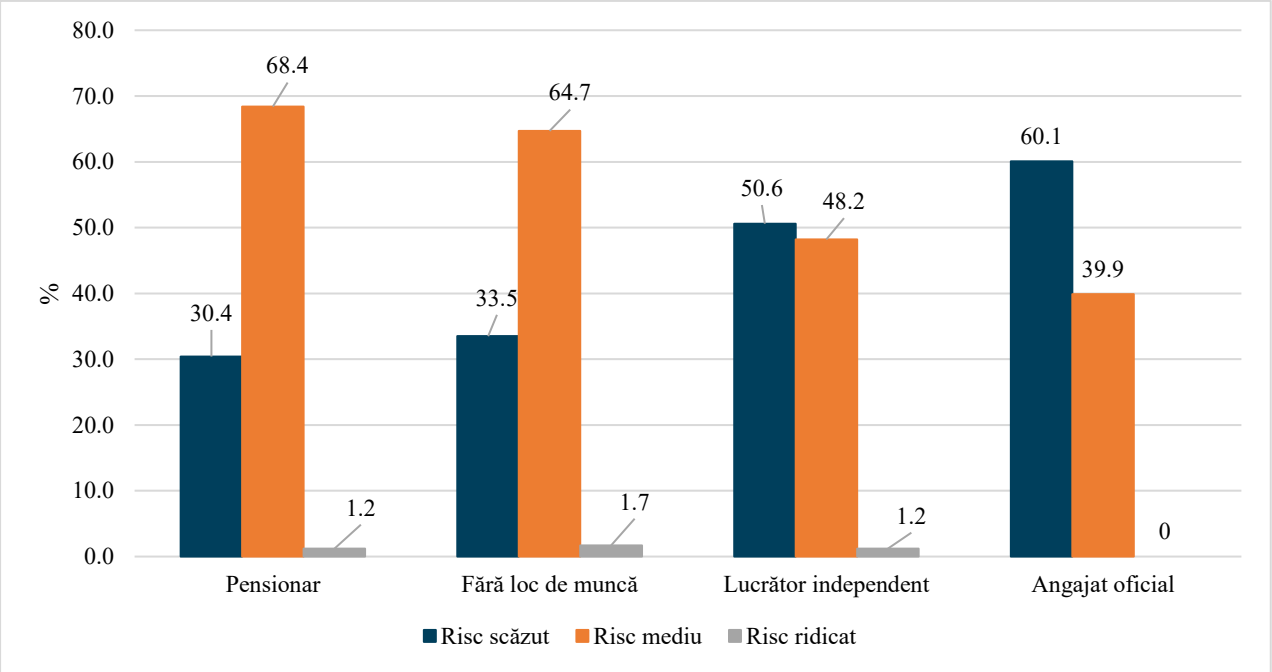

Figure 36. The level of health risk in relation to the occupational status of household members

frequently with sources of information on hygiene and health rules.

On the other hand, households where people are economically inactive – either retired or unemployed – have the highest levels of medium risk and also a constant presence of high risk. For example, 68.4% of pensioners and 64.7% of unemployed people are classified as medium risk, and between 1.2% and 1.7% as high risk. In the case of these categories, health vulnerability is accentuated by material constraints, reduced mobility and, sometimes, lack of institutional or family support. Intermediaries between these two categories are the self-employed, who, although better positioned than unemployed people, have a mixed profile: 50.6% low risk and 1.2% high risk, which indicates a need to strengthen access to support and training services.

These differences reflect systemic inequities in access to adequate sanitary conditions and require targeted social interventions, especially for population categories outside the formal occupational circuit. Community public health programmes should include specific components of technical support, information and subsidies for economically vulnerable people in order to reduce the risk of contamination, disease and environmental degradation.

6.1.7 Assessment of safely managed on-site sanitation in households

To track sanitation progress, particularly against the Sustainable Development Goal target 6.2 on safely managed sanitation, national household survey data are commonly used. These data can inform whether households use basic sanitation services and inform some aspects of the safe management of excreta. The WHO and UNICEF Joint Monitoring Programme for water supply and

sanitation have defined indicators for consistent and comparable monitoring globally, including the sanitation service ladder. The indicators used to assess safely managed sanitation differ slightly from the above Risk Assessment.

Table 5. Sanitation service ladder

Sanitation service ladder	n (830)	Proportion of respondents	
Open defecation	1	0%	Households without a toilet (Q: 2.1)
Unimproved	303	36%	Households using bucket toilet, toilet with solid waste or dry toilet without slab. (Q: 2.1, 3.1)
Improved	527	63%	Improved toilets hygienically separate human excreta from human contact. (Q: 1.4, 2.1, 3.1)
Limited	6	1%	Improved toilets that are shared (Q 2.2)
At least Basic	521	63%	Improve toilets that are not shared (Q 2.2)
Basic sewer[2]	24	3%	Sanitation sewer sanitation – assume all sewer connections are basic without further data
Basic OSS (not safely managed)	58	7%	Basic on-site sanitation (septic tanks, pits) that are not contained, or contained emptied but not delivered to treatment
Basic OSS (contained, emptied and delivered to off-site treatment but not treatead[1])	83	10%	Basic on-site sanitation that are emptied and delivered to treatment but no data if adequately treated
Safely managed – contained and stored in-situ	355	43%	Improved on-site sanitation, not shared, contained and not emptied.

Notes: 1. Data not available on the type of treatment, so assumption is that these have not received adequate treatment (solid and liquid treatment, or at least secondary wastewater treatment). If these data are available and indicates adequate treatment, these systems can be considered safely managed services.
2. Without data on sewer conveyance and treatment, sewer connections connot be classified as safely managed.

Table 6. – Sanitaiton service chain steps and ratios

Service step	% of all respondents	Ratio	Notes
Improved OSS	61%	65% of all OSS	Excludes pit latrines without slab, buckets
At least basic OSS	60%	99% of improved OSS	Improved sanitation facilities that are not shared
Contained	59%	97% of improved OSS	Improved OSS that do not release excreta to surface (no flooding, leaks, effluent discharged to surface)
Not emptied	68%	74% of all OSS	All OSS (inlcuding unimproved) that have never filled or filled but not emptied
Emptied	25%	26% of all OSS	All OSS (including unimproved) that have been emptied
Transported	18%	72% of emptied OSS	Of emptied, proportion that are transported to treatment or other authorised disposal site (inlcuding authorised landfill, burial, sewer)
Potentially Treated[1]	16%	65% of emptied OSS	Of emptied, proportion that are transported to a treatment plant

Notes: 1 – Potentially treated as only have data that they are delivered to a treatment but not whether the faecal sludge

treatment provides solid and liquid treatment or at least secondary treatment if delivered to a wastewater treatment plant.

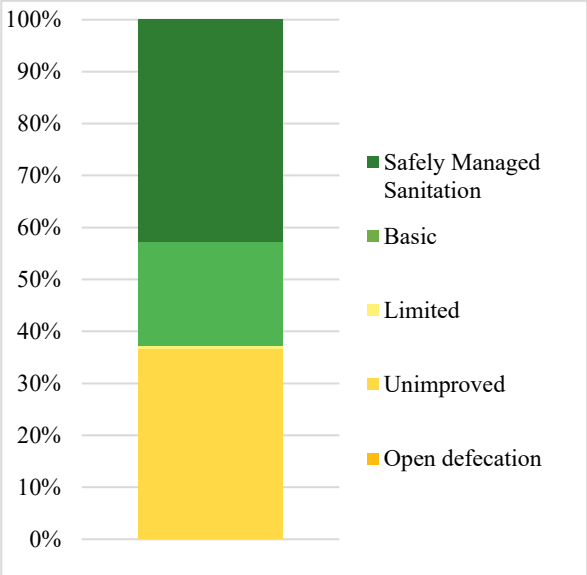

Figure 37. Sanitation ladder from SMOSS-monitoring in rural Moldova

6.2 Assessment of the level of sanitation in early education institutions

The assessment of the level of sanitation in early childhood education institutions emphasizes the importance of ensuring optimal hygienic conditions for the health and harmonious development of children, a category particularly vulnerable to the negative effects of poor hygiene. In rural areas, limitations in health infrastructure can increase the risk of exposure to communicable diseases and contamination. This section reviews the current state of sanitary facilities and hygiene practices in the EIT, focusing on access to functional toilets, the availability of handwashing points and methods of maintaining cleanliness, including the effective management of sanitation systems.

6.2.1 EIT background and health infrastructure

The study included all early education institutions in the selected localities, a total of 26 IETs, attended by 1744 children. The average number of children enrolled in each institution is 67, ranging from a minimum of 13 to a maximum of 193 children. Of the total number of children, the average of boys is 32 (minimum 4, maximum 115), and the average of girls is 35 (minimum 9, maximum 78). The distribution by age groups shows that, on average, 11 children are under 3 years old (minimum 0, maximum 37), and 26 children are between 5 and 7 years old (minimum 0, maximum 64). Also, the total number of children with physical disabilities enrolled in these institutions is 6. It is important to note that, in rural areas, the number of children is decreasing, a trend determined by factors such as migration, difficult socio-economic conditions and declining birth rates. This decrease in children often implies less attention paid to the endowment of educational infrastructure, including access to and quality of health systems within the EIT. The lack of a sufficient number of children can affect the prioritization of investments and the proper maintenance of facilities, generating risks for the

health and comfort of children.

These data provide a clear picture of the demographic composition and dynamics that characterize early childhood education institutions in the selected rural areas, providing an essential context for understanding their specific operating conditions and needs.

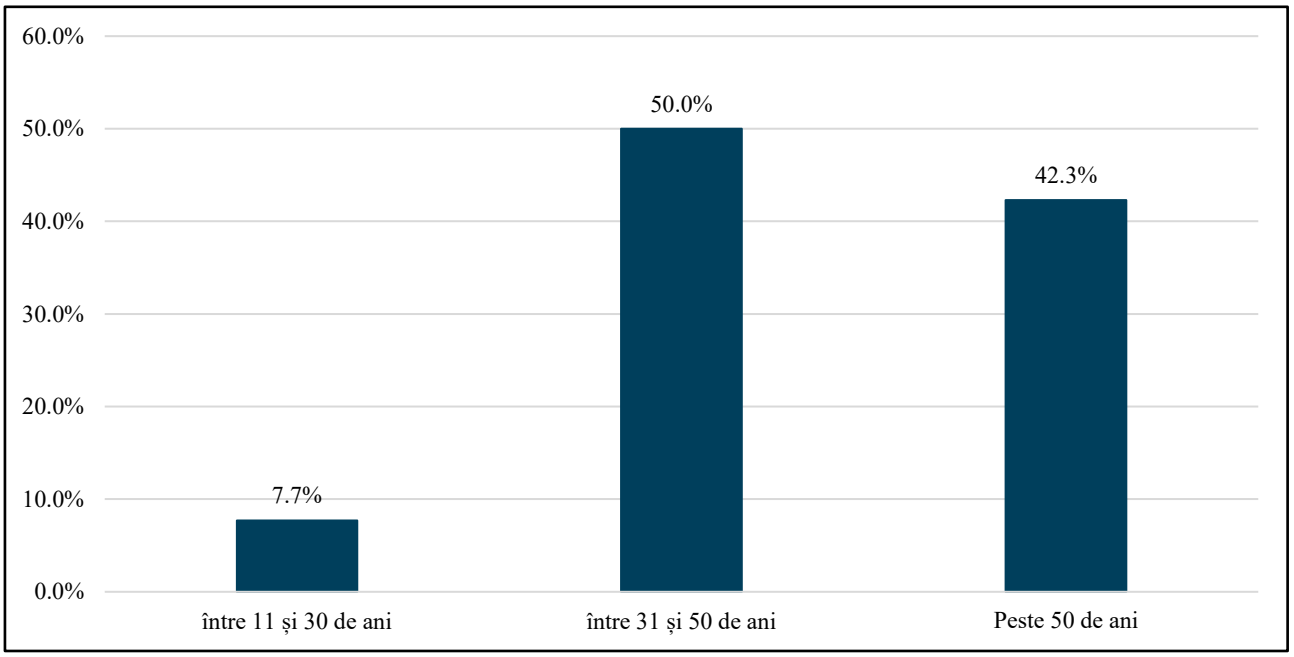

Figure 38. Percentage distribution of the age of the buildings in which the EIT operates

The age of the buildings in which the EIT operates (Figure 36) varies significantly, 7.7% represent buildings built in the last three decades, respectively between 11 and 30 years, 50% are between 31 and 50 years old, and an important proportion, 42.3%, is made up of buildings over 50 years old. The age of the buildings can compromise the quality of the educational environment and the sanitary conditions, essential aspects especially for preschool children.

Only about a quarter (26.9%) of the EITs assessed are connected to a public sewerage system, while the majority (73.1%) do not yet benefit from this facility (Table 4). Regarding the availability of a public system to which they can connect, all institutions not connected to the public sewerage system (100%) report that it is not currently available.

Table 7. EITs connected to the public sewerage system and the presence of staff responsible for managing sanitation systems

Name	Yes (%)	No (%)
Connected to a public sewerage system	26,9	73,1
Public sewerage system available for connection	0	100
Person responsible for the maintenance of water and sanitation systems	61,5	38,5

On the other hand, just over half (61.5%) of kindergartens have a person responsible for the

maintenance of sanitation systems.

6.2.2 Features of the sanitary infrastructure in the EIT: type, organization and conditions of use of toilets

All kindergartens included in the study have functional toilets, ensuring a basic level of sanitary infrastructure. In 76.9% of the ETIs analyzed, the toilets are separated for children and staff. However, in 23.1% of cases, this delimitation is missing, which can create discomfort and compromise hygiene. As for the sanitary facilities for kindergarten staff, the situation is relatively good, but not without drawbacks. Thus, 85.0% of teachers and employees have access to water toilets, but 15.0% use dry toilets, without a water supply system, usually equipped with a toilet plate.



The evaluation of the health infrastructure in the EIT included key indicators on the adaptation and equity of the use of facilities, especially for young children and gender separation (Table 5). The data indicate notable shortcomings: only 19.2% of the ETIs have separate toilets for girls and boys, while 80.8% do not ensure this demarcation. This can affect children's psychological comfort and contravenes basic norms regarding privacy in educational spaces. The lack of separation reflects either space limitations or a neglect of the importance of this aspect in the design of toilets.

Table 8. Criteria of equity and adaptation of sanitary facilities in the EIT

Criteria evaluated	Yes (%)	No (%)
Presence of separate toilets for girls and boys	19,2%	80,8%
Presence of toilets adapted for young children	53,8%	46,2%
Presence of the toilet accessible to younger children	62,5%	37,5%

Regarding the adaptation of toilets for young children, only 53.8% of the EITs have appropriate facilities such as small dimensions, ergonomic coils or adapted heights, while 46.2% do not have such facilities. This lack can limit children's autonomy in using the toilet and increase the risk of accidents or exposure to unsafe conditions. However, 62.5% of the units reported the existence of accessible toilets for younger children (in terms of proximity, ease of access, lack of physical barriers), which is a positive indicator, although 37.5% of kindergartens still remain unprepared from

this point of view.

The assessment of hygiene conditions included several key indicators: the availability of toilet paper, the quality of the materials from which the toilet seats are made, ventilation, daily maintenance, as well as access to personal hygiene products.

The results show a relatively favourable situation, especially in terms of general hygiene and daily practices (Table 6). Thus, in 100% of the institutions it was found that the toilets are properly maintained, the chairs or sanitary platforms are made of easy-to-clean materials, and the children have access to water and soap for hand washing. Also, all kindergartens report that handwashing after using the toilet is a respected practice.

Table 9. Hygiene and maintenance conditions in the toilets of the IET

Hygiene and maintenance criteria	Da (%)	No (%)
Presence of toilet paper	84%	16%
Sanitary chairs/platforms are made of easy-to-clean materials	100%	0%
The presence of natural ventilation in sanitary spaces	88%	12%
The toilets are maintained in proper hygienic conditions	100%	0%
Access to soap and water in toilets	100%	0%
Children wash their hands after using the toilet	100%	0%

However, there are some partial shortcomings. In about 16% of cases, toilet paper is not constantly available, and 12% of institutions do not have adequate natural ventilation in toilets.

According to the data, in 69.2% of the EITs, cleaning activities are recorded and signed in a dedicated register, which denotes a high level of accountability and traceability of sanitation actions. On the other hand, in 15.4% of cases, these activities are not recorded at all, which indicates the lack of basic procedures for hygiene control. In another 15.4% of institutions, registers are either outdated or incomplete, without signatures, which significantly reduces their value as a monitoring and internal audit tool.

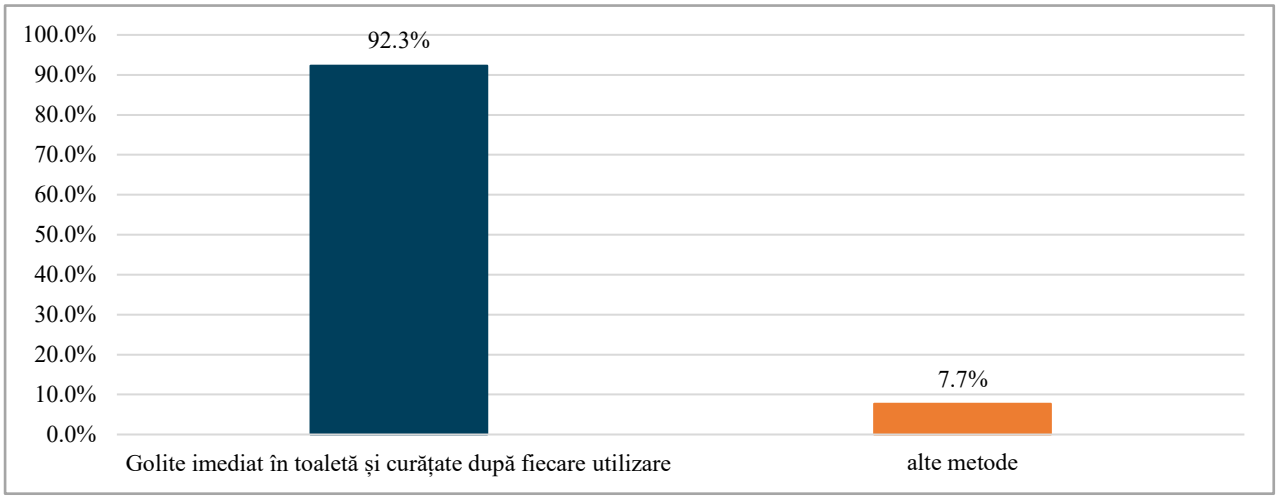

Figure 39. Method of disposing of the contents of potties used by children (%)

An essential component in ensuring proper hygiene in the EITs hosting young children is the way to manage the potties used in the process of learning toilet skills. According to the data collected in the study, 92.3% of the included kindergartens immediately flush the contents of the potties into the toilet, followed by cleaning them after each use (Figure 37). However, in 7.7% of cases, alternative methods of evacuation were reported, without being explicitly detailed.

The presence of pit latrines located in the courtyard of kindergartens is reported by 26.9% of the investigated institutions. These facilities are mainly used by kindergarten staff, and in some cases also by children in older groups, especially in situations where indoor toilets are insufficient or temporarily non-functional. A positive aspect noted in the study is the fact that latrines are not accessible to people outside the institution.

In terms of the level of use, the data collected indicates an average of about 20 users per day, with notable variations between institutions – from 0 to 65 people. This degree of use is considered relatively moderate and can be managed efficiently, provided that a strict cleaning, sanitation and maintenance schedule is followed.

According to the data, in 42.9% of the EITs with outdoor latrines, they are located at a distance of 15–24 meters from the main building, and in another 42.9%, the distance increases to 25–34 meters (Figure 47). Only 14.3% of the institutions report the existence of such latrines located closer, 5–14 meters from the educational spaces.

