



CLIMATE CHANGE ADAPTATION TECHNOLOGY NEEDS ASSESSMENT

in

ENERGY, AGRICULTURE, WATER, FORESTRY, TRANSPORT, HEALTH

sectors of the

REPUBLIC of MOLDOVA

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FOREWORD

The Republic of Moldova stands at a critical juncture in its development, where climate change adaptation is essential for safeguarding its economic, social, and environmental future. The country has aligned with the UNFCCC Parties in recognizing the significance of technology, following Article 10 of the Paris Agreement's Technology Framework, which emphasizes innovation, implementation, capacity building, enabling environments, collaboration, and stakeholder support.

As global weather patterns grow more erratic, Moldova adopted a strategic approach to climate adaptation, backed by technological innovation and coordinated policy efforts. Recognizing the technological needs for climate adaptation as a cornerstone of effective action, Moldova conducted a Technology Needs Assessment (TNA) in six priority sectors—Agriculture, Energy, Water, Forestry, Health, and Transport—during 2021-2023. In-depth sectoral assessments took an inclusive approach, guided by Sectoral Work Groups focused on enhancing resilience and promoting sustainable development in each area. The TNA was carried out as part of the second iteration of the National Adaptation Plan, funded by the Green Climate Fund and supported by UNDP and FAO UN Agencies.

The TNA process laid a robust foundation for integrating climate adaptation into sectoral planning, addressing existing adaptation gaps, and fostering systemic resilience in response to climate impacts. The identified and prioritised technological solutions aligned with Moldova's broader national and sectoral adaptation strategies, such as the *National Programme for Adaptation (2023-2030)*, *Moldova 2030 Sustainable Development Strategy*, *Low Emission Development Programme 2030* and *Nationally Determined Contribution 2.0 and 3.0* (under consultation). The outcomes of the TNA emphasised transformative adaptation, aiming to meet Moldova's adaptation needs by establishing resilient systems capable of responding to identified climate impacts, vulnerabilities, and risks in a timely manner, matching the anticipated pace of climate change.

The TNA process in Moldova followed a structured, three-stage approach to ensure a comprehensive understanding and prioritisation of adaptation technologies: Identification and *Prioritization of Adaptation Technologies*; *Barrier Analysis and Enabling Environment*; *Development of Technology Action Plans (TAPs)* followed by the identification of *Project Ideas* (Energy, Water, Forestry, Transport, Health and investment Concept Note (Agriculture)). Sectoral TNA Reports offer a thorough exploration of the technological pathways that can facilitate effective climate adaptation across the prioritized sectors.

Climate adaptation TNA assessments form a vital component of Moldova's contributions to global adaptation efforts under the Paris Agreement, underscoring the country's commitment to strengthening resilience against climate-induced impacts.

Aliona Rusnac
State Secretary
Ministry of Environment of Moldova





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HEALTH SECTOR

Integrated Report (TNA, BAEF, TAPs)

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ABBREVIATIONS

RO	EN	Name
ANSP	NPHA	National Public Health Agency
AM	EA	Environment Agency
ANCD	NARD	National Agency for Research and Development
APL	LPA	Local public authorities
ASC	CCA	Climate Change Adaptation
BNT	NCDs	Noncommunicable diseases
CDM	CDM	Clean Development Mechanism/ Clean Development Mechanism (CDM) under the Kyoto Protocol
CSP	PHC	Public Health Center
CND	NDC	National Determined Contribution
CONUSC	UNFCCC	United Nations Framework Convention on Climate Change (UNFCCC)
ENT	TNA	Technology Needs Assessment
MCA	MCA	Multi-criteria assessment
GES	GHGs	Greenhouse gases
GFMC	GFMC	Global Fire Monitoring Center
GIS	GIS	Geographic Information System Mapping
GPS	GPS	Global Positioning System
HG	GD	Government Decision
HP	DP	The Decision of the Parliament
IC	CI	Climate impact
IGSU	GIES	General Inspectorate for Emergency Situation
IMSP	PMSI	Public medical and sanitary institutions
IP	PI	Project Ideas
IPM	IEP	Inspectorate for Environmental Protection
MAIA	MAFI	Ministry of Agriculture and Food Industry
MEC	MECR	Ministry of Education, Culture and Research
MS	MoH	Ministry of Health
MMPSF	MLSPF	Ministry of Labor, Social Protection and Family
MM	ME	Ministry of the Environment
ODD	SDGs	Sustainable Development Goals
OMS	WHO	World Health Organization
PAT	TAP	Technology Action Plan
PIB	GDP	Gross domestic product
PNA	NAP	National Adaptation Plan
PNUD	UNDP	United Nations Development Plan
RM	RM	Republic of Moldova
SND	NDS	National Development Strategy
USMF	SUMP	State University of Medicine and Pharmacy
UE	EU	European Union
ANSP	NPHA	National Public Health Agency
AM	EM	Environment Agency
ANCD	NARD	National Agency for Research and Development

APL	LPA	Local public authorities
ASC	CCA	Climate change Adaptation
BNT	NCDs	Noncommunicable diseases
CDM	CDM	Clean Development Mechanism (CDM) according to the Kyoto Protocol
CSP	PHC	Public Health Center
CND	NDC	National Determined Contribution
CONUSC	UNFCCC	United Nations Framework Convention on Climate Change (UNFCCC)
ENTA	TNA	Assessment of technological adaptation needs
MCA	MCA	Multicriteria assessment
GES	GHGs	Greenhouse gases
GFMC	GFMC	Global Fire Monitoring Center/ Global Fire Monitoring Center
GIS	GIS	Geographic Information System Mapping/ Geographic Information System
GPS	GPS	Global Positioning System/ Global Positioning System
HG	GD	Government decision
HP	DP	The decision of the parliament
IC	CI	Climate impact

TECHNOLOGY PRIORITISATION REPORT (TNA 1)

Chapter 1. Introduction

1.1. About TNA process

Climate change is already profoundly affecting resource availability conditions and activities in different sectors of the national economy, in particular, agriculture, transport, energy, forestry, water resources, health, etc. Although agriculture is the sector most affected by climate change at national level, the impact on the health sector is also significant, and measures to increase the sector's resilience are needed to respond to the new challenges posed by extreme weather events because of climate change.

In the last decade, the Republic of Moldova has experienced several extreme weather phenomena, such as droughts and major floods, together with the effects caused by the increase in average temperature and the uneven distribution of precipitation throughout the year, which have had negative consequences on the country's economy, the well-being and health of the population, etc. Hot periods are longer and more frequent, causing excess mortality and additional strain on the health system. Severe droughts occur more frequently, causing significant economic losses and affecting food security and nutrition of the population. The increasing incidence and intensity of extreme events has also led to an increase in the frequency of high-risk situations.

The Government of the Republic of Moldova considers the National Adaptation Planning (NAP) process to be one of the basic keys to achieving the adaptation objectives outlined in Moldova's 2014 Climate Change Adaptation Strategy, National Determined Contribution (NDC), as well as for the continued integration of climate change considerations into its policies and budgetary processes. The government launched the NAP process in 2014 through consultations with national stakeholders and with the support of the Austrian Development Agency (ADA) and UNDP.

The NDA contains a strong adaptation component that relies on the NAP process to inform the development and implementation of adaptation objectives. The interconnection of the NAP process with the setting of NDA targets provides a constructive response between national and international decision-making processes on climate change for better convergence between the implementation of the Paris Agreement, the Sendai Framework and the 2030 Agenda. At the same time, the Republic of Moldova is a signatory to a series of agreements with the EU that provide much-needed support to improve its national policies, as well as a monitoring and reporting component, which leads many of the recent changes in the legal and regulatory framework. The Moldova-EU Association Agreement, signed in Brussels on June 27, 2014, contains in Chapter 17 – Climate Action provisions on development and strengthening cooperation to combat climate change. Cooperation shall be conducted considering the interests of the Parties based on equality and mutual benefit, as well as the interdependence existing between bilateral and multilateral commitments in this field. Cooperation shall encourage action at national, regional and

international level, including in the following areas: (a) climate change mitigation; (b) climate change adaptation; (c) carbon trading; (d) research, development, demonstration, deployment and dissemination of safe and environmentally sustainable low-carbon technologies and climate change adaptation technologies; (e) climate mainstreaming in sectoral policies; and (f) awareness-raising, education and training activities. The agreement also establishes that cooperation includes, inter alia, the development and implementation of measures aimed at integrating climate considerations into sectoral policies.

The main objective is to support the Government of the Republic of Moldova in advancing the second cycle of the iterative process of national adaptation planning. The project aims to address barriers to prioritizing national investments in climate change adaptation and to increase the availability of human and financial capacity to implement priority actions identified during NAP-1 and those that will occur under NAP-2. The objective of the project will be achieved through three outcomes that refer to strengthening national capacities to integrate ASC considerations:

1. Outcome 1 focuses on strengthening national governance mechanisms for CCA.
2. Output 2 supports the improvement of the long-term ASC capacity to plan and implement adaptation actions.
3. Output 3 focuses on continuous improvement of financing, implementation and monitoring systems related to adaptation.

The objectives of NAP-2 will be achieved within two parallel directions of implementation. The first strand implemented by UNDP expands and deepens the national approach developed under NAP-1 and strengthens synergies both vertically at different levels of government and horizontally between sectors affected by climate change in order to reduce duplication of efforts, pool limited resources for efficient use and ensure a coherent and comprehensive approach to integrating ASC responses into development planning, while the second path will focus on adaptation in the agricultural sector and will be implemented concurrently under the auspices of FAO.

The designated national authority coordinated with UNDP and FAO Country Offices to ensure complementarity and matching of activities and exchange, as appropriate. By its very nature, NAP-2 will facilitate the integration of CCA into existing strategies, policies and programmes and establish a solid basis for integrating information methods, tools and systems into day-to-day planning activities to effectively inform decision-makers. on climate risks and to enable informed formulation of resilient projects and financing strategies.

The sub-result of the project on the adoption of adaptation technologies aims to expand the capacity of the ASC activity with the development of an ASC technological framework that

articulates the medium and long-term objectives necessary to acquire technological knowledge to meet the needs of ASC and to achieve a large-scale and transformational technology transfer at subnational and sectoral level. Under TNA, technology assessments will provide information about technology needs, prioritized technologies will be included in the formulation of gender-sensitive ASC investment proposals for further mobilization of funding.

The ENT/TNA process will be implemented within the phased NAP2 Project, namely:

1. Identification and prioritization of adaptation technologies for the sectors: energy, transport, forestry, water resources, health.
2. Identifying, analyzing and addressing barriers, including the enabling framework, hampering the diffusion and deployment of priority technologies for climate resilience and adaptation.
3. Development of Technology Action Plan (PAT) for the implementation of priority technologies.

Among the main expected results of the project are mentioned the following:

- Updating the National Climate Change Adaptation Strategy with the general objective NAP-2 and sector-specific adaptation objectives, articulated in the action plans for adaptation to climate change of the health and forestry sectors, as well as in the development action plans of the transport, energy, water resources sectors.
- Development of monitoring and evaluation system with improved data analysis to support decision making.
- Update of the Climate Change Adaptation Capacity Development Plan adopted by the five key sectors (transport, energy, water resources, forestry, health).
- Launch of the climate change information and knowledge management portal supporting the NAP process and integrating climate change adaptation considerations.
- Development of adaptation plans for seven district cities.
- Elaboration, based on the technology needs assessment, of the technology roadmap for each key sector (transport, energy, water resources, forestry, health).
- Development of 5 investment project ideas to be submitted to the Green Climate Fund.

1.2. Existing national policies related to technological innovation, climate change adaptation and development priorities

1.2.1. National context on the health sector

According to the technical document "Strengthening the adaptability of health to climate change", which was presented at the first international conference dedicated to Health and Climate Change organized by the World Health Organization (Geneva, 2014), climate change is becoming more pronounced, being a driving force that exacerbates existing threats, diminishes development progress and affects global health. Climatic, social and environmental factors have a considerable impact on human health and well-being, and, since health is already affected by climate change, its impact on almost all populations, as well as on the entire world, is expected to be negative rather than positive.

WHO sees climate change as a global problem that both national governments and international organizations must address. Mitigation and adaptation are policy instruments that need to be developed and applied at all levels of the socio-economic and environmental governance process. Both types of policies are to be implemented together, because if greenhouse gas emissions increase, the risk of the adaptation strategy becoming ineffective at national level will increase, more so at local level. The more pronounced climate change is, the more extensive its effects are, irreversibly affecting socio-economic and environmental determinants on health, but also causing possible escalation of geopolitical conflicts due to the scarcity of natural resources such as aquatic and land resources, which, in turn, will intensify the phenomenon of population displacement.

Of course, Moldova's efforts to reduce its contribution to GHGS emissions by reducing the use of fossil fuels are insignificant compared to the largest global emitters. Therefore, the Republic of Moldova must implement adaptation policies, which are a priority for reducing vulnerability. However, there are at least 2 key reasons for further implementing GHGS emission reduction policies:

1. They allow an integrated approach to the phenomenon of climate change within Moldova's development plans, thus influencing the political decision-making process regarding the economy, infrastructure and education sectors.
2. These will facilitate Moldova's efforts to reduce health vulnerabilities, given that reducing the concentration of harmful air pollutants generated by burning fossil fuel will simultaneously reduce the concentration of pollutants in the air, if the right policies are selected.

The need to mitigate and adapt to the effects of climate change has been recognized by the Parties to the UN Framework Convention on Climate Change (UNFCCC) and, speaking of health adaptability, through the resolutions of the World Health Assembly as well as the WHO Regional Commissions.

1.2.2. Health services in the Republic of Moldova

The Health System of the Republic of Moldova is organized in accordance with the principles of universal access to the main health services, equity and solidarity in financing health care, being financed both by the state and by citizens through mandatory health insurance.

Public medical and sanitary institutions (PMSI) at the level of primary and secondary health care (territorial hospitals) provide services to communities and belong to local public authorities. In each district there are also providers of urgent medical assistance (ambulance services), belonging to the Ministry of Health (MoH). The PMSI at tertiary level provides specialized and highly specialized assistance to the entire population; Most tertiary level institutions are in mun. Chisinau and belong to MH.

PMSIs are autonomous, non-profit, self-financing organizations that are contracted directly by The National Insurance Health Company (NIHC) for the provision of medical services within mandatory health insurance. Some medical services are provided by the private sector and private healthcare providers may be contracted by NIHC.

The institutions with regulatory, licensing, accreditation, as well as state supervision of public health are financed from the state budget through the Ministry of Health, under whose subordination they are. Through state public health supervision institutions, MoH collects and analyzes data to generate relevant information to help develop sectoral policies.

The health system in Moldova includes a combination of public and private medical and sanitary institutions, as well as public agencies and authorities involved in the provision, financing, regulation and administration of health services.

To build climate-resilient health systems, in the context of health system adaptation actions, health system functions must be clearly defined based on a common understanding. In line with WHO recommendations, it proposes an "essential set" of 6 functions in identifying the roles of health systems (Watts N et al. 2014). Therefore, from an operational point of view, it is more efficient to formulate the objectives of the strategy considering these 6 functions of national health systems. Moreover, WHO propose that the health sector must take over the key role in protecting the health and well-being of the population from the impacts of climate change. Of major importance in developing an adaptability strategy is the fact of subjecting the health system to direct control of the functions of prevention, treatment or, indirectly, the function of guiding policies. This means that the Ministry of Health or another public health institution at national level must assume leadership and regulatory roles, advocacy, etc. in collaboration with institutions in other health-related sectors, such as those in aquatic resources management, emergency situations and communications, urban planning, housing, transport, waste management, food industry and agriculture.

The objectives set out in this strategy fall within the limits of the areas of intervention presented in accordance with the vulnerability assessment, i.e. in accordance with the priorities of the Republic of Moldova, but also with the weaknesses and strengths at socio-economic, geographical, infrastructure level, etc. This operational framework is described by the WHO, thus confirming

the key concept on which the draft strategy is based: health is a product of policies rather than an aim of them. Table 1.1 de gives a list of functions and the respective area of intervention caused or potentially increased by climate change exposures.

Table 1.1: Health system functions and related fields of activity

Functions	Areas of activity related to functions
Health governance and policies	<p>Conclusion of agreements between the Ministry of Health, Labor and Social Protection and other state institutions on their role in protecting health against climate risks.</p> <p>Ministerial coordination with other sectors influencing health, such as water, agriculture, urban planning, transport, welfare, waste, energy; Coordination between the Ministry and the State Hydrometeorological Service responsible for developing weather forecasts and issuing timely notifications.</p>
Human resources for health	<p>Training in health and other relevant disciplines to cope with climate-induced health risks (capacity building).</p> <p>Organization of existing human resources and identification of gaps in institutional capacities to cope with emergency situations and to develop action plans in the event of outbreaks of new diseases (emergency preparedness).</p> <p>Organizing the team and/or investing resources in risk assessment and communication, as well as in day-to-day communication on climate-induced health risks, to manage knowledge and raise awareness (readiness for communication).</p>
Information systems	<p>Definition and implementation by different actors of the national research agenda in the field of climate change and health; establishing partnerships between research institutions in the field of climate change and health; involvement of decision-makers.</p> <p>Extraction and recording of data in the field of health in accordance with the protocol of the International Health Regulations; processing and publishing health data for use by researchers and decision-makers; Reference data.</p> <p>Disease surveillance based on data on environmental risks caused by climate change and epidemiological trends, which are collected and analyzed regularly; special monitoring of vector-borne diseases.</p> <p>Creating an early warning system by establishing at national level communication procedures regarding possible ecological crises, outbreaks and emergencies; sectoral collaboration with institutions outside the health system responsible for issuing weather forecasts, protecting and monitoring environmental quality.</p>
Key products and technologies	<p>Adapting quality standards and regulations on the main environmental factors influencing health (air quality, water quality, food quality, housing, transport safety, waste management) so that they reflect a wider spectrum of possible climatic conditions.</p> <p>Infrastructure and services adaptable to climate change: a safe health and public health infrastructure that does not present vulnerabilities to natural and climate risks.</p> <p>Empowering communities to effectively prevent and respond to health risks caused by extreme weather events.</p>
Provision of services	<p>The level of supply of specific medicines and the level of preparedness for the provision of services in risk situations caused by climate change, such as heatwaves or vector-borne diseases.</p> <p>Scheduling and delivery of health services considering new risks caused by climate change and/or new diseases arising from environmental factors (e.g. allergies, vector-borne diseases...)</p>

Functions	Areas of activity related to functions
	Coordinated management of services and communication. Greening health, applying technologies that reduce greenhouse gas emissions in service provision.
Funding	Ensuring access to health services for the entire population, paying special attention to disadvantaged people. Presenting and obtaining funding from international climate change funds (e.g. GEF, Adaptation Fund, bilateral donors) of projects and programs to strengthen the adaptability of health systems. Financing the health sector from various other potentially risky sectors (e.g. transport insurance).

Weather events are a threat in themselves, regardless of climate change trends, except for heatwaves. For example, a hailstorm may be considered a normal weather event; however, hail poses a serious threat to the economy, but also to the health of the population of Moldova. The same applies to floods or droughts, which happen periodically. Climate change is becoming more pronounced, both in frequency and magnitude, making it a worsening problem. Environmental damage, environmental pollution and impoverishment of natural resources affect people's opportunities to earn a livelihood and hamper efforts to reduce poverty, thereby affecting public health and increasing healthcare costs. In other words, it is obvious that any natural disaster caused by climate variability as well as any extreme weather events will exacerbate existing problems and exacerbate existing weaknesses, less generating new threats.

1.2.3. Climate change policies and actions related to the health sector

The Republic of Moldova has developed and adopted a series of policy documents that also include some integrated measures to address the new conditions created by climate change for the health sector. Thus, the national policy framework in force with reference to technological innovations, climate change and health sector development includes a comprehensive set of documents (Parliament and Government decisions) that refer, in whole or in part, to the field of public health, establish objectives and measures in terms of addressing climate change, in the context of international documents ratified or adopted by the Republic of Moldova.

The programmatic documents adopted by the Republic of Moldova in the field of climate change include the health sector among vulnerable sectors, which is affected by the effects of climate change both as a system as a whole and by a greater demand on capacities as consequences on the health of the population. The list of these documents is presented below, including brief information about the provisions and their potential impact. Thus, the main national strategic documents in health, biodiversity conservation and climate change are the following:

- The Environmental Strategy for 2014-2023 and the Action Plan for its implementation, approved by GD nr. 301/2014.

- The Strategy of the Republic of Moldova for adaptation to climate change until 2020 and the Action Plan for its implementation, GD nr. 1009/2014.
- The Strategy for the Low Emission Development of the Republic of Moldova until 2030 and the Action Plan for its implementation, GD nr. 1470/2016
- National Strategy for Public Health for 2014-2020, approved by GD 1232/2013,
- National Strategy for the Prevention and Control of Non-Communicable Diseases for 2012-2020, approved by HP 82/2012,
- Action Plan for the implementation of the National Strategy for the Prevention and Control of Non-Communicable Diseases for 2012-2020, approved by GD 403/2016,
- National Program for the implementation of the Water and Health Protocol for 2016-2025, approved by GD 1063/2016.
- National Health Policy, GD 886/2007,
- Health System Development Strategy for 2008-2017, GD 1471/2007

Although expired, the main policy documents addressing sectoral development issues are the National Strategy for Public Health for 2014-2020 and the Strategy for Health System Development for 2008-2017. Currently, the draft National Health Strategy for 2022-2031 is being elaborated and public hearings. According to these documents, the strategic directions of the health sector are:

- a) Increasing the capacities of medical institutions for qualitative provision of medical services.
- b) Strengthening the national system of prevention, preparedness and response in public health emergencies through an integrated approach to hazards.
- c) Ensuring health protection by streamlining the control of behavioral and environmental risk factors.
- d) Development of sectoral policy framework on adaptation to extreme events of climate change, including the Sectoral Strategy and Action Plan on adaptation to extreme phenomena of climate change and guidance on their implementation.

- e) Strengthening national capacities for early detection and rapid response to public health hazards and emergencies based on risk monitoring indicators at local, intermediate (rayon/municipality) and national level.
- f) Minimizing the negative impact on population health, determined by public health risks and emergencies caused by natural, technogenic, biological, radiological and social factors.

The National Health Strategy 2022- 2030 The National Health Strategy 2030 is focused on achieving the targets set by the Sustainable Development Goals (hereafter - SDGs) that have an impact on human health. In particular, SDG 3 of the 2030 Agenda - Ensure healthy lives and promote well-being for all at all ages - emphasizes the global commitment, also undertaken by the Republic of Moldova, to develop a healthy society and to protect the right of everyone to enjoy the highest attainable standard of physical and mental health. The NHS encompasses the major health priorities reflected in the 20 targets with 40 indicators embodied in SDG 3, SDG 2, SDG 5 and SDG 16, including the control of communicable and non-communicable diseases, universal health coverage, access for all to safe, effective and quality medicines and vaccines, and ensuring reproductive, maternal, child and adolescent health, etc..

The Climate Change Adaptation Strategy until 2020 and the Action Plan for its implementation (GD no. 1009/2014) provide for research on the impact of climate change on different fields and ecosystems, temporal and spatial assessment of the impact of climate change on them, identification of vulnerable areas and sectors and assessment of needs and possibilities of alternation of more resistant species, in response to climate change, etc. The strategy is intended to serve as an umbrella programming document that creates an enabling environment for specific sectors to integrate climate change adaptation activities and risk management into their existing and future strategies and action plans, or to develop their own climate change adaptation strategies or action plans. The document sets out six priority sectors assessed as most vulnerable to climate change, including the health sector, subject to specific adaptation options and proposed in the Action Plan.

This strategy sets a general objective to develop and strengthen the capacity of the Republic of Moldova to adapt and respond to the actual or potential effects of climate change, with three specific objectives underlying the achievement of this objective:

- Create, by 2018, the institutional framework in the field of climate change to ensure the efficient implementation of adaptation measures at national, sectoral and local level.
- Create, by 2020, a mechanism to monitor the impact of climate change, related social and economic vulnerability and to manage/disseminate information on climate risks and disasters.

- Ensure the development of climate resilience by reducing climate-related risks by at least 50% and facilitating adaptation to climate change in six priority sectors by 2020.

Each specific objective is supported by the 'strand for action'. Six horizontal and cross-cutting actions are identified for the first and second specific objectives (three per objective), while for the third one action strands are assigned per sector (six in total). To provide viable sectoral solutions, climate change adaptation measures need to be integrated into the development planning of each vulnerable sector, by incorporating them into existing strategies and programs or by developing new sector-specific adaptation plans.