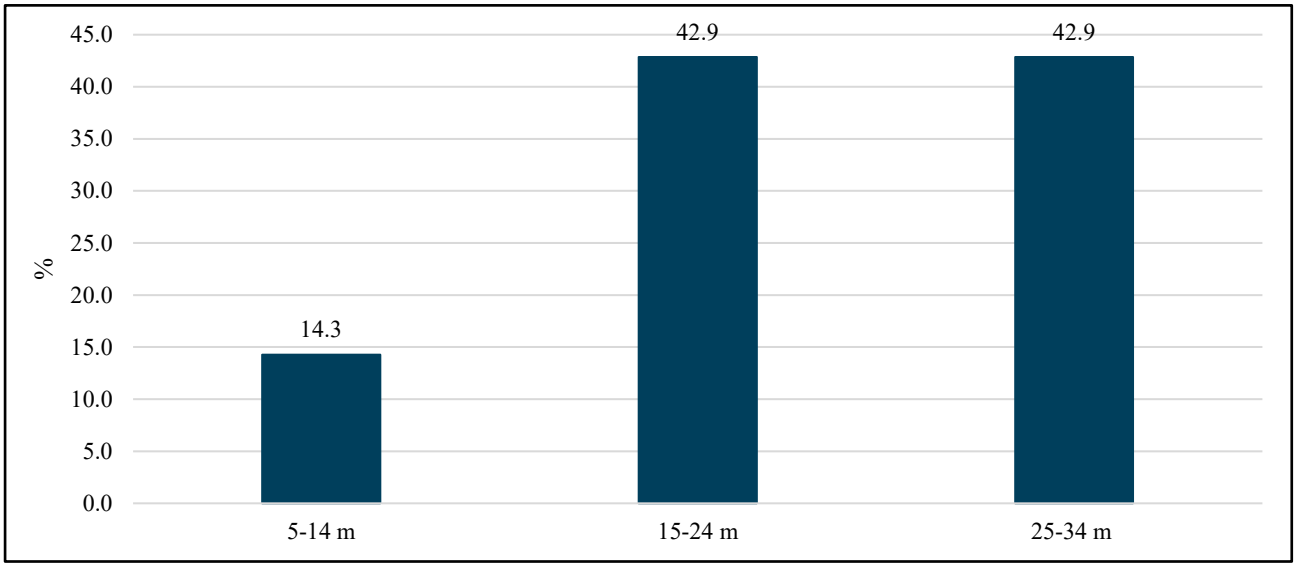

Figure 40. Distance to the pit latrine in the IET courtyard

According to the data in Table 8, in 85.7% of the evaluated institutions that have such facilities, the walls and doors of the latrines are in good condition, functional and intact. However, 14.3% of kindergartens report structural deficiencies, which can compromise users' privacy and protection from weather conditions.

Table 10. The sanitary status of the pit latrines in the IET courtyard

Criteria	Yes (%)	No (%)
The walls and/or door are in good condition and functional	85,7%	14,3%
The toilet is clean (general visual evaluation)	57,1%	42,9%
The toilet bowl is clean	100%	0%

In terms of general hygiene, only 57.1% of latrines are considered well maintained, while 42.9% show obvious signs of negligence in cleanliness.

A positive result is noted in terms of the hygiene of the toilet bowl itself (platform or plate), where 100% of the latrines were identified as clean, without the presence of remains of hygienic materials (toilet paper, fecal masses, etc.), indicating a minimum acceptable maintenance of the direct contact area.

In the case of the EITs that have additional latrine-type toilets with a pit located in the yard, the data indicate a significant lack of handwashing points in the immediate vicinity. Thus, in 28.6% of cases, there is no dedicated place for hand washing near the latrine. In the other 71.4% of institutions, there is a tap located outside the toilet, but at a distance of more than 5 meters, which reduces the likelihood of regular use by children.

The analysis of the situation of early education institutions in the studied localities highlights both positive aspects and significant deficiencies in health management.

6.2.3 Information on effluent collection and management in the EIT

According to the data collected (Table 9), most institutions have individual facilities for effluent management, the most common being impermeable septic tanks (38.5%), followed by airtight storage tanks (15.4%) and permeable septic tanks (15.4%). At the same time, 11.5% of kindergartens reported the existence of a small wastewater treatment plant, a modern solution, but less common in rural areas.

Table 11. Type of effluent collection and storage facility used by the EIT

Type of collection/storage facility	Percentage (%)
No individual collection system	7,7%
Waterproof Septic Tank	38,5%
Permeable septic tank	15,4%
Permeable pit (without concrete ring)	7,7%
Gropi duble waterproof	3,8%
Storage tank (airtight, no drain)	15,4%
Small wastewater treatment plant	11,5%

A small percentage of institutions use systems, such as permeable pits without concrete ring (7.7%) or double impermeable pits (3.8%). It should be noted that 7.7% of the EITs do not have an individual effluent collection facility at all, which implies a major risk of pollution and requires urgent interventions to ensure minimum sanitary conditions.



The age of the effluent collection and storage facilities is an important indicator of the technical and functional condition of the sanitary systems in rural kindergartens. According to the data, 19.2% of the installations are over 40 years old, and another 11.5% have been used for 30 to 40 years. In addition, 15.4% of the installations were installed 10 to 20 years ago, and a similar percentage, of 19.2%, fall into the category of installations older than 10 years, without a precise period specified.

It is important to mention that a significant percentage, 26.9%, of respondents do not know

the age of the individual collection facility, which indicates a possible lack of systematic monitoring and maintenance.

Ensuring the proper protection and delimitation of the place of storage or discharge of effluents is essential for preventing unauthorized access, reducing the risk of contamination and maintaining hygienic-sanitary conditions within kindergartens. According to the data, only a little over half of the kindergartens (52.0%) have a protected and fenced space, while almost half (48.0%) have not taken measures to physically delimit this area.

Monitoring the filling of individual effluent collection plants is essential. According to the study (figure 40), only 3.8% of the kindergartens identified that the pit or pit was almost full, in 26.9% the installation was half empty, and in 23.1% cases it was more than half-empty, signalling a relatively

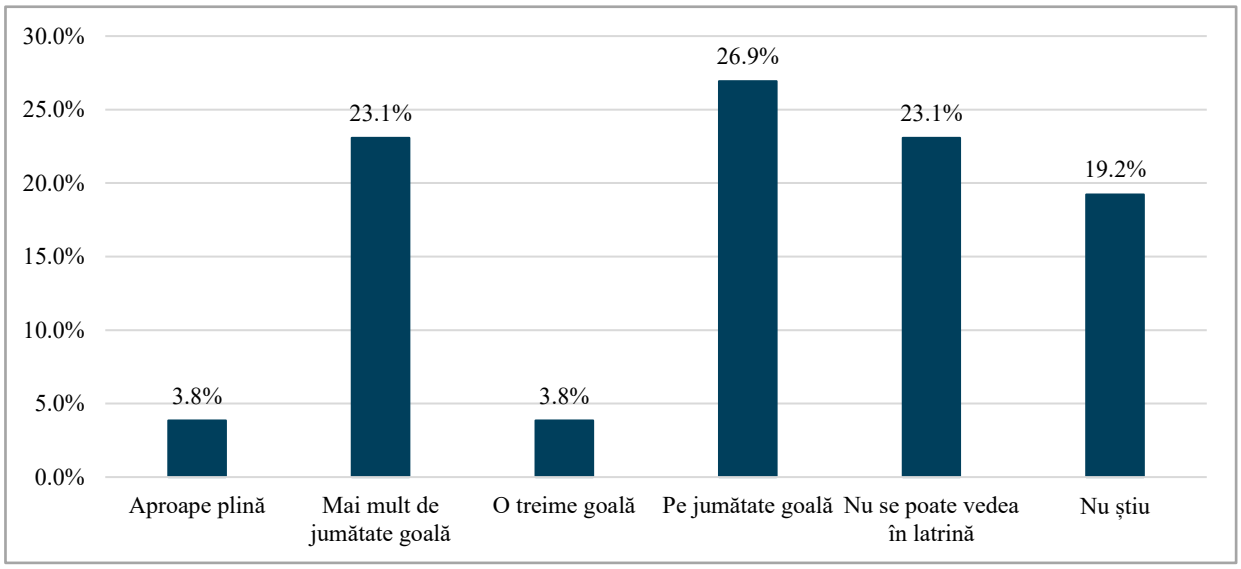

Figure 41. Degree of filling of collection pits or pits in rural kindergartens

stable utilisation of available capacity.

According to the study, 16.7% of the EITs reported incidents such as leaks, overflows or floods in the last year, (Figure 40), 75.0% of respondents said they had not experienced such incidents, 8.3%

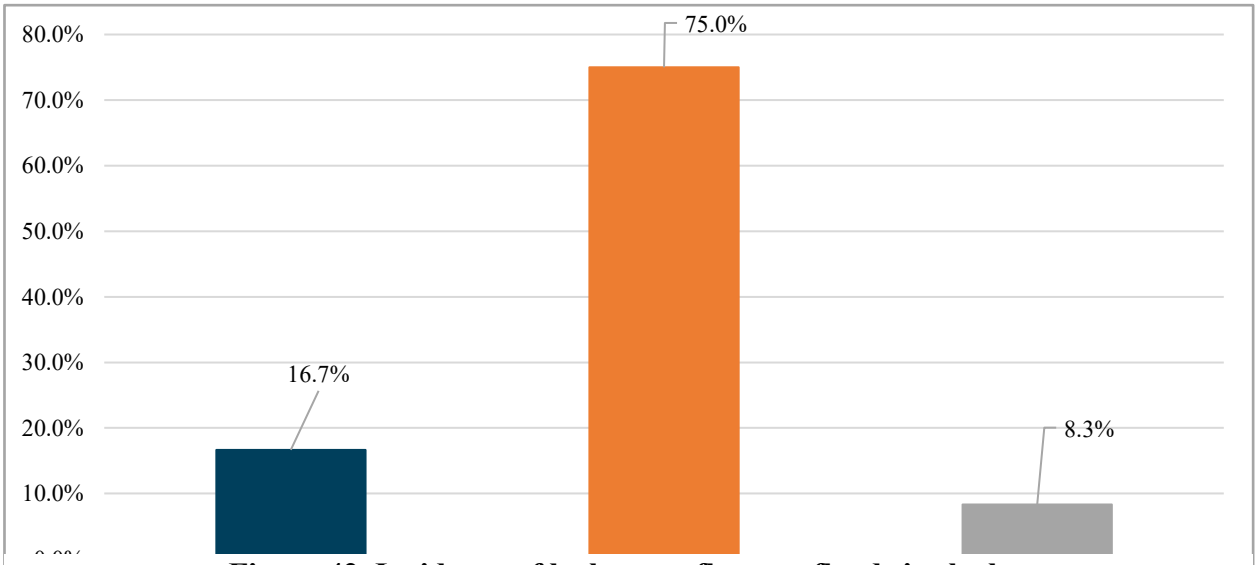

Figure 42. Incidence of leaks, overflows or floods in the last year

mentioned the option "not applicable", which corresponds to situations where the institution does not have an individual collection facility or does not use such a system.

The presence of incidents in more than one out of six institutions analyzed signals the need for technical interventions and a more rigorous monitoring and periodic maintenance system.

6.2.4 Emptying and maintenance practices of individual effluent collection facilities in the EIT

The presence of individual sanitation systems that are no longer in use, but have not been properly disposed of or disinfected, can pose a significant risk to public health, especially if these structures are accessible to children or are not well maintained. These abandoned installations can become sources of unpleasant odours, outbreaks of infection or even physical dangers (e.g. collapses, accidents).

According to the data collected in the study, 30.8% of the early education institutions investigated reported the presence of abandoned individual sanitation systems, while 69.2% did not report such cases. This relatively high percentage of unused installations highlights the need for assessment measures and, where appropriate, for the controlled and safe closure of these facilities.

Most early education institutions (69.23%) reported that they do not have any abandoned individual health system on the territory, which reflects a favorable situation from the perspective of potential risks to public health and children's safety. Among the EITs that reported the presence of abandoned individual sanitation facilities, 37.5% mentioned that they were closed by covering them with solid material, and an equivalent percentage indicated the use of a more sanitary-appropriate method: disinfection of the effluent followed by burial.

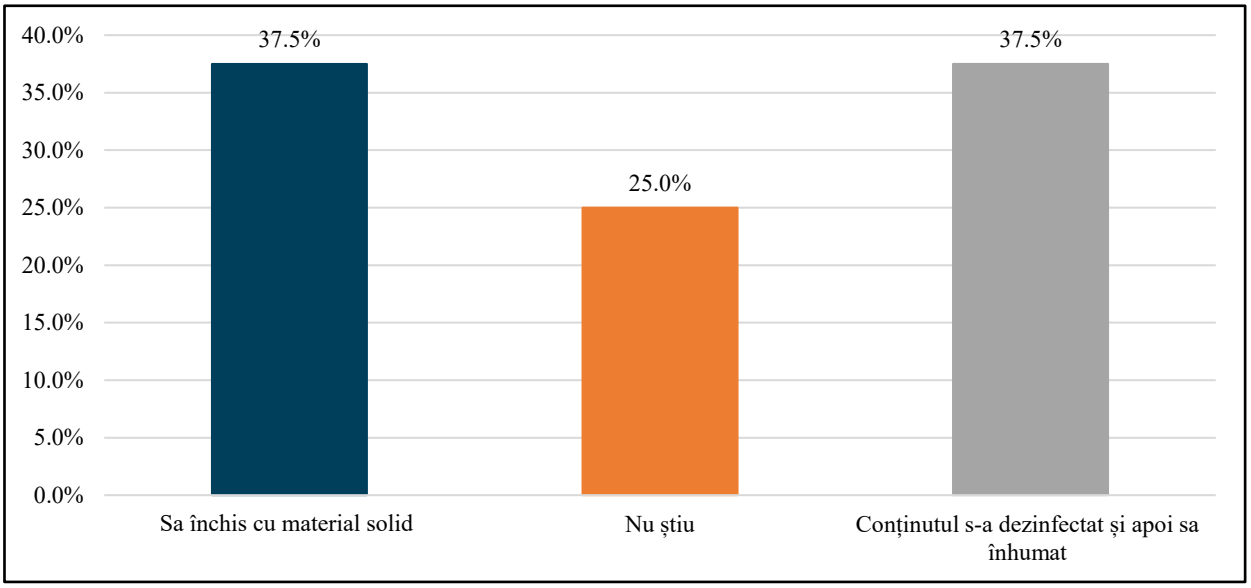

Figure 43. How to close individual effluent collection facilities reported as abandoned in early childhood education institutions

Of the early education institutions that reported the presence of abandoned individual sanitation facilities, in 37.5% of cases they were managed by covering the facility with solid material, while 37.5% reported the application of a more sanitary-complete method: disinfection of the contents

followed by burial. At the same time, in 25% of the cases, the respondents could not specify how the closure of the respective installation was carried out.

Information on the frequency of complete filling of individual effluent collection facilities in early childhood education institutions is presented in Figure 42. The majority of respondents - 65.4% said that the complete filling of the plant took place 1–2 years ago, which indicates a relatively recent use and probably a more intensive operating frequency. In 19.2% of the cases, it was mentioned that the installation had never been filled, and lower percentages were recorded for more distant periods: 7.77% indicated a range of more than 10 years, while 3.8% mentioned that the last filling took place 2–5 years ago and 5–10 years ago, respectively.

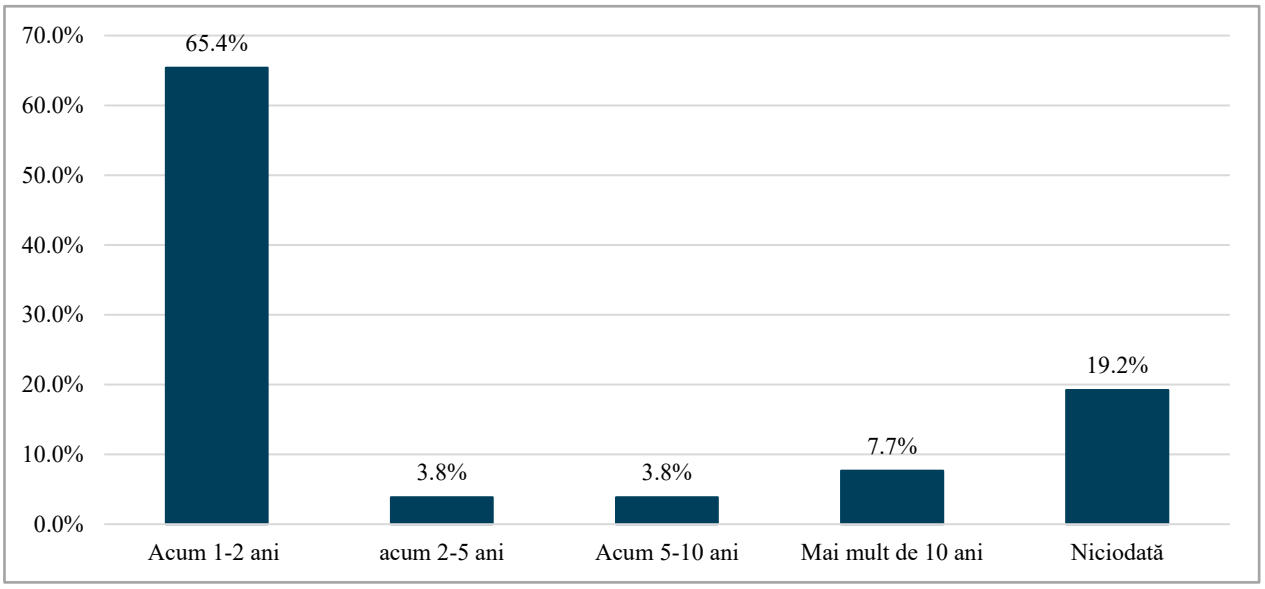

Figure 44. Time of the last complete filling of the individual effluent collection plant in early childhood education institutions

Figure 43 shows the actions taken by early childhood education institutions at the time of the last complete filling of the individual effluent collection facility.

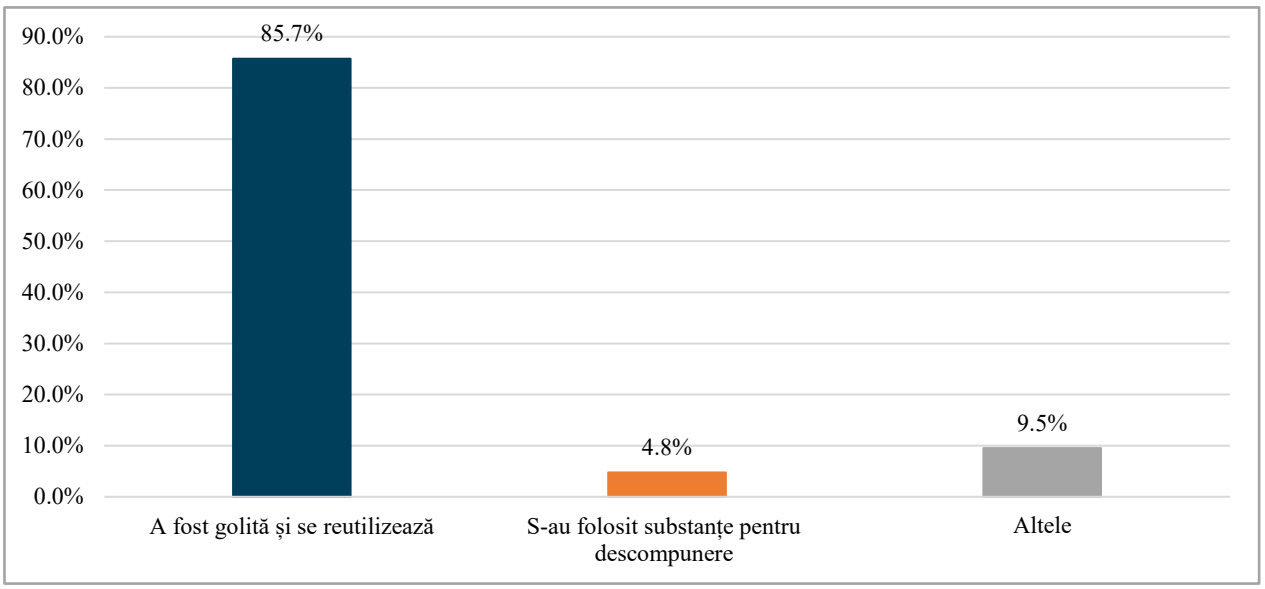

Figure 45. Actions taken at the last complete filling of the individual effluent collection plant in early childhood education institutions

The most common practice, reported by 85.7% of respondents, was emptying the installation and continuing its reuse, which indicates a functional management, but dependent on periodic emptying services. A small percentage (4.8%) mentioned the use of substances to break down the contents, another 9.5% of cases, other measures were reported.

These results suggest that, although most EITs use appropriate maintenance methods, there is a segment that resorts to alternative or undefined solutions, which could reflect the lack of a standardised protocol for the management of these facilities.

According to the data collected, an overwhelming proportion of 94.4% of respondents reported that emptying is carried out by a specialized service operator, which indicates the existence of an organized liquid waste management service in most cases. However, 5.6% said they do not know how to discharge effluents, which may signal either the lack of direct involvement in the process or the absence of clear procedures for informing and empowering the staff.

These data highlight a relatively high level of outsourcing of emptying services to authorised operators, which, in compliance with the rules, is a recommended practice for protecting public health and the environment.

Figure 44 shows that the majority of respondents (61.1%) indicated that this activity was carried out by a public company, which suggests the existence of municipal or district emptying services available, 33.3% of the EITs used a private service provider, and 5.6% of the cases, the respondents could not specify the entity that carried out the last emptying.

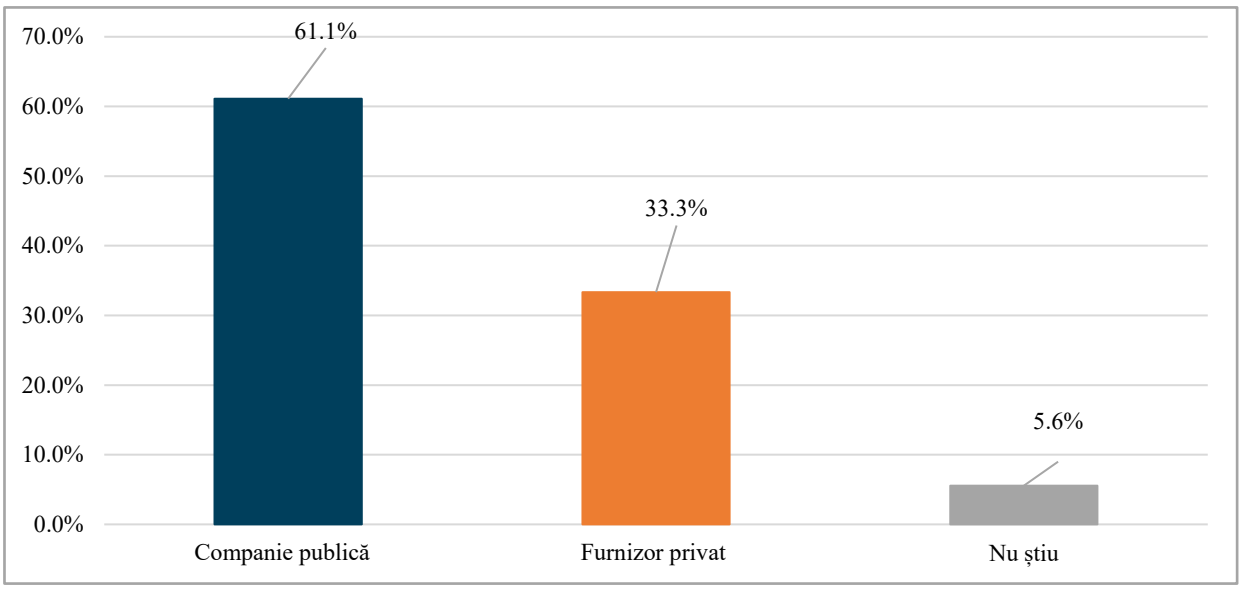

Figure 46. The entity that carried out the last emptying of the individual health system within early education institutions

The accessibility of individual effluent collection facilities is an essential factor thus facilitating the emptying process. Specifically, 94.4% of kindergartens reported that the facility was easily accessible for emptying, which is a positive aspect in waste management. Only a small 5.6% indicated difficulties in accessibility.

The perception of the cost of emptying services of individual effluent collection facilities is an important aspect for their accessibility and sustainability. According to the data collected, 55.6% rated the price as reasonable, which suggests a generally positive perception of the financial accessibility of this service. However, a significant number of respondents indicated a cost perceived as high (22.2%) or even very high (11.1%), which can influence the frequency of the request for emptying services or their quality. On the other hand, only 5.6% considered the price to be low, and a similar percentage (5.6%) assessed it as very low.

Half of the kindergartens (50.0%) consider that the services provided are good, and 16.7% appreciated them as very good, which indicates a relatively high degree of satisfaction. However, 33.3% of respondents rated the quality of services as acceptable, suggesting that there is room for improvement, especially in terms of promptness, hygiene or professionalism of the staff involved.

Thus, the results obtained highlight the fact that, despite the efforts to modernize the health infrastructure, a considerable part of the early education institutions in rural areas continue to use or own individual sanitation systems, including abandoned ones. The management of these facilities varies significantly, from appropriate sanitary practices (disinfection, burial, periodic emptying), to situations where there is a lack of clear information or standardized procedures.

In general, emptying services are carried out by authorized operators, and the perception of costs, quality and accessibility is predominantly favorable. However, inequalities persist in the frequency of interventions, the responsiveness of providers and the financial resources available

locally.

These findings underline the need to strengthen the regulatory framework, to establish minimum standards of maintenance and monitoring, as well as to develop logistical and financial support mechanisms for institutions located in disadvantaged areas, in order to ensure a safe and hygienic environment for children.

6.2.5 Practices for transporting and disposing of effluents collected from individual sanitary facilities

The responses provided by early education institutions (Figure 45) indicate a diversity of the final destinations of effluents. An equal proportion of respondents (38.9%) reported either the disposal of the contents at a wastewater treatment plant or the lack of knowledge of the final destination, which signals a considerable degree of uncertainty in the traceability of the process. A worrying aspect is the fact that 16.7% of the cases mentioned the unauthorized landfill as a disposal site, which raises questions regarding compliance with environmental and public health norms.

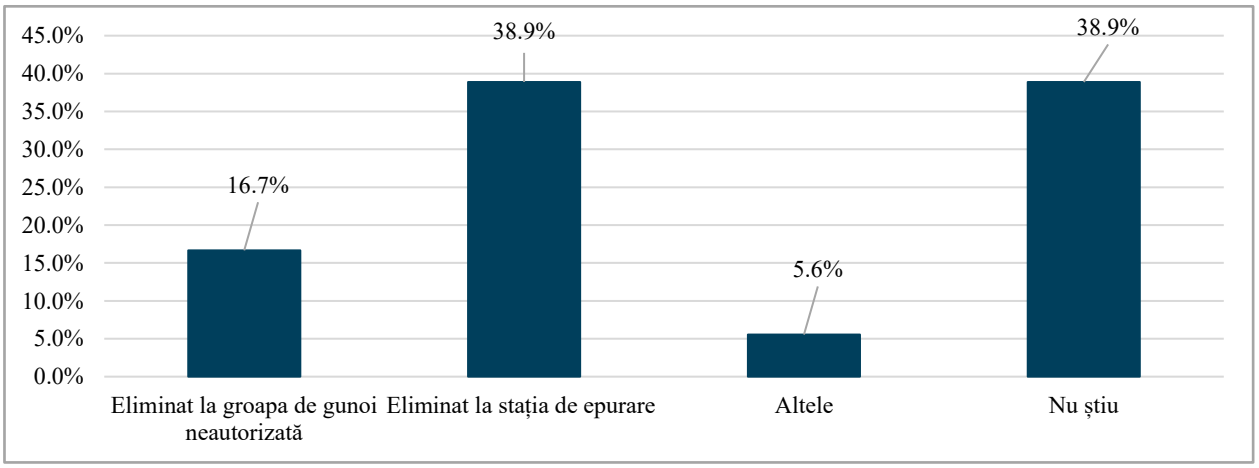

Figure 47. Final destination of the contents of effluent collection facilities, after the last emptying and transport, from early education institutions

In the "other" category (5.6%), problematic practices were reported, such as disposing of contents in a tank located on the territory of the institution or at a wastewater treatment plant that does not work, both of which suggest the absence of an effective treatment solution and the potential negative impact on children's health and the environment.

The results indicate the urgent need for strict regulation, monitoring and logistical support to ensure the safe, legal and controlled disposal of effluents from sanitation systems used in rural early childhood education institutions.

In 66.7% of cases, respondents did not know the distance to the elimination point, which indicates a pronounced lack of transparency. In other situations, 16.7% of respondents reported a distance between 5 and 9 km, while only 5.6% mentioned shorter distances of 0–4 km or 10–14 km.

Regarding the approximate distance between the early education institutions and the effluent

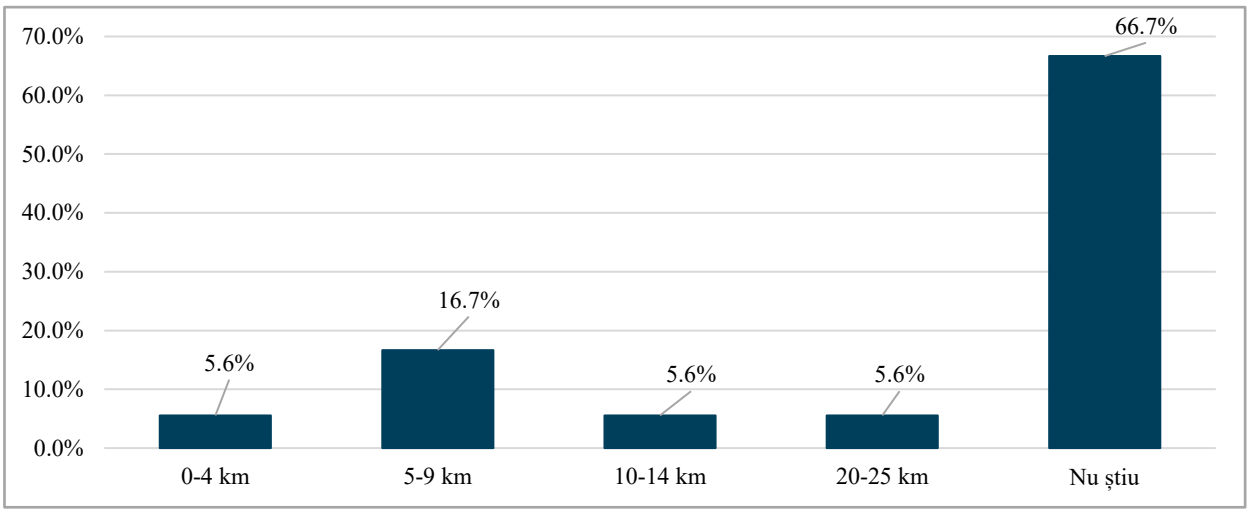

Figure 48. Approximate distance between the early education institution and the effluent disposal site

disposal site, the statistical analysis showed an average value of 9.66 km, which indicates that, overall, the transport of effluents involves covering relatively long distances.

At the same time, 25% of them have a disposal point located at a very short distance of less than 3 km, reflecting cases where transport is relatively easy and probably logistically efficient.

This distribution highlights a low concentration of authorised disposal points, especially in rural areas, which can negatively affect the regularity and quality of sanitation services. Consequently, strategic planning of disposal infrastructure and capacity building at local level remain priorities for streamlining the system.

The costs associated with the transport and disposal of effluents are an essential aspect for the sustainability of sanitation services in rural early education institutions. According to the data collected, the average cost reported for a transport and disposal intervention was 2,637.1 MDL, with a significant variation between the extremes: minimum 300 MDL and maximum 10,000 MDL. Thus, in 83.3% of the early education institutions included in the study reported the existence of a budget line dedicated to these services, which denotes a clear financial planning and a recognition of the need to cover these expenses systematically. However, 16.6% of kindergartens do not have such a budget line, which can generate difficulties in ensuring the continuity of services. As for the actual source of funds used for the last transport and disposal operation, the majority of respondents (61.1%) indicated the local public authorities, while in 38.9% of the cases the costs were covered from the institution's own budget.

In order to ensure the long-term sustainability of these services, it is recommended to

strengthen funding mechanisms at local level by explicitly and mandatorily including sanitation expenses in the annual budgets of early childhood education institutions. It is also important to develop methodological guides or models of good practice to support kindergartens and local authorities in estimating and realistically planning costs, taking into account distances to disposal points, frequency of services and technical conditions imposed.

6.2.6 Evaluation of institutional measures for the treatment and final management of fecal sludge implemented by early education institutions

Faecal sludge treatment is a critical step in the process of sustainable sanitary waste management, with the role of reducing pathogens, odours and negative environmental impact. In the context of rural preschool institutions, where centralized infrastructure is often non-existent or insufficient, decentralized treatment solutions can significantly contribute to protecting public health and natural resources.

The perception of the need to treat fecal sludge before disposal or reuse reflects the level of institutional awareness about the health and environmental risks associated with this process. In the absence of adequate treatment, sludge can become a major source of contamination, especially in the vicinity of environments frequented by children.

According to the study, 70.6% of respondents believe that fecal sludge should be treated before it is disposed of or reused, which denotes a real concern for health safety and environmental protection. On the other hand, 29.4% do not consider the treatment necessary, which may indicate either a lack of information on the associated hazards or technical and logistical difficulties in implementing such processes.

On-site treatment of faecal sludge before emptying the plant is an important step in reducing biological risks, stabilising the contents and ensuring safer handling during collection and transport. This practice is all the more relevant in institutions attended by children, where the prevention of environmental contamination and human contact is a priority.

However, only 36.3% of early childhood education institutions reported that they carry out on-site faecal sludge treatment, while 64.7% do not apply any form of pre-treatment. Of the institutions that apply this measure, 66.7% use the chemical disinfection method, especially by treating with lime, an affordable and effective solution in reducing the microbiological load and unpleasant odors. At the same time, 16.7% of the institutions indicated the use of drying and treatment methods of the liquid fraction, a solution that requires favorable environmental conditions and a minimum of infrastructure to be applied efficiently.

Overall, the results reflect that, although there are intentions to implement some treatment practices, the dissemination of good practices in this area is insufficient.

The collected responses show a diversity in terms of the entity or person responsible for the treatment of fecal sludge within early education institutions. Most institutions (66.7%) have delegated

this task to specialized external suppliers, such as specialized companies. On the other hand, a significant 33.3% of kindergartens have designated their own staff for the management and treatment of fecal sludge, which may reflect limited resources or more decentralized approaches, where institutional staff are trained and made responsible for the maintenance of the facilities.

Regarding the destination of the faecal sludge treated on site, the data indicate a high degree of uncertainty as 83.3% of respondents could not specify where the solid sludge resulting from treatment is disposed of or taken. Only a minority, 16.7%, reported that the sludge is stored at the landfill.

6.3 General profile of effluent emptying, transport and treatment service operators

For a better understanding of the capacities and context in which decentralised sanitation service operators operate, this section collects basic information on the legal status, area of operation, licensing and presence of other providers in the region.

Of the total of 20 companies analyzed, some were founded as early as the 1970s and 1980s, and others emerged in the last decade, including very recently, until 2025. Thus, 70% of the companies are over 25 years old, indicating a stable presence and experience gained in the sector, while 30% are relatively new, having been established in recent years.

The analysis of the data on the licensing of companies that provide emptying, transport and effluent treatment services indicates that 90% of the companies have an official license to provide these services**,** a minor proportion, of about 10% of the operators, operate without a license**,** an aspect that raises questions regarding the compliance with sanitary and environmental norms, as well as the quality and safety of the services offered.

The analysis of the geographical area of operation of the companies that provide emptying services (Figure 47), transport and treatment of effluents shows that 35% of the companies operate in several localities within a single district**,** and an equal percentage operates at the level of a single district, indicating a clear regional focus. 20% of the companies offer services in several districts of

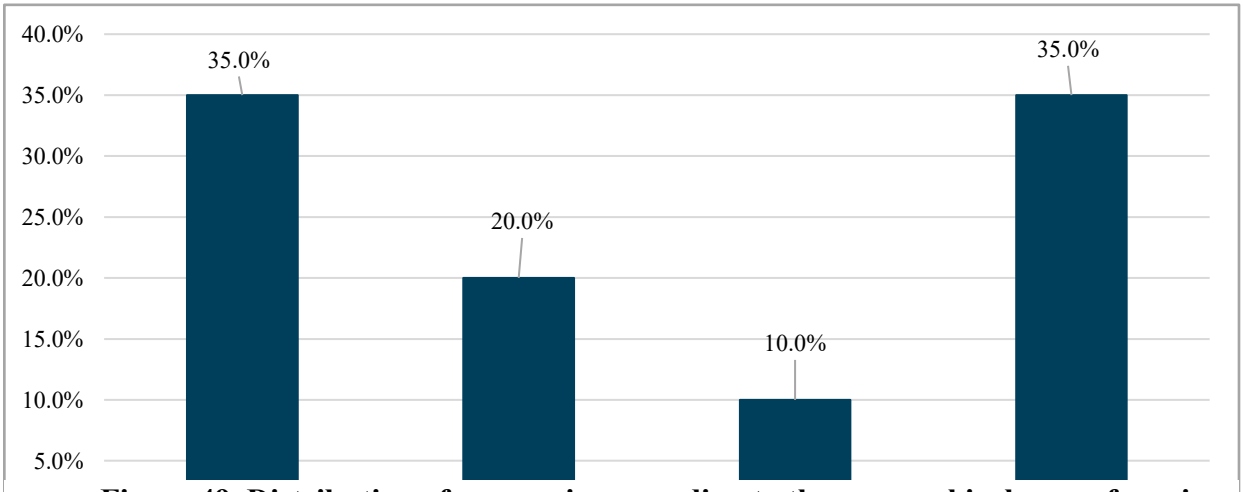

Figure 49. Distribution of companies according to the geographical area of service provision

the country, suggesting an extensive logistical and operational capacity. At the same time, a small part, about 10%**,** it limits its activity exclusively to a single locality.

In most cases (75%) the companies providing effluent emptying, transport and treatment services operate on a sole-source basis in the respective region, a high concentration of services and the lack of alternative are suggested. Only 25% of respondents reported the existence of other providers active in the same region. The lack of effective competition in three quarters of cases can generate challenges in terms of ensuring the quality of services, transparency of tariffs and stimulating investment in modern infrastructure and equipment.

6.3.1 Monitoring and recording of emptying, transport and treatment of faecal sludge from individual collection facilities

The results obtained show that only 45% of the surveyed operators keep records and provide reports to the competent authorities on the activity of emptying septic tanks and cesspools, while 55% do not have a formalized record and reporting system (Figure 48).