The analysis of the degree of implementation of the mentioned policy documents until 2020 on the health sector shows that, within the health sector, certain measures/technologies have been undertaken, aimed mainly at developing the technical-material base, endowment with equipment and increasing energy efficiency. Retrospective epidemiological studies have also been carried out on the impact of the heat wave on health. In general, however, due to limited resources and frequent changes in institutional management, there is little awareness among medical staff of the role of the health system. It should also be mentioned that with the entry of the Republic of Moldova into the COVID-19 pandemic (the first case being registered on 07.03.2020), declared by WHO on 11 March 2020, the Government invested substantially in the health system, especially in medical and laboratory equipment modernization and protective equipment for staff. There was an improvement in staff training, and in the quality of medical services provided by hospital institutions.

1.3. Vulnerability assessments in the country

1.3.1. Impacts, risks and vulnerabilities associated with climate change in the Republic of Moldova

According to national communications 2-4 submitted to UNFCCC, Moldova is particularly affected by three types of climate impacts: temperature increase, changes in precipitation regimes and increased climate aridity, which are associated with the frequency and intensity of amplification of extreme weather events, such as heat waves and frost, floods, storms with heavy rains and hail, severe droughts. These conclusions are drawn based on projected climate change scenarios, assessments undertaken in national communications 2 to 4 to UNFCCC, together with various other assessments carried out at project level, covering national, sub-national and geographical scale. Those documents shall define the basis for setting medium and long-term priorities for planning, actions and investments in adaptation, together with monitoring the effectiveness of planned and implemented adaptation.

The analysis of national climate data reveals that the frequency of droughts in the Republic of Moldova over a period of 10 years is about 1-2 droughts in the northern part of the country, 2-3 droughts in the central part and 5-6 droughts in the south. It is also mentioned that 7 out of 10 warmest years in Moldova's history were in the last two decades. Historically, Moldova has experienced episodes of drought once every 3-10 years, depending on the geographical location in the country. During 1990-2015, droughts of varying intensity were recorded in Moldova for 12 years (1990, 1992, 1994, 1996, 1999, 2000, 2001, 2003, 2007, 2011, 2012, 2015). It is necessary to note that in 1990, 1992 and 2003, droughts continued throughout the growing season (April to September). The most severe and disastrous droughts during the mentioned period were in 2007 and 2012, affecting over 70% of the country's territory. This dangerous trend continued in the following period and, in 2020, Moldova was hit by one of the most severe drought episodes in the last two decades, which caused a decrease of almost 30 percent in agricultural production, with significant spillover effects throughout the economy, including the compression of household income and consumption. This contributed to the general recession and imposed additional tensions on Moldova's budget.

Floods affect Moldova repeatedly. In the last 70 years, 10 major floods of the Dniester and Prut rivers have been reported, three of which occurred in the XXI century (in 2006, 2008 and 2010). Flooding caused by smaller rivers in the country is also quite common. The socio-economic costs of climate change associated with natural disasters such as droughts and floods are significant. Between 1984 and 2006, they amounted to about 61 million US dollars. Droughts in 2007 and 2012 caused an estimated economic loss of about \$1.0 billion and \$0.4 billion, respectively.

Projected temperature increases, volatility of precipitation and incidence and severity of drought episodes due to climate change could worsen the impact of hydrometeorological disasters in the medium term. Natural hazard events could have a significant impact on Moldova's development trajectory and disproportionately affect poor and vulnerable income groups. Thus, climate change is expected to further intensify the severity and impact of hydrometeorological hazards in Moldova. In line with global climate trends, the likelihood of multi-year droughts is expected to increase, and, without proper management, the repercussions could be disastrous for the economy.

The negative impacts of climate change pose challenges to the country's economic growth, directly and indirectly affecting sectors that rely on natural resources (agriculture, water and forestry), but also industrial sectors such as energy, transport, along with the impact on population health. The exacerbated impact of climate change can have repercussions on social and gender equality.

For the health sector, adaptation priorities are to promote the resilience and adaptability of healthcare institutions to climate change.

1.3.2. Risks and vulnerabilities highlighted in the health sector

The Climate Change Adaptation Strategy of the Republic of Moldova until 2020 (SNASC) and the Action Plan (PA) for its implementation was adopted by Government Decision nr. 1009/2014, in accordance with the Government Program for 2013-2014 "European integration: freedom, democracy, welfare" (chapter "Environment") and in accordance with the provisions of the Association Agreement of the Republic of Moldova with the European Union (chapter "Climate change"). The strategy is intended to serve as an umbrella programming document that creates an enabling environment for specific sectors to integrate climate change adaptation activities and risk management into their existing and future strategies and action plans, or to develop their own climate change adaptation strategies or action plans. The strategy establishes the health sector as one of those six priority sectors assessed as most vulnerable to climate change.

From the beginning, for the health sector, the risks highlighted in the SNASC, and their evolution were examined. Thus, according to the data from SNASC, the main risks and advantages identified at that stage for the health sector were established, which are exposed in Table 1.2.

Table 1.2: Risks to the health sector due to climate change

Degree of risks/benefits		North	Centre	South	Mun. Chişinău
Risks	Increase in deaths from heatwaves	LOW	MEDIUM	HIGH	HIGH
	Increase in diseases caused by air pollution	MEDIUM	MEDIUM	MEDIUM	HIGH
	Changes in phenological phases and high risk of allergic conditions	MEDIUM	MEDIUM	MEDIUM	HIGH
	High risk of drought and water scarcity	LOW	MEDIUM	HIGH	LOW
	Increasing the frequency and intensity of floods	MEDIUM	HIGH	HIGH	LOW
	Increased incidence of waterborne and foodborne diseases	MEDIUM	HIGH	HIGH	MEDIUM
Benefits	Reducing the duration of the heating season and fuel consumption in winter	HIGH	MEDIUM	LOW	MEDIUM
	Reducing mortality from cold				

Indicators on the state of health in Moldova show a vulnerable society, including due to dependence on climatic conditions. The table selectively presents indicators on the state of health in Moldova compared to other neighboring countries, as well as to countries of the WHO European Region. Life expectancy and infant mortality, which are very important indicators of a country's overall level of development, are far from the standards set in advanced economies. The neighboring countries have practically the same weaknesses as in the Republic of Moldova, except for infant mortality, which is not so pronounced. It should be noted, however, that the infant mortality indicator is 3.5 times higher in Moldova than the regional average.

Table 1.3: Selected indicators on health status compared to international indicators in 2019

Indicator	Moldova	Bulgaria	Romania	Ukraine	European Union
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Life expectancy at birth (years) Total	72.3	75.5	76.5	72.5	81.3
Infant mortality (per 1000 live births)	12	6.7	6.4	7.9	3.5
Injuries and poisoning caused by external factors, MSR	74.2	31.7	39.4	85.4	52.1
General mortality of the population, all causes, MSR	1036	1550	1035	1520	1039
Chronic digestive boluses, RSM	95.5	34.3	51,2	50.1	24.0

SDR = Standardized Death Rate x 100,000.

The population groups most vulnerable to extreme weather phenomena are children, urban population, elderly and chronically ill people, those from disadvantaged groups and populations highly dependent on natural resources. The following table provides a list of populations vulnerable to climate change and the danger to health.

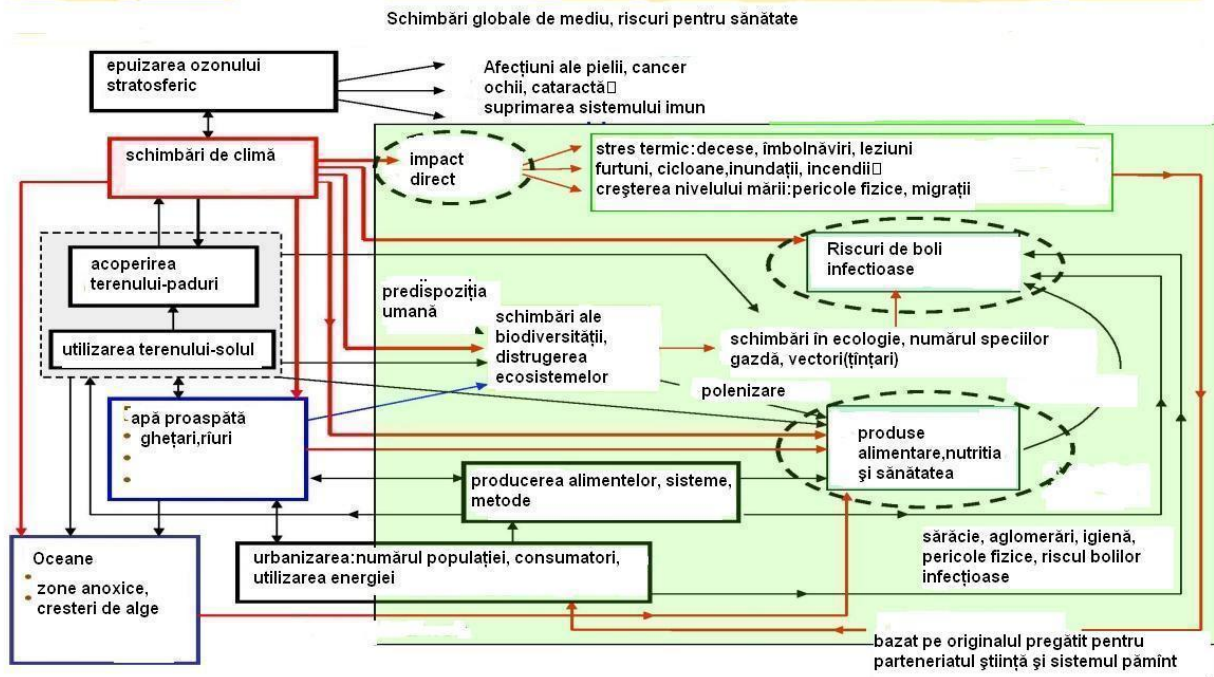
Table 1.4: Particularly vulnerable and sensitive groups to climate change and health risks

Particularly vulnerable groups	Health hazard
Older people, people with chronic diseases, newborns and children, pregnant women, poor in urban and rural areas, outdoor workers	Heatwave-related illnesses and deaths
Children, people with heart and lung diseases, diabetes, athletes, outdoor workers	Diseases and deaths related to poor air quality due to pollution
The poor, pregnant women, people with chronic illnesses, mobility and cognitive limitations	Diseases and deaths related to extreme climatic events
Older people, children	Waterborne and foodborne diseases
All categories of population, but especially children, outdoor workers	Vector-borne diseases - Lyme disease, West Nile

Health effects of climate change

According to WHO data for Europe, climate change could have both direct and indirect impacts on health. They can cause loss of goods, resources, infrastructure, affecting local production and service provision in general, thus also having an impact on health. In fact, climate change can cause severe socio-economic constraints, including malnutrition, occupational stress and mental illness. The latter effect must be considered in the context of possible displacement of population, escalation of conflicts, loss of property, etc. which strongly affect health. In this regard, to ensure a common understanding, a general scheme is proposed by the WHO that graphically describes how climate change could affect the population and its health. The general scheme presented describes the overall impact of climate change from the perspective of the physical environment, affected human societies and individuals. It is important to mention that people's health is determined by several factors, therefore having a close correlation with progressive and proactive development, which allows us to consider it as a solid indicator of sustainability of development policies.

Fig.1: General climate change risk exposure scheme



Climate change can also cause a slowdown in economic growth as well as an increase in inequalities and poverty levels, which will bring a stagnation in Moldova's sustainable development processes. Table 1.5 below includes a list of health effects according to WHO health and climate documents. It is important to note that adaptation policies increase the adaptability of the population to all phenomena caused by environmental changes and territorial stress, such as natural disasters (e.g. earthquakes) and wars, i.e. those unrelated to climate change. In terms of adaptation policies, the proposed classification is from the point of view of "environments", i.e. from the point of view of the recipients of the event causing stress: 1) human beings, 2) the natural environment and 3) human societies.

Table 1.5: Climate change health risks classified according to a reliable rating

Climate phenomenon/exposure	Direct effects		
	Health risk	Health Impact	Truste d rating
<p>Greater number of days and nights with high temperatures.</p> <p>Increasing the intensity and frequency of heat waves.</p> <p>Increased risk of fires in conditions of rainfall deficit.</p>	<p>Increased mortality rate caused by heatwave, increased incidence of hyperthermia and heatstroke, especially among workers, athletes and the elderly.</p> <p>Exacerbation of diseases of the circulatory, cardio-vascular, respiratory and kidney systems.</p> <p>Increased premature mortality rate caused by ozone depletion and air pollution during fires that occur mainly during hot periods.</p>	<p>Increased risk of trauma; very high rate of illnesses and deaths caused by heatwaves and fires.</p>	<p>Very high</p>
<p>Fewer cold days and nights.</p>	<p>Decrease the mortality rate caused by low temperatures, as well as reduce cardiovascular</p>	<p>Modest improvements in mortality rate and</p>	<p>Low</p>

Direct effects			
Climate phenomenon/exposure	Health risk	Health Impact	Truste d rating
	and respiratory diseases, especially in older people in cold and temperate climates.	morbidity due to low temperatures.	
Higher temperatures and humidity, unstable and increasingly variable rainfall, rising surface water temperature of seas as well as freshwater.	Accelerated development of microbial agents; survival, persistence, virulence and transmission of pathogens; changes in the geographical and seasonal distribution of diseases such as cholera, harmful algae; lack of water for compliance with hygiene; floods and their dangers to water resources and water supply and sanitation infrastructure; risks of contamination of water resources due to flash floods.	Increased risk of waterborne and foodborne diseases.	Very high
Higher temperatures and humidity, unstable and increasingly variable rainfall levels.	Accelerated multiplication of parasites and increase in the number of bite cases; extension of transmission periods; re-emergence of diseases that were dangerous in the past; changes in the distribution and abundance of pathological vectors; decrease in the effectiveness of vector control interventions.	Increased risk of vector-borne diseases.	Medium
Higher temperatures and changes in precipitation regime.	Lower food production; less access to food products due to reduced supplies and higher prices; the combined effect of malnutrition and infectious diseases; chronic effects among children, such as developmental stagnation and weight loss.	Increased risk of malnutrition due to declining food production in poor regions.	High
Higher temperatures and humidity.	Outdoor and unprotected workers are forced to work in physiologically unsafe conditions or otherwise lose income or livelihood opportunities.	Health effects from loss of work capacity, thus reducing labor productivity among vulnerable population.	High

Source: Protection of health from the effects of climate change: WHO vulnerability and adaptability assessment

Table 1.6 presents the most frequent impacts of climate change on the health and well-being of the population in Moldova.

Table 1.6: The impact of climate change characteristic for the territory of the Republic of Moldova on the health of the population

Category of climatic factors	Health impact
High air temperatures and heat waves	<p>Increased morbidity and mortality rate due to heatwaves.</p> <p>Increased incidence of hyperthermia and heatstroke, especially among workers and the elderly.</p> <p>Worsening the state of health of people with chronic diseases of the circulatory, cardio-vascular, respiratory and kidney systems.</p>

	<p>Increasing the incidence and spread of infectious diseases transmitted through water and food.</p> <p>Increased incidence of vector-borne diseases.</p> <p>The appearance of changes in the symptomatic of diseases caused by food.</p>
Flood	<p>Increased number of injuries, including fatalities.</p> <p>Increasing the incidence and spread of infectious diseases transmitted through water and food.</p>
Drought	<p>Affecting food security and increasing malnutrition and malnutrition.</p> <p>Increasing the incidence and spread of infectious diseases transmitted through water and food.</p>
Low temperatures and frost waves.	<p>Increasing the incidence of acute respiratory diseases and exacerbations of chronic diseases of the respiratory apparatus.</p> <p>Increased incidence of hypothermia and frostbite, especially among homeless and elderly people.</p> <p>Increased trauma caused by falls from ice.</p> <p>Health problems caused by reduced access to healthcare due to road blockages during heavy snowfall, snowfall, etc.</p>
Air pollution	<p>Increased incidence of allergic diseases with preponderant damage to the respiratory apparatus.</p> <p>Increased mortality from lung cancer, chronic obstructive pulmonary disease and cerebrovascular accidents.</p>

1.4. Selection of priority sectors for climate change adaptation

In the last 127 years (1887-2014), changes in average temperatures and precipitation have occurred in the Republic of Moldova. RM became warmer, with an average increase in temperatures greater than 1.0°C, while the increase in precipitation was only about 54.7 mm. The early 1980s is generally considered a "turning point" in the long-term air temperature curve, where human influence on the atmosphere is most distinctly expressed (IPCC, 2007). This has been statistically confirmed by both international studies (Gil-Alana, 2008) and national studies (Corobov et al., 2013; Țăranu, 2014). The temperature increase is evident (from an average annual value of 8.5°C in the north to 10.3°C in the south), followed by a decrease in the amount of annual precipitation, respectively, from 622 mm to 508 mm. The increase in temperatures on the territory of the Republic of Moldova during 1981-2010 no longer offers any room for doubt and is very evident in the warm period, especially in summer, when T average increases by 0.9-1.0°C and T max - by 0.9-1.3°C / decade with a very high degree of certainty.

According to available studies and information, Moldova is very vulnerable to climate variability and change. For the period ahead, the impact of climate change is expected to intensify as changes

in temperature and precipitation affect economic activity, and socio-economic vulnerability to these changes is extremely high. The socio-economic costs of climate-related natural disasters such as droughts, floods and hail are significant, and both their intensity and frequency are expected to increase further as climate change has resulted. Adaptation is relevant for many sectors of Moldova's economy, but when it comes to operationalizing it, at district or country level, institutions may be overburdened by coordination, integration and monitoring requirements.

The existing policy framework is usually not designed to promote the integration of future climate projections and their uncertainties with sectoral priorities and measures at different levels and within different organizational structures and stakeholders. Communities operate at different spatial and time scales, have different priorities, and may need different incentives to increase their capacities to respond to climate change. Climate change is increasingly recognized as a fact of national importance, but so far, the national strategic framework lacks integrated climate change adaptation measures. Therefore, a strategic framework is needed at national level to ensure that a qualitative, efficient and coherent process of adaptation to climate change takes place.

The process of prioritizing sectors was based on the following aspects:

- Data from previous vulnerability assessments of countries and sectors showing climate vulnerabilities changing each sector.
- Adaptation potential of sectors.
- How improvements (technologies potentially deployed) in selected sectors can contribute to achieving the country's development priorities.

This process used data on the country's vulnerability to climate change, long-term impact on the country, social, economic and environmental development, data collected from vulnerability assessments in national communications (I-IV), as well as various thematic evaluation reports carried out in the previous period. As a result, the following sectors were selected as key sectors:

- Transport.
- Energy.
- Health.
- Water resources.
- Forestry.

Chapter 2. Institutional framework for ENT/TNA and stakeholder involvement

Moldova's institutional arrangements on climate change and adaptation need significant improvement. Given the complexity and multidisciplinary nature of climate change, several institutions each focus on different aspects of this issue and the challenges associated with it. However, to address climate change effectively and systematically, formal coordination structures between relevant ministries are needed to ensure a better overview of climate policy. The Ministry of Finance would also be an important actor in setting up and supervising such a structure, given its critical stance on resource allocation.

In the Republic of Moldova, **the Ministry of Health (MoH)**, as a central specialized body of the Central Public Administration, is responsible for health policy and for drafting legislation regulating the organization and provision of health services. It is also responsible for quality assurance and setting minimum quality criteria, defining the package of services, planning resources and using capital investments, monitoring the health of the population, setting public health priorities, managing national health programs (including health education), as well as promoting the principle of "health in all policies". A series of basic functions of MH are related to ensuring the preparedness of the health system for effective response to public health emergencies, implementation of international health regulations and collaboration with international organizations and structures in the field of health.

MoH and its subordinated institutions have full responsibility for organizing, functioning and regulating individual and public health services, as well as for ensuring state surveillance of population health, since financing most health services is the responsibility of NIHC. Although most primary health care providers and territorial hospitals belong to local authorities, the latter have little influence on the administration of health services in the subordinate territory, as their competences are very limited.

Basic authorities and institutions within the Health System

National Public Health Agency – is the competent administrative authority, subordinated to the Ministry of Health, responsible for implementing the state policy in the field of state supervision of public health.

The priority areas in state surveillance of public health are the following: surveillance, prevention and control of communicable and non-communicable diseases, health promotion, management of public health emergencies, scientific research in the field of public health, evaluation of social determinants of health, health in relation to the environment, nutritional health, community health

and hygiene, safety and security in activities related to biological agents, chemicals, dangerous or potentially dangerous physical and radiological factors, etc.

NPHA consists of the central apparatus, consisting of directorates, sections and services, and 10 public health centers (with the status of directorate), which are territorial subdivisions, without legal personality, having as main task ensuring the coordination of public health activities at territorial level in the established service areas (the area of responsibility for each SPC includes 2-3 districts).

It should be mentioned that in the structure of the central apparatus of NPHA there is a specialized subdivision - the Public Health Protection Directorate, which has in its composition the environmental health section, and in the structure of each public health center is provided a subdivision for the protection of public health.

NPHA is designated as National Focal Point for the implementation of the International Health Regulations (IHR 2005) and is responsible for notifying, verifying and consulting with the World Health Organization on events that may constitute a public health emergency of international importance. For this purpose, NPHA ensures 24/24 monitoring of the situation in the country and abroad and is accessible for receiving information from different sources.

NPHA manages two national monitoring and alert systems predestined for detecting as soon as possible the dangers and risks to public health in order to approve health measures to prevent the spread of communicable diseases and health events, reducing their consequences for the population, namely: the National System for Epidemiological Surveillance and Control of Communicable Diseases and Public Health Events and the System National epidemiological surveillance and control of communicable diseases and public health events.

NPHA owns the national network of laboratories in the field of public health, within the central apparatus and 10 territorial SPCs, involved in routine testing to identify microbial agents in humans and the environment, as well as chemical and radiological contamination. At the same time, NPHA laboratories and territorial SPCs are part of the National Network for Observation and Laboratory Control (RNOCL), involved in detecting radioactive, chemical and biological contamination (pollution) of soil, air, water, food raw materials, feed and other environmental objectives, as well as for the timely performance of measures to protect the population, animals, plants and water against contamination by radioactive, poisonous, highly toxic substances and biological agents.

Hospital care. According to the current situation in hospital healthcare in the republic, depending on the territory and founder, the existing hospitals are classified into republican, municipal, district, departmental and private.

The hospital sector is represented by 86 hospitals, including 61 public, 8 departmental and 17 private hospitals. In turn, out of 61 public hospitals, 17 are republican, 9 are municipal hospitals, 34 district hospitals and 1 community hospital. The founder of republican hospitals is MSMPS, the founder of municipal and district hospitals is the local public administration, and the founder of departmental hospitals is the central public administration authorities subordinated to these hospitals.

Hospitals provide the following basic services: curative, consisting of inpatient treatment of diseases and/or prevention of their complications; preventive, which are provided to prevent diseases, detect diseases early and preserve health and recovery, which are provided to restore health.

Primary health care (PHC) is part of the health system and constitutes essential health care that is universally accessible to individuals and families in the community and is oriented towards meeting the basic health needs of the community. Primary health services include first-contact health care and permanent monitoring of patients, regardless of the presence or absence of disease. Primary health services are provided in primary health care institutions (family medicine centers, with health centers, family doctor's offices and health offices), which can be both public and private. Institutionally PHC represented a network of public and private institutions that provide primary health care. The network of PHC public institutions is represented by 241 autonomous health centers, 589 family doctors' offices and 373 health offices. Primary health care in mun. Chisinau is represented by five territorial medical associations (TMAs) and 14 autonomous health centers located in the suburbs.

Pre-hospital emergency medical assistance is represented by the Prehospital Emergency Medical Assistance Center (PHEMAC). A unique entity, which ensures the provision of urgent medical assistance at the pre-hospital stage and assisted medical transportation at the request of the patient, other persons or at the request of medical workers in continuous regime, from the place of accident or illness and during transportation to the transmission of the patient to the medical institution on the entire territory of the republic. Structurally, PHEMAC consists of 5 AMU Regional Departments, located in 5 operational geographical areas (mun. Chisinau, Center, North, South and ATU Gagauzia), within which operate 6 municipal substations AMU (5 in mun. Chisinau and 1 in mun. Balti), 35 AMU district substations and 96 AMU points located in rural localities. Every day PHEMAC ensures non-stop activity of 240-250 AMU teams, serving about 2400-2800 requests.

The institutions for training and training medical staff are represented by **the State University of Medicine and Pharmacy "Nicolae Testemitanu"**, **the Center of Excellence in Medicine and Pharmacy "Raisa Pacalo"** and **4 medical colleges**, whose objectives are to train specialists with

superior and medium training, performing in relation to national and international level, as well as continuous updating and improvement of the training of specialists, through various forms of education. SUMP's mission to provide performance services in education, research, healthcare and professional training of doctors and pharmacists throughout their entire professional activity. In parallel with the teaching activity, Nicolae Testemitanu State University of Medicine and Pharmacy carries out an impressive volume of scientific and innovative activities in all fields related to public health. The Center of Excellence in Medicine and Pharmacy "Raisa Pacalo" and 4 medical colleges ensure high-level professional training of medical staff with secondary education (nurses, paramedic, etc.).

The National Insurance Health Company (NIHC) is a state organization with financial autonomy, which has the following responsibilities: compulsory medical insurance of the population; contracting health service providers; verification of the execution of contractual provisions; protection of interests of insured persons. NIHC manages the Mandatory Health Insurance Funds, which also includes the Fund of Prophylaxis Measures, which is predestined including for carrying out measures to reduce disease risks, carrying out prophylactic examinations for early detection of diseases, purchasing, based on Government decision, material goods necessary to carry out measures to reduce the risk of disease and treatment in case of public health emergencies, etc.

2.1. TNA national team

The TNA National Team includes a TNA Coordinator as well as a wide range of stakeholders to constitute the NAP2/TNA Coordination Board and national consultants/experts organized in working groups. The NAP2/TNA Coordination Council is envisaged as the highest decision-making body of the TNA Project, comprising decision-makers from MS, ANSP, SUMP and relevant medical institutions relevant key ministries. As shown in Figure 2.2, as well as in the detailed description provided below, each element of the institutional set-up in the country is designed to play an important role in the process of implementing and promoting the NAP2/TNA project.

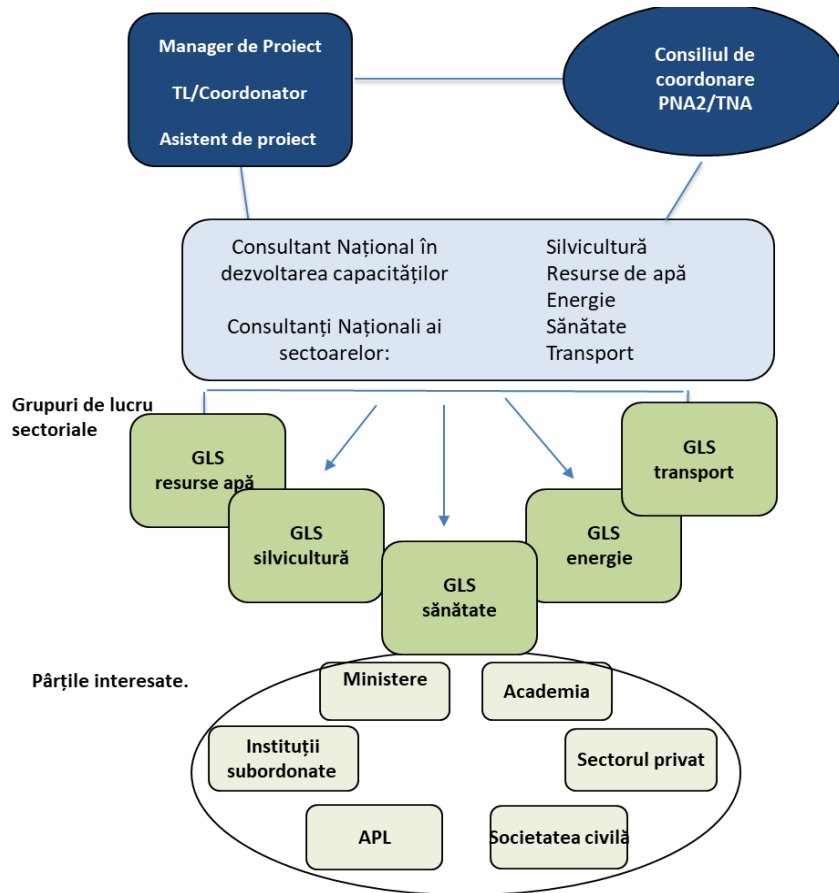


Figure 2.2: Institutional arrangements of the TNA component

The TNA National Team is the main decision-making body for the project, with the TNA Coordinator acting as a national focal point. The TNA national team is composed of a small core group (project manager, assistant, etc.), as well as a broader group of stakeholders and experts, who help the core group. This broader group includes national consultants and sectoral/technology working groups. The TNA coordinator will play a key role and coordinate between the different groups to ensure they work together as a team. The appointment of the TNA Coordinator was made by the Ministry of Environment (representation of ME, performs functions of UNFCCC focal point, etc.). The TNA coordinator is the focal point for the effort and management of the entire TNA process. This involves providing vision and leadership for the overall effort, facilitating communication tasks with NAP2/TNA Coordination Board members, national consultants and stakeholder groups, networking, information acquisition, and coordination and communication of all work products.

The NAP2/TNA Coordination Council is the core group of decision-makers and includes policy implementation representatives from the ministries involved, members familiar with national development goals, sectoral policies, climate change science, potential impacts of climate change for the country and adaptation needs. The NAP2/TNA Coordination Board is to provide project

leadership in association with the TNA Coordinator. The specific responsibilities of the NAP2/TNA Coordination Board shall include the following:

- Identification of national development priorities and priority sectors.
- Decision on setting up sectoral/technological working groups.
- Approval of adaptation technologies and strategies that are recommended by sectoral working groups.
- Endorse the Technology Sector Action Plan (a roadmap of policies that will be needed to remove barriers and create an enabling environment) and develop the Technology Action Plan for Adaptation.

The Technology Needs Assessment (TNA) is central to the work of the Parties to the UNFCCC and represents an opportunity to track the evolving need for new equipment, techniques, practical knowledge and skills that are needed to reduce the vulnerability of sectors and livelihoods to the adverse impacts of climate change. In this context, UNDP Moldova has recruited a team of five national experts to support the participatory adaptation process at national level in the water, health, transport, energy and forestry sectors. The results of their mission will contribute to achieving Moldova's adaptation goals declared in the updated NDC (2020), while meeting national targets for several SDGs: 13, 7, 9, 3, 15, 6. The experts employed under the TNA project have in-depth knowledge and extensive experience in the field of climate change. Most experts have participated in other climate change projects, especially in national communications, which is of great benefit for the TNA assessment. The involvement in TNA evaluation of high-level professionals from different sectors ensures a multidisciplinary team, led by the TNA National Coordinator.

The role of national consultants is to lead and undertake activities such as research, analysis and synthesis in support of the TNA exercise. The leadership of the national working group of consultants/experts on the TNA component was ensured by Dr. Druta Ala. The national consultants worked closely with the NAP2/TNA Coordination Council and other working groups involved in the NAP2 project.

National consultants applied a participatory approach in TNA to climate adaptation of assigned sectors, involving a wide range of stakeholders and ensuring a multisectoral and multidisciplinary scope. In close cooperation with the TNA working group leader, national consultants supported and facilitated the activities of sectoral working groups (SWGs), ensuring communication with stakeholders on working products, etc. The core tasks assigned to the TNA Expert/Consultant Group shall include the following:

- Identify priority technologies for climate adaptation of assigned sectors (water, health, transport, energy, forestry) by providing an overview of possible adaptation technological options, highlighting their adaptation potential based on identification of sectoral vulnerabilities and currently applied technologies.
- Preparation of the TNA Report according to the established technological prioritization steps.
- Elaboration of the Report on conducting the analysis of barriers and proposing the framework of activity for the implementation and dissemination of the first three priority technologies in the sector (including market and barrier analysis for the development, implementation and dissemination of priority technologies; production of market maps and problem trees for each prioritized technology; identification of measures to overcome barriers, etc.).
- Perfecting action plans for each prioritized technology (TAP).
- Elaboration of sectoral reports on TAPs and compilation of sectoral technology roadmaps on CCA.
- Formulating, based on TAPs, project ideas (IP) for prioritized technologies.

The tasks and areas of activity of the national consultants employed in the TNA Working Group are generalized in Table 2.4.

Table 2.4: Context of national consultants contracted under the adaptation component of the TNA project

National consultants	Title, position, institution	Area of competence
Druță Ala	PhD in Biology, Team Leader	National adaptation team leader in TNA project
Comendant Ion	dr. technical sciences, coordinating scientific researcher, Energy Efficiency and Renewable Energy Sources Laboratory, Institute of Power Engineering	Capacity development consultant within the ENT/TNA component
Dascalov Alexandr	Deputy Director, National Agency for Public Health	National consultant on the health sector
Lupu Mihai	Head of Energy Efficiency and Renewable Energy Sources Laboratory, Institute of Power Engineering	National consultant on the energy sector
Bejenaru Gherman	PhD in Geography, associate professor, Tiraspol State University	National consultant on water resources sector
Soloviov Nicolae	coordinating scientific researcher, Energy Efficiency and Renewable	National consultant on the transport sector

	Energy Sources Laboratory, Institute of Power Engineering	
Talmaci Ion	Technical Deputy Director, Institute for Forest Research and Management	National consultant on forestry sector

2.2. Stakeholder engagement process followed in TNA – overall assessment

An important element in assessing technological needs in the field of climate change adaptation is to carry out stakeholder mapping for the health sector. The parties/institutions interested in the activity of the health sector in the Republic of Moldova have been identified. The current general organizational chart of the stakeholders in the health sector of the Republic of Moldova is presented in Figure 2.4.

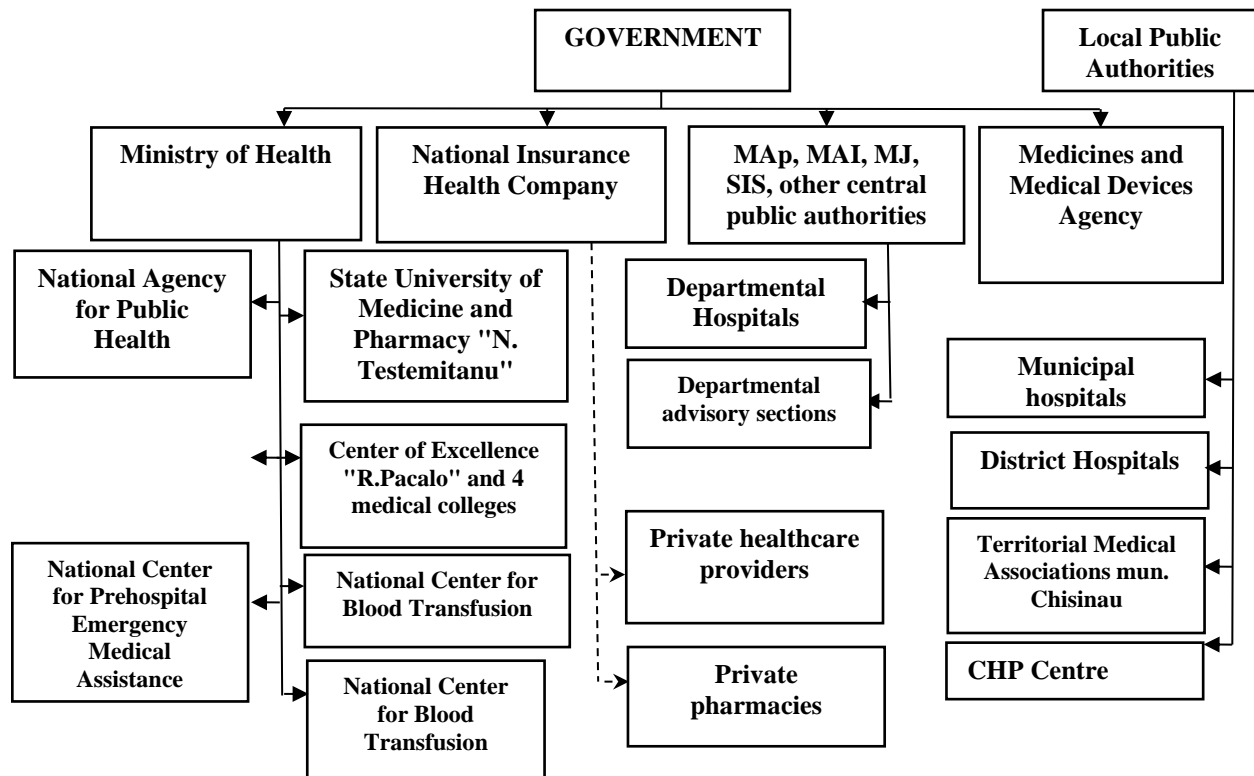


Figure 2.4: Current overall organizational chart of stakeholders in the health sector in the Republic of Moldova

As a result of the analysis of the existing institutional framework, as well as of the beneficiaries of health services, the institutions and organizations directly involved in the activity of the health sector in the Republic of Moldova are: the central specialized authority in health – Ministry of Health, Administrative authority subordinated to the Ministry of Health – National Agency for Public Health with 10 subordinated territorial SPCs, 47 public medical institutions where MoH

has the quality of founder, 112 public medical institutions where local public authorities are founders, as well as about 1200 health centers/offices providing primary health care services.

The main institutions, included in the list of stakeholders:

The Ministry of Health (MoH) ensures the implementation of state health policy, including aspects related to the impact of climate change on health. The Ministry has the mission to analyze the situation and problems in the managed areas, to develop effective public policies, to monitor the quality of policies and normative acts and to propose justified state interventions with effective solutions in the fields of competence.

National Public Health Agency (NPHA) is the competent administrative authority, subordinated to the Ministry of Health, responsible for implementing the state policy in the field of state supervision of public health.

It should be mentioned that, in the NPHA structure at central level, there are several specialized subdivisions that ensure the supervision of the impact of climate change on health. These include: The Health Protection Directorate, which has in its composition the environmental health section, responsible for developing regulations in the field, and in the structure of each public health center is provided a health protection subdivision; The Directorate for Health Promotion, responsible for communicating the risks conditioned by climate change and extreme weather phenomena; The Directorate for the prevention and control of non-communicable diseases, responsible for assessing the impact on the health of the population, at territorial level, in each SPC there is a section for NTD control and health promotion; The Directorate for Prevention and Control of Non-Communicable Diseases, responsible for surveillance of infectious diseases, including vector-borne diseases, water and food; The Public Health Emergency Management Directorate, responsible for coordinating activities in case of emergencies, including those caused by epidemic outbreaks, epidemics, pandemics, as well as those conditioned by extreme weather events. At territorial level, in each SPC is a BT and MUSP control section.

The NPHA is designated as the National Focal Point for the implementation of the International Health Regulations (IHR 2005) and is responsible for notifying, verifying and consulting with the World Health Organization on events that may constitute a public health emergency of international concern. For this purpose, NPHA provides 24/24 monitoring of the situation in the country and abroad and is accessible for receiving information from different sources.

NPHA manages the national monitoring and alert system – National System of Epidemiological Surveillance and Control of Communicable Diseases and Public Health Events – predestined to detect, as soon as possible, the dangers and risks to public health to approve health measures to prevent the spread of communicable diseases and health events, with their consequences for the population.

NPHA owns the national network of public health laboratories within its headquarters and 10 territorial SPCs involved in routine testing to identify microbial agents in humans and the environment, as well as chemical and radiological contamination. At the same time, NPHA laboratories and territorial CSPs are part of the National Network for Observation and Laboratory Control (NNOLC), involved in detecting radioactive, chemical and biological contamination (pollution) of soil, air, water, food raw materials, feed and other environmental objectives, as well as for the timely performance of measures to protect the population, animals, plants and water against contamination by radioactive, poisonous, highly toxic substances and biological agents.

Hospital care. Hospitals provide the following basic services: curative, consisting of inpatient treatment of diseases and/or prevention of their complications; preventive, which are provided to prevent diseases, detect diseases early and preserve health and recovery, which are provided to restore health.

Primary Health Care (PHC). Primary health services include first-contact health care and permanent monitoring of patients, regardless of the presence or absence of disease. Primary medical services are provided in primary health care institutions (family medicine centers, with health centers, family doctor's offices and health offices). Institutionally, PHC represented a network of public and private institutions that provide primary health care.

Pre-hospital urgent medical assistance is represented by the Pre-hospital Emergency Medical Assistance Center (PHEMAC), a unique entity, which ensures the provision of urgent medical assistance at the pre-hospital stage and assisted medical transportation at the request of the patient, other persons or at the request of medical workers on a continuous basis, from the place of accident or illness and during transportation to the transmission of the patient to the medical institution on the entire territory of the republic.

All healthcare institutions, hospital, primary and emergency care provide medical services as intended, including for diseases aggravated by the impact of climate change. Also, within the limits of their competence, the respective institutions also carry out information and communication measures on the risks and impact of climatic factors on health and protection and precautionary measures.

State University of Medicine and Pharmacy "Nicolae Testemitanu" and 4 medical colleges, which have as objectives the training of specialists with superior and medium training, performing in relation to the national and international level, as well as the continuous updating and improvement of the training of specialists, through different forms of education. In parallel with the teaching activity, Nicolae Testemitanu State University of Medicine and Pharmacy carries out an impressive volume of scientific and innovative activities in all fields related to public health.

National Insurance Health Company (NIHC) manages the Mandatory Health Insurance Funds, which also includes the Fund of Prophylaxis Measures, which is predestined including for carrying

out measures to reduce disease risks, carrying out prophylactic examinations for early detection of diseases, purchasing, based on Government decision, material goods necessary to carry out measures to reduce the risk of disease and treatment in case of public health emergencies, etc.

The list of stakeholders within the Health Sector in terms of implementing measures related to adaptation to climate change is presented in the table below.

Table 2.5: Potential stakeholders within the Health Sector in the implementation of measures related to adaptation to climate change.

Nr	Authority/Institution	Scope and tasks related to climate change adaptation
1	Ministry of Health (MoH)	Development and implementation of policies in the field of Public Health, including in the field of health protection from the impact caused by climate change.
2	National Agency for Public Health and Public Health Centers within it	The Lead Authority within the Health System, responsible for implementing the state policy in the field of public health surveillance. The number of priority areas of competence and responsibility includes: surveillance, prevention and control of communicable and non-communicable diseases, management of public health emergencies, scientific research in the field of public health, evaluation of social determinants of health, health in relation to the environment, nutritional health, community health and hygiene, safety and security in activities related to biological agents, hazardous or potentially hazardous chemicals, physical and radiological factors, etc.
3	National Center for Prehospital Emergency Medical Assistance	Emergency medical care in situations caused by the impact of climate change factors.
4	National Insurance Health Company	Management of mandatory health insurance funds (FAOM), including the prophylaxis fund, which can also be used in situations caused by climate change.
5	Primary health care institutions	Ensures the implementation of information, prophylaxis, medical assistance measures, including consequences related to climate change, at primary level (first contact between the health system and individuals and families in the community).
6	State University of Medicine and Pharmacy "N. Testemitanu"	It provides performance services in education, research, healthcare and professional training of doctors. Scientific research in all areas of public health.
7	Center of Excellence in Medicine and Pharmacy "Raisa Pacalo"	Ensures high-level professional training of medical staff with secondary education (nurses, nurses, etc.)
8	PMSI republican, municipal and district hospitals	Provides specialized treatment of patients, including diseases aggravated by climate change
9	Health NGOs	Provides support for public institutions in evaluating analyzes, treatment of certain categories of patients, especially palliative care, including diseases aggravated by climate change

Stakeholder consultation was an ongoing process throughout all phases of the project. Their consultations and views in providing technological details about the current situation in sectors

was of particular importance, including the use of new technologies. Stakeholders have an important contribution in developing the final set of criteria and indicators used to prioritize technology options. Discussions have been developed to consider different technology options in adapting the health sector to climate change. Also, important arguments were raised during the exercise of awarding the weighting of criteria, as the members of the working group judged according to their knowledge, interests, other considerations. During these discussions, stakeholders' views and arguments were considered decisive in establishing the short list of adaptation technologies.

Stakeholders are essential in the TNA process, therefore, to give an active role to stakeholders in the TNA process, sectoral working groups (SWGs) have been set up, including on the health sector. On a sector-by-sector basis, working groups decide on appropriate technologies for the sector, carry out market/barrier analyses and recommend an enabling framework for the sector.

For the health sector, GLS consisted of 15 members, including the NAP2 national consultant on the health sector. The composition of GLS, as well as the authorities/institutions it represents, is set out in Annex no. 3 to this Report. Within the TNA process in the health sector, GLS was involved as a priority in the following actions/activities:

- Participation in identifying the long list of technologies/measures to adapt the health sector to climate change (26 technologies/measures).
- Primary selection/prioritization of effective technologies/measures to adapt the health sector to climate change (12 technologies/measures; organization of the workshop on 12.10.2021).
- Participation in the MCA analysis for the final prioritization of technologies/measures for adaptation of the health sector to climate change (evaluation of 10 technologies/measures; selection of evaluation criteria; scoring; organization of the workshop on 23.12.2021; validation of results on selection for the health sector of 2-3 technologies/measures for adaptation to climate change, etc.).

2.3. Taking gender aspects into account in the TNA process

In the process of prioritizing technologies/measures to adapt the health sector to climate change, the gender aspect was also pursued. Thus, in the structure of the criteria for assessing technologies/measures for adaptation of the health sector to climate change (15 criteria) is included a criterion dedicated to this field – Criterion P. Impact on gender equality. Also, within the action of sectoral prioritization of adaptation technologies/measures, 66.7% female respondents and

33.3% male respondents participated. It can be considered an acceptable ratio, considering the gender composition in the health sector under this heading.

The proposed technological options for adapting the health sector to climate change do not affect gender equality. Women, who constitute almost two-thirds of human potential in health, will be extensively involved, along with men, in the implementation process at most of the planned stages and actions.

Chapter 3. Prioritizing technology for the health sector

Executive Summary

Climate change is already profoundly affecting resource availability conditions and activities within different sectors of the national economy, for instance, forestry, agriculture, transport, energy, water resources, health, etc. In the last decade, the Republic of Moldova (RM) has experienced a series of extreme events, such as droughts and major floods, along with incremental effects caused by the increase in average temperature and uneven distribution of precipitation throughout the year, which have had negative consequences on the country's economy, well-being and health of the population, etc.

Life expectancy at birth is one of the basic health indicators of a nation's overall health. The Republic of Moldova is currently in a slightly better situation than in the pre-transition period in terms of life expectancy, which increased by 2.7 years in the last decade - in 2020, it was 72.3 years for both sexes (123rd place worldwide), including 68 years for men and 76.5 years for women, compared to 2015, when it was 71.7 years for both sexes, including 67.6 years for men and 75.7 years for women (in 2010 it was 69.6 years for both sexes).

While the general health of the population has registered an improving trend in the last decade, comparative statistics show that the situation in most transition countries has improved to a greater extent than in the Republic of Moldova.

Climate change and extreme weather events have direct impacts on health. At the same time, they can also affect forestry, agriculture and industry, which can cause problems in terms of food security and poor sanitary conditions that can in turn produce serious effects on health in the short and long term. The health effects of drought could, for example, cause a decrease in food production and dietary problems, making people more vulnerable to disease.

Rising extreme temperatures are estimated to cause between 30,000 and 40,000 deaths per year between 2030 and 2040. Climate variations will cause disturbances in people with chronic cardiovascular and respiratory diseases, with the most vulnerable population groups being those aged under 15 and people over 75.

Among the 17 Sustainable Development Goals of the 2030 Agenda for Sustainable Development, adopted in September 2015 by the UN General Assembly Resolution at the UN Summit for Sustainable Development, is included Goal 13. This is dedicated to climate change issues, which provides for urgent measures to combat climate change and its impacts, focused on adaptability and promoting resilience, its effects. The key targets of this Objective are:

1. Strengthen resilience and adaptive capacity to climate-related risks and natural disasters in all countries.
2. Integrate climate change measures into national policies, strategies and plans.
3. Improve education, awareness-raising and human and institutional capacities on climate change mitigation, adaptation, impact reduction and early warning.

As emphasized in the new EU Strategy on Adaptation to Climate Change, adopted by the European Commission on 24 February 2021, "Health threats related to climate change are increasing; They are serious and can only be solved across borders. These include death and injury from heat, flood or forest fire; the emergence and spread of infectious diseases and allergens associated with the geographical movement of vectors and pathogens. Climate change will increasingly jeopardize the ability of public health systems to function effectively, for example: developing capacity to tackle previously unknown diseases in Europe."

The Government of Moldova considers that the National Adaptation Planning (NAP) process is one of the basic keys to achieving the adaptation objectives outlined in the 2014 Climate Change Adaptation Strategy, the 2020 National Determined Contribution (NDC), as well as for the continuous integration of climate change considerations into its policies and budgetary processes. The government relaunched the NAP process in 2018 through consultations with national stakeholders and UNDP support.

The documents adopted by the Republic of Moldova in the field of climate change include, on the one hand, the health sector among vulnerable sectors, and on the other hand, among the sectors that can make a significant contribution to mitigating the effects of climate change, including for other sectors (water, agriculture, forestry, etc.). The most important documents to be mentioned and where to address climate change issues are:

1. National Strategy for Public Health for 2014-2020, approved by GD 1232/2013.
2. National Strategy for the Prevention and Control of Non-Communicable Diseases for 2012-2020, approved by DP 82/2012.
3. Action Plan for the implementation of the National Strategy for the Prevention and Control of Non-Communicable Diseases for 2012-2020, approved by GD 403/2016.