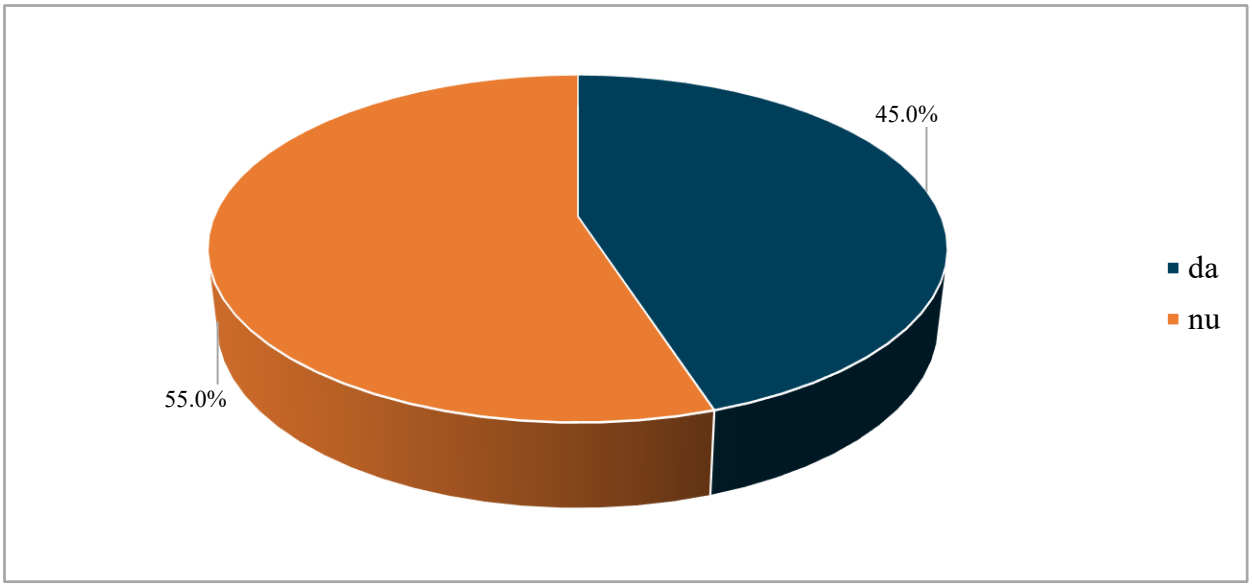

Figure 50. Record-keeping practice and reporting to authorities on septic tank and cesspool emptying services

The analysis of the degree of registration, retention and reporting of records on septic tanks and cesspools by sanitation service operators reveals major structural deficiencies in the monitoring system of decentralized effluent collection facilities (Table 10). The results show that only 11.1% of

respondents keep records on the number of septic tanks and cesspools served, which significantly limits the ability to estimate the volumes of waste generated and, implicitly, to efficiently plan emptying and transport operations.

More worrying is the fact that none of the surveyed operators has information on the capacity of these systems (0%), an essential parameter for establishing the appropriate emptying frequency and avoiding overflow or infiltration into the environment. To the same extent, data on the type or degree of permeability of pits and cesspools are completely lacking (0%). About 55.6% of the operators report the number of annual emptyings carried out in households, which suggests a partial concern for monitoring the activities provided to the general population.

A similar percentage (55.6%) maintains records regarding the emptying of cesspools and cesspools in primary and secondary general education institutions as well as in early education institutions, indicating a minimum attention paid to the institutional framework, especially in the educational field.

In contrast, only 22.2% of operators keep information about emptying activities carried out in medical institutions, where public health and contamination risks are higher.

Table 12. Degree of highlighting data on septic tanks and cesspools by operators

Evidence criterion	Yes (%)	No (%)
There are records on the number of septic tanks and cesspools	11,1	88,9
There is evidence of the capacity of septic tanks and cesspools	0,0	100,0
There are records on the type of septic tanks and cesspools	0,0	100,0
There are records on the number of annual emptying of septic tanks	55,6	44,4
There are records on the number of annual emptyings in educational institutions and preschool	55,6	44,4
There are records on the number of annual emptyings in medical institutions	22,2	77,8

6.3.2 Operational practices for effluent emptying and transport services

Data on the average annual total volume of waste discharged from individual effluent

collection facilities to individual households (Fig. 49) indicate that 85% of the surveyed operators manage between 0 and 500m3 of waste annually.

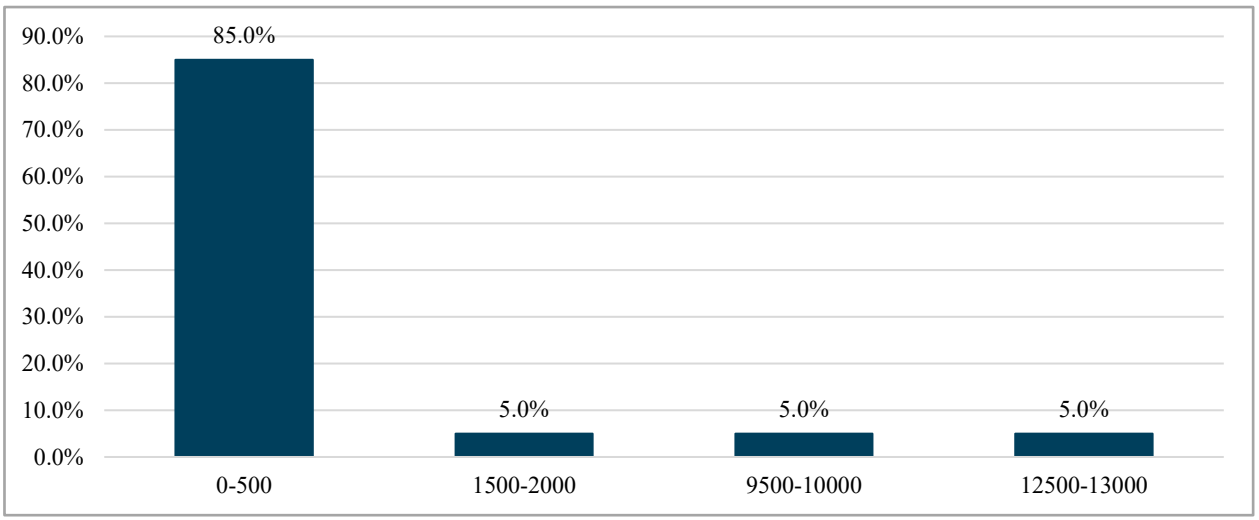

Figure 51. Distribution of operators according to the average annual total volume (m³) of waste discharged

This situation reflects either a small size of the market served, or a low frequency of service provision in the areas covered, the lack of statistical records. Only 15% of operators report significantly higher volumes, between 1,500 and 13,000 m³, suggesting either an extended territorial coverage or a more intense demand in certain regions.

Data collected from 20 operators indicate a significant diversity in the volume of emptying services performed in individual households in 2024. The number of services reported ranges from 0 (for three operators) to a maximum of 480 services for an operator with an extended capacity. At the same time, one operator indicated that it does not have information on the exact number of services provided.

On average, operators provided approximately 72.9 emptying services per year, which adds up to a total of 1,167 services for the entire analyzed sample. This significant variation between operators reflects differences in operational size, scope and degree of activity, as well as occasional difficulties in collecting accurate data.

Analysis of the average volume of waste discharged from individual effluent collection facilities from preschool institutions, 90% of operators report that the average total volume discharged annually is between 0 and 500 m³ per service provider. This reflects the relatively small size of pre-school institutions and, implicitly, a limited demand for emptying services in this sector. A modest 5% of operators report average volumes in the range of 500-1000 m³, and another 5% mention volumes between 1000 and 1500 m³. Out of the total of 20 operators, 7 declared that they did not provide any services in this sector, while the majority (14 operators) report a variable number of interventions, between 1 and 12 services per year. A single operator reported a significantly higher number of 50 services, probably indicating a wider geographical coverage or a larger customer

portfolio in this segment.

Most operators report very small volumes of waste discharged from individual effluent collection facilities in medical institutions. Thus, 95% of the companies reported an average volume between 0 and 100 m³, 5% reported much larger volumes, between 1400 and 1500 m³, which may indicate services provided for larger medical institutions or a centralized management of effluents from several units.

The seasonal analysis of the frequency of effluent emptying and transport services from individual collection facilities shows that for a significant majority of operators (60%) there is no specific period in which the services are provided without marked seasonal variations, However, 5% and 10% mentioned that spring and summer are periods of intensified activity.

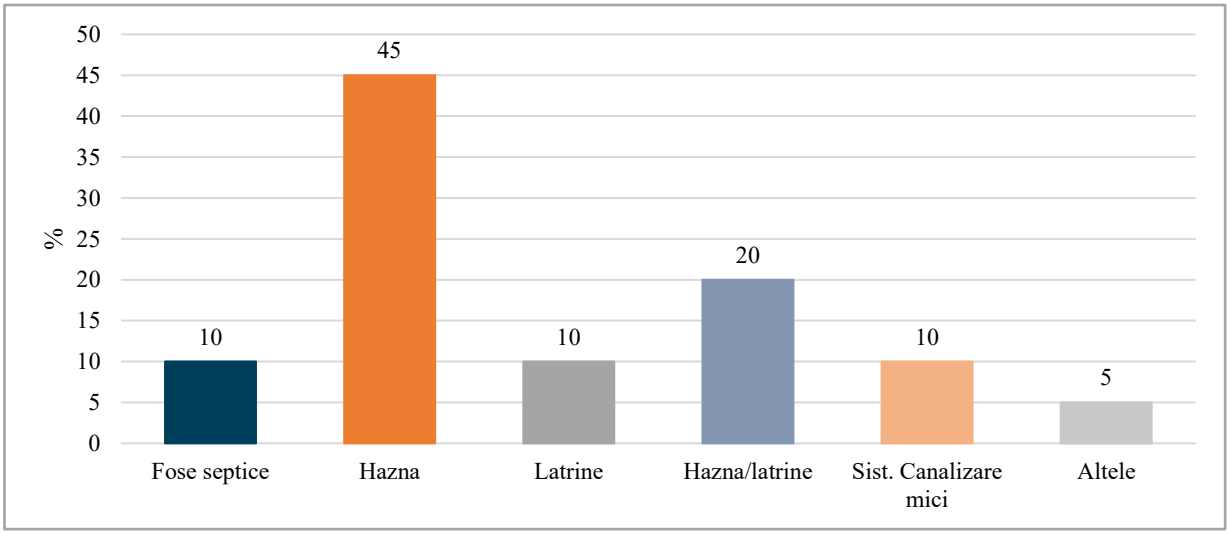

Figure 52. Types of individual effluent management systems served by wastewater treatment service operators

The distribution of responses on the types of individual effluent management systems served by sewage service operators reflects a majority focus on traditional systems used in rural areas. Thus, (Figure 50), 75% of respondents confirmed that they mainly serve wells, latrines and/or both, confirming the prevalence of this type of infrastructure in localities without access to centralized sewerage networks. 4 operators reported that they also managed septic tanks and/or SIS.

The overwhelming majority of operators (95%) use dump trucks to provide emptying services, which confirms the standardised nature of the basic equipment in the sector. Small capacity motorized pumps are mentioned by 15% of respondents, indicating complementary technical solutions, possibly used for small installations or in spaces with limited access. In the same logic, 5% of operators report the use of machines specially adapted for hard-to-reach areas. Most operators providing effluent emptying and transport services use a single dump truck – 84.2% of respondents reported this configuration. Only 15.8% of operators have two trucks, which gives them an extended intervention capacity.

The analysis of the capacity of the trucks used for emptying and transporting fecal sludge shows a concentration around the volume of 3–4 m³ (68.4%), which reflects the predominance of medium-sized trucks, adapted to the local infrastructure and operational requirements of rural areas (Fig. 73).

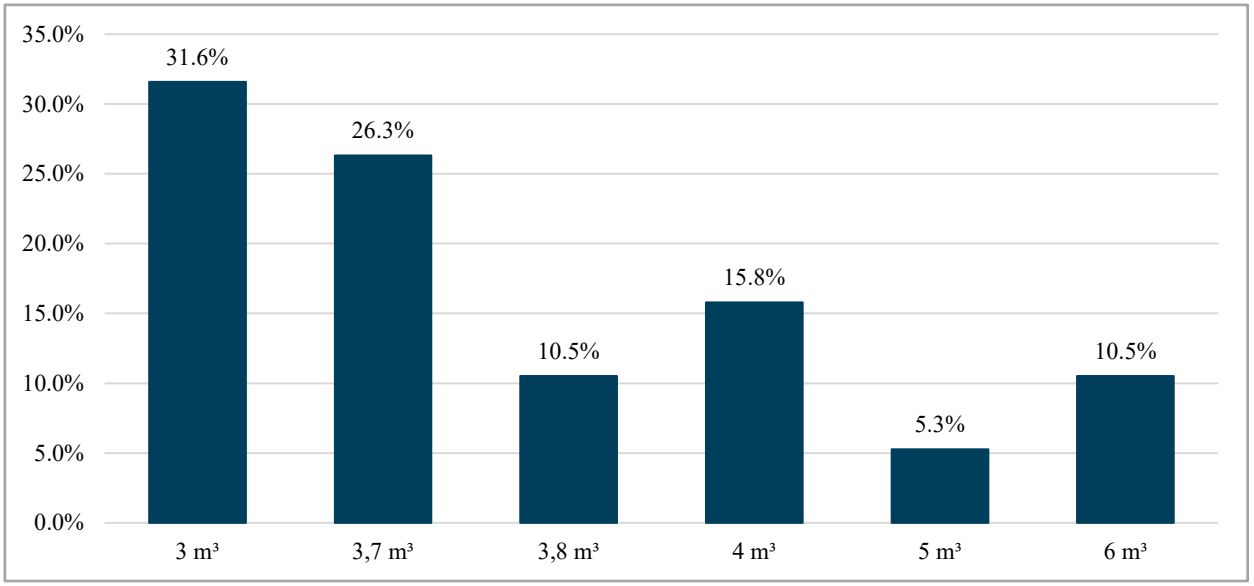

Figure 53. Average capacity of trucks used for emptying and transporting effluents

Larger capacities of 5 m³ and 6 m³ are less common (5.3% and 10.5% respectively) and are likely to be used by operators covering larger territories or serving institutions with higher effluent volumes.

Data on the operational practices of waste disposal service operators reveal key aspects in terms of post-intervention hygiene and effluent transport safety. Thus, only 40% of the operators clean the individual installations after the emptying service has been performed, which suggests a partial application of good post-operation sanitation practices.

Regarding the transport route, 85% of the companies declare that they carry out the transport of effluents through urban or rural areas, which highlights a high degree of mobility and integration of these activities into the local road network. It is important to emphasize that none of the respondents reported incidents of accidental leakage of effluents into the environment during transport – a positive indicator, which may reflect adequate equipment of the emptying trucks and compliance with tightness and safety requirements.

6.3.3 Fecal Sludge Treatment and Disposal Service: Practices, Locations, and Legal Compliance

The data collected indicate a low level of operator involvement in faecal sludge treatment processes, either at source or during transport. Only 10% of providers say they offer on-site sludge treatment services, while no operator has reported treatment during transport. On the other hand, the overwhelming majority of operators (95%) say that the effluent disposal site is legal, 5% said they cannot guarantee its legality.

Most of the effluents (90%) are transported to treatment plants, of which in 5% of the cases involve wastewater treatment plants that do not work, and another 5% indicate disposal to unauthorized landfills, which poses a significant risk to public health and environmental protection. Other disposal routes (5%) are not clearly defined, suggesting a lack of traceability or regulation (Figure 52).

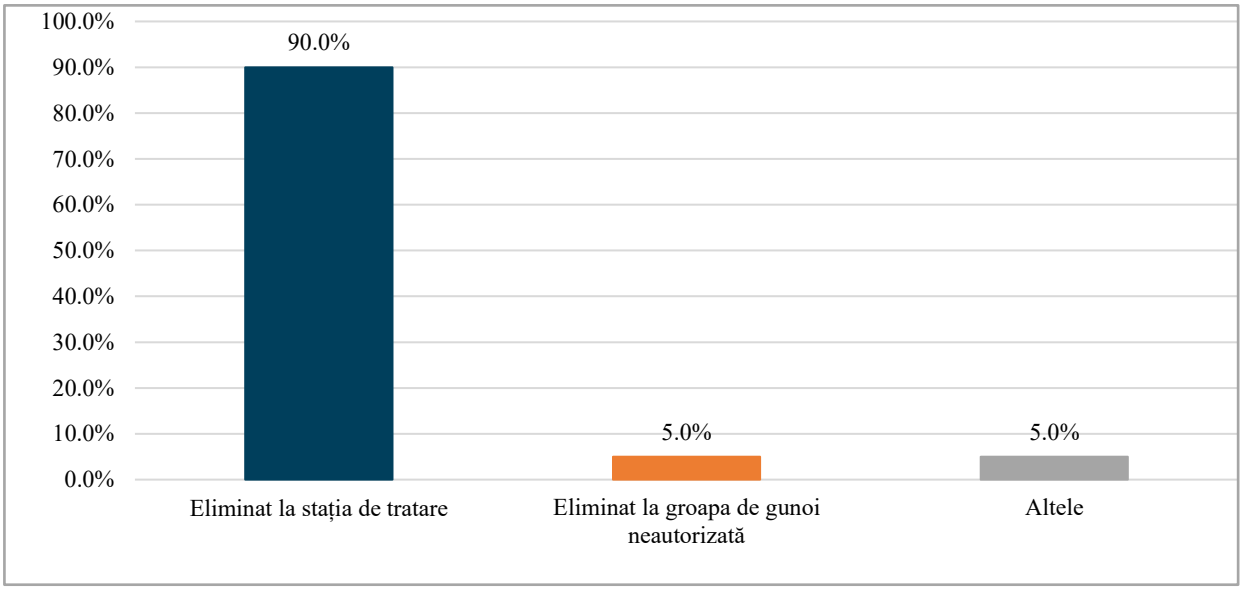

Figure 54. Transport destination of effluents from individual collection facilities

For global monitoring transport of excreta emptied from on-site sanitation is considered transported if it delivered to an off-site treatment plant or other approved disposal site. From the household surveys, considering all emptied on-site systems (n=205, including unimproved pits), 24% were transported to a treatment plant and 6% were transported to other disposal sites (including authorized landfill, sewer or buried). Unsafe disposal was 15% of all emptied OSS which inlcuded disposal to agricultural land, as further treatment is required before excreta can be safely reused. 40% of emptied systems were taken off-site but the respondents didn't know where. Given service providers indicated 90% of excreta are delivered to treatment, it can be assumed that the unknown are also safely delivered to treatment. Therefore 71% of emptied on-site systems are transported to a treatment or other approved disposal site, while a maximum of 61% are delivered to a treatment plant. Without data on the type of treatment received, it is not possible to confirm whether excreta discharge to treatment are considered adequately treated (both solid and liquid fraction treated, or at least secondary treatment in a wastewater treatment plant).

According to Figure 53, 40% (n = 8) of the operators transport effluents over distances between 2 and 11 km, indicating relatively good accessibility to disposal points in some regions. The rest of the operators are equally divided between the 12–21 km, 22–31 km and 32–41 km ranges – each accounting for 20% of the total.

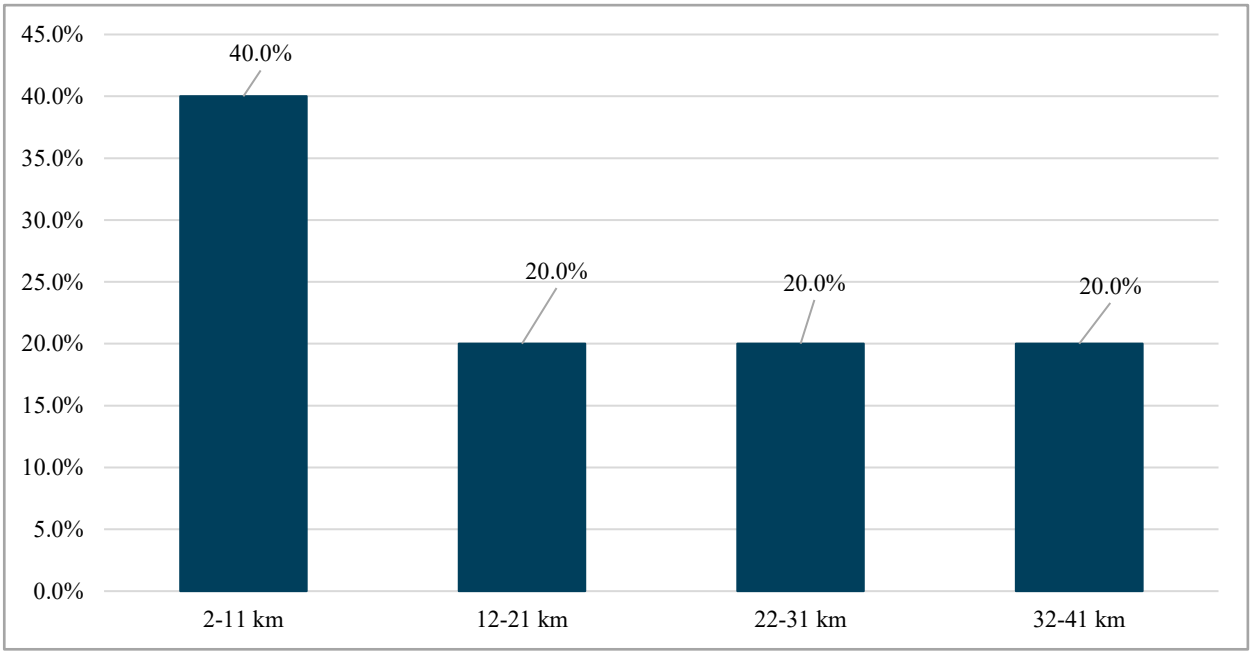

Figure 55. Distribution over distance intervals to the disposal site of the effluents transported from the individual plants

In terms of transport distances, there is significant variability, which can directly influence operational costs, the frequency of emptying and the sustainability of services. This context highlights the importance of developing treatment solutions closer to communities, efficient regionalisation of infrastructure and improved mechanisms for tracking the flow of effluents from collection to final disposal.