4. National Program for the implementation of the Water and Health Protocol for 2016-2025, approved by GD 1063/2016.

For the health sector, sectoral adaptation priorities consist of promoting the resilience and adaptability of health institutions to climate change and preparing for response to public health emergencies.

The analysis of the degree of implementation of the policy documents mentioned until 2020 at the public health department shows progress for certain actions, with about 75% of the established indicators being achieved. However, in 2018, the public health system underwent an extensive reorganization, by creating the National Agency for Public Health, which incorporated into its composition 39 former health entities, with a 50% reduction of staff units, which substantially weakened the system's capacities. At the same time, during 2017-2021, the Ministry of Health was merged with the Ministry of Labor and Social Protection, forming the Ministry of Health, Labor and Social Protection, significantly reducing capacities in the field of health. Cross-sectoral coordination and collaboration capacities with other sectors, the first line of environmental protection, which has also undergone similar transformations, have also weakened.

Due to the registered and forecasted vulnerabilities, as well as the significant contribution to mitigating the effects of climate change, including for other sectors of the national economy, the health sector was selected among the key sectors for the TNA process. In the context of mitigating and/or anticipating the impact of climate change, variability and climate extremes, several adaptation technologies/measures have already been identified and proposed in various policy documents over the past two decades to increase the capacity of the health sector to adapt to climate change. Due to the above-mentioned institutional reorganizations, the draft Strategy for adaptation of the health system to climate change for 2018-2022 was not approved, the document being ready in 2018. In the previous period, certain measures/technologies were undertaken in the health sector. Aimed mainly at increasing energy efficiency, retrospective epidemiological studies were carried out on the impact of heat waves on health. However, in general, due to limited resources and frequent changes in institutional management, there is little awareness among medical staff of the role of the health system. It should also be mentioned that with the entry of the Republic of Moldova into the COVID-19 pandemic (the first case being registered on 07.03.2020), declared by WHO on 11 March 2020, the Government invested substantially in the health system, especially in medical and laboratory equipment modernization and protective equipment for staff. There was an improvement in staff training, and in the quality of medical services provided by hospital institutions. At the same time, due to the restrictions imposed during the pandemic, the provision of primary health care was disturbed, which led to reduced access to medical services, especially for the rural population. Therefore, in 2020, 3% more deaths were registered compared to 2019, due to failure to provide timely medical assistance.

Information and innovative technologies are underemployed in the health sector. There is a lack of an automated surveillance system for non-communicable diseases, including those that would be conditioned or aggravated by extreme weather events. This does not allow for a detailed analysis of the health impact of environmental risk factors.

In the TNA project, stakeholder consultation has been an ongoing process throughout all phases. Their consultations and views in providing technological details about the current situation in sectors was of particular importance, including the use of new technologies. Stakeholders have an important contribution in developing the final set of criteria and indicators used to prioritize technology options. To give an active role to stakeholders in the TNA process, sectoral working groups (SWGs) have been set up, including on the health sector (15 members). Within the TNA process in the health sector, GLS was involved as a priority in the following actions/activities:

1. Participation in identifying the long list of technologies/measures to adapt the health sector to climate change (26 technologies/measures).
2. Primary selection/prioritization of effective technologies/measures to adapt the health sector to climate change (12 technologies/measures; organization of the workshop on 12.10.2021).
3. Participation in the MCA analysis for the final prioritization of technologies/measures for adaptation of the health sector to climate change (evaluation of 10 technologies/measures; selection of evaluation criteria; scoring; organization of the workshop on 23.12.2021; validation of results on selection for the health sector of 3 technologies/measures for adaptation to climate change, etc.).

Identifying technologies/tools to mitigate the consequences of climate change, increasing the resilience and adaptability of the health sector is a complex process based on knowing the current state and forecasts for the short and medium period of development. For the health sector, technology is more associated with the notion of measures and best practices. In the context of ensuring the adaptation of the health sector to climate change, the following general sectoral objective is established: *Strengthening capacities to prevent, prepare and respond to climate-driven events to reduce vulnerability and health risks by implementing measures to adapt the health sector to climate change.*

Most of the identified sectoral technologies/measures have a medium or high degree of replicability and applicability. The implementation of these technologies/measures will require at the initial/preparatory stage an extensive analysis of regulatory and policy barriers, but also a list of activities aimed at solving them (development and/or strengthening of the institutional framework for adjusting the regulatory framework, communication and digitalization of supervisory information systems, definition of roles and responsibilities for stakeholders, etc.), which will partially change approaches and situation in the health sector.

The adaptation options identified include the realization of a wide range of transfer and diffusion of existing and new technologies in the health sector in the Republic of Moldova. Among the main innovative aspects foreseen within the technologies selected and proposed for implementation are the following:

1. Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.
2. Endowment of NPHA laboratories with equipment, reagents for the implementation of advanced methods of microbiological control of water.
3. Development of the national network for monitoring ambient air quality at the parameters recommended by WHO and national legislation for continuous monitoring and information on the level of concentration of polluting substances in ambient air.
4. Set up a monitoring system for the UV index and associated health risks.
5. Identifying the impacts of climate change on water quality and potential health impacts, on vulnerable populations.
6. Identification of climate change impacts on air quality and potential health impacts, on vulnerable populations.
7. Promoting cycling and walking as types of active mobility to change behavior and improve the health of the population.
8. Strengthening the surveillance system for vector-borne infectious diseases and other emerging diseases influenced by climate change.
9. Development of an automated system for epidemiological surveillance of non-communicable diseases and their risk factors, including conditioned by climate change.
10. Elaboration of the national guide on the management and prevention of the effects of heat waves on the health of the population, dedicated to medical workers and public authorities.
11. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.
12. Establishment of a modern information system on health in relation to the environment, including aspects related to climate change, air quality and data on population health.
13. Conducting a national communication campaign on the health effects of climate change, especially heatwaves.

14. Development and application of m-health technologies with the involvement of mobile operators to quickly inform the population, vulnerable groups about health risks in extreme weather conditions.
15. Conducting a national survey on the level of literacy of the population in the field of health risks caused by climate change.

Among the main climate change adaptation benefits of technologies/measures identified for the national health sector, the following aspects are mentioned:

- a) Better control of infections in medical institutions, cases of hospital diseases will be prevented.
- b) Capacities to provide medical services to be increased.
- c) Design disease burden and evaluate public health interventions.
- d) Modelling anticipated changes in air and water quality will allow better assessment of public health risks.
- e) Better cooperation with water and sewerage system operators, economic agents will allow assessing the performance of infrastructure and natural systems under climate change conditions, public health needs and vulnerabilities.
- f) Identify communities and populations more vulnerable to this impact due to location, pre-existing health conditions, lifestyle.
- g) Obtaining relevant data on population health, by age groups, sex, geographical region, area of residence, ethnicity, education level and income, including for vulnerable groups of population, which is most strongly affected by climate change, providing support for these groups to adapt to climate change.
- h) Establishing standard operational procedures explicitly stipulating what to do in case of: cold waves, floods, high air pollution, etc. and a clear distribution of responsibilities for better interoperability.
- i) Integration of the air quality monitoring system with the health assessment system, identifying the interrelation between air pollution and the level of addressability and hospitalization of the population with diseases caused by air pollution: cardiovascular diseases, cancer, chronic respiratory diseases and type II diabetes.

The process of prioritizing adaptation technologies/measures at the level of the health sector was carried out in two stages through a participatory process. At the first stage, WG members

prioritized through a web questionnaire, but also in Word format, 12 technologies from the long list proposed for implementation for the sector. Thus, according to the results of the sector questionnaire, the highest scores were accumulated by the technologies "Identifying the impact of climate change on air quality and potential effects on health, especially on vulnerable populations", "Promoting cycling and walking as types of active mobility in order to change behavior and improve the health of the population" and "Conducting a national communication campaign on the health effects of climate change, in particular heatwave". In fact, the selected third technology/measure intersperses with the other two and can assist them.

To achieve the direct prioritization of climate change adaptation technologies/measures on the health sector, the multicriteria analysis (MCA) procedure was used. In this context, with the support of spreadsheets based on Excel, 3 interconnected matrices were built: performance matrix, score matrix and decision matrix. The forms filled in by GLS members were submitted to the national sector consultant.

3.1. Key climate change vulnerabilities in the health sector

3.1.1. Current situation of the health sector in terms of climate change

The most important health risks caused by climate change are as follows:

- Increase in the number of diseases and deaths caused by heat waves.
- Increase in the number of diseases caused by air pollution.
- High risk of allergic conditions.
- High risk of water scarcity due to drought.
- Increasing cases of waterborne and foodborne diseases.

Vulnerable groups of the population. Climate change does not affect the entire population to the same extent. Some groups are obviously more vulnerable than others. As already estimated about heatwaves, the overall health impacts of climate change would differ across regions of Europe. Health and well-being are closely linked to socio-economic factors such as income, housing, work, education, gender and lifestyle; Thus, the effects of climate change would affect health inequalities between and within countries and lead to an uneven distribution and additional burdens for modest income groups and some vulnerable groups, such as children, people working outdoors, older people, pregnant women and people already suffering from diseases.

For example, current cases of heat-related mortality indicate a strong dependence on socioeconomic factors. For certain effects, e.g. heat-related mortality or air pollution, older people are more vulnerable, and other factors affecting this group may also be linked to their socioeconomic situation.

Another element of inequality may be that the rural population is much more dependent on decentralized water supply than the urban population, and the decline in water quality will affect the rural population, one of the most vulnerable groups to intestinal diseases being children. Also, a big problem is the provision of primary health institutions in rural areas with medical staff and medical transport, as well as the fact that the share of people who do not have a medical policy in villages is higher than in cities.

Another element that influences the vulnerability of some categories of people is the state of their health. In a healthy person, if there is any change in climate, the adjustment of physiological processes in the body to new environmental conditions occurs quickly, there is mobilization of protective reactions and, as a result, healthy people adapt quite easily to climate change. Whereas in a sick person, adaptive reactions are weakened, the body loses its ability to adapt quickly. The influence of weather conditions on a person's well-being is also associated with the age and individual susceptibility of the body. Under conditions of rapid climate change, human adaptation mechanisms are overworked and often cannot react normally, which increases the vulnerability of the population. Table 3.1 defines the groups most vulnerable to climate change.

Table 3.1: Groups vulnerable to climate change and health risks

Health problems caused by climate change	Vulnerable groups
<i>Non-Communicable diseases</i>	
Heatwave-related illnesses and deaths	Older people. People with chronic diseases. Newborns and children. Pregnant females. People with low incomes and poor. Residents of urban areas. Farm workers. Workers and other people working outdoors.
Diseases and deaths caused by air pollution	Children. People with respiratory and cardiovascular diseases. People with unfavorable allergic status. Traffic police employees.
Diseases and deaths related to extreme climate events	The poor, pregnant women, people with chronic diseases, people with limitations of mobility and cognitive.
<i>Communicable diseases</i>	
Waterborne infectious diseases	Older people. Children with reduced immunity. Women. People who do not have access to drinking water in adequate quantities and of good quality. People who encounter waste or wastewater.
Foodborne infectious diseases	Homeless, low-income and poor people.
Vector-borne infectious diseases:	People who perform work in forest spaces, public gardens, etc.

Lyme	People arriving from endemic areas, people with reduced immunity, children, pregnant women, people with genetic deficiencies.
Malaria	

Increased morbidity and mortality. The main concern is related to morbidity and mortality conditioned by heat waves, because of the increase in annual average temperature and extreme temperatures. In EU countries, it is estimated that mortality can increase by 1–4% for every one degree rise in temperature. Older people, with a reduced ability to control and regulate body temperature, are at greatest risk of death from heat shock and cardiovascular, renal, respiratory and metabolic disorders. While the total number of deaths is closely linked to population size, the change in mortality rates may be much more pronounced in regions where warming is more pronounced.

Infectious diseases transmitted by vectors. Vectors such as mosquitoes or ticks are largely linked to climate change due to changes in their geographical range, seasons of activity and population size. Also, changes in land use and socio-economic factors (e.g. human behavior, movement of people and goods) will continue to be important. As a result, changing temperatures and rainfall levels favor the emergence and spread of diseases such as malaria, dengue fever, Lyme disease, West Nile fever, etc.

Waterborne diseases. Heavy rainfall has been correlated with several outbreaks of waterborne diseases because of pathogen mobilization or widespread water contamination due to overflow from sewer networks. Reduced water flow in summer can increase the potential for bacterial and chemical contamination. The increase in fecal bacterial contamination also risks affecting drinking water abstraction systems and recreational water. In addition, insufficient water in adequate quantities to meet every day hygiene needs, such as hand washing, is essential for health and could contribute to multiplying infectious disease outbreaks.

Diseases caused by air pollution. Air pollution caused by car traffic is one of the main culprits for air toxicity. Car traffic generates more than 50% of nitrogen oxide emissions, according to statistics published by the European Environment Agency in 2018. According to the World Health Organization, air pollution is responsible for 29% of lung cancer deaths, 24% of stroke deaths and 43% of chronic obstructive pulmonary disease deaths. Several studies have shown a clear causal link between air pollution and serious conditions such as dementia and cardiovascular disease.

Foodborne diseases. Heat is also associated with high risks of explosions of salmonella and campylobacter outbreaks. Extreme rainfall can contaminate drinking water, and algae that multiply due to high temperatures can cause gastrointestinal problems. As a result, foodborne diseases, which are usually caused by microbial contamination, are a growing health problem caused by climate change.

Allergic reactions. As the temperature rises, plants produce more pollen for longer periods of time and thus intensify and prolong the allergy season. Also, rising levels of carbon dioxide in the atmosphere can cause plants to grow longer and produce more pollen, which in 20% is the leading cause of allergic reactions in humans. In addition, symptoms such as pain in the sinus area, pressure in the ears and stuffy nose can become increasingly intense. There is also the possibility of an extension of the season of occurrence and duration of allergies ("hay fever", asthma), with effects on the direct costs of healthcare and medicines, as well as on working hours. Finally, there could be other indirect impacts of climate change impacting other determinants of health, such as indoor and outdoor air quality, air pollution levels and the nature, severity and timing of air allergens such as pollen or mold. People who already suffer from chronic respiratory conditions such as asthma, serious allergies or chronic obstructive pulmonary disease will be at particularly high risk.

Pregnancy and complications in childbirth. Climate change is worsening air pollution and heat, which particularly affects pregnant women. There is an increase in the number of babies already born in a weakened state due to heat and air pollution. In developing countries, pregnant women may also suffer from lack of food or water, or be at risk from disease-carrying insects, all caused by climate change.

Health problems related to ultraviolet radiation. An indirect effect of climate change on health is determined by the possible modification of ultraviolet radiation. It has been confirmed that increased temperatures will influence clothing and time spent outdoors, thus risking intensifying exposure to ultraviolet radiation, which can negatively influence the incidence of skin cancers, including malignant melanoma, as well as cataracts.

Mental illness. People exposed to or displaced by the effects of extreme weather are at major risk of mental illness. Extreme heat can also make the effects of these diseases much more aggressive. The increase in disasters caused by adverse climatic conditions could therefore increase the number of people affected in this regard.

Trauma. Episodes of extreme weather, including hurricanes, floods and wildfires often cause physical damage such as fractures, injuries and smoke inhalation. Very high temperatures are also associated with aggression and violence, and the climate crisis is linked to violent conflicts and forced migrations. Similarly, in low temperatures, there is an increase in trauma caused by ice falls, as well as in the number of people with frostbite and hypothermia.

Table 3.2 presents the health risks caused by climate change, according to a trust rating proposed by the WHO.

Table 3.2: Health risks of climate change classified according to a reliable rating

Climate phenomenon / exposure	Direct effects		
	Health risk	Impact Health	Trusted rating
<p>Greater number of days and nights with high temperatures.</p> <p>Increasing the intensity and frequency of heat waves.</p> <p>Increased risk of fires in conditions of rainfall deficit.</p>	<p>Increased mortality rate caused by heatwave, increased incidence of hyperthermia and heatstroke, especially among workers, athletes and the elderly.</p> <p>Exacerbation of diseases of the circulatory, cardio-vascular, respiratory and kidney systems.</p> <p>Increased premature mortality rate caused by ozone depletion and air pollution during fires that occur mainly during hot periods.</p>	<p>Increased risk of trauma; very high rate of illnesses and deaths caused by heatwaves and fires</p>	<p>Very High</p>
<p>Fewer cold days and nights</p>	<p>Decrease the mortality rate caused by low temperatures, as well as reduce cardiovascular and respiratory diseases, especially in older people in cold and temperate climates.</p>	<p>Modest improvements in mortality rate and morbidity due to low temperatures</p>	<p>Low</p>
<p>Higher temperatures and humidity, unstable and increasingly variable rainfall, rising surface water temperature of seas as well as freshwater</p>	<p>Accelerated development of microbial agents; survival, persistence, virulence and transmission of pathogens; changes in the geographical and seasonal distribution of diseases such as cholera, harmful algae; lack of water for compliance with hygiene; floods and their dangers to water resources and water supply and sanitation infrastructure; risks of contamination of water resources due to flash floods.</p>	<p>Increased risk of waterborne and foodborne diseases</p>	<p>Very High</p>
<p>Higher temperatures and humidity, unstable and increasingly variable rainfall levels</p>	<p>Accelerated multiplication of parasites and increase in the number of bite cases; extension of transmission periods; re-emergence of diseases that were dangerous in the past; changes in the distribution and abundance of pathological vectors; decrease in the effectiveness of vector control interventions</p>	<p>Increased risk of vector-borne diseases</p>	<p>Medium</p>
<p>Higher temperatures and changes in precipitation regime</p>	<p>Lower food production; less access to food products due to reduced supplies and higher prices; the combined effect of malnutrition and infectious diseases; chronic effects among children, such as developmental stagnation and weight loss;</p>	<p>Increased risk of malnutrition due to declining food production in poor regions</p>	<p>High</p>
<p>Higher temperatures and humidity</p>	<p>Outdoor and unprotected workers are forced to work in physiologically unsafe conditions or otherwise lose income or livelihood opportunities</p>	<p>Health effects from loss of work capacity, thus reducing labor productivity among vulnerable population</p>	<p>High</p>

3.2. Climate change adaptation capacity of the health system for healthcare delivery

In the context of adapting the health system to climate change, system functions need to be clearly defined. WHO recommends an "essential set" of 6 functions in identifying the roles of health systems. Therefore, from an operational point of view, it is more efficient to formulate the

objectives of the strategy considering these 6 functions of national health systems. Moreover, the WHO proposes that the health sector must take on the key role in protecting the health and well-being of the population from the impacts of climate change. Of major importance in developing adaptability interventions is the fact of subjecting the health system to direct control of the functions of prevention, treatment or, indirectly, the function of guiding policies. This means that the Ministry of Health or another public health institution at national level must assume leadership and regulatory roles, advocacy, etc. in collaboration with institutions in other health-related sectors, such as those in aquatic resources management, emergency situations and communications, urban planning, housing, transport, waste management, food industry and agriculture.

It should be mentioned that, in general, the Republic of Moldova has a developed network of medical-sanitary institutions of urgent, primary and hospital medical assistance, as well as state supervision institutions of public health.

The public health sector is represented by the National Public Health Agency (ANSP) - administrative authority, responsible for implementing state policy in the field of state supervision of public health.

NPHA consists of the central apparatus and 10 public health centers, territorial subdivisions, without legal personality, which ensure the coordination of public health activities, including the management of public health emergencies, at territorial level in the established service areas, each comprising 2-4 districts.

The NPHA is designated as the National Focal Point for the implementation of the International Health Regulations (IHR 2005) and the Water and Health Protocol and is responsible for notifying, verifying and consulting with the World Health Organization on events that may constitute a public health emergency of international concern. For this purpose, NPHA ensures 24-hour monitoring of the situation in the country and abroad and is accessible for receiving information from the surveillance and reporting system, from border crossing points, as well as from unofficial sources, disseminates aggregated information and temporary or permanent recommendations received from WHO to health networks, public authorities, decision-makers.

The urgent medical assistance sector is represented by the National Center for Prehospital Emergency Medical Assistance (PHEMAC), which structurally consists of 5 regional AMU Departments, located in 5 operational geographical areas (mun. Chisinau, Center, North, South and ATU Gagauzia), within which operate 6 municipal substations AMU (5 in mun. Chisinau and 1 in mun. Balti), 35 AMU district substations and 96 AMU points located in rural localities. Every day PHEMAC ensures non-stop activity of 240-250 AMU teams, serving about 2400-2800 requests. PHEMAC's ambulance fleet consists of over 400 transport units. The request for

emergency calls is made through the Single Urgent Requests Service 112.

The primary health care sector is represented by a network of public and private institutions providing primary health care. The network of public institutions is represented by 241 autonomous health centers, which include 13 health centers within autonomous health centers, 589 offices of family doctors and 373 health offices. Primary health care in mun. Chisinau is represented by five territorial medical associations and 14 autonomous PHC health centers located in the suburbs.

The hospital sector comprises 86 hospitals, including 61 public, 8 departmental and 17 private hospitals. In turn, out of 61 public hospitals, 17 are republican, 9 are municipal hospitals, 34 district hospitals and 1 community hospital. The founder of republican hospitals is MSMPS, the founder of municipal and district hospitals is the local public administration, and the founder of departmental hospitals is the central public administration authorities subordinated to these hospitals. The total number of beds in public hospitals is 16251, of which 7638 beds (47%) are deployed in republican hospitals, 2283 beds (14%) – in municipal hospitals and 6330 beds (39%) – in district hospitals. Over 50% of hospitals (16 republican, 9 municipal, 8 departmental and 8 private), with a capacity of 9369 beds, or 46.8% of the total number of beds, are in Chisinau.

At the same time, not all medical institutions have a safe degree of resilience to the factors of climate change. For example, according to a study on hospital safety in emergency situations, conducted in Moldova in 2016 with WHO support, several gaps have been identified that negatively influence hospital safety, namely:

- In the compartment "Structural safety" (condition of buildings): multiple portions of degraded walls (settlements and holes), which as a result of rainwater penetration can influence the resistance of both foundations and soils, cracks in load-bearing partitions, lintels and floors, and in some cases also damage to the foundations, bare joints between vertical reinforced concrete panels, which allow moisture penetration and can condition damage to external walls, partially damaged roof sections, some deficiencies in the maintenance and proper operation of buildings.
- In the compartment "Non-structural safety" (state of infrastructure and engineering networks): the large number (in some hospitals exceeds 60%) of engineering networks (electricity, aqueduct, sewerage, etc.) that require renovation, lack or reduced capacity of alternative sources of electricity, drinking water and heating supply, deficiencies in ensuring fire safety, lack or non-functionality of ventilation / air conditioning systems, etc.

Similarly, infrastructure for health care services is less accessible in rural areas compared to cities. An indirect effect of climate change on health could also occur because of limiting access to

medical services, because of obstacles to them, created by floods or floods, or affecting the functionality of healthcare institutions because of storms, strong winds, fires or other factors related to climate change.

Table 3.3 provides a list of health system functions, and the respective area of intervention caused or potentially increased by climate change exposures.

Table 3.3: Health system functions and related fields of activity

Functions	Areas of activity related to functions
Health governance and policies	<p>Conclusion of agreements between the Ministry of Health, Labor and Social Protection and other state institutions on their role in protecting health against climate risks.</p> <p>Ministerial coordination with other sectors influencing health, such as water, agriculture, urban planning, transport, welfare, waste, energy; Coordination between the Ministry and the State Hydrometeorological Service responsible for developing weather forecasts and issuing timely notifications.</p>
Human resources for health	<p>Training in health and other relevant disciplines to cope with climate-induced health risks (capacity building).</p> <p>Organization of existing human resources and identification of gaps in institutional capacities to cope with emergency situations and to develop action plans in the event of outbreaks of new diseases (emergency preparedness).</p> <p>Organizing the team and/or investing resources in risk assessment and communication, as well as in day-to-day communication on climate-induced health risks, to manage knowledge and raise awareness (readiness for communication).</p>
Information systems	<p>Definition and implementation by different actors of the national research agenda in the field of climate change and health; establishing partnerships between research institutions in the field of climate change and health; involvement of decision-makers.</p> <p>Extraction and recording of data in the field of health in accordance with the protocol of the International Health Regulations; processing and publishing health data for use by researchers and decision-makers; Reference data.</p> <p>Disease surveillance based on data on environmental risks caused by climate change and epidemiological trends, which are collected and analyzed regularly; special monitoring of vector-borne diseases.</p> <p>Creating an early warning system by establishing at national level communication procedures regarding possible ecological crises, outbreaks and emergencies; sectoral collaboration with institutions outside the health system responsible for issuing weather forecasts, protecting and monitoring environmental quality.</p>
Key products and technologies	<p>Adapting quality standards and regulations on the main environmental factors influencing health (air quality, water quality, food quality, housing, transport safety, waste management) so that they reflect a wider spectrum of possible climatic conditions.</p> <p>Infrastructure and services adaptable to climate change: a safe health and public health infrastructure that does not present vulnerabilities to natural and climate risks.</p> <p>Empowering communities to effectively prevent and respond to health risks caused by extreme weather events.</p>
Provision of services	<p>The level of supply of specific medicines and the level of preparedness for the provision of services in risk situations caused by climate change, such as heatwaves or vector-borne diseases.</p>

Functions	Areas of activity related to functions
	<p>Scheduling and delivery of health services considering new risks caused by climate change and/or new diseases arising from environmental factors (e.g. allergies, vector-borne diseases...)</p> <p>Coordinated management of services and communication.</p> <p>Greening health, applying technologies that reduce greenhouse gas emissions in service provision.</p>
Funding	<p>Ensuring access to health services for the entire population, paying special attention to disadvantaged people.</p> <p>Presenting and obtaining funding from international climate change funds (e.g. GEF, Adaptation Fund, bilateral donors) of projects and programs to strengthen the adaptability of health systems.</p> <p>Financing the health sector from various other potentially risky sectors (e.g. transport insurance).</p>

Accessibility of health and well-being services

Social inequalities and gender inequalities risk hampering investment in infrastructure aimed at increasing the country's resilience capacity. The health system must cope with the level of accessibility of health services and primary health care for the general population and the gender difference, mainly, apparently, in the productive age group. The Ministry of Health, Labor and Social Protection has the role of advocating on ensuring accessibility to health services and covering expenses for essential living needs, as well as productive services such as: the cost of energy, public transport and commuting, educational institutions and other main welfare components of civil society life. Decisions are also to be taken on policies aimed at facilitating equal gender opportunities to increase the resilience of the entire country.

Management of waste resulting from medical activity

Efficient management of waste resulting from medical activity (DAM) is an extremely important activity in the prevention and control of nosocomial infections, ensuring the safety of work of medical personnel, as well as environmental protection, as DAM can be an important source of greenhouse gas emissions (GEF).

In this case, the regulatory framework for DAM management consists of:

- Law 209/2016 on waste.
- Sanitary Regulation on the management of waste resulting from medical activity, approved by GD 696/2018.
- DMA management strategy for 2013-2027, approved by MoH Order no. 652 of 06.06.2013.

- List of waste, approved by GD 99/2018.
- Order of MH no.9 of 06.01.2006 on harmless destruction of medicines with expired shelf life, counterfeit, quality deficiencies or without documents of origin.
- Practical guide on the safety of injections, approved by MoH order no.765 of 30.09.2015.

In the documents listed, in this case in the Sanitary Regulation on the management of waste resulting from medical activity, the obligations of the institutions generating dam, requirements regarding the local management plans of the dam, the current classification of the dam, the current methods of neutralization / elimination of the dam are approved, such as autoclaving, incineration, chemical, biological and thermal treatment. The Sanitary Regulation is based on the precautionary principle, by reducing the production and degree of hazardousness of MSD, reducing the quantity of hazardous waste, separate collection of waste at source, promoting recycling and reuse of non-hazardous waste (paper, metal, glass), continuous monitoring and record keeping of MSD, identification of hazards to the health of medical workers and the population.

DAM poses a potential risk of infection and major harm compared to other types of waste. Regardless of where the dam is produced, implementing safe management methods is crucial to eliminate risks to public health and environmental pollution. At the same time, in the absence of concrete actions and adequate infrastructure to neutralize hazardous DAM, several medical institutions, especially in rural areas, collect them together with household waste or dispose of them on the spot, including by burning, being exposed to risks employees, environment and population.

According to WHO data, about 85% of all DAM can be considered non-hazardous and disposed of together with household waste, and the other 15% is hazardous waste – infectious, pungent, toxic or radioactive. It is estimated that up to 6kg/person/year of hazardous DMA is generated in developed countries. In low- and middle-income countries, to which the Republic of Moldova is also attributed – about 3kg/person/year. According to data reported by medical institutions in 2018, the amount of waste amounted to about 9 thousand tons, including hazardous ones (infectious, stinging, anatomy-pathological, radiological and chemical. Exact data on the amount of DMA in 2020 are missing, but if we consider data from several countries reported by WHO, because of the COVID-19 pandemic, which has majorly affected health systems in all countries, there was an increase in DMA by 105-110% compared to the pre-pandemic period. Thus, we can conclude that in 2020 around 20 thousand tons DMA were generated.

Risks arising from hazardous DAM persist at all stages of separation, storage, transportation, treatment and disposal of this waste. The significant amounts of HMA, the major risks it represents, as well as the deficiencies in their management, dictate the need to implement technologies to eliminate them in several areas of the country, because the existing ones are not enough. Medical services in the Republic of Moldova have not reached the level of European standards, which

exposes medical staff and patients served to the risk of transmission of nosocomial infections. DAM hygiene conditions and management and disposal practices are not sufficiently safe and do not provide adequate protection of personnel and protection of the environment from pollution.

3.2. Adaptation technology options for the health sector and their main adaptation benefits

Identifying technologies/tools to mitigate the consequences of climate change, increasing the resilience and adaptability of the health sector is a complex process based on knowing the current state and forecasts for the short and medium period of development. In this context, it is mentioned that technology is a synthesis of equipment, techniques, practical knowledge or skills for performing a particular activity (IPCC, 2000). For the health sector, technology is more associated with the notion of action and good practices. In the context of ensuring adaptation of the forest-based sector to climate change, the following sectoral general objective shall be set:

Strengthening capacities to prevent, prepare and respond to events conditioned by climate change to reduce vulnerability and health risks by implementing measures to adapt the health sector to climate change

At the initial stage, to ensure the development of relevant measures/technologies based on concrete goals and targets, potential climate impacts (CI) on the health system were established:

- **Climate impact 1: Increasing incidence of non-communicable and infectious diseases due to climate change**
- **Climate impact 2: Affecting the safety of medical institutions and the capacities to provide qualitative medical services**
- **Climate impact 3: Worsening of the quality of the population's living environment**

To strengthen the capacities of the health system to adapt to climate change, as well as to increase their protective effect for agricultural land and crops, human localities, infrastructure, etc., at the primary stage was identified a set of sectoral technologies/measures (21 technologies/measures), classified in 8 subsectors. The cumulative budget of these options is an estimated \$17 million.

3.3. Evaluation criteria and prioritization process of adaptation technologies on the health sector

3.3.1. Identification of criteria for assessing adaptation technologies in the health sector

For the second stage of prioritizing climate change adaptation technologies/measures on the health sector, the identification of dedicated evaluation criteria was carried out. This contributed to achieving a clear and transparent process of prioritizing climate change adaptation

technologies/measures selected at the primary stage. The evaluation criteria were derived by the national sector consultant based on the objectives specified in subchapters 3.1-3.3 of this Report, using the appropriate guide to the given topic (Sara Trærup and Riyong Kim Bakkegaard, 2015). Subsequently, these criteria were concretized and finalized with the participation of the members of the Sectoral Working Group (GLS). In this context, those criteria are considered appropriate to demonstrate variations between proposed technologies/sectoral measures.

The process aimed to ensure that the criteria include all relevant aspects, are not redundant (do not repeat what is already assessed by another criterion), mutually independent, etc. Criteria that cannot be measured in numbers (qualitative criteria), usually related to benefits, have been converted into a numerical form on a scale from 0 to 10 (scoring), where "0" means the least preferred option and "10" means the most preferred option. Based on the specificities of the sector, these criteria are associated to 8 categories of evaluation: costs; Economic; Social; medium; climate; institutional/implementation; politics; gender. Also, for each evaluation criterion, the scoring scale (0-10) is given.

Table 3.4: Existing/implemented adaptation technologies/measures in the health sector

Rating categories	Criteria code	Name of selected assessment criteria	Scoring scale
Costs	Criterion A	Investment cost of technology, EUR per operating unit	0=very high costs --> 10=very low costs
	Criterion B	Technology maintenance/operation costs, EUR per operational unit	0=very high costs --> 10=very low costs
Economic	Criterion D	Capacity of revenue generation, scoring	0= very low--> 10= very high
	Criterion E	Capacity to attract private investment, score	0= very low--> 10= very high
Social	Criterion F	Capacity to generate new jobs, number of jobs created	0= very low--> 10= very high
	Criterion G	Potential for transfer and diffusion of new technologies (Degree of innovation), score	0= very low--> 10= very high
	Criterion H	Contribution to improving population health, score	0= very low--> 10= very high
Environment	Criterion I	The contribution of technology to protecting and sustaining ecosystem services, score	0= very low--> 10= very high
	Criterion J	Benefits for increasing indigenous GHGS sequestration capacities, score	0= very low--> 10= very high
Climate	Criterion K	Improving the sector's resilience to climate change (to what extent technology will help reduce climate vulnerability), score	0= very low--> 10= very high
	Criterion L	Contribution to improving climate resilience (synergism) for other sectors (agriculture, water, etc.), score	0= very low--> 10= very high
Institutional/ Implementation	Criterion M	Implementation ability, scoring	0= very difficult--> 10=very easy

	Criterion N	Degree of replicability, score	0=very difficult-->10=very easy
Politics	Criterion O	Coherence with national development policies and priorities, score	0= very low--> 10= very high
Gender	Criterion P	Impact on gender equality, scoring	0= very low --> 10= very high

3.3.2. Final prioritization of adaptation technologies on the health sector

To achieve the direct prioritization of climate change adaptation technologies/measures on the health sector, the multicriteria analysis (MCA) procedure was used. In this context, with the support of spreadsheets based on Excel, 3 interconnected matrices were built: performance matrix, score matrix and decision matrix¹. Those matrices have been constructed for each climate impact described in chapters 1.2-1.4 and 3.4 of this Report. Also, at the initial stage, the technologies included in the assessment process were allocated to the corresponding climate impacts.

3.4. Results of prioritizing climate change adaptation technologies on the health sector

3.4.1. Results regarding the prioritization of climate change adaptation technologies on the health sector according to MCA

The final stage of the prioritization exercise with MCA support is the construction of the decision matrix. The decision matrix is based on performance and score matrix data. The results of the MCA exercise were carefully examined to see if the calculations and rows were logical. First, it has ensured that the scores given to different criteria are consistent and reflect technological merits.

3.4.2. Analysis of the sensitivity of the process of prioritizing climate change adaptation technologies on the health sector according to MCA

The results obtained in the first MCA were tested at robustness, i.e., how they are stable to changing factors that determine the position T/M in the list of priority levels. In this respect, according to GLS recommendations, robustness has also been studied by changing the weight of evaluation criteria, especially those related to primary implementation investment costs, but also maintenance/operating costs, etc.

¹ The Excel file "MCDA_Selectarea tehnologiilor_Sectorul forestier_fin" is attached separately to this Report.

Chapter 4. Annexes for the Technology Prioritisation Exercise

Annex1: Technology Fact Sheets (short format) for the long list of technological options for adapting the health sector to climate change

Identifying and prioritizing technologies/tools to mitigate the consequences of climate change, increasing the adaptability and resilience of the health sector is a complex process based on knowing the current state and forecasts for the short and medium period of development. In context, technology is a synthesis of interventions, technologies, actions, practical knowledge, or skills to perform a particular activity (IPCC, 2000). For the health sector, technology is more associated with the notion of actions/measures and good practices.

The general sectoral objective is *to strengthen capacities for prevention, preparedness and response to events conditioned by climate change to reduce vulnerability and health risks by implementing measures to adapt the health sector to climate change*

To strengthen both sectoral capacities, communicable and non-communicable disease surveillance systems, infection control, maintaining infrastructure and ensuring continuous delivery of health services, risk communication, health impact forecasting and emergency management, a broad set of sectoral technologies/measures is proposed, including the following:

1. Location of incineration plants in locations established by the Ministry of Health for the disposal of hazardous medical waste.
2. Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.
3. Endowment of 100 rural medical-sanitary and educational institutions with filtration facilities for drinking water polluted because of floods.
4. Endowment of NPHA laboratories with equipment, reagents for the implementation of advanced methods of microbiological water control.
5. Creation of cool areas within medical institutions of republican and municipal level.
6. Development of the national network for monitoring ambient air quality at the parameters recommended by WHO and national legislation for continuous monitoring and information on the level of concentration of polluting substances in ambient air.
7. Set up a monitoring system for the UV index and associated health risks.

8. Identifying the impacts of climate change on water quality and potential health impacts, on vulnerable populations.
9. Identification of climate change impacts on air quality and potential health impacts, on vulnerable populations.
10. Promoting cycling and walking as types of active mobility to change behavior and improve the health of the population.
11. Improving the system of statistical record keeping and reporting of non-communicable diseases, including conditioned by climate change.
12. Strengthening the surveillance system for vector-borne infectious diseases and other emerging diseases influenced by climate change.
13. Development of an automated system for epidemiological surveillance of non-communicable diseases and their risk factors, including conditioned by climate change.
14. Elaboration of the national guide on the management and prevention of the effects of heat waves on the health of the population, dedicated to medical workers and public authorities.
15. Needs assessment and development plan for prophylactic disinfection services to control and reduce vector population.
16. Development of clinical protocols for diagnosis and treatment for allergic diseases, pollinosis, conditional climate change.
17. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.
18. Establishment of a modern information system on health in relation to the environment, including aspects related to climate change, air quality and data on population health.
19. Conducting serial trainings for medical workers on the management of heatwaves, floods, cold waves by medical and sanitary institutions.
20. Conducting trainings for medical workers on the management of waste resulting from medical activity to improve separate collection at source and prevent an increase in the amount of hazardous waste.
21. Conducting an in-depth epidemiological study on the influence of heat waves on health.

22. Conducting a national communication campaign on the health effects of climate change, in particular heatwaves.
23. Development and introduction in the curricula of undergraduate and postgraduate studies at State University of Medicine and Pharmacy "N. Testemitanu" of health and climate change adaptation departments, capitalizing on the gender dimension.
24. Development and application of m-health technologies with the involvement of mobile operators to quickly inform the population, vulnerable groups about health risks in extreme weather conditions.
25. Conducting a national survey on the level of literacy of the population in the field of health risks caused by climate change.

To facilitate the process of prioritizing adaptation technologies in the health sector, the long list of adaptation technology options was subjected to an evaluation with the support of short-form technology fact sheets (TFS). Next, the adaptation technology options for the health sector exposed in Chapter V of this Report are assessed and assigned in TFS.

TECHNOLOGY FACT SHEETS FOR THE HEALTH SECTOR

Sector	Health
Category by impact	Increasing the incidence of non-communicable and infectious diseases conditioned by climate change and affecting the safety of medical institutions and the capacities of qualitative provision of medical services
Sub-category	Health infrastructure upgrade and health assessment technologies
Name of technology/action	1.Location of incineration plants in locations established by the Ministry of Health for the disposal of hazardous medical waste formed in medical activity
Legal framework	Sanitary Regulation on the management of waste resulting from medical activity, approved by GD 696/2018
Brief assessment of the proposed technology/action	<p>Medical waste (MW) poses a potential risk of infection and major harm compared to other types of waste. Regardless of where the MW is produced, implementing safe management methods is crucial to eliminate risks to public health and environmental pollution. At the same time, in the absence of concrete actions and proper infrastructure to neutralize hazardous MW, several medical institutions, especially in rural areas, collect them together with household waste or dispose of them on the spot, including by burning, putting employees, the environment and the population at risk.</p> <p>According to WHO data, about 85% of all MW can be considered non-hazardous and disposed of together with household waste, and the other 15% is hazardous waste – infectious, pungent, toxic or radioactive. According to data reported by medical institutions in 2018, the quantity of hazardous waste (infectious, stinging, anatomic-pathological, radiological and chemical) amounted to about 4 thousand tons, including 26 tons of anatomic-pathological waste. Exact data on the total amount of DMA in 2020 are missing, but if we consider data from several countries reported by WHO, because of the COVID-19 pandemic, which has majorly affected health systems in all countries, there has been an increase in DMA by 105-110% compared to the pre-pandemic period. Thus, we can conclude that in 2020 around 20 thousand tons of DMA were generated, of which approximately 6 thousand tons of hazardous waste.</p> <p>Risks arising from hazardous MW persist at all stages of separation, storage, transportation, tarring and disposal of this waste. The significant quantities of MW, the major risks they represent, as well as the deficiencies in their management, dictate the need to implement technologies to eliminate them in several areas of the country, especially in the North and Center areas, because the existing ones are not enough. Medical services in the Republic of Moldova have not reached the level of European standards, which exposes medical staff and patients served to the risk of transmission of nosocomial infections. The hygiene conditions and practices for managing and disposing of MW are not sufficiently safe and do not provide adequate protection of personnel and protection of the environment from pollution.</p> <p>Thus, it is proposed to place incineration plants in mun. Balti and Orhei, possibly in other locations for the disposal of hazardous medical waste collected. The costs could be covered by external investments, with the contribution of the NIHC.</p> <p><i>This technology is not applied for the first time, it can be replicated at regional level.</i></p>
Estimated costs	The estimated cost of an installation that complies with international standards, with a capacity of 135kg / hour, is 660 thousand USD

Market potential	Such facilities are not domestic, they need to be imported
Adaptation impacts and benefits	This technology has dual benefits – both in adapting the capacities to cope with new health emergencies – in this case to the conditions caused by the COVID19 pandemic, which is also a result of climate change, and in mitigation – reducing emissions caused by uncontrolled storage of MW. Better infection control will be ensured in medical institutions, cases of intrahospital diseases will be prevented, capacities to provide medical services will be increased
Name of technology/action	2.Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided
Legal framework	GD 1063/2016 for the approval of the National Program on the implementation of the Protocol on Water and Health in the Republic of Moldova and the Plan for 2016-2025. GD 663/2010 for the approval of the Sanitary Regulation on hygiene conditions for medical and sanitary institutions.
Brief assessment of the proposed technology/action	In the Republic of Moldova there is a large discrepancy between urban and rural localities regarding the population's access to safely managed aqueduct and sanitation systems. Thus, access to safely managed aqueduct systems is 98% in urban and 49% in rural, i.e. 2 times, and the difference in access for sanitation systems is even greater – 77% in urban and 13% in rural, i.e. 6 times. An even greater discrepancy is in the Northern Region, where the level of connection to aqueduct networks is 2 times lower than in the Southern Region. Medical and sanitary institutions are not an exception and are a mirror of the situation in the locality. The presence of safe water supply and sanitation systems in medical institutions is an urgent necessity to ensure proper hygiene conditions and prevent infections. In this regard, 30 SPMIs will be identified, mainly in the Northern Region, where water supply, sanitation and waste management projects resulting from medical activity will be implemented. <i>This technology is known, it is to be implemented, it can be replicated at the level of all localities.</i>
Estimated costs	The estimated cost of such a project is about 200 thousand USD per institution, in total for 30 institutions – 6 million USD
Market potential	Facilities and equipment are available on the domestic market of the Republic of Moldova
Adaptation impacts and benefits	The implementation of these technologies will have a beneficial impact on medical institutions, by improving hygiene conditions will increase their safety, prevent infections, increase the quality of medical services and response capacities to public health emergencies
Name of technology/action	3.Endowment of 100 medical and sanitary institutions and rural education institutions with filtration facilities for drinking water polluted because of floods
Legal framework	GD 1063/2016 for the approval of the National Program on the implementation of the Protocol on Water and Health in the Republic of Moldova and the Plan for 2016-2025

Brief assessment of the proposed technology/action	<p>In the Republic of Moldova, the localities from the meadow r. The Dniester and Prut are exposed to an increased risk of flooding, because of which drinking water sources used by the population and institutions for drinking purposes, mainly groundwater wells, are frequently polluted. The localities and institutions where there are no aqueduct networks suffer the most - currently there are over 300 such localities. Medical institutions must first and foremost have safe drinking water both for their own needs and for the affected population.</p> <p>For this purpose, 100 institutions in rural areas will be equipped with drinking water filtration installations.</p> <p><i>This technology is known, proposed for implementation and can be replicated at the level of all identified institutions.</i></p>
Estimated costs	The estimated cost of such a project is about 500 USD per institution, in total for 30 institutions – 50 thousand USD
Market potential	Facilities and equipment are available on the domestic market of the Republic of Moldova
Adaptation impacts and benefits	The implementation of these technologies will have a beneficial impact on both medical institutions, education institutions and the population, by preventing water-conditioned diseases and improving hygiene conditions in institutions and for the population. It will raise awareness about the consumption of safe drinking water
Name of technology/action	4. Identifying the impacts of climate change on water quality and potential health impacts, on vulnerable populations
Legal Framework	<p>Water Law 172/2011.</p> <p>Law 182/2019 on drinking water quality.</p> <p>GD 1063/2016 for the approval of the National Program on the implementation of the Protocol on Water and Health in the Republic of Moldova and the Plan for 2016-2025.</p>
Brief assessment of the proposed technology/action	<p>Climate change can cause a variety of changes in water quality and cause risks to public health. To predict the impact of climate change on water quality, mathematical models will be used to design and quantify the following risks:</p> <ol style="list-style-type: none"> 1. Seasonal and geographical changes in the risk of spreading waterborne diseases. <p>Changes in water temperature mean that pathogenic bacteria, vibrios and algae toxins will be present in the water at different times of the year, or in places where they have not previously been detected.</p> <ol style="list-style-type: none"> 2. Floods increase risk exposure. <p>Pathogens present in water (bacteria, viruses and parasites such as Cryptosporidium and Giardia), toxins produced by algae blooms and cyanobacteria increase in quantity because of floods, warmer temperatures and increased discharges from pollution sources.</p> <ol style="list-style-type: none"> 3. Extreme weather events disrupt the infrastructure of drinking water supply.