6.3.4 Evaluation of safety procedures and human resources in effluent emptying, transport and treatment services

This section focuses on the operational practices and human resources involved in the emptying, transport and treatment services of faecal sludge and effluents from individual collection facilities. Proper and safe management of these activities is essential to protect workers' health and the environment. In this context, the existence and compliance with the instructions on safety procedures, the adequate provision of personal protective equipment, as well as the use of cleaning materials and disinfectants to prevent contamination and biological risks are assessed. It also analyzes the frequency and quality of training provided to employees, as well as the organizational capacity in terms of the availability of human resources necessary to ensure the continuity and efficiency of services. This assessment allows the identification of strengths and aspects that need improvement in order to increase the level of safety and professionalism in the field of effluent management.

The majority of wastewater emptying, transport and treatment service operators stated that they

had clear instructions defining safety procedures for workers (Table 11), with 85% of respondents confirming their existence. In terms of access to individual collection facilities, only 10% of workers actually enter these facilities during emptying.

Providing personal protective equipment is a widespread practice, with 90% of workers being properly equipped to prevent occupational hazards. At the same time, personal hygiene is well respected, with 90% of workers stating that they wash their hands with soap and water after finishing work. The use of cleaning materials and disinfectants after manual emptying is applied at a rate of 35%, and in case of accidental leaks, 75% of workers use these materials to prevent environmental contamination and protect health.

Table 13. Criteria for the evaluation of safety practices and human resources in effluent emptying, transport and treatment services

Evaluation criteria	Da (%)	Now (%)	Not applicable (%)
Having a clear instruction defining safety procedures for workers	85	15	-
Workers' access to individual collection facilities during emptying	10	90	-
Provision of personal protective equipment for workers	90	10	-
Use of cleaning materials and disinfectants after manual emptying	35	25	40
Personal hygiene – washing hands with soap and water after finishing work	90	10	-
Use of cleaning materials and disinfectants in case of accidental leaks	75	25	-
Participation of workers in trainings on minimum safety standards	90	10	-
Availability of sufficient human resources for effluent emptying, transport and treatment services	60	40	-

Participation in trainings on minimum safety standards is another positive aspect, with 90% of workers involved in such training programs. In terms of human resources, 60% of companies believe that they have enough staff to provide emptying, transport and effluent treatment services, while 40% indicate a shortage that can affect the quality and efficiency of operations.

The majority of employers (94.4%) provide regular training to workers involved in wastewater emptying, transport and treatment services, indicating a strong commitment to maintaining an adequate level of training and occupational safety. On the other hand, a small 5.6% of employers limit the training of workers only at the time of employment, without ensuring a continuous updating of their knowledge and skills.

These results underline the general commitment of operators to occupational safety and quality of services, but also indicate the need to strengthen hygiene practices and the use of disinfection

materials, as well as to supplement human resources to meet the demands of the sector.

6.3.5 Financial aspects of effluent emptying, transport and treatment services

The analysis of the tariffs applied for effluent emptying, transport and treatment services (Figure 54) shows that 40% of respondents report a tariff between 0-499 MDL lei, respectively 45% of operators apply tariffs between 500 and 999 MDL lei, which suggests a dominant tariff average in this segment. To a lesser extent, 15% of operators charge tariffs in the range of 1000-1499 lei MDL, reflecting services that may be more complex or with higher operational costs. It is worth noting that no respondent failed to indicate the amount of tariffs, thus ensuring a complete picture of the financial distribution of services.

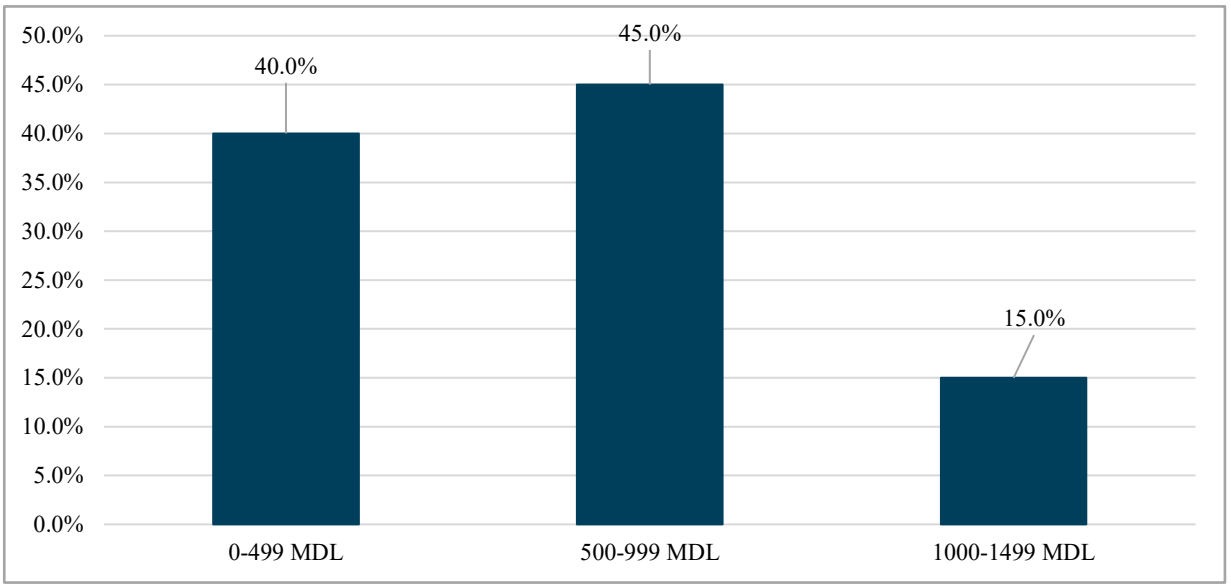

Figure 56. Distribution of tariffs for effluent emptying, transport and treatment services according to their value

The results obtained regarding the financial support granted for the emptying, transport and treatment of effluents show that this sector operates mainly on the principle of cost recovery from its own sources, without significant subsidy interventions. Thus, 95% of the surveyed operators stated that they do not benefit from any type of subsidy for the provision of these services. Only a marginal percentage of 5% mentioned the existence of some form of subsidy.

Table 14 reflects the main criteria used by service operators in setting tariffs for the emptying, transport and treatment of effluents from individual systems. The most common variable invoked is the transport distance to the point of discharge**,** mentioned by 85.7% of respondents, the category of the user (61.9%) and the amount of fecal sludge collected (57.1). This predominance indicates a major dependence of logistics and infrastructure costs.

Table 14. Criteria used in setting the tariff for effluent emptying, transport and treatment services

Criteriu de tarifare	% of respondents

User category (individual households / public institutions)	61,9%
Transport distance to the point of discharge	85,7%
Amount of fecal sludge collected (in cubic meters)	57,1%
Duration of the intervention (number of hours)	4,8%
The state of the roads to the location of the service provision (e.g. unpaved roads)	9,5%
Legal fees for storing or treating sludge	9,5%
Seasonal conditions (e.g. winter, rainy periods)	14,3%
Alte criterii (nespecificate)	14,3%

6.4 Assessment of the institutional capacities of local public authorities in the management of decentralised health services

6.4.1 Demographic and institutional profile of local public authorities

The effective management of decentralised sanitation services, in particular in terms of the collection, transport and treatment of effluents, depends to a large extent on the involvement and capacities of LPAs.

The analysis of demographic and institutional data at the level of LPAs reveals a significant diversity in terms of population size and household structure in their jurisdiction. The total average population managed by an LPA is approximately 2,819 inhabitants and 1,241 households. Within the analyzed LPAs, the educational and medical institutional infrastructure is represented by 44 kindergartens, 34 schools and 42 medical institutions (IMSP).

6.4.2 Management of effluent emptying, transport and treatment services at LPA level

This section addresses the administrative and operational framework for effluent management at the level of local public authorities (LPAs). This analysis is necessary for understanding institutional capacities regarding management in the field of sanitation. As a result of the analysis of the responses, it was identified that only 15.4% of LPAs issued a local decision on effluent management, while 84.6% did not adopt such a normative act. The lack of a local decision, in most LPAs, can create difficulties in the implementation of standardized practices, can affect the monitoring of the services offered and can generate inconsistencies in the responsibilities of the operators involved. A quarter of these regulations (25%) comprehensively address all essential aspects of effluent management, including the construction of individual installations, the frequency of emptying, transport methods, disposal site, worker safety and environmental protection. Half (50%) partially regulate, focusing on transport methods, disposal site and environmental protection, and the remaining (25%) are limited to emptying frequency, disposal site and environmental protection.

As for infrastructure, out of the total number of public institutions, according to the statements of the LPA representative, a significant number of kindergartens (15), schools (16) and medical

institutions (14) are connected to the centralized sewerage system. However, only 6 of the 26 LPAs report that households benefit from access to sewerage, and this access is limited.

Sludge emptying services are available throughout the territory of 65.4% of the LPAs analyzed, while 34.6% of them do not ensure a complete coverage of the services throughout their area of responsibility. This distribution indicates that there are significant gaps in the accessibility of sewage services, which can lead to non-compliances in effluent management and risks to public health and the environment in uncovered areas.

The distribution of sludge emptying service providers in the localities managed by the evaluated local public authorities (Figure 55) shows that most of the services are provided by public companies, representing 70.6% of the total. Private providers cover a smaller proportion, 11.8%, while other unqualified persons participate in a proportion of 17.6% in the provision of these services.

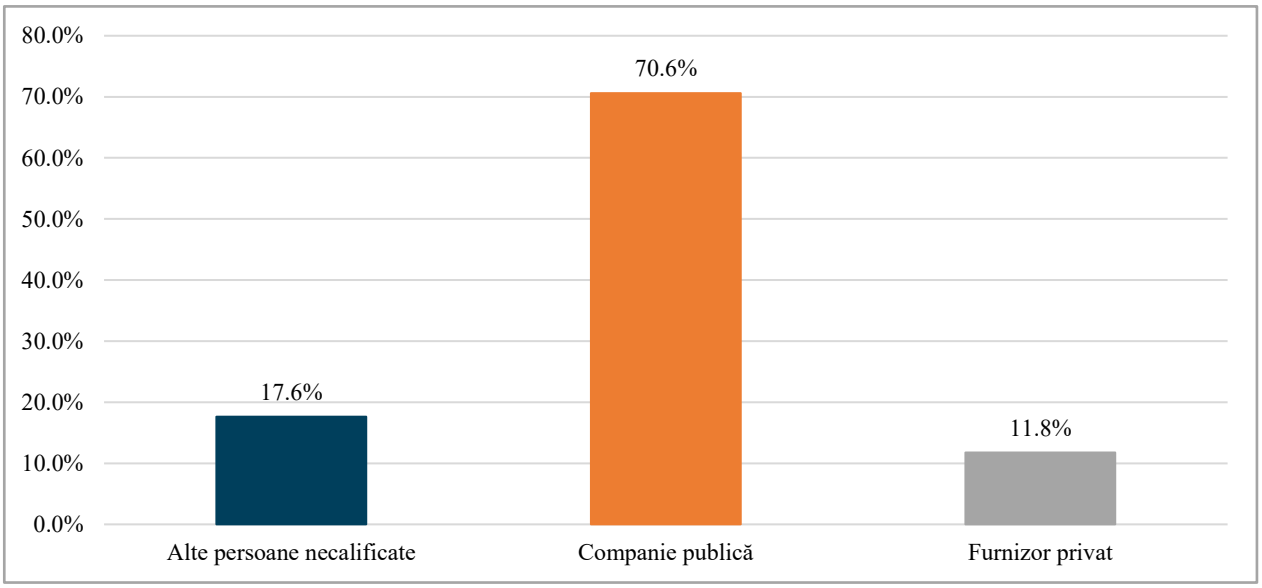

Figure 57. Distribution of effluent emptying service providers in localities managed by local public authorities

These data indicate a predominance of the public sector in the provision of effluent emptying services, but also a significant presence of unqualified actors.

Only about 23.5% of local public authorities (LPAs) reported that they maintain a systematic and up-to-date record of effluent emptying services carried out in their territory (Figure 56), while a significant proportion of 76.5% do not have such records or data.

This lack of rigorous monitoring reflects a challenge in managing wastewater emptying,

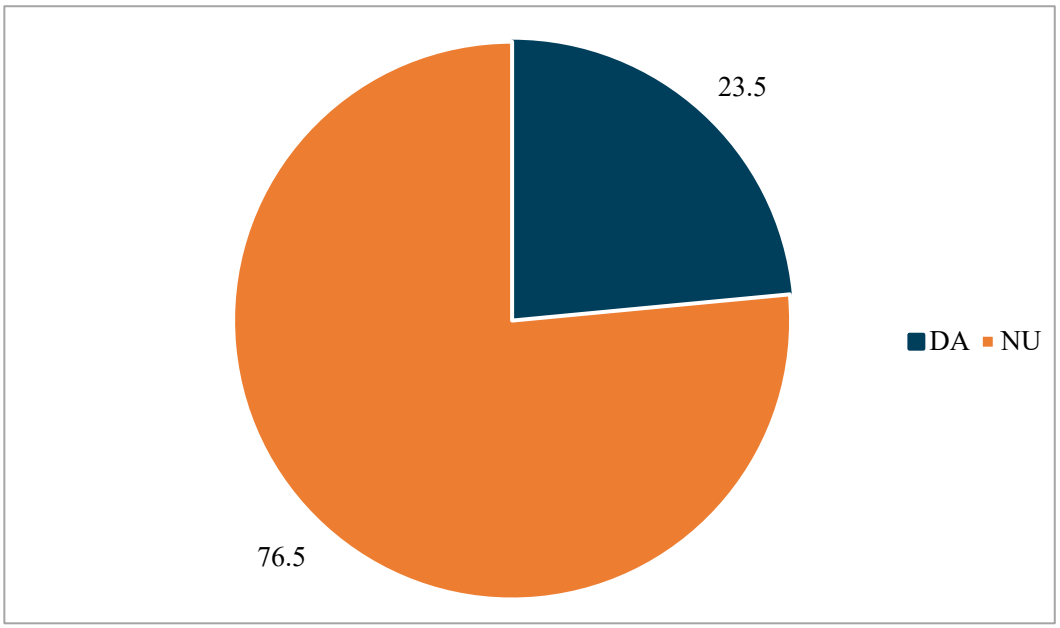

Figure 58. Percentage of local public authorities that keep track of effluent emptying services in the locality (%)

transport and treatment services locally. Without clear and well-organized records, LPAs can face difficulties in assessing operators' performance, planning the necessary resources and ensuring compliance with sanitary and environmental regulations. This can lead to inefficient management of services, limiting the ability of authorities to respond to community needs. Therefore, improving the systems for recording and reporting activities is indispensable for an efficient and transparent administration of effluent management services.

6.4.3 Mechanisms and practices for the supervision and control of individual effluent collection facilities by LPAs

This section analyzes the capacity and practices of LPAs regarding the registration of sanitary facilities in the locality, the performance of periodic checks, as well as the tools and procedures used for quality control of services and pollution prevention.

The results presented in Table 13 highlight the main practices and responsibilities of LPAs in relation to the supervision of individual effluent collection facilities. The data indicate the share of LPAs that keep track of these installations, the frequency and the degree of verification performed.

Table 15. Criteria for the registration and verification of individual effluent collection facilities by LPAs

Evaluation criteria	Yes (%)	No (%)
LPA keeps track of the sanitary installations in the locality	3,8	96,2
LPA performs verification of individual effluent collection facilities	3,8	96,2

According to the data of most LPAs, 84.6% report that no discharges from individual effluent collection facilities have been recorded in the last year. 11.5% indicate the existence of such incidents, while 3.8% of respondents do not know the situation. It is important to emphasize that the lack of reporting does not necessarily imply the absence of spills, but may also reflect insufficient or non-existent monitoring of the installations, considering the data in Table 13.

The analysis of the measures taken to prevent environmental pollution caused by individual effluent collection facilities reveals a variety of approaches taken by LPAs. Among the most frequent is the conduct of information campaigns for citizens, invoked by 42.3% of LPAs (Table 14). In addition, 38.5% of the authorities reported attracting funds dedicated to the extension of sewerage networks and 23.1% mentioned the periodic collection of effluents.

Table 16. Measures taken to prevent environmental pollution caused by individual effluent collection facilities

Criteriu de tarifare	% of respondents
Conducting information campaigns for citizens	42,3
Attracting funds for the extension of the sewerage network	38,5
Organization of periodic collections of wastewater from septic tanks	23,1
Installation of septic tanks or ecological toilets in communities without sewerage	15,4
Carrying out controls and applying sanctions for illegal dumping	11,5
No action has been taken	26,9

The installation of septic tanks or ecological toilets in communities without access to centralized sewerage is used by 15.4% of LPAs. Measures to control and sanction illegal dumping are reported by 11.5% of the authorities. It is worrying that 26.9% of the authorities have not implemented any measures. This diversity in approaches and existing gaps underline the importance of an integrated strategy and multisectoral involvement.

6.4.4 Planning and development of health services at LPA level

The percentage of LPAs that have implemented a plan to ensure and expand the centralized sewerage system is approximately 46%, which reflects a moderate level of preparation and strategic planning in the field of sanitation. At the same time, 54% of the authorities do not yet have such a plan, signaling a possible insufficiency in the long-term planning of sanitation services, which can affect the quality and accessibility of sanitation for the population.

Of the total number of local public authorities that have a plan to ensure or extend the centralized sewerage system, 91.67% included in this plan various categories of beneficiaries such as individual households, kindergartens, schools and medical institutions. A significantly lower percentage of 8.3 percent said the plan only covers households and kindergartens. Overall, the data suggest the need to strengthen the institutional capacity of local authorities for the development and implementation of coherent and sustainable plans for the development of centralized sewerage systems.

The assessment of the challenges in health management (Table 15) reflects the main difficulties encountered by LPAs in administering and improving services in this area. All respondents indicated the insufficiency of financial resources as the major obstacle, the low level of awareness among the community regarding adequate sanitation practices (30.8%), the insufficiency of qualified personnel within LPAs (23.1%), the lack of service operators and difficult access to isolated areas of localities, insufficient implementation of legislation (19.2%), outdated sanitation infrastructure (15.4%). This presentation reflects the complexity and multiple dimensions of the challenges that LPAs face in ensuring effective health management.

Table 17. Challenges in managing health services at LPA level

Challenges in health management	% of respondents
Insufficient financial resources	**100**
Outdated sanitation infrastructure	**15,4**
Lack of service operators	**19,2**
Lack of community awareness of sanitation practices	**30,8**
Difficulties of access to isolated areas of the locality	**19,2**
Insufficient implementation of legislation	**19,2**
Shortage of qualified personnel in LPAs for health management	**23,1**
Other (regulation of the obligation of contracts for citizens)	**3,8**

The ways in which citizens can submit complaints, report malfunctions or request information on health services are diverse. 92.3% respondents indicate that notifications can be made in person,

at the APL headquarters, by telephone communication - 61.5%, written notifications, either by mail or directly at the headquarters - 69.2%, 38.5% of the authorities have implemented digital channels, such as websites or other online platforms, to facilitate communication with citizens. In total, in 2024, 56 notifications were registered among the LPAs included. The planning and development of health services at the level of local public authorities reflects their commitment to improving living conditions by expanding infrastructure and optimizing existing services. However, the success of these efforts is often limited by significant challenges, such as insufficient financial resources, outdated infrastructure and shortages of skilled personnel.