	<p>Extreme weather events (floods, drought) increase the risk of drinking water supply and sewerage infrastructure failing due to blockage or exceeding capacity. As a result, the risk of exposure to pathogens, toxins, water-conditioned chemicals will increase in container waters used as a drinking water source and may complicate the drinking water treatment process.</p> <p><i>The technology is innovative, it was previously proposed, but not implemented, and can be replicated at the level of all localities.</i></p>
Estimated costs	The estimated cost of such a project is about 200 thousand USD
Market Potential	The expertise and technologies are available on the domestic market of the Republic of Moldova, but also on the external market and can be purchased with reference terms
Adaptation impacts and benefits	<p>The implementation of these technologies will allow projecting a possible impact and assessing vulnerabilities conditioned by water pollution because of climate change:</p> <p>Design disease burden and evaluate public health interventions.</p> <p>Modelling anticipated changes in water quality will allow better assessment of public health risks.</p> <p>Better cooperation with water and sewerage system operators will allow assessing the performance of infrastructure and natural systems under climate change conditions, public health needs and vulnerabilities.</p> <p>Identify communities and populations more vulnerable to this impact due to location, pre-existing health conditions, lifestyle.</p>
Name of technology/action	5. Identification of climate change impacts on air quality and potential health impacts, on vulnerable populations
Legal Framework	<p>GD 301/2014 on the approval of the Environmental Strategy for 2014-2023 and of the Action Plan for its implementation.</p> <p>GD 1009/2014 on the approval of the Strategy for adaptation to climate change of the Republic of Moldova until 2020 and of the Action Plan for its implementation.</p> <p>Draft law on ambient air quality.</p>
Brief assessment of the proposed technology/action	<p>Climate change can cause a variety of changes in air quality and cause public health risks. To forecast the impact of climate change on air quality, mathematical models shall be used to design and quantify the following risks:</p> <p>1. Increased impact of ozone on health</p> <p>Climate change is making it increasingly difficult to regulate and reduce ground-level ozone pollution as weather conditions become more conducive to ozone formation. If not offset by further reductions in emissions, these climate-change-driven increases in ozone will cause increases in premature deaths, hospital admissions and doctor visits, missed school days and acute respiratory symptoms.</p> <p>2. Increased health impact due to agricultural fires</p> <p>Burning vegetation in agriculture increases emissions of fine particles (PM10 and PM 2.5) and ozone precursors, which in turn increase the risk of premature deaths and the incidence of cardiovascular and respiratory diseases. The continuation of agricultural waste burning practices against the background of climate change and worsening dispersion conditions will intensify the severity of health impacts.</p>

	<p>3. Worsening allergy and asthma conditions</p> <p>Climate change, especially rising temperatures, changing rainfall patterns and rising carbon dioxide concentrations, will lead to increased levels of some airborne allergens and associated increases in asthma and other allergic diseases. Worsening indoor air quality creates more favorable conditions for the growth and spread of pests, pathogenic bugs and vectors that can migrate indoors. Climate change can also lead to reduced mixing of indoor and outdoor air, which on the one hand limits the penetration of pollutants from outside, but also leads to higher concentrations of pollutants generated indoors, because their reduction by ambient air is lower.</p> <p><i>This technology is innovative, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	The estimated cost of such a project is about 200 thousand USD
Market Potential	The expertise and technologies are available on the domestic market of the Republic of Moldova, but also on the external market and can be purchased with reference terms
Adaptation impacts and benefits	<p>The implementation of these technologies will allow projecting a possible impact and assessing vulnerabilities conditioned by air pollution because of climate change:</p> <ul style="list-style-type: none"> ● Modelling future air quality scenarios due to ozone. ● Analysis of possibilities to manage vegetation burning in agriculture for an assessment of projected particulate emissions. ● Determination of vulnerability to fire or ozone. ● Identify populations and communities more vulnerable to these effects due to pre-existing health problems, or behavior, such as people who spend a lot of time outdoors due to their profession. ● Once potential vulnerabilities have been identified and assessed, it will be possible to properly design the burden of disease to assess public health intervention strategies and develop a plan to adapt and mitigate the effects of climate change on public health.
Name of technology/action	6.Endowment of NPHA laboratories with equipment, reagents for the implementation of advanced methods of microbiological water control
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health, GD 1063/2016 for the approval of the National Program on the implementation of the Protocol on Water and Health in the Republic of Moldova and the Plan for 2016-2025
Brief assessment of the proposed technology/action	According to Law 182/2019 on drinking water quality, the responsibility for controlling the compliance of drinking water lies with the operator and the National Agency for Public Health (ANSP), which ensures state control as well as in emergency situations. NPHA has 11 laboratories with drinking water quality analysis capabilities. Given that only 3 operators have microbiological laboratories for water quality control, in emergency situations this is put on the shoulders of ANSP. The results of microbiological analyses of water quality at regulated parameters (E. coli, fecal streptococci, Clostridia perfringens) are available in the environment within 3 days from the moment of sampling. But it is often necessary to act faster to prevent water-conditioned infections. Most European countries already apply rapid systems of

	<p>microbiological investigations, containing culture media ready to be sown, which allow obtaining the result in 24 hours.</p> <p><i>This technology is innovative, can be replicated at the level of all accredited laboratories in the field.</i></p>
Estimated costs	The estimated cost for modernizing a laboratory – about 15 thousand USD. For 11 laboratories, \$ 165 thousand is required.
Market Potential	Facilities and equipment are available on the domestic market of the Republic of Moldova
Adaptation impacts and benefits	The implementation of these technologies will allow reducing the time for microbiological investigations of drinking water and will allow to act much faster in emergency situations to remove nonconformities.
Name of technology/action	7.Creation of cool areas within medical institutions of republican and municipal level
Legal Framework	GD 663/2010 for the approval of the Sanitary Regulation on hygiene conditions for medical and sanitary institutions
Brief assessment of the proposed technology/action	<p>One of the WHO's recommendations during hot weather is to create cool areas in medical institutions. This concerns hospitals with inpatient and ambulatory type with a high flow of patients in mun. Chisinau and Balti, as Family Doctors' Centers. Although the situation is quite good at SCR, where the necessary facilities have been made, improvements are needed in other institutions. It is proposed to install air conditioning and purification systems in 15 republican and municipal institutions in Chisinau and Balti.</p> <p><i>This technology is innovative for the Republic of Moldova, it can be replicated at the level of all large medical institutions.</i></p>
Estimated costs	The cost of one system – about 10 thousand USD, for 15 systems – 150 thousand USD
Market Potential	Facilities and equipment are available on the domestic market of the Republic of Moldova
Adaptation impacts and benefits	The implementation of these technologies will have a beneficial impact on medical institutions and visitors to these institutions, will allow the creation of an optimal microclimate for patients and staff during the heat wave
Name of technology/action	8.Development of the national network for monitoring ambient air quality at the parameters recommended by WHO and national legislation for continuous monitoring and information on the level of concentration of polluting substances in ambient air
Legal framework	<p>GD 301/2014 on the approval of the Environmental Strategy for 2014-2023 and of the Action Plan for its implementation.</p> <p>Law 10/2009 on state supervision of public health.</p>
Brief assessment of the proposed technology/action	<p>At the third UN High-Level Meeting on Non-Communicable Diseases (NCDs) held in October 2018, the vision on risk factors for NCDs was revised. If previously it was established that there are 4 priority risk factors: tobacco use, alcohol consumption, unhealthy diet and physical inactivity, at this UN meeting was added the fifth factor – air quality. It is proven, that polluted air, especially particulate matter PM10 and PM2.5 increase death rates from heart disease, respiratory diseases, cancer and diabetes. To prevent these risks, it is very important to monitor ambient air quality, which is affected by climate change with increasing emissions, as well as to quickly inform the population</p>

	<p>and economic agents about air quality and cases of high pollution. The existing system managed by the State Hydrometeorological Service is outdated, control posts are poorly located, and the quality of data raises doubts, as only three samples and analyses are made per day instead of 48, and results are not available online. At the same time, these data are vital for the health system in developing public health interventions aimed at controlling NTDs and adapting to climate change. To improve the situation and inform health authorities and the population, at least in mun. Chisinau, where the highest level of air pollution is recorded, automated air quality control stations are needed, min.3, optimal 6.</p> <p><i>This technology is innovative, according to WHO recommendations, can be replicated at the level of municipalities.</i></p>
Estimated costs	The cost of such a station - min. 50 thousand USD, the cost for 6 systems - about 300 thousand USD
Market Potential	Installations and equipment are not available on the domestic market of the Republic of Moldova, need to be imported/purchased at auctions
Adaptation impacts and benefits	Air pollution is one of the major consequences of climate change. The availability of valid information on the level of air pollution will allow the establishment of measures to protect the health of the population from vulnerable groups and will increase the adaptive capacities of society through knowledge of the negative effects on the environment and health, their monitoring and management.
Name of technology/action	9.Set up a monitoring system for the UV index and associated health risks
Legal Framework	GD 1291/2016 on the National Cancer Control Program for 2016-2025
Brief assessment of the proposed technology/action	<p>The differentiated degree of warming, either by direct solar radiation or by a transfer of tropical warm air, is the cause in the genesis, manner of manifestation and territorial differentiation of summer climate risks. After the average temperatures of the warmest months (July and August), the most intense warming is those ≥25°C: after the absolute maximum temperatures (monthly, or annually), there are those that exceeded 30C (tropical days) and even more (≥33°C, hot days), and after the minimum night temperatures, those of ≥20°C (tropical nights). With the increasing frequency of heatwaves, the number of days and hours of sunlight has also increased in the last 2 decades. The population of Chisinau is most exposed to health risks due to solar radiation. Chisinau, where in June and July there is no day without sun, and the average air temperature is higher by 0.7oC compared to localities at the same latitude. The number of hours of sunlight is also increasing in the last 15 years – up to 2218 hours / year compared to the average of 2215 hours / year. Under these conditions, there is also an increase in the last decade in the incidence of malignant melanoma, which is dependent on solar radiation, from 2 cases per 100 thousand population in 2010 to 3.8 cases in 2020. To ensure adequate communication of risks caused by solar radiation, it is necessary to establish a monitoring system for the UV index and health risks. The UV index is a standard unit of measurement of the intensity of solar radiation that can cause sunburn. The higher the UV index, the greater the likelihood that there will be negative effects of the sun on the skin and eyes, and the less time it takes for these effects to occur. The UV index can be</p>

	<p>checked by measurements with radiometers that give us accurate information or with the help of telephone applications, which give us data from online resources.</p> <p><i>This technology is innovative for the Republic of Moldova, can be replicated at national level and all accredited laboratories in the field.</i></p>
Estimated costs	Cost of a UV measuring device – \$50, for 11 NPHA labs – \$550
Market Potential	Facilities and equipment are available on the domestic market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this technology will allow NPHA to carry out systematic monitoring and analysis of ultraviolet radiation, issuing recommendations to the population to prevent adverse effects, will increase the adaptive capacity of NPHA and the population to the negative effects of solar radiation conditioned by climate change
Name of technology/action	10.Improving the statistical record and reporting system for non-communicable diseases, including climate change
Legal Framework	Law 411/1995 on health care. Project of the National Health Strategy for 2021-2030.
Brief assessment of the proposed technology/action	<p>The current statistical record of non-communicable diseases has not changed in the last 20 years and is not adapted to needs. Thus, only data on health indicators per 100 thousand general population are collected, for men, women, by age groups only children up to 18 years and adult population over 18 years, without specifying by age groups, or urban rural, ethnic group, level of education or income bracket. This fact does not allow obtaining these data in the usual regime, to analyze in more detail, the primary sources of information must be examined, but anyway not all data can be obtained. This limits the rationale for actions to reduce the prevalence of diseases and determinants of health. For example, people with low incomes are known to consume more tobacco and alcohol, which further affects their health and is more strongly affected by climate change. For this purpose, it is proposed to revise and improve the statistical system of evidence of non-communicable diseases based on an easy-to-operate information system, modifying the forms of primary evidence of diseases.</p> <p><i>The technology is routine, which comes to improve decision-making, the innovative part is that attention is emphasized on diseases that are aggravated by climate change, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	The cost of a modernized information system in the field of non-communicable diseases – about 500 thousand USD
Market Potential	Information technologies are available on the domestic market of the Republic of Moldova
Adaptation impacts and benefits	The implementation of this system will allow obtaining relevant data on population health, by age groups, sex, geographical region, area of residence, ethnicity, education level and income, including for vulnerable groups of population, which is most strongly affected by climate change, providing support for these groups to adapt to climate change
Name of technology/action	11.Strengthening the surveillance system for vector-borne infectious diseases and other emerging diseases influenced by climate change
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.

	GD 1009/2014 on the approval of the Strategy for adaptation to climate change of the Republic of Moldova until 2020 and of the Action Plan for its implementation.
Brief assessment of the proposed technology/action	<p>In the Republic of Moldova there is an Automated Information System for Surveillance of Communicable Diseases, operated by ANSP, which is currently in the process of reengineering, to ensure the connection of all medical institutions for reporting and analysis of incidence for 72 infectious diseases. Each institution will have an access code to report new cases. At the reengineering stage, it is necessary to include vector-borne diseases such as Lyme Borreliosis, transmitted by ticks and West Nile disease, transmitted by the Asian Tiger mosquito species. West Nile meningitis has been recorded for a decade in Romania, in connection with climate warming and has a lethality of over 20%. This requires training of medical workers for diagnosis and epidemiological surveillance of vector-borne diseases. For the reengineering of the Automated Information System for the surveillance of communicable diseases, resources will be allocated from international partners, at the same time resources are needed for staff training and providing medical institutions with internet connection for data transmission.</p> <p><i>The technology is routine, which comes to improve decision-making, the innovative part is that attention is focused on diseases that become more widespread as a result of climate change, it is proposed for the first time in the Republic of Moldova</i></p>
Estimated costs	The costs are estimated at about 25 thousand USD
Market Potential	The services are available on the domestic market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this system will allow rapid reporting of new cases and operative analysis of the situation with the adoption of appropriate decisions. A modern database compatible with European reporting systems will be created, to which it will be interconnected. Based on the information, policy records will be developed based on indicators such as incidence, mortality, costs, and recommendations for prevention of these diseases and adaptation of the population will be developed.
Name of technology/action	12.Development of an automated system for epidemiological surveillance of non-communicable diseases and their risk factors, including conditioned by climate change
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 730/2014 on the approval of the National Program for Food and Nutrition for 2014-2020.</p>
Brief assessment of the proposed technology/action	Of the five priority risk factors for priority NTDs – cardiovascular disease, cancer, chronic digestive diseases, diabetes, chronic respiratory diseases and mental illness, two factors are influenced by climate change, namely – air quality and nutrition. Frequent heat waves, fires, lead to an increase in air pollution. Drought and floods affect the volume of agricultural production and incomes of the rural population, which is the majority in the Republic of Moldova, creating conditions for an unhealthy diet. The food security and nutritional security of the population is affected. By establishing this information system for surveillance of NTDs and risk factors in primary healthcare institutions, with the application of the electronic patient record, real-time information on the prevalence of risk factors and NTDs will be collected and analyzed. At the same time, it will allow the elaboration based on the information obtained of policy record sheets based on indicators such as incidence, prevalence, mortality, disability, costs, the use of progress indicators for evaluating national policies in the field and developing recommendations for preventing these diseases and adapting the population.

	<i>The technology is innovative, comes to improve disease surveillance and provide evidence for decision-making, it is proposed for the first time in the Republic of Moldova.</i>
Estimated costs	The estimated cost of the automated risk factor surveillance system for NTBs – about 500 thousand USD
Market Potential	Technologies and practices are available on the domestic information market of the Republic of Moldova and can be procured through public procurement
Adaptation impacts and benefits	The implementation of this technology will enable NPHA to systematically monitor and analyze the prevalence of nutritional risk factors and unhealthy behaviors such as alcohol consumption, save time and resources devoted to population studies, surveys and various situational analyses, and inform subsequent evidence-based adaptation policies
Sub-category	13. Technologies/actions to strengthen the regulatory and institutional framework in the health sector and risk communication
Name of technology/action	Elaboration of the national guide on the management and prevention of the effects of heat waves on the health of the population, dedicated to medical workers and public authorities
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health
Brief assessment of the proposed technology/action	<p>Although most medical workers have general knowledge about the impact of climate change and extreme weather phenomena, especially hot periods on the health of a person and population, less know about the necessary measures to adapt and prepare staff and medical institutions to respond to these challenges, about monitoring risk factors. The development of the guide would help train medical workers to apply protection and adaptation measures during hot weather. The guide will also be intended for local public authorities, given that they are the founders of territorial medical institutions and are responsible for maintaining the infrastructure of these institutions.</p> <p><i>The technology is innovative, it is proposed for the first time in the Republic of Moldova, the application can be replicated at the level of each medical institution.</i></p>
Estimated costs	The costs of developing and editing the guide are valued at five thousand USD
Market Potential	Development and editing services are available on the internal market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this guide will allow increasing the level of professionalism of medical workers and a better management and prevention of the effects of heat waves on the health of the population, and local public authorities will be able to provide informed support to medical institutions in their capacity as founders.
Name of technology/action	14. Needs assessment and development plan for prophylactic disinfection services to control and reduce vector population
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p>
Brief assessment of the proposed technology/action	Until the creation of ANSP in 2018, the former State Public Health Surveillance Service was responsible for carrying out prophylactic disinfection to control the vector population (rodents and insects). After 2018, the attributions passed to the private sector and to local public authorities. At the same time, if services can be organized by LPA

	<p>and private companies, the policy in the field must be made by the Ministry of Health and subordinated institutions. It is necessary to assess the situation and needs in the field, with the elaboration of proposals to modify the regulatory framework and the clear establishment of responsibilities.</p> <p><i>Technology is routine, improving decision-making, and the quality of services to prevent infections, aggravated by climate change.</i></p>
Estimated costs	Estimated cost of needs assessment and development of proposals to amend the regulatory framework – 15,000 USD
Market Potential	Consultancy services for evaluation are available on the domestic market of the Republic of Moldova, WHO experts could also be involved and can be procured through reference terms
Adaptation impacts and benefits	The implementation of this action, with carrying out impact analysis, allows mapping prophylactic disinfection services and developing a plan for their development. The effectiveness of this service will depend on the control of the vector population to prevent vector-borne diseases
Name of technology / action	15.Development of clinical protocols for diagnosis and treatment for allergic diseases, pollinosis, conditioned by climate change
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 967/2018 for the approval of the Regulation on combating and preventing the spread of ragweed (<i>Ambrosia artemisiifolia</i>) and of the Action Plan on combating and preventing the spread of ragweed (<i>Ambrosia artemisiifolia</i>) for 2019-2024.</p>
Brief assessment of the proposed technology/action	<p>Climate change has led to the expansion of the range of some plants with an allergenic effect, as well as to an increase in vegetation duration and earlier flowering. If a decade ago allergies caused by pollen, plant dust, poplar fluff predominated, in recent years the incidence of allergies caused by the ambrosia plant has significantly increased, which has spread a lot due to the non-processing of agricultural land. The danger of this plant is also the long duration of action – from June to October, unlike other plants that affect allergic people during the flowering period – May-June. By Decision No. 967 of 03-10-2018, the Government approved the Regulation on combating and preventing the spread of ragweed (<i>Ambrosia artemisiifolia</i>) and the Action Plan on combating and preventing the spread of ambrosia weed (<i>Ambrosia artemisiifolia</i>) for 2019-2024, specifying the responsibilities of different authorities. The responsibility of the health system is to ensure the communication of risks and prevention measures, as well as the diagnosis and treatment of allergic conditions. To date, clinical protocols are developed on bronchial asthma, on food allergy, on allergic rhinitis in children. Clinical protocols on pollinosis (pollen-conditioned allergic conditions) and other possible allergic conditions are missing. For this purpose, the Ministry of Health will instruct the specialized commissions to develop the necessary clinical protocols.</p> <p><i>The technology is routine, which comes to improve treatment, the innovative part is that it focuses on diseases that are aggravated by climate change, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	This requires estimated costs for analysis and elaboration of about 1000 USD
Market Potential	The works can be carried out by a Working Group appointed by the Ministry of Health for this purpose

Adaptation impacts and benefits	The implementation of this action will allow standardizing the diagnosis and treatment of allergic diseases, pollinosis, conditioned by climate change, will substantially reduce the number of complications and loss of work incapacity and adaptation of vulnerable people during the season with increased allergenic intensity
Name of technology / action	16.Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health. GD 1009/2014 on the approval of the Strategy for adaptation to climate change of the Republic of Moldova until 2020 and of the Action Plan for its implementation.
Brief assessment of the proposed technology/action	Currently, MoH has adopted a Communication Strategy in emergency situations – epidemics, natural disasters. In certain health regulations – e.g. The sanitary regulation on small drinking water systems (GD 1466/2016) contains provisions on disinfection and cleaning of wells in case of pollution. MoH approved an order on PMSI actions in case of heatwave. We also have the provisions of the Extraordinary Public Health Commission in case of public health events, as well as of the National Commission for Emergency Situations in case of emergencies or calamities. At the same time, there is a lack of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. It is not clearly stipulated the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. To remove these shortcomings, SOPs will be developed on early warning, on preventing and combating floods, on air pollution, etc. <i>The action is a managerial one, which comes to improve coordination and interaction between authorities, the innovative part is that it focuses on managing conditions caused by climate change, it is proposed for the first time in the Republic of Moldova.</i>
Estimated costs	Estimated cost of argumentation and elaboration of SOP – 10 thousand USD
Market Potential	Services are available on the domestic market of the Republic of Moldova, but external consulting services could also be requested through terms of reference
Adaptation impacts and benefits	The implementation of this measure will allow the establishment of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and a clear distribution of responsibilities for better interoperability.
Name of technology/action	17.Establishment of a modern information system on health in relation to the environment, including aspects related to climate change, air quality and data on population health
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health. GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.
Brief assessment of the proposed technology/action	The establishment of a modern information system on health in relation to the environment is an older desideratum of public health, which has failed to be applied due to the lack of financial support and its complexity. This information system would include several actors, such as NPHA as holder, State Hydrometeorological Service for providing data on air pollution and temperature, Primary health care institutions – data

	<p>on addressability of the population and hospital healthcare institutions – data on hospitalization with diseases influenced by air quality and heatwave. The benefits of the system are multiple – obtaining real-time information on the health of the population conditioned by the quality of the environment, as well as the possibility of forecasting it by applying mathematical models.</p> <p><i>The technology is innovative, proposed for the first time in the Republic of Moldova, and can be replicated for other types of health risks.</i></p>
Estimated costs	The estimated cost of the system – 2 mil. USD
Market Potential	Information services and technologies are available on the internal market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this health surveillance system will allow the integration of the air quality monitoring system with the health status assessment system, identifying the interrelation between air pollution and the level of addressability and hospitalization of the population with diseases caused by air pollution: cardiovascular diseases, cancer, chronic respiratory diseases and type II diabetes. These results will also enable adaptation measures to mitigate the risks posed by climate change
Name of technology/action	18. Conducting serial trainings for medical workers on the management of heatwaves, floods, cold waves by medical and sanitary institutions
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p>
Brief assessment of the proposed technology/action	<p>After the elaboration of the Guide on heat management and other operational procedures, trainings will be organized for all heads of medical institutions on the activity of IMS and the provision of the medical act in conditions of extreme weather events. In total, 40 trainings will be organized for 2000 people. The trainings will be conducted by NPHA and SUMP "N. Testemitanu" in collaboration with experts in the field.</p> <p><i>The action is one of increasing skills in health, the innovative part is that it focuses on managing conditions caused by climate change, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	Estimated cost – 60 thousand USD
Market Potential	Training services are available on the internal market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this measure will allow increasing the level of professionalism of medical workers and a better management and prevention of the effects of the heat wave on the health of the population, will increase the capacity of adaptation of the population to extreme weather phenomena conditioned by climate change
Name of technology/action	19. Conducting trainings for medical workers on the management of waste resulting from medical activity to improve separate collection at source and prevent an increase in the amount of hazardous waste
Brief assessment of the proposed technology/action	Although the Sanitary Regulation on the management of waste resulting from medical activity, approved by GD 696/2018, certain problems persist in its implementation. Medical services in the Republic of Moldova have not reached the level of European standards, which exposes medical staff and patients served to the risk of transmission of

	<p>nosocomial infections. The hygiene conditions and practices for managing and disposing of MW are not sufficiently safe and do not provide adequate protection of personnel and protection of the environment from pollution. Significant quantities of hazardous medical waste are disposed of together with those assigned to household waste. It is important that with the development of MW disposal units, the staff of these institutions are also properly trained. In total, 40 trainings will be organized for 2000 people. The trainings will be conducted by NPHA in collaboration with WHO experts.</p> <p><i>The action is routine, focusing on increasing skills in hospital infection control and risk management.</i></p>
Estimated costs	The estimated cost of trainings – 60 thousand USD
Market Potential	The services are available on the domestic market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this measure will allow increasing the level of knowledge of medical workers and better management of medical waste, will improve infection control in medical institutions and will allow reducing cases of disease, and medical institutions will be better protected and resilient to climate change
Name of technology / action	20. Conducting an in-depth epidemiological study on the influence of heat waves on health
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p>
Brief assessment of the proposed technology/action	<p>This study is necessary to strengthen the capacities of the health system to cope with heatwaves, to identify appropriate healthcare actions for people from vulnerable groups and those with chronic diseases. The study will be retrospective, will be conducted as a scientific research project. and will cover the heatwave periods of 2000-2020, identifying excess morbidity and mortality during the hot period.</p> <p><i>The technology is innovative, proposed for the first time in the Republic of Moldova, and can be replicated for other types of health risks.</i></p>
Estimated costs	Estimated cost – 100 thousand USD
Market Potential	The services are available on the domestic market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this study will allow the accurate assessment of the impact of heat waves on the health of the population by assessing excess mortality during hot periods, with the elaboration of the necessary measures for recommending public health interventions
Name of technology / action	21. Promoting cycling and walking as types of active mobility to change behavior and improve the health of the population
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p> <p>GD 1000/2016 on the approval of the National Program on Health Promotion for 2016-2020.</p>

	<p>Pan-European Masterplan for the promotion of cycling, adopted at the V European Conference on Health, Transport and Environment, Vienna. 17-18 May 2021.</p> <p>Vienna Declaration of Health, Transport and Environment Ministers of the European Region.</p>
Brief assessment of the proposed technology/action	<p>Combating obesity and increasing the level of physical activity is. More than 10% of the adult population (aged 18-69) in the republic practices less physical activity than recommended by the WHO, namely, at least 300 minutes of moderate-intensity physical activity per week or its equivalent. People aged 15 to 24 years (19.3%) are most frequently engaged in intensive physical activities and certain sports in their free time. As people age, the share of people who engage in vigorous or moderate physical activity decreases. Regular physical activity is a powerful preventive factor against CVD, cancer and related conditions (hypertension, obesity, diabetes, mental health, etc.).</p> <p>Overweight/obesity – 56% of adults have been found to be overweight, including 23% are obese; The share of women with obesity (28.5%) was 1.6 times higher than that of men (17.8%) and increasing - from 17% and 10%, respectively, in 2010, but without large differences between rural and urban areas.</p> <p>The application of this technology involves several activities:</p> <p>Development of a national plan to promote cycling.</p> <p>Inclusion of these provisions in the urban plans of all localities with the status of municipality in the Republic of Moldova.</p> <p>Creation of public-private partnerships for the arrangement of velo-parks near public institutions.</p> <p>Creation of road infrastructure – cycling lanes in different areas of municipalities – at least 1 in each municipality.</p> <p>Communication actions to promote cycling and walking.</p> <p><i>The technology is innovative, proposed for the first time in the Republic of Moldova, and can be replicated in all localities.</i></p>
Estimated costs	The estimated cost of the action, including for infrastructure development – 5 mil. USD
Market Potential	The services are available on the domestic market of the Republic of Moldova and can be contracted through terms of reference
Adaptation impacts and benefits	<p>The implementation of this action will bring multiple benefits:</p> <ul style="list-style-type: none"> ● In the short term it will contribute to decongesting road traffic, also in public transport, which will reduce the risk of trauma. ● It will contribute to increasing the share of cycling and walking, leading to behavior change and better adaptation to climate change. ● Reduce emissions of pollutants into the atmosphere through less frequent use of personal transport, which will improve air quality.

	<ul style="list-style-type: none"> • Increase cooperation between health, transport and environment sectors to promote mobility using low-emission transport over short distances. • It will increase the involvement of local public authorities to modernize urban infrastructure and create lanes, spaces for cycling and walking.
Name of technology/action	22. Conducting a national communication campaign on the health effects of climate change, especially heatwaves.
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p> <p>GD 1000/2016 on the approval of the National Program on Health Promotion for 2016-2020.</p>
Brief assessment of the proposed technology/action	<p>The IV National Communication on climate change, published in 2018, shows a relatively low level of information of the population on the risks conditioned by climate change. Thus, less than half of the population knows about the impact of extreme weather events on health and about protective measures. To increase the level of knowledge and behavior change, a national information campaign is needed, with the elaboration of the campaign Concept, the establishment of messages, target groups, slogans, testing messages in focus groups, with the elaboration and use of video, audio materials and broadcasting to the most heard TV and radio stations, as well as the distribution of information materials on paper.</p> <p>Although much of the population has access to the Internet, printed information is still popular, especially in rural areas. Information materials (leaflets, leaflets) on the health effects of climate change and prevention measures focused on vulnerable groups will be developed, edited and distributed:</p> <p>elderly people, chronically ill, pregnant, women, children, people working in specific conditions – e.g. agriculture, construction.</p> <p><i>The action is one of increasing health literacy, the innovative part is that it focuses on managing conditions caused by climate change and behavior change, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	The estimated cost of the campaign, including the development of video, audio and paper materials – 85 thousand USD
Market Potential	These services are available on the domestic market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this action will contribute to increasing the population's knowledge of the negative impact of climate change on living conditions and health and will facilitate adaptation to climate change through behavior change
Name of technology/action	23. Development and introduction in the curricula of undergraduate and postgraduate studies at State University of Medicine and Pharmacy "N. Testemitanu" of health and climate change adaptation departments, capitalizing on the gender dimension
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.

	GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.
Brief assessment of the proposed technology/action	<p>Currently, at State University of Medicine and Pharmacy "N. Testemitanu" general hygiene is taught for all students, for those from the specialty of preventive medicine – and environmental health discipline. Both disciplines do not contain practically a compartment on climate change, so graduates do not have general knowledge about this aspect. It is proposed to revise and complete the university and postgraduate curricula with the chapter on health and adaptation to climate change, capitalizing on the gender dimension.</p> <p><i>The action is one of increasing the skills of health specialists, the innovative part is that it focuses on aspects of adaptation to climate change and behavior change, it is proposed for the first time in the Republic of Moldova.</i></p>
Estimated costs	The cost of this action – 5 thousand USD, which will include analysis of the situation, development and piloting of undergraduate and postgraduate curricula
Market Potential	The services are available on the domestic market of the Republic of Moldova and can be contracted through terms of reference
Adaptation impacts and benefits	The implementation of this technology will allow the university and postgraduate training of medical staff of different specialties, who will know the benefits of adapting to climate change, will improve the activity of medical services and their preparation to face extreme weather phenomena and will improve risk communication
Name of technology/action	24.Development and application of m-health technologies with the involvement of mobile operators to quickly inform the population, vulnerable groups about health risks in extreme weather conditions
Legal Framework	<p>GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health.</p> <p>GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020.</p> <p>GD 1000/2016 on the approval of the National Program on Health Promotion for 2016-2020.</p>
Brief assessment of the proposed technology/action	<p>The use of m-health technologies is widespread in many countries to convey different messages, warnings about certain restrictions or recommendations to mobile users. More people need to be informed in good time about the health risks of heat waves and about proper nutrition and hydration, air pollution, cold waves, etc. to protect themselves. It is proposed to develop applications and involve the 3 mobile operators to quickly inform the population, vulnerable groups about health risks in extreme weather conditions. The messages will be sent by the Primary Health Care Service, which knows the health status of the people served, in collaboration with ANSP.</p> <p><i>The technology is innovative, it is proposed for the first time in the Republic of Moldova, it can be replicated for other risk factors.</i></p>
Estimated costs	Estimated costs for the development and application of m-health technologies – 10 thousand USD
Market Potential	Services and applications can be developed in the conditions of the Republic of Moldova and can be purchased through public procurement

Adaptation impacts and benefits	The implementation of these technologies will allow prompt information of different categories of population on health risks and compliance with protection measures during extreme weather events, will reduce the level of diseases and the frequency of complications of existing morbid states
Name of technology/action	25. Conducting a national survey on the level of literacy of the population in the field of health risks caused by climate change
Legal Framework	GD 1090/2018 for the approval of the Regulation on the organization and functioning of the National Agency for Public Health. GD 1232/2013 on the approval of the National Public Health Strategy for 2014-2020. GD 1000/2016 on the approval of the National Program on Health Promotion for 2016-2020.
Brief assessment of the proposed technology/action	It is proposed to conduct a telephone survey, respecting sociological methodologies, on at least 2000 respondents, to assess the level of knowledge (literacy) of the population on health risks conditioned by climate change. The assessment is needed to adopt evidence-based actions to increase levels of awareness of people's availability to adapt to climate change.
Estimated costs	Estimated cost of the study – 20 thousand USD
Market Potential	Sociological services are available on the internal market of the Republic of Moldova and can be purchased through public procurement
Adaptation impacts and benefits	The implementation of this survey will allow knowledge of the level of literacy (knowledge and skills) on climate change risks and adaptation measures, including the assessment of the impact and effectiveness of the information campaign/s to establish communication technologies

Annex 2: Shortlisted technological options of the health sector

In the context of ensuring the adaptation of the health sector to climate change, the following general sectoral objective is set:

- Strengthening capacities to prevent, prepare and respond to events conditioned by climate change to reduce vulnerability and health risks by implementing measures to adapt the health sector to climate change

To ensure the development of relevant measures/technologies based on concrete goals and targets, potential climate impacts (CI) on the health system have been aggregated into the following categories:

- Climate impact 1: Increasing incidence of non-communicable and infectious diseases due to climate change.
- Climate impact 2: Affecting the safety of medical institutions and the capacities to provide qualitative medical services.
- Climate impact 3: Worsening of the quality of the population's living environment.

As a result of prioritizing the long list of technologies by health sector, arising from the workshop on 12.10.21 with the Sector Working Group and subsequent consultations, the short list of 12 technologies for the sector was finalized.

1. Location of incineration plants in locations established by the Ministry of Health for the disposal of hazardous medical waste,
2. Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.
3. Endowment of NPHA laboratories with equipment, reagents for the implementation of advanced methods of microbiological water control.
4. Promoting cycling and walking as types of active mobility to change behavior and improve the health of the population.
5. Identification of climate change impacts on air quality and potential health impacts, especially on vulnerable populations.
6. Development of an automated system for epidemiological surveillance of non-communicable diseases and their risk factors, including conditioned by climate change.

7. Elaboration of the national guide on the management and prevention of the effects of heat waves on the health of the population, dedicated to medical workers and public authorities.
8. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.
9. Establishment of a modern information system on health in relation to the environment, including aspects related to climate change, air quality and data on population health.
10. Conducting serial trainings for medical workers on the management of heatwaves, floods, cold waves by medical and sanitary institutions.
11. Conducting a national campaign of communication on the effects of climate change, especially heatwave, on health.
12. Development and application of m-health technologies with the involvement of mobile operators to quickly inform the population, vulnerable groups about health risks in extreme weather conditions.

Annex no. 3: List of SWG members on health sector for prioritizing climate change adaptation technologies/measures

Nominal list of WG members by health sector, approved by MoH Order no.604-d of 11.08.2021 and contact details

No	Authority/Institution	Name, surname	Function	Telephone	e-mail
1	Ministry of Health	Dascalov Alexandr	Senior Consultant, Public Health Policy Directorate	022-268-870	alexandru.dascalov@ms.gov.md
2	Ministry of Health	Galaicu Valeriu	Head of Information Technologies and Communication Department	022-268-860	valeriu.galaicu@ms.gov.md
3	Ministry of Health	Lilia Oleinic	Senior Consultant, Hospital Healthcare Policy Directorate	022268822	lilia.oleinic@ms.gov.md
4	General Directorate for Health and Social Protection CM Chisinau	Babilev Nicolae	Primary specialist	069269453	nicolae.babilev@gmail.com
5	National Public Health Agency	Silitrari Natalia	Head of Health Promotion Department	079781028	natalia.silitrari@ansp.gov.md
6	National Public Health Agency	Tcaci Eudochia	Head of CSP Chisinau	067493456	eudochia.tcaci@ansp.gov.md
7	National Public Health Agency	Liliana Carp	Hygienist, Millet Health Department, Health Protection Directorate	069328526	liliana.carp@ansp.gov.md
8	National Public Health Agency	Zagnitco Valentina	Hygienist, Millet Health Department, Health Protection Directorate	079446019	valentina.zagnitco@ansp.gov.md
9	National Center for Prehospital Emergency Medical Assistance	Lupu Svetlana	Prim-vice-principal	068083232	svetlana.lupu@ambulanta.md
10	National Insurance Health Company	Rotaru Doina- Maria	Head of Health Insurance Department	069110645	doina- maria.rotaru@cnam.gov.md
11	Buiucani Territorial Medical Association	Baranov Lina	Deputy Director Quality Management	069087233	lina.baranov@yahoo.com
12	State University of Medicine and Pharmacy "N. Testemitanu"	Corlăteanu Alexandru	Head of International Research	079571600 022 205 116	alexandru.corlateanu@usmf.md

			Cooperation Section		
13	State University of Medicine and Pharmacy "N. Testemitanu"	Croitoru Cătălina	Assoc. Prof., Department of Preventive Medicine	068716501	catalina.croitoru@usmf.md
14	International Hospital Medpark	Bahnarel Aliona	Administrative Director	068088777	aliona.bahnarel@gmail.com

**BARRIER ANALYSIS and
ENABLING
ENVIRONMENT
REPORT/BAEF (2)**

Report on the analysis of barriers and work framework for adapting the health sector to climate change

Executive Summary

Following the identification of climate change adaptation technologies for the health sector in the Republic of Moldova, several barriers that would appear to the implementation and respective technologies were analyzed. At the same time, the working group on the health sector (WG) established by the order of the Ministry of Health (MoH) nr. 604-d of 11.08.2021, identified a number of solutions to overcome barriers to the transfer and diffusion of selected technologies for climate change adaptation of the health sector.

Following the consultations on prioritization of climate change adaptation technologies, 3 technologies were identified that would have the greatest impact on the adaptation process of the health sector in the Republic of Moldova, and the capacity to transfer and disseminate technology. (i) Development of an information system for surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change; (ii) Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change; (iii) Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided.

The description of barriers began with the establishment of sectoral development goals, and, in the description of each, technology was established as the goal of modernizing the health system into one capable of providing real access to quality health services, viable solutions for treatment and prevention of diseases, as well as adequate working conditions for medical staff.

The WP carried out the barrier analysis for each priority technology based on the recommendations of the methodological guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015).

The given action includes the following steps:

1. Characterization of technology, identification of its type (non-market and public goods, etc.).
2. Collecting available information about prioritized technologies.
3. Identifying potential barriers, root causes, prioritizing barriers.
4. Identification of measures to overcome barriers, prioritization of measures.

5. Further analysis of measures to group measures for different technologies.

Following the examination of policy documents, the normative framework in force, as well as statistical data and studies on the epidemiological sanitary situation of communicable and non-communicable diseases and finally the study of scientific articles on climate change, the main causes for which they are not implemented so far or are partially considered were identified, without focusing on climate change. The identified barriers were qualified according to their power of influence on the medical system, especially through their action on the health of the population and the quality of services provided by public medical and sanitary institutions (PMSI). A large number of barriers were identified during the discussions, of which the most important were selected and non-essential elements were removed.

In the context of the discussions, an initial set of 29 barriers for climate adaptation technologies of the health sector was identified. The most important part of the barriers is occupied by the regulatory framework not directly adapted to climate change due to the indirect action of climatic factors on the health of the population, as well as the allocations from the state budget for the health sector, which were focused especially on the fight against the pandemic, leaving in the shadow the health status of disadvantaged people, which otherwise suffer most from sudden changes in climate.

At the same time, the poorly executed financial aspect is largely due at the level of central public authorities (CPAs), in terms of decreasing allocations from the state budget for the health sector. Over 12 billion lei will be the medical insurance budget in 2022, over 1 billion lei less than the previous year. From the medical insurance policy paid by employees and employers, the authorities estimate that they will get about 1 billion more than in 2021 (+18.2%), i.e. 5 billion 984 million 775.1 thousand lei. Of those purchased independently – 132 billion 403.3 million lei. In total, 66,000 individuals would buy their own medical policy.

The state's contribution for the categories it provides is to be 6 billion 71 million 930 thousand lei in 2022.

The largest fund will be the basic one. It will amount to 12 billion 97 million 758.4 thousand lei (99.7%), and the money will be directed to pay for medical and pharmaceutical services. The reserve fund will amount to only 10 million lei, while 50 million lei are expected for prophylaxis measures. For the modernization and development of medical service providers, 15 million lei are provided, for the administration of all mandatory health insurance funds – 114 million 842.6 thousand lei. The bulk of the money will go again to hospital healthcare – 6 billion 408 million 547.6 thousand lei, over half a billion more compared to this year.

Following the correlation analysis of barriers, 16 common barriers of technologies prioritized by GL were identified (Table 1.7)

The alignment of the barriers of these three priority technologies facilitates the process of identifying the factors for overcoming the identified barriers.

At the same time, logical problem analysis (ALP) was applied to identify basic problems in technology transfer. Also, based on cause/effect relationships, the problem trees were established (Annex no.1), for each of the three technologies, as well as the consequences of not solving them.

Using ALP, it was possible to bring together the key elements of problems, applying logical analysis of interconnected elements to identify links between problem elements and external factors. Thus, problem trees have been used to understand the causal relationships of barriers, their links, etc.

The discussions considered the recommendations of the guide "Overcoming barriers to climate technology transfer and diffusion" (Nygaard I., Hansen U. E., 2015), considered the transfer and diffusion of technology under different market conditions, and the identification of barriers are intrinsically linked to market characteristics. To facilitate barrier analysis, technologies have been classified according to the types and services to which they belong and the identification of characteristic types of goods and services distinct from the market.

All 3 technologies selected for the health sector are assigned to the category "non-market goods – publicly supplied goods". This classification was made because these technologies will be implemented by public entities such as the Ministry of Health, the National Agency for Public Health (ANPS) as well as by SPIs, the community and medical staff. The allocation of financial means for the implementation of technologies depends directly on government policies. Also, the favorable environment that will be used across the institutional range, the existing regulatory framework or its adjustment possibilities, as well as policies to promote and facilitate technology transfer were also considered.

Applying LPA, we analyzed the circumstances under which these opportunities could be achieved and set goals for each technology, organizing them into the goal tree. It includes country-specific circumstances, the existence of conditions and resources that can be upgraded or subject to change as government response actions. In this context, solutions to overcome barriers have been identified for the technologies prioritized for adapting the health sector to climate change.

In overcoming the barriers to implementing these three technologies, the main areas in which governments can influence changes in the regulatory framework to promote technology transfer are also described.

Chapter 5. Health Sector

The WG on the health sector gave priority to technologies that centered on beneficiaries and human resources in the health system, ensuring their fundamental rights to health, quality medical services and safe and decent working conditions. At the same time, during the discussions, as part of the TNA process, priority was given to the technologies with the highest adaptive impact of the health sector, as well as the capacity to transfer and disseminate technology, which define the role of central authorities and their relationship with other actors whose activities have an impact on health. It involves overseeing and guiding the entire health system, both private and state, to protect the public interest.

- Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change.
- Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.
- Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.

In particular, the first two technologies are focused on managing the national system of public health events, also on establishing a monitoring system of risk factors (environmental and occupational) and health determinants to confirm or refute potential dangers of climate change and their effect on public health. At the same time, the third technology provides for the creation of optimal conditions for the provision of quality medical services within PMSI, applying energy-efficient technologies. Thus, the implementation of this project will contribute to the efficient use of operational expenses for the maintenance of the medical institution, as well as to the development of employees' capacities in the field of ensuring energy efficiency.

During phase II of the ENT/TNA process, these technologies were subjected to barrier and framework analysis. The analysis of barriers and their screening, together with the development of measures, required knowledge of the specifics and application of appropriate tools.

5.1. Preliminary targets for the transfer and diffusion of climate change adaptation technologies to the health sector

A large part of non-communicable diseases are directly caused by environmental and climatic factors, and the national health system, so far, has not developed plans for preparing and responding to climate change in the health sector, including protocols and guidelines for planning, preparation, training in assessing risks, needs and vulnerability, applying case definitions,

management, communication, for preventing and responding to accidents caused by climate change.

Currently, the Republic of Moldova is facing economic and social difficulties, and the burden of non-communicable diseases (NCDs) caused by climate change is causing pressures on both the health system and the sustainable development of the country. Awareness of the impact of climate change on public health, as well as adaptation of global and regional instruments to the national context, will encourage the setting of national priorities and the strengthening of public health policies in the field of prevention and control of diseases caused directly or indirectly by climate change.

The documents adopted by the Republic of Moldova in the field of climate change include, on the one hand, the health sector among vulnerable sectors, and on the other hand, among the sectors that can make a significant contribution to mitigating the effects of climate change, including for other sectors (water, agriculture, forestry, etc.). The most important documents to address the impact on public health because of climate change are:

1. National Strategy for Public Health for 2022-2031, draft law approved by GD 377/2022.
2. National Program for Prevention and Control of Priority Non-Communicable Diseases in the Republic of Moldova for 2023-2030 (draft GD).
3. National Program for the implementation of the Water and Health Protocol for 2016-2025, approved by GD 1063/2016.

These documents emphasize that one of the specific objectives of the health system is to ensure health protection by streamlining control over behavioral and environmental risk factors, and to achieve the specific objective, the following tasks are drawn:

1. Improving the legal and regulatory framework in the field of health protection by aligning it with international regulations.
2. Strengthening the capacities of the State Public Health Surveillance Service to assess, manage and communicate information on public health risks and establishing the collaboration mechanism with other services in this field.
3. Strengthening the capacities to identify and manage health risks of other authorities with responsibilities in the field of health protection (environmental health, occupational health, food safety).

The general principles underlying the development of *the National Health Strategy* (NSS) are formulated in various international and national documents addressing the field of public health, such as, mainly, the World Health Organization Framework Policy "Health 2020", aiming to

support the interactions of the Government and society to significantly improve the health and well-being of the population, reducing health inequalities, strengthening public health. As a priority, the Strategy will pursue the implementation of the post-2014 Programme of Action of the International Conference on Population and Development and the post-2015 Agenda for Sustainable Development.

At the same time, the new NSS (2022-2031) is part of the socio-economic policies of the state, oriented towards the long-term development of the health system, with an implementation period of 10 years, until 2031. The NSS deepens the strategic aspects related to the health field, included in the National Development Strategy "Moldova 2030" and is focused on achieving the targets set by the Sustainable Development Goals (SDGs) with impact on human health.

In the NSS for the years 2022-2031, specific objectives will be set as:

- Strengthening national capacities for monitoring, analysis and use of public health data and records.
- Development of a core set of health indicators, including through SDG linkage.
- Evaluation and identification of new public health interventions.
- Digitalization with integration of surveillance systems.

Thus, through point 4.2, *Specific Objective 1*, it is necessary to strengthen the health surveillance systems of the population to identify health problems and provide relevant, truthful and timely information for.

The National Program for Prevention and Control of Priority Non-Communicable Diseases in the Republic of Moldova for 2023-2030 (PNCBN) was developed in accordance with the provisions of Law no. 10/2009 on State Supervision of Public Health and aligns with the commitments assumed by the country to contribute to achieving the target of relative reduction of premature mortality from priority non-communicable diseases by 25% by 2025 and by 30% by 2030, set out in the European Strategy for the Prevention and Control of Non-Communicable Diseases (resolution EUR/RC56/R2) and the Action Plan implementing the Strategy 2016-2025 (resolution EUR/RC66/R11), and in the UN General Assembly Political Declarations on the prevention and control of non-communicable diseases (resolutions of 2011, 2014, 2015, 2018 and 2019), as well as the targets of the 2030 Agenda for Sustainable Development, adopted at the Sustainable Development Summit on 25 September 2015, in particular, to reduce premature mortality from non-communicable diseases by one third by 2030 (SDG 3.4.1).

GD 1063/2016 for the approval of the National Program on the implementation of the Protocol on Water and Health in the Republic of Moldova and the Plan for 2016-2025 was developed in accordance with the provisions of Law no. 207-XVI of July 29, 2005 for the ratification of the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, signed on March 10, 2000, Law No. 10-XVI fin February 3, 2009 on State Supervision of Public Health, Water Law No. 272 of 23 December 2011 in order to achieve medium and long-term strategic actions to achieve target indicators in accordance with the obligations of the Republic of Moldova to the Protocol on Water and Health until 2025, by establishing and achieving national target indicators, by implementing appropriate measures to prevent water-associated diseases, by ensuring drinking water quality and a more efficient and sustainable management of water resources.

Based on the above, as preliminary objectives and targets for the transfer and dissemination of climate change adaptation technologies in the health sector, the following are provided:

1. Ensuring adequate infrastructure for neutralization of waste resulting from medical activity (DAM) to reduce the risk to public health and environmental pollution.
2. Providing drinking water filtration facilities to medical and sanitary institutions in case of pollution of drinking water sources following floods.
3. Multifaceted approach to actions focused on people's health, both at governmental, district and local level, as well as at the level of a wide range of actors, with commitments and actions in all sectors such as health, agriculture, communication, education, employment, energy, environment, finance, food, foreign affairs, housing, justice and security, social assistance, economic and social development, sport, trade and industry, transport, rural infrastructure development and youth work and partnership with relevant civil societies and private sector entities.
4. Availability of laboratory technologies for microbiological control that will allow reducing the testing time of drinking water to act in crisis situations to remove non-conformities in the shortest possible time.
5. Extension of information campaigns at population level about the impact of extreme weather phenomena on health and about protection measures to increase the level of knowledge and behavior change with the elaboration of messages directed to target groups by developing and using video, audio materials and their dissemination on TV stations and social networks.
6. Review and complement undergraduate and postgraduate curricula with chapters on health and climate change adaptation, capitalizing on the gender dimension.

7. Timely inform the population about the health risks of heat waves and proper nutrition and hydration, air pollution, cold waves, and propose the development of applications for rapid information of the population, vulnerable groups on health risks in extreme weather conditions.

At the same time, for the technologies prioritized on the health sector, as preliminary objectives and targets, the following are foreseen:

1. Elaboration of an Information System for Statistical Evidence of Non-Communicable Diseases that will allow the collection of data on health indicators for the general population, and their disaggregation into men, women, by age groups, children, adults, ethnic group, level of education and quintile by income. This system will allow obtaining real-time data for detailed analysis and argumentation of actions to reduce the prevalence of diseases and influence health determinants in relation to the environment.
2. Reduce by 20% by 2025 the number of epidemic outbreaks of infectious diseases and the incidence of diseases conditioned by water and water quality. At the same time, the Republic of Moldova must ensure by 2025 100% of the population's access to improved sanitation systems, including up to 50% to sewerage systems, so technology number 3 identified by GL becomes a priority and falls under the scope of this normative act.
3. Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. At the same time, the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. should be clearly stipulated. To remove these shortcomings, SOPs will be developed on early warning, on preventing and combating floods, on air pollution, etc.
4. Location of dam incineration plants in healthcare institutions to reduce emissions caused by DAM and ensure better infection control in medical institutions.

5.2. Analysis of barriers and possible support measures for the technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change"

5.2.1. General description of the technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditional on climate change"

The continuous analysis of public health indicators, including through information technologies, is an important field for monitoring NCDs and the risk factors that determine them, but the various databases that are collected by several institutions involved in the analysis of data in public health (NBS, NIHC, ANSP), are not inter-operable, remain fragmented, without complete disaggregation and difficult to manage. Data on health determinants and risk factors, especially on targets and progress indicators, are not systematically collected, operational research is not a priority and is carried out ad hoc and inconsistently, existing data are incomplete and only partially reflect from problems. There is no data quality control system, for which reason their comparability cannot be ensured at the national and international level.

The technology "Development of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change" (SI SBNT) was selected by GL as the main activity intended for consolidation to ensure the digitization of the processes of collection, analysis, systematic and continuous interpretation and dissemination of health data on non-communicable diseases, in the context of their spread in time, space, population group and the analysis of risk factors for contracting these diseases, including in epidemiological studies. The general purpose of SI SBNT is to improve the process of recording, management and reporting of cases regarding non-communicable diseases and the assessment of risk factors, including those determined by climate change.