6.4.5 Assessment of the capacity and financing of health services at LPA level

The effective management of health services at LPA level directly depends on the appropriate allocation of human resources, the stability and level of funding available, as well as the investments made for the modernisation and expansion of infrastructure. This section explores issues such as the average costs of effluent emptying, transport and treatment services, the financial support provided by LPAs for these services, and the degree of cooperation between LPAs and other relevant entities (public sector, NGOs, donors).

The results obtained from the data analysis show that only 19.2% of LPAs provide financial support for emptying services, while 80.8% do not provide any type of economic support in this regard. This situation indicates a low degree of financial involvement of local administrations in supporting equitable access to basic sanitation services, especially for the vulnerable population or for more isolated areas. This finding highlights the need to include financial support measures in local development strategies in the field of health and, at the same time, suggests the opportunity to develop partnership mechanisms between LPAs, service operators and the community, to ensure sustainability and the extension of services to all users, regardless of their financial capacity.

The capacity of human resources dedicated to sanitation within LPAs is limited (Fig. 57). A

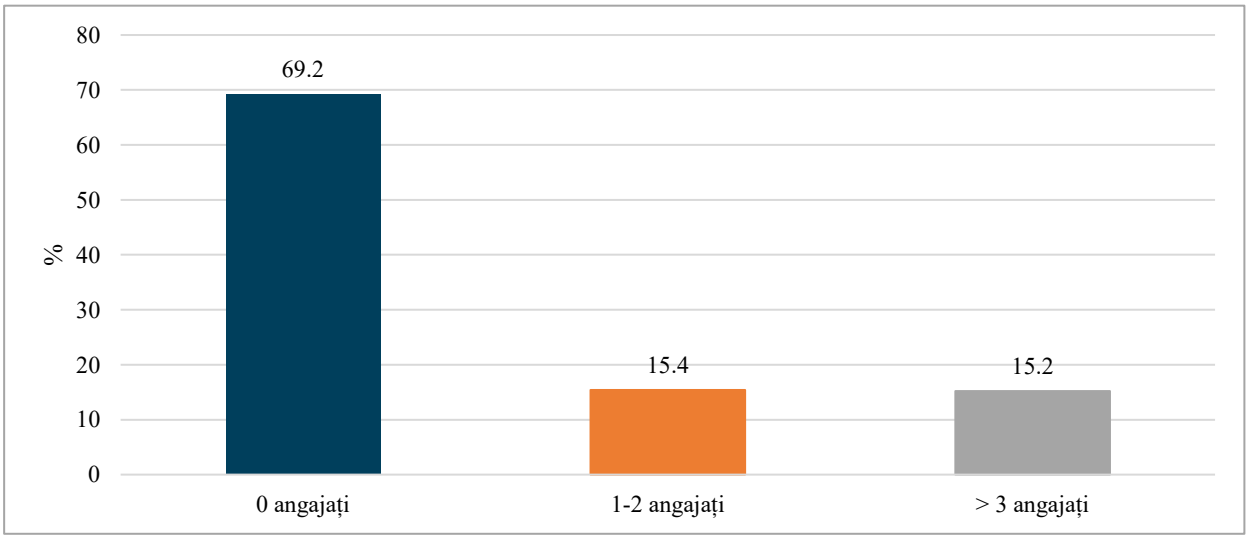

Figure 59. Distribution of the capacity of human resources dedicated to the management of health services at the level of LPAs

total of 69.2% invoked the lack of special personnel designated for the management of effluent

collection, transport and treatment services. This reflects a weak institutionalisation of the health function and suggests that responsibilities related to this area are either dispersed across several functions or are not systematically addressed. Only a small part of the LPA has staff (>3 people) for these activities: 15.2%.

Assessing the perception of LPAs' cooperation with other actors involved in faecal sludge management, such as the public and private sectors, NGOs, donors and other partners, reveals a variable distribution of collaboration (Figure 58). On a scale of 1 (unsatisfactory) to 5 (excellent), the data indicate that the majority of respondents (42.3%) consider the level of cooperation to be satisfactory, suggesting a minimal functioning of partnerships, but with significant potential for improvement.

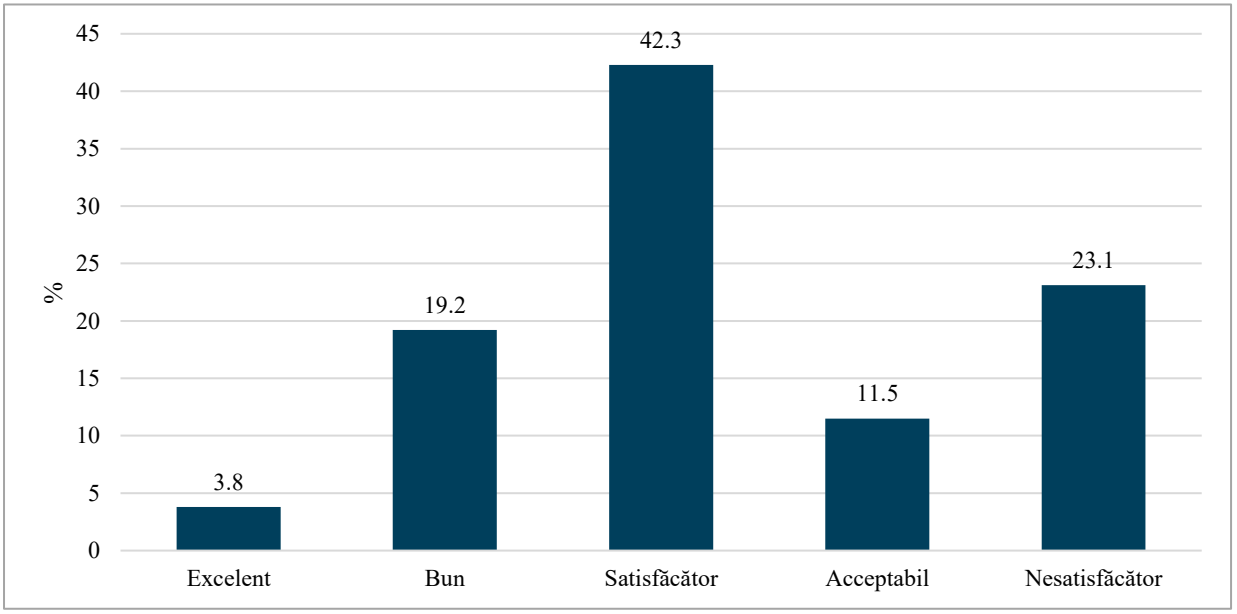

Figure 60. Assessment of the level of cooperation of local public authorities (LPAs) with other actors in the field of faecal sludge management

At the same time, a considerable 23.1% of local authorities assess the collaboration as unsatisfactory, which highlights the existence of systemic barriers or the lack of clear mechanisms for intersectoral communication and coordination. And only 3.8% of LPAs reported excellent collaboration, while 19.2% consider it good.

These results underline the need to strengthen the cooperation framework between LPAs and other key actors, through the creation of functional partnerships, regional coordination initiatives and integrated health development projects.

General conclusions:

1. More than 80% of households in rural areas are not connected to a centralized sewerage system, using individual improvised sanitation systems (permeable septic tanks, latrines), which do not comply with minimum sanitary standards. This reality points to insufficient critical infrastructure, with a direct impact on health and the environment.
2. About 46% of households use drinking water from decentralized sources, such as springs, public and individual wells. At the same time, for 84.6% of respondents (n=280) the source of drinking water is located at a distance of up to 50 meters from the individual effluent collection facility, these practices amplify the risk of contamination of drinking water, which represents a danger to the health of consumers, especially vulnerable groups.
3. According to the results obtained, based on the risk assessment matrix, over 55% of households are classified in the "medium" or "high" health risk category. Early education institutions are characterized by a more favorable health situation, 96% of them being classified in the category of "low" health risk.
4. More than 35% of early childhood education institutions use sanitary facilities that are not adapted to children. It is important to mention that over 80% do not provide separate toilets for girls and boys, as well as 23% do not have separate toilets for staff and children.
5. The assessment of the challenges of local public authorities in health management reflects the main difficulties, such as insufficient financial resources (100%), low community awareness of appropriate sanitation practices (30.8%) and insufficient qualified personnel in LPAs (23.1%).
6. The share of operators of effluent emptying and transport services that encounter difficulties regarding the availability of human resources is 40%. Another challenge identified refers to the distance of more than 12 km to the effluent disposal plants, reported by 60% of operators.
7. Rural sanitation infrastructure is not monitored, indicators on the use of individual sanitation systems are not integrated into official statistics. The lack of data limits the country's ability to assess progress on universal access to safe health services, according to the Sustainable Development Goals (SDGs 6.2 and 6.3).

Recommendations:

1. Development of a specific regulatory framework for individual sanitation systems, accompanied by concrete measures of priority technical, informational and financial support

for localities where sanitation infrastructure is non-existent or non-compliant;

2. Using the risk assessment tool used in the study as a basis for establishing a national monitoring system, used to substantiate budgetary decisions and public policies for targeted interventions in households and localities with "medium" and "high" health risk.
3. Extension of the application of SMOSS by developing the automated information system for monitoring individual wastewater collection and treatment systems, ensuring the alignment of national indicators on sanitation with the standards of the European community.
4. Creation and implementation of the automated information system regarding the record, monitoring, analysis, control and efficient administration of all water sources.
5. Allocating additional funds for the modernization of the infrastructure and sanitary equipment in early education institutions, in order to ensure separate and adjusted sanitary groups according to gender and age of children.
6. Develop and implement a national professional training program on existing government platforms (e.g. Mlearn – https://mlearn.gov.md) to strengthen the capacities of local public authority officials, staff of early education institutions and operators involved in the emptying, transport and disposal of effluents.
7. Developing sanitation infrastructure by building new wastewater treatment plants and upgrading existing ones and ensuring sustainable funding for effluent management services.
8. Organizing public awareness campaigns, in order to promote good hygiene practices and the safe operation of individual sanitation facilities.
9. Develop and implement a functional mechanism for allocating subsidies to support the access of socially vulnerable groups to safe and sustainable sanitation services.
10. Strengthen intersectoral cooperation in order to update the indicators and methodologies on the monitoring of individual sanitation systems, based on the tool used in the SMOSS study.

Annex no. 1

Household questionnaire

SECTION 1: General data on households

S1	Questions	Responses	Logic

1.1	Household code		
1.2	District		
1.3	Village		
1.4	Respondent's gender	1. Masculine 2. Feminine	
1.5	Respondent's age		
1.6	The latest studies?	1. No education 2. Primary education 3. Secondary education 4. High school education 5. Secondary/vocational education (college, vocational school) 6. Higher education	
1.7	Total monthly household income (all sources) at the moment.	1. <5 000 lei; 2. 5 000 -10 000 lei; 3. 10001- 15000 lei; 4. > 15,001 5. I'd rather not answer	
1.8	How many people have been living permanently in the household (including you) in the last 6 months?	Number:_____	
1.9	How many children under the age of five live in your household?	Number:____	
1.10	Are there people with disabilities in the household?	1.Nu 2.Yes (number: _____)	
1.11	Specify your status. occupational?	1. Official Employee 2. Self-employed 3. No job 4. Pensioner	
1.12	What is the main source of drinking water used by members of your household? *Note: If multiple sources are used, focus on the primary source used today.*	1. Water from the public network, introduced into the home 2. Water from the public network, introduced in the yard/on the land 3. Public fountain 4. Individual fountain 5. Spring 6. Bottled water (bought) 7. Other sources	
1.13	What is the main source of water used by household members for other purposes, such as cooking and handwashing?	1. Water from the public network, introduced into the home 2. Water from the public network, introduced in the yard/on the land 3. Public fountain 4. Individual fountain	

	Note: This refers to the general source of water for household use, not necessarily for drinking.	5. Spring 6. Rainwater collected 7. Tanker/Water Tank Machine 8. Surface water (river, dam, lake, pond, stream, sewer, irrigation canal) 9. Bottled water 10. Other sources	
1.14	Your household is connected to the public sewerage system?	1. Not 2. Yes	If Yes, skip to section 2
1.15	Is there currently a public sewer system to connect to?	1.Yes 2.Nu 3. I don't know	
1.16	Planning to connect to the public sewer system?	1.Yes 2.Nu 3. I don't know	If No/Don't know, go to section 2
1.17	When do you plan to connect to the public sewerage system? **Note*: *If there is no public sewer connection plan, put 8888*	Year:_____	

SECTION 2: Data on the type and characteristics of the toilet used

S2	Questions	Responses	
		1.	
2.1 **R1**	What type of (main) toilet is used by members of your household? **Note: Observe the toilet and estimate the type as instructed* ***Note: If the household owns >1 functional latrine that remains in use by household members, take data for the latrine that remains in poor condition. Note: If the household has a latrine in addition to the main toilet, be sure to answer the questions in section 2B.*	2. Water toilet connected to the water mains 3. Water toilet (pour water from a bucket) 4. Dry toilet (without water) with toilet plate 5. Dry toilet (without water) without toilet plate [RISK] 6. Defecation in buckets or similar objects [RISK] 7. Open defecation (field, field, bush, open ground) [RISK]	
2.2 **R2**	Do you share this toilet on a regular basis with other	1.Nu 2.Yes [RISK]	

	people/individuals who are not members of this household? **Note: Not applicable (without toilet) 8888 [RISK]*		
2.3	How many people, including children, use this toilet? **Note: If you don't know, enter 9999*	Enter the number: _____	
2.4	Where is the toilet / sanitary installation located?	1. In your own home 2. In your own backyard (on the premises) 3. Off the property	
2.5	Approximate distance to the toilet (in meters)? (approximately in meters) **Note : If the toilet is inside the home, enter 0*	Distance in meters: _____	
2.6	Is the toilet accessible and safe for children under 5? *Note: If they are not children, enter 8888*	1. No 2. Yes 3. 8888	
2.7	Is the toilet accessible and safe for people with disabilities? *Note: If there are no people with disabilities, enter 8888*	1.Nu 2.Yes 3. 8888	
2.8	Is the toilet illuminated at night, artificial (e.g. electric light, flashlight, solar lamps)?	1.Nu 2.Yes	
2.9 **R3**	Where is the closest handwashing point to the toilet?	1. Inside the toilet 2. Outside the toilet, distance less than 5m 3. Outside the toilet, distance greater than 5 m [RISK] 4. There is no handwashing point [RISK]	
2.10	Is the handwashing point equipped with soap? *Note: Notice the soap*	1. No 2. Yes	
2.11	How often do household members wash their hands with soap after using the toilet?	1. Never 2. Rare 3. Sometimes 4. Always 5. I don't know	
2.12	Is there at least one household member who usually doesn't use the main toilet?	1. No 2. Yes 3. I don't know	If not. Skip to 2.14
2.13	If one or more members of the household do not use the main toilet, what are	1. Elderly people cannot use the latrine 2. People with disabilities / injuries / reduced physical mobility	

	the reasons? *Note* : Multiple options can be selected, which will be separated by commas in the database.	3. Some members do not want to use the latrine 4. Too far away 5. Lack of privacy and security 6. Other	
2.14	When was the main toilet installed? *Note: If **you don't know**, enter 9999*	Enter the year: _____	
2.15 	Are the walls and/or door of the main toilet intact and functional? *Note: Notice if the walls and door of the toilet prevent other people from seeing or hearing what someone is doing when using it, and if the toilet provides safety for intended users.*	1.Nu 2.Yes	
2.16 	Is the toilet clean? *Note* no faecal residue on the bowl, walls and floor?*	1.Nu 2.Yes	
2.17 	Have you noticed the presence of human feces in the yard or on the premises?	1.Nu 2.Yes	

SECTION 2B: DATA ON THE TYPE AND CHARACTERISTICS OF THE PIT LATRINE (If the household has an additional toilet, i.e. a latrine with a pit different from the main one)

S2B	Question	Response	
2.19	Do you share the pit latrine with other people/individuals who are not members of this household?	1.Nu 2.Yes	
2.20	How many people, including children, use this toilet? *Note: If you don't know, enter 9999*	Enter the number: _____	
2.21	Where is the toilet / sanitary installation located?	1. In your own backyard (on the premises) 2. Off the property	
2.22	Approximate distance to the toilet (in meters)?	Distance in meters: _____	
2.23 	Are the walls and/or toilet door intact and functional?	1.Nu 2.Yes	

2.24	Where is the closest handwashing point to the toilet?	1. Inside the toilet 2. Outside the toilet, distance less than 5m 3. Outside the toilet, distance greater than 5 m [RISK] 4. There is no handwashing point [RISK]	
2.25	Is the toilet clean? **Note: no faecal residue on the bowl, walls and floor?*	1.Nu 2.Yes	If Yes, go to section 3

SECTION 3: DATA ON COLLECTION AND MANAGEMENT OF FAECAL WASTE

S3	Question	Response	
3.1 **R4**	Where is the effluent from the toilet discharged and stored?	1. Waterproof Septic Tank 2. Permeable septic tank [RISC] 3. Gropi duble waterproof 4. Gropi duble permeable [RISC] 5. Storage tank 6. Permeable pit (without concrete ring) [RISK] 7. With solid waste [RISK] 8. Without individual collection plant [RISC] 9. Connected to the centralized sewerage system	If the answer no. 8, 9 complete the questionnaire
3.2	When was the individual effluent collection plant built/installed? **Note: If you don't know, enter 9999* **Note: Not applicable (no installation), enter 8888.*	Enter the year:_____	
3.3	What is the capacity of the individual effluent collection plant? **Note: If you don't know, enter 9999*	In cubic meters (approximately): _____	
3.4	How full is the cesspool/pit currently?	1. Almost full 2. An empty third 3. Half empty 4. More than half empty 5. You can't see it in the latrine 6. I don't know	
3.5	Individual effluent collection facilities had leaks, overflows or floods in the last year?	1. Not 2. Yes 3. Not applicable 4. I don't know	
3.6	What is the distance of the individual plant to the nearest source of drinking water? **Note: Not applicable (no drinking water source), enter 8888.*	Metres from:_____	If you answer 8888, go to question 3.8

	**Note: If you don't know, enter 9999*		
3.7	Is the drinking water source located on an upward or downward slope from the individual effluent collection plant?	1. Downhill (lower than the individual installation) 2. Uphill (higher than the individual installation) 3. At the same level (right)	
3.8	Have you noticed contamination of nearby soil or water due to leaks?	1. Not 2. Yes	

SECTION 4: EMPTYING

S4	Questions	Responses	
4.1	Are there individual abandoned (closed) installations on the premises of your household?	1. Not 2. Yes 3. I don't know	If you answer no.1 or no.3, go to question 4.3
4.2	How was the closure of the individual effluent collection facility carried out?	1. Buried 2. Disinfected and buried 3. Closed with solid material 4. Nothing was done 5. Not applicable (not closed) 6. I don't know	
4.3	When was the individual effluent collection plant last filled?	1. Never 2. 1-2 years ago 3. 2-5 years ago 4. 5-10 years ago 5. More than 10 years 6. I don't know	If you answer no.1, complete the questionnaire
4.4	What did you do the last time your individual effluent collection plant was filled?	1. Emptied and reused 2. Digging a new pit 3. Nothing was done 4. Used substances for decomposition 5. Other: Specify _____	If you answer no. 2,3,4 or 5, questionnaire completion
4.5	How frequently is it necessary to empty the individual effluent collection plant? *Note: Not applicable (no pit/pit) enter 8888.*	1. Several times a year 2. At 1-2 years 3. At 2-5 years old 4. Rare (over 5 years) 5. I don't know 6. 8888	
4.6 **R5**	Where and how are effluents discharged from individual plants? *Note: Answers 3-6 must be observed and confirmed on the spot.*	1. Emptied by the service operator 2. Drain underground (permeable potholes) [RISK] 3. Evacuated to the surface due to overflow [RISK] 4. Drain through pipes to the surface (e.g. yard, road) [RISK] 5. Discharge through pipes directly into a body of water (e.g. river, lake) [RISK]	

		6. Drain through pipes on a drainage field (e.g. farmland) 7. Drain through pipes into an infiltration pit 8. I don't know	
4.7	Who last performed the emptying?	1. Public company (e.g. Municipal Enterprise) 2. Private provider 3. Member of the household 4. Other unqualified persons: specific 5. I don't know	
4.8	Was the individual installation easily accessible for emptying?	1. Not 2. Yes 3. I don't know	
4.9	Did anyone have to enter the individual installation to empty it?	1. Not 2. Yes 3. I don't know	
4.10	How was emptying predominantly achieved last time?	1. Motorized (e.g. pump, tanker) 2. Manual (e.g. buckets, shovel) 3. I don't know	
4.11	How do you rate emptying services in terms of price?	1. Very high 2. Elevated 3. Reasonable 4. Reduced 5. Very low	
4.12	How do you evaluate emptying services in terms of quality of service?	1. Very weak 2. Poor 3. Acceptable 4. Hi 5. Very good	
4.13	How do you rate emptying services in terms of accessibility (service availability)?	1. Very difficult to access 2. Difficult 3. Moderate 4. Easy 5. Very easy	
4.14	How do you rate emptying services in terms of turnaround time?	1. Very long 2. Long 3. Reasonable 4. Short 5. Very short	

SECTION 5: Transport and disposal

S5	Questions	Responses	
5.1	Is the contents of the individual effluent collection plant transported after emptying?	1. Not 2. Yes 3. I don't know	If you answer no.1 or no.3, go to section 6
5.3	Who transported the contents of the individual effluent collection plant last after emptying?	1. State Service Operator 2. Private service operator 3. Individuals 4. Transported on your own 5. I don't know	

5.2	How was the effluent transported?	1. With drained tank (no leaks) 2. With vehicle without pumping system 3. Textbook 4. Other: Specify _____ 5. I don't know	
5.4	Did you notice any leaks during transport?	1. Not 2. Yes 3. I don't know	
5.5	Where was the contents of the individual effluent collection plant disposed of last after emptying and transport?	1 Disposed of at the wastewater treatment plant 2 Disposed of in the public sewer 3 Disposed of at the authorized landfill 4 Disposed of at unauthorized landfill 5 Removed to the body of water (river) 6 Removed to the body of water (lake/pond) 7 Disposed of on agricultural land as fertilizer 8 Buried 9 Others 10 I don't know	
5.6	What is the approximate distance (in Km) between your household and the disposal site? **Note: If you don't know, enter 9999*	Km: _____ _____	

SECTION 6: Treatment and reuse

S6	Questions	Responses	
6.1	Do you know that fecal sludge needs to be treated before disposal and/or reuse?	1. No 2. Yes	
6.2	Is fecal sludge treated on site before emptying? *Note; If Yes, please indicate the way ** Note: check all applicable options	1. Not; 2. Yes, drying and liquid treatment; 3. Yes, only drying; 4. From, composting; 5. Yes, chemical disinfection (e.g. lime treatment); 6. Other: Specify	If No, go to question 6.4
6.3	Where is the treated fecal sludge removed or taken on site (solid part)?	1. Thrown on land or in water (e.g. field, river) 2. Taken to the landfill 3. Safely buried on the property 4. Used as fertilizer for agricultural crops 5. Used to produce biogas or charcoal 6. Given or sold (e.g. neighbours, farmers) 7. I don't know	
6.4	How do you think, can treated sludge be used as fertilizer?	1. Yes 2. I'm not sure 3. Not	

Annex no. 2

Questionnaire for kindergartens

SECTION 1: General data about the kindergarten

S1	Questions	Responses	
1.1	Kindergarten code		
1.2	District		
1.3	Village		
1.4	Street		
1.5	The position of the respondent in kindergarten? *Note: Principal, educator, nurse*		
1.6	Kindergarten contact phone number *Note: Do not enter into the database*	Number:	

1.7	Total number of children in kindergarten	Number:	
1.8	Number of boys in kindergarten	Number:	
1.9	Number of girls in kindergarten	Number:	
1.10	Age groups of children in kindergarten	1. Under 3 years = 2. 3-5 years = _____ 3. 5-7 years =	
1.11	Number of children with physical disabilities in kindergarten	Number:_____	
1.12	The age of the kindergarten building?	1. Kindergarten built less than a year 2. Building from 1 to 10 years old 3. Building 11 to 30 years 4. Building 31 to 50 years 5. The building is more than 50 years old	
1.13	Is kindergarten connected to a public sewerage system?	1. Yes 2. Not	If Yes, go to 1.17
1.14	Is there currently a public sewerage system to connect to?	1. Not 2. Yes 3. I don't know	If No, go to question 1.17
1.15	Is there a plan to connect the kindergarten to the public sewerage system?	1. Not 2. Yes 3. I don't know	If you answer no.1 or no.3, go to question 1.17
1.16	If so, when is it expected to happen?	Year:_____	
1.17	Is there a person responsible for the maintenance of the water supply and sanitation systems?	1. Not 2. Yes 3. I don't know	

SECTION 2: Data on the type and characteristics of the toilet used

S2	Questions	Responses	
2.1	Does the kindergarten have toilets?	1. Not 2. Yes	
2.2 	Are the toilets organized separately for children and staff?	1. Not 2. Yes	If not, upgrade to 2.4
2.3 	What type of toilet does the staff use?	1. Water toilet connected to the water mains 2. Water toilet (pour water from a bucket) 3. Dry toilet (without water) with toilet plate 4. Dry toilet (without water) without toilet plate [RISK]	

		5. Defecation in buckets or similar objects [RISK] 6. Open defecation (field, field, bush, open ground) [RISK]	
2.4  **R1**	What type of toilet do children use?	1. Water toilet connected to the water mains 2. Water toilet (pour water from a bucket) 3. Dry toilet (without water) with toilet plate 4. Dry toilet (without water) without toilet plate [RISK] 5. Defecation in buckets or similar objects [RISK] 6. Open defecation (field, field, bush, open ground) [RISK]	
2.5 	Are the toilets for girls and boys located in separate rooms?	1. Not 2. Yes	
2.6 	Where is the children's toilet located?	1. Inside the building 2. In the courtyard of the kindergarten 3. Outside the perimeter of the kindergarten	If no. 1, go to 2.10
2.7 	For outdoor toilets: Is there an accessible road to the toilet in all weather conditions?	1. Not 2. Yes 3. Not applicable	
2.8 	For outdoor toilets: Are there lights that work properly on the way to the toilet?	1. No 2. Yes	
2.9 	The distance between the toilet and the kindergarten building (approximately, in meters)?	Distance in meters:_____	
2.10 	How many toilet compartments are in use?	1. For children only: _____ 2. Staff only: _____ 3. Common:_____	
2.11 	Is there at least one toilet adapted for small children (e.g. smaller seats)?	1. Not 2. Yes	
2.12 	Is there at least one toilet accessible to younger children?	1. Not 2. Yes	
2.13 	Are toilet flushing mechanisms accessible to young children?	1. Not 2. Yes	
2.14 	Is toilet paper available in toilets at the time of inquiry?	1. Not 2. Yes	

2.15	Are the toilet seats or platforms made of easy-to-clean materials (porcelain, concrete, plastic)?	1. Not 2. Yes	
2.16	Do the toilets have natural ventilation (window, ventilation opening)?	1. Not 2. Yes	
2.17	Is the toilet clean, with no traces of feces on the bowl, walls or floor?	1. Not 2. Yes	
2.18	Where is the closest handwashing point to the toilet?	1. Faucet in the toilet 2. Robinet la <5 m 3. Tap >5 m 4. There is no washing point	
2.19	Are soap and water available at the handwashing point?	1. Not 2. Yes	
2.20	Are children taught to wash their hands after using the toilet?	1. Not 2. Yes	
2.21	Are cleaning activities recorded and signed?	1. Yes 2. No, no signatures (outdated records) 3. Not	
2.22	How is the contents of potties used by children evacuated?	1. Emptied immediately into the toilet and cleaned after each use 2. Periodically flushing the toilet throughout the day 3. Emptied into an intermediate container and then evacuated 4. The contents are disposed of in nature or in an unauthorized place 5. Other methods (specify)	

Section 2B: Data on pit latrines (if they exist in addition to main toilets)

S2B	Question	Response	
2.23	Is the pit latrine used by other people outside the kindergarten?	1. Not 2. Yes	
2.24	How many people, including children, use this latrine? **Note: If you don't know, enter 9999*	Number:_____	
2.25	Where is the toilet / sanitary installation located?	1. In the courtyard of the kindergarten 2. Outside the perimeter	
2.26	Approximate distance to	Distance:_____	

	the toilet (in meters)?		
2.27	Are the walls and/or toilet door intact and functional?	1. Not 2. Yes	
2.28	Where is the nearest place for handwashing in relation to the toilet?	1. Tap outside the toilet, distance less than 5m 2. Tap outside the toilet, distance more than 5m 3. There is no place for hand washing	
2.29	Is the toilet clean? **Note: no faecal residue on the bowl, walls and floor?*	1.Nu 2.Yes	If Yes, go to section 3
2.30	Is the toilet bowl free of used cleaning materials? (paper)	1.Nu 2.Yes	

SECTION 3: DATA ON COLLECTION AND MANAGEMENT OF FAECAL WASTE

S3	Question	Response	
3.1 **R4**	Where is the effluent from the toilet discharged and stored?	10. Small wastewater treatment plant 11. Waterproof Septic Tank 12. Permeable septic tank [RISC] 13. Gropi duble waterproof 14. Gropi duble permeable [RISC] 15. Storage tank 16. Permeable pit (without concrete ring) [RISK] 17. With solid waste [RISK] 18. Without individual collection plant [RISC]	If the answer no. 8, complete the questionnaire
3.2	When was the individual effluent collection plant built/installed? **Note: If you don't know, enter 9999* **Note: Not applicable (no installation), enter 8888.*	Enter the year:_____	
3.3	Is the effluent storage/discharge site protected (fenced)?	1. Not 2. Yes	
3.4	What is the capacity of the individual effluent collection plant? **Note: If you don't know, enter 9999*	In cubic meters (approximately): _____	
3.5	How full is the cesspool/pit currently?	1. Almost full 2. An empty third 3. Half empty 4. More than half empty	

		5. You can't see it in the latrine 6. I don't know	
3.6	Individual effluent collection facilities had leaks, overflows or floods in the last year?	5. Not 6. Yes 7. Not applicable 8. I don't know	
3.7	What is the distance to the nearest source of drinking water? **Note: Not applicable (no drinking water source), enter 8888.* **Note: If you don't know, enter 9999*	Metres from:_____	
3.8	Is the drinking water source located on an upward or downward slope from the individual effluent collection plant?	4. Downhill (lower than the individual installation) 5. Uphill (higher than the individual installation) 6. On the same level	

SECTION 4: Emptying

S4	Questions	Responses	
4.1	Are there individual abandoned (closed) installations on the premises of your household?	4. Not 5. Yes 6. I don't know	If you answer no.1 or no.3, go to question 4.3
4.2	How was the closure of the individual effluent collection facility carried out?	1. Buried 7. Disinfected and buried 8. Closed with solid material 9. Nothing was done 10. Not applicable (not closed) 11. I don't know	
4.3	When was the individual effluent collection plant last filled?	7. Never 8. 1-2 years ago 9. 2-5 years ago 10. 5-10 years ago 11. More than 10 years 12. I don't know	If you answer no.1, complete the questionnaire
4.4	What did you do the last time your individual effluent collection plant was filled?	6. Emptied and reused 7. Digging a new pit 8. Nothing was done 9. Used substances for decomposition 10. Other: Specify _____	If you answer no. 2,3,4 or 5, questionnaire completion

4.5	How often is it necessary to empty the individual effluent collection plant?	7. Several times a year 8. At 1-2 years 9. At 2-5 years old 10. Rare (over 5 years) 11. Not applicable (without pit/pit) 12. I don't know	
4.6  **R5**	Where and how are effluents discharged from individual plants? *Note: Answers 3-6 must be observed and confirmed on the spot.*	9. Emptied by the service operator 10. Drain underground (permeable potholes) [RISK] 11. Evacuated to the surface due to overflow [RISK] 12. Drain through pipes to the surface (e.g. yard, road) [RISK] 13. Discharge through pipes directly into a body of water (e.g. river, lake) [RISK] 14. Drain through pipes on a drainage field (e.g. farmland) 15. Drain through pipes into an infiltration pit 16. I don't know	
4.7	Who last performed the emptying?	6. Public company 7. Private provider 8. Member of the household 9. Other unqualified persons: specific 10. I don't know	
4.8	Was the individual installation easily accessible for emptying?	4. Not 5. Yes 6. I don't know	
4.9	Did anyone have to enter the individual installation to empty it?	4. Not 5. Yes 6. I don't know	
4.10	How was emptying predominantly achieved last time?	4. Motorized (e.g. pump, tanker) 5. Manual (e.g. buckets, shovel) 6. I don't know	
4.11	How do you rate emptying services in terms of the following?	1. Price – (Very High / High / Reasonable / Low / Very Low) 2. Quality of service – (very poor / poor / acceptable / good / very good) 3. Accessibility (service availability) – (very difficult to access / difficult / moderate / easy / very easy) 4. Lead time – (very long / long / reasonable / short / very short)	

SECTION 5: Transportation and Disposal

S5	Questions	Responses	

5.1	Is the contents of the individual effluent collection plant transported after emptying?	4. Not 5. Yes 6. I don't know	If you answer no.1 or no.3, go to section 6
5.3	Who transported the contents of the individual effluent collection plant last after emptying?	6. State Service Operator 7. Private service operator 8. Individuals 9. Transported on your own 10. I don't know	
5.2	How was the effluent transported?	6. With drained tank (no leaks) 7. With vehicle without pumping system 8. Textbook 9. Other: Specify _____ 10. I don't know	
5.5	Where was the contents of the individual effluent collection plant disposed of last after emptying and transport?	11 Disposed of at the wastewater treatment plant 12 Disposed of in the public sewer 13 Disposed of at the authorized landfill 14 Disposed of at unauthorized landfill 15 Removed to the body of water (river) 16 Removed to the body of water (lake/pond) 17 Disposed of on agricultural land as fertilizer 18 Buried 19 Others 20 I don't know	
5.6	What is the approximate distance (in Km) between the kindergarten and the disposal site? **Note: If you don't know, enter 9999*	Km: _____ _____	
5.6	Did the kindergarten pay for transport and disposal services?	1. No 2. Yes 3. I don't know	
5.7	How much did the transport and disposal service cost (in MDL)? **Note: If you don't know, enter 9999*	Amount in Moldovan lei: _____	
5.8	Is there a dedicated budget line in the kindergarten budget for these services?	1. No 2. Yes 3. I don't know	
5.9	Who secured the funds for the last transport and disposal service?	1. Kindergarten 2. Local public authorities (city hall) 3. National budget (Ministry of Education) 4. Parents	

		5. Other source (specify):_____ 6. I don't know	

SECTION 6: Tartar and Reuse

S 6	Questions	Responses	
6. 1	Do you know that fecal sludge needs to be treated before disposal and/or reuse?	1. No 2. Yes	
6. 2	Is fecal sludge treated on site before emptying? *Note; If Yes, please indicate the way ** Note: check all applicable options	7. Not; 8. Yes, drying and liquid treatment; 9. Yes, only drying; 10. From, composting; 11. Yes, chemical disinfection (e.g. lime treatment); 12. Other: Specify _____	If No, go to question 6.4
6. 3	Who is responsible for the treatment process?	1. Kindergarten staff 2. External supplier (e.g. specialist company) 3. Other entity (specify): _____ 4. I don't know	
6. 4	Has staff received training on the safe treatment or management of faecal waste?	1. Not 2. Yes 3. I don't know	
6. 5	Where is the treated fecal sludge removed or taken on site (solid part)?	8. Thrown on land or in water (e.g. field, river) 9. Taken to the landfill 10. Safely buried on the property 11. Used as fertilizer for agricultural crops 12. Used to produce biogas or charcoal 13. Given or sold (e.g. neighbours, farmers) 14. I don't know	

Annex no. 3

Questionnaire for the local public authority

Section 1: Basic data about LPAs

S1	Question	Responses	Logic
1.1	APL Code		
1.2	District	Text:_____	
1.3	Village	Text:_____	
1.4	Respondent Function	Text:_____	
1.5	Telefon de contact *Note: Not published*	Number:_____	
1.6	E-mail	Text:_____	
1.7	Total population according to the last census (population according to residence)	Number:_____	
1.8	Total number of households	Number:_____	
1.9	Number of public institutions in the locality	Kindergartens:_____ Schools:_____ IMSP: _____ Others:_____	

Section 2: Management of wastewater emptying, transport and treatment

S2	Question	Responses	
2.1	Has the LPA issued a decision on effluent management?	1. Not 2. Yes (title and year: _____)	If No, go to question 2.4
2.2	Does the decision regulate the emptying, transport and treatment of faecal waste?	1. Not 2. Yes 3. Partially	
2.3	What aspects are regulated? *Note: Select all applicable*	1. Construction of individual installations; 2. Frequency of emptying; 3. Methods of transport; 4. Place of elimination; 5. Worker safety; 6. Environmental protection; 7. Other(specify)	

S2	Question	Responses	
2.4	What is the number of public institutions connected to sewerage?	Kindergartens:_____ Schools:_____ Medical institutions: _____	
2.5	What is the number of households that benefit from access to the centralized sewerage system?	Percentage:_____	
2.6	Are effluent emptying services available throughout the LPA?	1. No 2. Yes	If not, skip to section 3
2.7	Who provides effluent emptying services in the locality? *Note: Select all applicable*	1. Public company 2. Private provider 3. Individual households (e.g. self-emptying or informal solutions) 4. Other unqualified persons 5. There are no authorized services available	If no. 5, Switch to
2.8	List the operators that provide services for emptying, transporting and treating effluents from individual collection facilities?	Operators/other persons:_____	
2.9	Does the LPA keep track of the effluent emptying services carried out in the locality?	1. No 2. Yes	

Section 3: Health Surveillance by Verification

S3	Question	Responses	
3.1	Does the LPA have the records of the sanitary installations in the locality? If yes, specify the number:	1. Not 2. Yes ● Number of septic tanks: _____ ● Number of cesspools: _____ ● Number of latrines: _____	
3.2	Does the LPA carry out the verification of individual effluent collection facilities?	1. No 2. Da, regulates 3. Yes, exceptional 4. Both	If No, go to question 3.8
3.3	Does the LPA have an annual plan and checklist of individual effluent collection facilities?	1. Yes 2. Not 3. In the process of development	
3.4	Specify verified entities?	1. Housekeeping;	

S3	Question	Responses	
	Note: Select all applicable	2. Kindergartens; 3. Schools; 4. IMSP; 5. Other	
3.5	What parameters are checked? *Note: Select all applicable*	1. Construction requirements; 2. Impermeability; 3. Distance from the water source; 4. Periodicity of emptying; 5. Disinfection after emptying; 6. Uncontrolled leakage; 7. Other	
3.6	Does the LPA transmit information about the results of the checks to other authorities?	1. No 2. Yes	If not, upgrade to 3.8
3.7	To whom does the LPA report the results of the verifications carried out? *Note: Select all applicable*	1. Ministry of Infrastructure and Regional Development; 2. Ministry of Environment; 3. Ministry of Health; 4. APL top level Others:_____	
3.8	Have discharges from individual effluent collection facilities been reported in the last year?	1. Not 2. Yes (number of cases: _____) 3. I don't know	
3.9	What measures have you taken to prevent environmental pollution caused by individual effluent collection plants? *Note: Select all applicable*	1. Installation of septic tanks or ecological toilets in communities without sewerage. 2. Organization of periodic collections of wastewater from septic tanks. 3. Carrying out controls and applying sanctions for illegal discharges. 4. Carrying out information campaigns for citizens. 5. Attracting funds for the extension of the sewerage network. 6. No action has been taken	to check the legislation

Section 4: Healthcare Planning

S4	Question	Responses	
4.1	Is there a plan to ensure/expand the centralized sewerage system?	1.Nu 2.Da (termen: _____)	If not, upgrade to 4.3
4.2	What categories does the plan include? * *Note: check all applicable options*	1. Housekeeping; 2. Kindergartens; 3. Schools; 4. Medical institutions;	
4.3	Are there ongoing projects related to improving sanitation? **Note; If Yes, indicate what the project is about?* ** *Note: check all applicable options*	1. Not 2. Yes, the construction of new sewerage systems 3. Yes, the extension of the public sewerage system 4. Yes, the construction of the wastewater treatment plant; 5. Yes, the implementation of organized emptying of individual effluent collection facilities; 6. Yes, subsidies for connection to the public sewerage system; 7. Yes, subsidies for building individual systems; 8. Yes, the introduction of green technologies; 9. Yes, safe reuse of sludge after treatment; 10. Yes, Other (indicate): _____	
4.4	What are The challenges in health management? *Note: Select all applicable*	1. Insufficiency of financial resources; 2. Outdated sanitation infrastructure; 3. Lack of service operators; 4. Lack of community awareness of sanitation practices; 5. Difficulties of access to isolated areas of the locality; 6. Insufficient implementation of legislation; 7. Shortage/insufficiency of qualified personnel in LPAs for health management; 8. Other challenge (specify): _____	
4.5	By what means can citizens file a complaint, report a malfunction or ask for information about the health services? *Note: Select all applicable*	1. Personally, at the APL headquarters; 2. Phone; 3. In writing, by mail or directly to the LPA; 4. Online, through the LPA website or other digital platforms;	

S4	Question	Responses	
4.6	What is the total number of notifications and complaints registered from users in the field of health in 2024?	Number:_____	

Section 5: Human resources, financing of services and investments

S5	Questions	Responses	Logic
5.1	The average annual cost of sanitation services by category? *Note: if I don't know, to enter 8888?	1.Gospodării: _____ MDL 2. Kindergartens: _____ MDL 3.Școli: _____ MDL 4.IMSP: _____ MDL	
5.2	Does LPA offer financial support for emptying in the locality?	1. Not 2. Yes If yes, Percentage or category of support: _____	
5.3	On a scale of 1 to 5, how would you rate LPAs' cooperation with other sectors, NGOs, donors or partners related to the collection, drainage, emptying, transport and treatment of faecal sludge?	1. Unsatisfactory 2. Acceptable 3. Satisfactory 4. Good 5. Excellent	
5.4	What is the total amount of investments in healthcare in the last 3 years?	Amount in MDL: _____	
5.5	What is the total amount of investment in regular operation and maintenance for emptying, transporting and treating fecal sludge in 2024?	Amount in MDL: _____	
5.6	What is the total annual amount of investments in the improvement and expansion of the system - connections to the public sewerage system?	Amount in MDL: _____	

5.7	What is the level of investments needed for the expansion of the public sewerage system (new connections)?	Amount in MDL: _____	
5.8	The capacity of LPAs in terms of human resources dedicated to health management?	Number:_____	

SECTION 6: Questions about emptying and transport services

S6	Questions	Responses	Logic
6.1	Are the services of emptying, transporting and disposing of effluents in the locality provided directly by the LPA?	1. Yes 2. Not	If No, complete the questionnaire
6.2	What is the average total volume of waste (in m³) discharged from individual effluent collection facilities in individual households?	Volume (m³)_____	
6.3	How many emptying services did you provide in 2024 from individual households?	Number:_____	
6.4	What is the average total volume of waste (in m³) discharged from individual effluent collection facilities in preschool institutions?	Volume (m³)_____	
6.5	How many emptying services did you provide in 2024 from preschool institutions?	Number:_____	
6.6	What is the average total volume of waste (in m³) discharged from individual school effluent collection facilities?	Volume (m³)_____	
6.7	How many emptying services did you provide in 2024 from schools?		

6.6	What is the average total volume of waste (in m^3) discharged from individual effluent collection facilities in medical institutions?	Volume (m^3)_____	
6.7	How many emptying services did you provide in 2024 from medical institutions?		
6.8	What is the season in which you provide services more frequently?	1. Spring 2. Summer 3. Fall 4. Winter 5. It is not a specific period	
6.9	State the reasons why utility services are offered more frequently?	Specify:_____	
6.10	Indicate the types of individual effluent management systems served? *Note: Check all applicable options*	1. Septic tanks; 2. Cesspit; 3. Latrines; 4. Small sewerage systems on site 5. Others	
6.11	What types of machinery or equipment do you use for the emptying process? *Note: Check all applicable options*	1. Dump trucks; 2. Machinery adapted for hard-to-reach areas (e.g. portable pumps, small tanks); 3. Small capacity motorized pumps; 4. Hand tools (e.g. shovels, spades, buckets, ropes); 5. Manual pumps without motor; 6. Other equipment (specify): ___	
6.12	How many trucks do you use for emptying and transporting effluents?	Number:_____	
6.13	What is the average capacity of trucks?	(m^3):_____	
6.14	Do workers clean individual plants after emptying?	1. Yes 2. Not	
6.15	Transporting effluents through localities (urban or rural areas)?	1. Yes 2. Not	

6.16	During transport, do effluents accidentally leak into the environment? **Note; If Yes, please indicate the reasons* *** Note: check all applicable options*	1. Not 2. Yes, the quality of the roads 3. Yes, the features of the relief (e.g. hills): 4. Yes, technical reasons (transport equipment failures): 5. Yes, Other	

SECTION 7: Treatment and Disposal Service Questions

S7	Questions	Responses	Logic
7.1	Do you offer on-site fecal sludge treatment services (latrines, septic tanks, or cesspools)? **Note; If Yes, please indicate the way* *** Note: check all applicable options*	1. Not; 2. Yes, drying and liquid treatment; 3. Yes, only drying; 4. From, composting; 5. Yes, chemical disinfection (e.g. lime treatment); 6. Other: Specify _____	
7.2	Do you provide a fecal sludge treatment during transportation? **Note; If Yes, please indicate the way* *** Note: check all applicable options*	1. Not 2. Yes, Chemical stabilization (e.g. adding lime for disinfection) 3. Yes, Adding coagulants or flocculants to separate the liquid: 4. Yes, Other methods (specify):_____	
7.3	Where are the effluents transported from the individual plants?	1. Disposed of at the treatment plant 2. Disposed of in the public sewer 3. Disposed of at the authorized landfill 4. Disposed of at unauthorized landfill 5. Removed to the body of water (river) 6. Removed to the body of water (lake/pond) 7. Disposed of on agricultural land as fertilizer 8. Buried 9. Others_____	If no. 1, upgrade to 7.5

7.4	What is the reason for effluent disposal in this way? ** Note: check all applicable options*	1. There is no treatment plant; 2. The treatment plant does not work; 3. The waste is not suitable for the treatment plant; 4. Workaround; 5. The cost of treatment is too high; 6. Too long a distance to the treatment plant; 7. Other (specify): _____	
7.5	Is the effluent disposal site legal?	1. Yes 2. Not 3. I don't know	
7.6	What is the approximate distance (in Km) to the effluent disposal site?	Miles:	
7.7	How many disposals of untreated wastewater in 2024 have been carried out into the environment (e.g. rivers, open pits)?	Total:_____	

SECTION 8: Questions related to workers/human resources

S8	Questions	Responses	Logic
8.1	You have an instruction which defines safety procedures for workers?	1. Yes 2. Not	
8.2	Do workers enter individual effluent collection facilities during emptying?	1. Yes 2. Not	
8.3	Are workers insured with personal protective equipment? **Note; If Yes, indicate the equipment* *** Note: check all applicable options*	1. Not 2. Yes, gloves; 3. Da, măști faciale; 4. Da, combinezoane; 5. Yes, boots; 6. Yes, Other (specify): ____	
8.4	Do workers wear personal protective equipment as required?	1. Yes 2. Not 3. Occasional	

8.5	Do workers use cleaning materials and disinfectants after manual emptying?	1. Yes 2. Not 3. Not applicable (no manual emptying)	
8.6	Do workers wash their hands with soap and water after finishing work?	1. Yes 2. Not 3. Occasional	
8.7	Do workers use cleaning materials and disinfectants in case of leaks?	1. Yes 2. Not	
8.8	Do workers participate in training on minimum safety standards?	1. Yes 2. Not	
8.9	How often are worker trainings offered? (check only one answer)	1. Only once at the time of employment 2. Regular, once a year 3. Sometimes, but not regularly	
8.10	Do you have sufficient human resources for effluent emptying, transport and treatment services?	1. Yes 2. Not	

SECTION 9: Finance

S9	Questions	Responses	Logic
9.1	What is the rate of the emptying, transport and treatment service provided?	_____MDL	
9.2	Select the criteria used to set the tariff for the services provided? * *Note: check all applicable options*	1. User category (individual households or public institutions); 2. Transportation distance to the point of unloading; 3. The amount of fecal sludge collected (in cubic meters); 4. Duration of the intervention (number of hours); 5. The condition of the roads to the service location (e.g. unpaved roads); 6. Legal fees for sludge storage or treatment; 7. Seasonal conditions (e.g. winter or rainy periods); 8. Other criteria (specify): _____	

9.3	Is the emptying, transport and treatment service subsidized in any way? **Note; if Yes, please indicate for whom* *** Note: check all applicable options*	1. Not 2. Yes, low-income households (Social Assistance); 3. Yes, for pensioners; 4. Yes, public medical institutions; 5. Yes, educational institutions; 6. Yes, Other groups (specify):_____	

Annex no. 4

Questionnaire for emptying, transport and treatment service operators

SECTION 1: General data on operators

S1	Questions	Responses	Logic
1.1	Cod operator		
1.2	Company Name		
1.3	Address		
1.4	District		
1.5	Village		
1.6	Respondent Function		
1.7	Phone/e-mail		
1.8	Year of company establishment		
ID: 1.9	Does the company hold a license for effluent emptying, transport and treatment services?	1. Yes 2. No	
1.10	The area in which the company provides services?	1. Several districts of the Republic of Moldova 2. A singur raion 3. Several localities in a district 4. Only the specified locality	
1.11	Are there other service providers in the region?	1. Yes 2. Not 3. If Yes, indicate the number of public companies: 4. Indicate the number of private companies:_____	

SECTION 2: Monitoring/records regarding the emptying, transport and treatment of faecal sludge from individual collection facilities.

S2	Questions	Responses	Logic
2.1	Do you keep records and provide reports to authorities on septic tank and pit emptying services?	1. Yes 2. Not 3. Partially	If No, go to question 2.5
2.2	If there are records of septic tanks and cesspools, indicate whether they contain the following data:	according to the table below	

Aspects of the record	Records			Report to the authorities	
Number of septic tanks and cesspools	Yes	Number	Not	Yes	Not
Capacity of septic tanks and cesspools	Yes		Not	Yes	Not
Type of septic tanks and cesspools (permeability	Yes		Not	Yes	Not
Method of on-site treatment of fecal sludge	Yes		Not	Yes	Not
Total number of annual emptyings of septic tanks and cesspools	Yes	Number	Not	Yes	Not
Number of annual emptyings of septic tanks and cesspools in households	Yes	Number	Not	Yes	Not
Number of annual emptyings of septic tanks and cesspools in schools and preschools	Yes	Number	Not	Yes	Not
Number of annual emptyings of septic tanks and cesspools in medical institutions	Yes	Number	Not	Yes	Not

2.3	Indicate the method of treating fecal sludge for septic tanks and cesspools:		
2.4	Do you provide services for emptying, transporting and disposing of effluents from latrines?	1. Yes 2. Not	If not, skip to section 3
2.5	Do you keep records and provide reports to authorities on latrine emptying services?	1. Yes 2. Not 3. Partially	If not, skip to section 3
2.6	If there are records of latrines, indicate whether they contain the following information:		

Aspects of the record	Records			Report to the authorities	
Number of latrines	Yes	Number	Not	Yes	Not
Latrine capacity	Yes		Not	Yes	Not
Type of latrines (permeability)	Yes		Not	Yes	Not
Method of on-site treatment of fecal sludge	Yes		Not	Yes	Not
Total number of annual latrine emptyings	Yes	Number	Not	Yes	Not
Number of annual emptyings of latrines in households	Yes	Number	Not	Yes	Not
Number of annual emptyings of latrines in school and preschool institutions	Yes	Number	Not	Yes	Not
Number of annual emptyings of septic tanks and cesspools in medical institutions	Yes	Number	Not	Yes	Not

2.7	Indicate the method of treating fecal sludge for latrines:		
2.8	Do you keep records and provide reports to authorities on emptying services of small sewerage systems?	1. Yes 2. Not 3. Partially	If not, skip to section 3
2.9	If there are records of small sewerage systems, indicate whether they contain the following data:	according to the table below	

Aspects of the record	Records			Report to the authorities	
Number of small sewerage systems	Yes	Number	Not	Yes	Not
Method or type of fecal sludge treatment of a small sewage system	Yes	Number	Not	Yes	Not
Number of individual households connected to small sewerage systems	Yes	Number	Not	Yes	Not
Number of annual emptyings of small sewerage systems in households	Yes	Number	Not	Yes	Not

Number of annual emptyings of small sewerage systems in schools and preschools	Yes	Numb er	Not	Yes	Not
Number of annual emptyings of small sewerage systems in medical institutions	Yes	Numb er	Not	Yes	Not

2.10	Indicate the method of treating fecal sludge for small sewerage systems:		

SECTION 3: Questions about emptying and transport services

S3	Questions	Responses	Logic
3.1	What is the average total volume of waste (in m^3) discharged from individual effluent collection facilities in individual households?	Volume (m^3)_____	
3.2	How many emptying services did you provide in 2024 from individual households?	Number:_____	
3.3	What is the average total volume of waste (in m^3) discharged from individual effluent collection facilities in preschool institutions?	Volume (m^3)_____	
3.4	How many emptying services did you provide in 2024 from preschool institutions?	Number:_____	
3.5	What is the average total volume of waste (in m^3) discharged from individual effluent collection facilities in medical institutions?	Volume (m^3)_____	
3.6	How many emptying services did you provide in 2024 from medical institutions?		

3.7	What is the season in which you provide services more frequently?	1. Spring 2. Summer 3. Fall 4. Winter 5. It is not a specific period	
3.8	State the reasons why utility services are offered more frequently?	Specify:_____	
3.9	Indicate the types of individual effluent management systems served? *Note: Check all applicable options*	1. Septic tanks; 2. Cesspit; 3. Latrines; 4. Small sewerage systems on site 5. Others	
3.10	What types of machinery or equipment do you use for the emptying process? *Note: Check all applicable options*	1. Dump trucks; 2. Machinery adapted for hard-to-reach areas (e.g. portable pumps, small tanks); 3. Small capacity motorized pumps; 4. Hand tools (e.g. shovels, spades, buckets, ropes); 5. Manual pumps without motor; 6. Other equipment (specify): ___	
3.11	How many trucks do you use for emptying and transporting effluents?	Number:_____	
3.12	What is the average capacity of trucks?	(m^3):_____	
3.13	Do workers clean individual plants after emptying?	1. Yes 2. Not	
3.14	Does the company transport effluents through localities (urban or rural areas)?	1. Yes 2. Not	
3.15	During transport, do effluents accidentally leak into the environment? **Note; If Yes, please indicate the reasons* *** Note: check all applicable options*	1. Not 2. Yes, the quality of the roads 3. Yes, the features of the relief (e.g. hills): 4. Yes, technical reasons (transport equipment failures): 5. Yes, Other	

SECTION 4: Treatment and Disposal Service Questions

S4	Questions	Responses	Logic
4.1	Do you offer on-site fecal sludge treatment services (latrines, septic tanks, or cesspools)? **Note; If Yes, please indicate the way* *** Note: check all applicable options*	1. Not; 2. Yes, drying and liquid treatment; 3. Yes, only drying; 4. From, composting; 5. Yes, chemical disinfection (e.g. lime treatment); 6. Other: Specify _____	
4.2	Do you provide a fecal sludge treatment during transportation? **Note; If Yes, please indicate the way* *** Note: check all applicable options*	1. Not 2. Yes, Chemical stabilization (e.g. adding lime for disinfection) 3. Yes, Adding coagulants or flocculants to separate the liquid: 4. Yes, Other methods (specify):_____	
4.3	Where are the effluents transported from the individual plants?	1. Disposed of at the treatment plant 2. Disposed of in the public sewer 3. Disposed of at the authorized landfill 4. Disposed of at unauthorized landfill 5. Removed to the body of water (river) 6. Removed to the body of water (lake/pond) 7. Disposed of on agricultural land as fertilizer 8. Buried 9. Others_____	If no. 1, upgrade to 4.5
4.4	What is the reason for effluent disposal in this way? ** Note: check all applicable options*	1. There is no treatment plant; 2. The treatment plant does not work; 3. The waste is not suitable for the treatment plant; 4. Workaround; 5. The cost of treatment is too high; 6. Too long a distance to the treatment plant; 7. Other (specify): _____	

4.5	Is the effluent disposal site legal?	1. Yes 2. Not 3. I don't know	
4.6	What is the approximate distance (in Km) to the effluent disposal site?	Miles:	
4.7	How many disposals of untreated wastewater in 2024 have been carried out into the environment (e.g. rivers, open pits)?	Total:_____	

SECTION 5: Questions related to workers/human resources

S5	Questions	Responses	Logic
5.1	You have an instruction which defines safety procedures for workers?	1. Yes 2. Not	
5.2	Do workers enter individual effluent collection facilities during emptying?	1. Yes 2. Not	
5.3	Are workers insured with personal protective equipment? **Note; If Yes, indicate the equipment* *** Note: check all applicable options*	1. Not 2. Yes, gloves; 3. Da, măști faciale; 4. Da, combinezoane; 5. Yes, boots; 6. Yes, Other (specify): ____	
5.4	Do workers wear personal protective equipment as required?	1. Yes 2. Not 3. Occasional	
5.5	Do workers use cleaning materials and disinfectants after manual emptying?	1. Yes 2. Not 3. Not applicable (no manual emptying)	
5.6	Do workers wash their hands with soap and water after finishing work?	1. Yes 2. Not	

		3. Occasional	
5.7	Do workers use cleaning materials and disinfectants in case of leaks?	1. Yes 2. Not	
5.8	Do workers participate in training on minimum safety standards?	1. Yes 2. Not	
5.9	How often are worker trainings offered? (check only one answer)	1. Only once at the time of employment 2. Regular, once a year 3. Sometimes, but not regularly	
5.10	Do you have sufficient human resources for effluent emptying, transport and treatment services?	1. Yes 2. Not	

SECTION 6: Finance

S 6	Questions	Responses	Logic
6.1	What is the rate of the emptying, transport and treatment service provided?	_____MDL	
6.2	Select the criteria used to set the tariff for the services provided? * *Note: check all applicable options*	1. User category (individual households or public institutions); 2. Transportation distance to the point of unloading; 3. The amount of fecal sludge collected (in cubic meters); 4. Duration of the intervention (number of hours); 5. The condition of the roads to the service location (e.g. unpaved roads); 6. Legal fees for sludge storage or treatment; 7. Seasonal conditions (e.g. winter or rainy periods); 8. Other criteria (specify): _____	
6.3	Is the emptying, transport and treatment service subsidized in any way? **Note; if Yes, please indicate for whom* *** Note: check all applicable options*	1. Not 2. Yes, low-income households (Social Assistance); 3. Yes, for pensioners; 4. Yes, public medical institutions;	

		5. Yes, educational institutions; 6. Yes, Other groups (specify):_____	