SI SBNT will have the following objectives:

1. Digitization, automation and efficiency of processes aimed at improving the prevention and control of non-communicable diseases and public health events caused by determinants and climate change.
2. Developing capacities for recording, managing, analyzing and reacting to events with a negative impact on public health, supervising public health events, including through the implementation of the early warning and rapid response system.
3. Improving the activity of the health system in the context of non-communicable disease case management and public health events.

The technology will correspond to the sectoral priorities regarding the digitization of the health system in the context of the lack of an information system for collecting data on the epidemiological situation through non-communicable diseases and the methods used by the NPHA have multiple deficiencies both at the physical and operational level. The currently applied technologies are out of date, do not provide the necessary functionalities in accordance with the Legal Framework in the field of state supervision in public health and are not aligned with the current requirements of national information systems. At the same time, the technology will represent a high-performance IT solution for creating and managing notifications about cases of non-communicable diseases and public health events, including because of climate change. This will involve automating the process of registration and management of notifications and relevant information, such as primary diagnosis; final diagnosis; symptoms/manifestations of the disease; laboratory investigation results, treatment information and treatment administration records, but

also the record and dissemination of information regarding the investigation of public health events.

The owner of SI SBNT will be the state that will realize its right of ownership, management, and use of data from it and the implementation will be carried out by NPHA with the participation of PMSI regardless of the legal status and form of ownership. The legal framework of SI SBNT will be formed by the national legislation, the international agreements, and conventions to which the Republic of Moldova is a party, as well as the normative acts that regulate the health system. The activities within the technology include the exchange of experience between the national institutions involved in the process, but with similar institutions from neighboring countries (Romania, Ukraine, etc.). The technology will facilitate the management and records in the field of state epidemiological surveillance of communicable diseases, which covers the business processes related to both the activity of the ANSP and the relations with the medical service providers in the medical assistance sectors.

The basic tasks to be carried out during the operation of SI SBNT are the following:

1. Streamlining the management processes and records of cases of non-communicable diseases and public health events.
2. The automation and digitization of the management and record processes of cases of non-communicable diseases and public health events.
3. Creation and development of the information source for record and management of cases of non-communicable diseases, public health events, laboratory investigations, as well as other relevant information.
4. Standardization of procedures, forms and nomenclature.
5. Collecting and processing information on the determinants of health status.

The implementation of the mechanism and responsibility in decision-making within the information system will be carried out transparently and clearly for society, patients and medical personnel. A permanent reporting to the citizens of the health indicators and the strategic results obtained will be ensured.

The undertaking of public health measures is a very complex operation, and they are qualified as an indispensable component of the process of adapting the health sector to climate change. The main effects/benefits of the implementation of the respective technology being:

1. Benefits for the state:
 - Monitoring the emergence of new cases or the reappearance of cases of non-communicable diseases subject to registration and notification in SI SBNT, as well as cases of non-communicable diseases of unknown origin.

- Monitoring the evolution of a public health situation through non-communicable diseases in a territory.
- The gradual elimination of paper-based data management, by using electronic information and documents.
- Rapid communication between SI SBNT entities, using electronic means.
- Using the potential of contemporary electronic technologies in data collection and processing.
- The development and provision of electronic services to citizens, including by submitting requests online.
- Ensuring interoperability with other information systems for the delivery and consumption of information.
- Securing information with limited accessibility, by implementing an access policy in the system for each individual entity/user, depending on the specific skills.

2. Social-economic benefits:

- a. Following the implementation of public health measures and behavioral changes, the human and economic consequences caused by NCDs, felt by the authorities and entrepreneurs regardless of legal status and form of ownership, are expected to decrease.
- b. Ensuring the responsiveness of different sectors to health problems related to NCDs and exposure to modifiable risk factors; reducing the medical, social and economic burden associated with non-communicable diseases.
- c. Ensuring the financial protection of the population; creating environments, places, conditions to facilitate the adoption of a healthy lifestyle; increasing the effectiveness of the medical, social and educational services delivery system by rationalizing the distribution of financial resources; ensuring the transparency of the financing of actions and interventions in the field of NCD prevention and health promotion, increasing the level of funding for the given field as well as rationalizing the use of state budget resources.

3. Capacity building, technology transfer and diffusion:

- a. Coordination of health promotion activities and determination of intervention priorities through NPHA and territorial subdivisions, by strengthening institutional capacities,

motivating and hiring specialists in the field of health promotion, which otherwise remains a priority for the health system of the Republic of Moldova.

- b. Provision of primary and continuous healthcare services, including health promotion services at the individual, family and community level by providing minimal response advice to possible climate change and its indirect influence on the individual's health.
- c. Consolidation of capacities in common activities to promote health and prevent diseases caused by environmental factors by involving community medical assistance and ensuring the collaboration of the multidisciplinary team within the APL.

5.2.2 Identification of barriers to technology transfer "Development of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change"

According to the classification of the guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015) the technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by changes climate "non-market goods - publicly provided goods". Because the respective technology is to be performed and disseminated by a public entity (ANSP) to a large population of users and/or beneficiaries. Major investments in the respective technology tend to be decided at the governmental level and depend primarily on the policies adopted by the Ministry of Health. It is also mentioned that the main result of the technology consists in reducing the medical, social and economic burden associated with non-communicable diseases and their risk factors, including climate change.

An initial step in identifying the barriers to the diffusion of the respective technology was to study policy and other relevant documents to identify the main reasons why the given technology was not currently widely used and why central public authorities (CPAs) did not invest in it. In conclusion, since for non-market technologies it is generally not the user who decides to invest in the technology in question and consequently it is difficult to anticipate that the user will see a benefit in using the technology after it has been acquired/ implemented. The conclusion is supported by the experience that the Ministry of Health has with other information systems, (SIPHC, SIAMS, SISAE) which the beneficiaries did not find very useful, and which were underdeveloped and do not offer the necessary functionalities in accordance with the Legal Framework in the field of supervision of the state in public health and are not aligned with the current requirements of national information systems. It is also noted that the costs and benefits for most non-market technologies are not experienced by the same person or entity.

GL participants unanimously identified essential barriers that need to be addressed for technology transfer and diffusion, as well as several non-essential barriers that were subsequently not addressed. At the same time, the long list of key and non-key barriers was screened, keeping the focus on the objective, namely the transfer and diffusion of the aforementioned technology.

Another tool used in the barrier analysis process was logical problem analysis (ALP/LPA) for analyzing causal relationships and underlying issues in technology transfer. The problems were arranged in a hierarchy of causes and effects, with a central/generic starting problem for technology transfer. The problem tree highlighted the main links between causes and effects and organized them into some logical interrelationships, addressing the underlying issues and highlighting links with external factors. The problem tree for this technology is included in Appendix no. 1. The small-scale use of information technologies within the health system was identified as a fundamental cause of the problem, as the provision of PMSIs with computers and software that are out of date, do not provide the necessary functionalities in accordance with the Legal Framework in the field of supervision of state in public health.

The results of the exercise to identify, detail and rank the barriers are presented in Table 5.1.

Table 5.1: Ranking list of barriers to technology transfer for the development of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change

Barriers identified			
Broad categories of barriers	Barriers within the category	Detailed description of the barrier	Importance of barrier
I. Financial barriers	1.1. Lack of funding for the creation, establishment, and development of the information system	According to the estimated calculations, the cost of such a technology will have an impact on the budget allocated to the health system in the person of the Ministry of Health and ANSP, in the amount of 198 thousand USD.	Very important
	1.2. Lack of a robust regulatory framework regarding the financing of the digitization of the health sector	Now, the only document that provides for the implementation of information technologies and the digitization of the health system is the Action Plan of the Government 2021-2022, which does not include concrete provisions regarding the financial facilitation of the digitization process, but only provides for action.	Important
	1.3. Additional financing needs for the maintenance of an information system	The annual maintenance of an information system in the field of health constitutes an estimated 10-15 % of the total cost of the project and the financial possibilities of the Ministry of Health, as the owner of information systems in health, are insufficient for such a technology.	Insignificant
	1.4. Additional costs of donation with electronic signatures for authentication in information systems	In accordance with Government Decision no. 375/2020, authorizations in information systems are made based on the electronic signature, which must also be provided for from the health system budget.	Insignificant
II. Technological barriers	2.1. Weak technical endowments in the field of technical means of program and methodologies, located in interconnection, which is intended to ensure the	The technical equipment within public medical and sanitary institutions is often outdated or in many cases even missing, which often leads to the deterioration of the process of recording, management and reporting of cases regarding non-communicable diseases.	Very important

	registration, preservation, processing and use of information		
	2.2. Low ability to use information systems	Most health information systems are underutilized by medical staff due to duplication of work (paper records and information system). Current information systems are used by about 45% of users.	Important
	2.3. Reduced ability to detect NCD risk factors, including those conditioned by climate change	Now, there is no express classification of diseases caused by climatic factors, which can reduce the quality of informational data and the achievement of the goal of implementing public health measures.	Important
III. Institutional and social barriers	3.1. Insufficient provision of medical personnel engaged in the management of NCDs, especially in rural areas	The provision of family doctors and family doctor assistants in public medical and sanitary institutions is insufficient and uneven, especially the population in the districts is poorly provided with medical personnel and in some regions.	Very important
	3.2. Refusal of the medical staff to activate according to the allocation made by the MS	Graduates of postgraduate residency studies do not engage in the labor field in accordance with the signed contract, and the Ministry of Health does not have real mechanisms to hold them accountable, in this sense a large part of the population remains uninsured with medical personnel.	Important
	3.3. The presence of the large number of medical personnel in retirement age or close to it	Approximately 58% of the medical staff providing primary care services are of retirement age, which leads to their eventual departure from the system, and at the same time they do not use information technology.	Important
	3.4. The low level of remuneration of the personnel in the health sector	The average salary in the medical sector is among the lowest in the national economy.	Important
	3.5. Political economic and social instability	Political problems can lead to the disadvantage of vulnerable groups and the rapid progression of non-communicable diseases, which will be addressed by developing and applying a mechanism for managing the increased risks of vulnerable people, including those living with NCDs.	Less important
IV. Policy and regulatory framework barriers	4.1. Low implementation of health policy documents and regulatory framework	The regulatory framework in the field of health is relatively good but insufficiently implemented and put into practice. Especially in the field of digitization and state surveillance of public health. Most policy documents are implemented without considering mechanisms for collaboration with local and central public authorities.	Important
	4.2. Normative framework, guidelines and regulations	Although at the national level it is considered that agriculture is the most affected sector	Important

	not adapted to the impact of climate change	because of climate change, the impact on the health sector is also significant, as measures are needed to delimit and monitor diseases caused by climate change.	
	4.3. Lack of a normative framework for interconnection and sharing of medical data to facilitate research and take measures to improve health	The enormous potential of medical data for medical research is not exploited in the absence of a unique database regarding the health status of the population including in the context of continuous climate change.	Important
	4.4. The lack of a normative basis for strengthening the empowerment of citizens and individual care through digital services	Lack of digital health management services followed by prevention guidance to motivate them to adopt healthier lifestyles, manage chronic conditions and provide feedback to healthcare providers.	Important

According to the analysis of the data in Table 5.1, the main barriers to be addressed in the technology transfer assessment process "Development of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change" are essential and mostly related to the normative framework and the capabilities of medical personnel to interact with information systems and understanding the need to transfer such technology. However, the biggest barrier is the awareness by the Government, Central Public Authorities and not least by the Ministry of Health, of the importance of collecting informational data about the health status of the population influenced by climate change and undertaking the necessary public health measures. These barriers lead to the implementation of non-compliant policies, and which most often lead to results below expectations or in many cases lead to the weakening of the health sector both socially and economically-financially.

5.2.3. Identification of measures to ensure the transfer of technology "Elaboration of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change"

The institution most interested in the implementation and transfer of this technology is the Ministry of Health through the National Agency for Public Health, which according to Government Decision 1090/2017 has the mission of ensuring the implementation of state policy in the fields of state supervision, promotion and protection of public health, monitoring and the assessment of the health status of the population in the manner established and within the limits assigned by the normative framework. Currently, NPHA is the owner of four information systems and at the same time it will have another information system for the Surveillance of Communicable Diseases and Public Health Events, which is connected and will be interconnected to the European network of Communicable Diseases. Technology The development of an information system for the surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change, is to be implemented by the ten territorial Public Health Centers (CSP), which have the experience and tools necessary for the transfer the technology. At the same time, an important role in the transfer of technology will be played by the "Nicolae Testemițanu" State University of Medicine and Pharmacy, by the public health department, namely through the

implementation of a training module at the residency, regarding the application of technical solutions and the digitalization of the public health system.

The problems were evaluated according to the system's ability to overcome them, the impact of the implementation of the respective technology and finally the economic capacity of the public health system, in the establishment, development and maintenance of such a database. At the same time, external partners would be interested in the establishment of this technology, and the costs can be covered by external partners working in the field of health such as (World Health Organization, Swiss Development Agency "Healthy Life Project", UNICEF, etc.) with the subsequent allocation of sources from the state budget. But in addition to the financial aspect, it is necessary to give importance to aspects related to overcoming non-financial barriers such as:

- Elaboration or revision of a normative framework, guidelines and regulations adapted to the impact of climate change (Law 10/2009 on state supervision of public health, updating contingency plans and their connection to climate change in medical and sanitary institutions, etc.).
- Staff training in reporting cases of non-communicable diseases caused by climate change, as well as providing the health system with technical equipment and software capable of continuously monitoring and reporting cases of non-communicable diseases, including those caused by climate change. At the same time following the revision of law no. 10/2009 regarding the state supervision of public health will provide the opportunity to take measures not only at the level of the health system but also intersectoral, as maintaining a robust health system is in the interest of all central authorities.

The results of the process of identifying and detailing the measures to overcome the barriers are presented in Table 5.2.

Table 5.2: Measures to overcome barriers to technology transfer for Development of an information system for surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change.

Broad categories of barriers	Barriers within the category	Overcoming measures
I. Financial barriers	Lack of funding for the creation, establishment, and development of the information system	The digitization of the health system is one of the specific objectives of the Health Strategy 2022-2030 project "Consolidation of the surveillance system in the field of public health and evaluation of the impact of public health interventions" with the sub-point digitization with the integration of surveillance systems.
		With the help of the Medical Insurance Company (NIHC), the establishment in the classifier of the tabular list of ICD-10-EA diseases, with the inclusion of diseases caused by climate changes, which can be financed by compulsory insurance.

	Lack of a robust regulatory framework regarding the financing of the digitization of the health sector	These aspects are to be reevaluated because of the strategy to strengthen the surveillance system in the health field and the initiation of the digitization campaign in the health field as one of the objectives of the health strategy.
II. Technological barriers	Weak technical endowments in the field of technical means of program and methodologies, located in interconnection, which is intended to ensure the registration, preservation, processing and use of information	Following the investment projects of the partners for the development of the health field, the technical equipment within the public medical and sanitary institutions is constantly being renewed. Thus, by the end of 2022 with the help of the WHO, the Republic of Moldova will have 1300 computers, and in the next year the public health system will reengineer the entire surveillance network for communicable diseases.
	Low ability to use information systems	Training of medical staff in the field of primary, hospital and public health media assistance by implementing training courses within the public health department of SUMP "Nicolae Testemițanu".
	Reduced ability to detect NCD risk factors, including those conditioned by climate change	Revision of the table list of ICD-10-EA diseases, with the inclusion of diseases caused by climate change. The development of indicators that can establish the direct interaction of the environment with the health of the population.
III. Institutional and social barriers	Insufficient provision of medical personnel engaged in the management of NCDs, especially in rural areas	The provision of family doctors and family doctor assistants in public medical and sanitary institutions will be made in accordance with Government Decision 1396/2003 Regarding the training of resident doctors and pharmacists and the employment of young specialists".
		Development of mechanisms to attract medical personnel in rural localities
	Refusal of the medical staff to activate according to the allocation made by the MS	Implementation of Government Decision 1396/2003 "On the training of resident doctors and pharmacists and the employment of young specialists".
	The presence of the large number of medical personnel in retirement age or close to it	The development of mechanisms for the additional remuneration of medical personnel in rural localities and the attraction of young and able-bodied medical personnel in these localities.
	The low level of remuneration of the personnel in the health sector	Following the amendments to GD no. 837/2016, the salaries of the medical personnel included in the mandatory medical assistance insurance system are expected to be continuously increased and related to the increase in inflation, which will have a particular impact in the phenomenon of the exodus of medical personnel from the country.
IV. Policy and regulatory framework barriers	Low implementation of health policy documents and regulatory framework	Daily reporting through the Information System for the Surveillance of Non-Communicable Diseases, including those caused by climate change, of disease cases and the systematic evaluation of these reports by including an execution point in the government decision by which it is to be instituted.
	Normative framework, guidelines and regulations not	In accordance with the Order of the Ministry of Health no. 867/2020 regarding the specialized commissions, the

	adapted to the impact of climate change	members of the commission are responsible for the development of guidelines and protocols. At the same time, the existing protocols are to be reviewed and adapted to the conditions caused by climate changes directly or indirectly.
	Lack of regulatory framework for interconnection and sharing of medical data to facilitate research and take measures to improve health	Following the implementation of the 2022-2030 health strategy, the single national database on health "Health data management" is to be put into practice, which will incorporate the data of all the information systems found in Government Decision 586/2017 for the approval of the Regulation on the of keeping the Medical Register, with their subsequent analysis and the development of public health measures focused including on the field of climate or environmental changes.
	The lack of a normative basis for strengthening the empowerment of citizens and individual care through digital services	Digital services will empower citizens, helping them more easily take a greater role in managing their own health, if they can follow prevention guidelines and whether they are motivated to adopt healthier lifestyles, manage chronic conditions, and provide feedback to health care providers.

5.3. Analysis of barriers and possible support measures for technology "Development of operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

5.3.1. General description of the technology "Development of operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change "

The technology "Development of operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" provides for the detection as soon as possible of the dangers and risks caused by heat waves, cold, floods, pollution of drinking water, atmospheric air, for public health in order to approve health measures to prevent the spread of communicable diseases and health events, with the reduction of their consequences for the population.

Operational procedures regarding early warning and prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena will include the following aspects:

- a) Detection (triage, filtering and selection), verification of information, risk assessment and interpretation of data related to sudden changes in weather phenomena.

- b) The exchange of information relevant to public health between the competent authorities for the supervision of public health.
- c) Developing, initiating public health measures and monitoring the impact.
- d) Maintaining specific surveillance networks by the competent authorities for the surveillance of public health and weather phenomena that may directly or indirectly harm the health of the population.

Monitoring of weather hazards that would have an immediate impact on public health, evaluates the risks of triggering public health emergencies and, if necessary, could declare a state of alert, as follows:

- a) Alert with yellow code – possible risk of triggering a public health emergency (activation level 1), which includes the occurrence of the public health event with a minor/moderate risk of affecting the health of the population and requires precautionary measures/response, in special information.
- b) Alert with orange code – probable risk of triggering a public health emergency (activation level 2), which includes the occurrence of the public health event with a high risk of affecting the health of the population and requires information and response measures.
- c) Red code alert – imminent risk of triggering a public health emergency (activation level 3), which includes public health events with major risk (national and/or international with a major impact on the health of the population) and requires, in first, simultaneous control, surveillance and information measures.

The technology corresponds to the sectoral priorities regarding the early warning system for responding to health events and aims to detect as soon as possible the dangers and risks caused by heat waves, cold, floods, pollution of drinking water, atmospheric air to the approval of health measures to prevent health events, with the reduction of their consequences for the population.

NPHA in the context of public health surveillance, will be the competent authority responsible for monitoring health hazards and determinants, assessing the risks of triggering public health emergencies, communicating risks and implementing public health measures in cases of extreme weather phenomena.

At the same time, the State Hydrometeorological Service (SHS), the State Ecological Inspectorate (IES), in the first 12 hours after detection, will ensure the operative information of the National Agency for Public Health about the extreme weather phenomena in the country, which can influence public health.

At the same time, in certain areas (technical equipment; personal training in the field of action in extreme situations such as massive fires and/or extreme atmospheric pollution) will be coordinated according to the competences by the specialists of the General Inspectorate for Emergency Situations (GIES) and other authorities according to the regulatory framework that will be activated.

Technology for the early detection of extreme weather events that would pose a threat to health requires robust continuous surveillance and early warning and response mechanisms. The Republic of Moldova does not have structures that allow the rapid exchange of information between public health authorities and other authorities such as SHS or GIES, to detect threats as soon as possible. The early warning and rapid response system for the prevention of public health events caused by climate change can be aimed at maintaining and ensuring public safety and health through intersectoral collaboration and cooperation, joint efforts of public and private institutions, with the involvement of every citizen and the whole society. The technology will specify the activities to be performed by the authorities involved in early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by of climate change.

For the transfer of the technology, it is necessary to revise the normative base aimed at early warning and rapid response to changes caused by the climate.

The establishment of this technology involves the activation of intersectoral working mechanisms between the Ministry of Internal Affairs, the Ministry of Agriculture and Food Industry, the Ministry of Environment, the Ministry of Finance, through subordinated institutions, the National Agency for Food Safety, within the limits of their competences, will ensure the exchange of information about the occurrence of events on the territory of the country that may influence public health according to Government Decision nr. 1076 of 16 November 2010 "On the classification of exceptional situations and on the manner of accumulation and presentation of information in the field of protection of population and territory in case of exceptional situations" and Government Decision nr. 961 of 21 August 2006 "On the approval of the Regulation of the national network for observation and laboratory control on contamination (pollution) of the environment with radioactive, poisonous, highly toxic substances and biological agents".

The main and direct benefits of implementing the technology in question are:

1. Benefits for the state:

- Proper coordination of the health system due to early warning and rapid response of health services with the undertaking of prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena.
- Diminishing the economic and social impact due to the correct management of the personnel employed in diminishing the impact of the weather event.

- Preventing partial overloading of services essential for the proper functioning of society and the State.

2. Socio-economic benefits:

- To mitigate the social and economic consequences of climate change, cross-sectoral collaboration with all actors and providers of medical, social, educational and psycho-social services, etc., is necessary, so the burden of the event will not fall only on the health system.
- The economic impact of the extreme weather crisis varies across industries and companies, and early warning will enable them to adapt to supply chain disruptions, stockpiles or early dependence on production processes.

3. Capacity building, technology transfer and diffusion:

- Strengthening intersectoral interaction that can lead to strengthening the capacities of the Public Health Agency and its territorial structures with the direct involvement of Governments and finally civil society.
- State flexibility that will allow development partners to introduce aid schemes (e.g. development of the early warning mechanism, humanitarian aid, etc.) to support authorities in strict accordance with its field of competence.
- Review of the regulatory basis providing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.

5.3.2. Identification of barriers to technology transfer "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

According to the classification in the guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U.E., 2015), the WP identified essential and non-essential barriers for technology transfer "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, air conditioning, etc.) caused by climate change" as in the case of technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditional on climate change" (study of policy and other relevant documents; identification of long list of

barriers; establishment of short list of barriers; decomposition of barriers, etc.). Because that technology is fulfilled and disseminated by a public entity (ANSP) to a large population of users and/or beneficiaries, major investments in this technology tend to be decided at government level and depend largely on policies adopted not only by the Ministry of Health but also by other authorities responsible for adapting to extreme weather phenomena and disasters. It is also mentioned that the main result of the technology is to reduce the medical, social and economic burden associated with diseases caused by heat waves, cold, floods, pollution of drinking water, atmospheric air. Thus, the technology is assigned to the category "non-market goods – goods supplied to the public". Because that technology is procured/fulfilled and disseminated by a public entity (ANSP), to a large population of users and/or beneficiaries. Major investments in selected technology tend to be decided at the government level and depend largely on health policies.

Most barriers refer to the lack of an information exchange mechanism between responsible authorities and the presence of a regulatory framework not adapted to climate change, or, in some cases, its lack. At the same time, the investment deficit and the deserts of qualified personnel in public health emergencies and climate change are one of the problems identified by the WG in the context of the discussions. All these barriers seriously affect the capacity of the national health sector to develop operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena, etc.

The problem tree for this technology is included in Appendix No. 1.

The results of the barrier identification, detailing and ranking exercise are presented in Table 5.3.

Table 5.3: List of hierarchy of barriers to technology transfer for developing operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change

Identified barriers			
Broad categories of barriers	Barriers within the category	Detailed description of the barrier	The importance of the barrier
I. Financial barriers	1.1. Lack of funding for early warning systems, due to sporadic cases of climate events.	Due to the small number of public health events and disasters caused by extreme weather phenomena, the government does not see the need to allocate financial sources for developing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena.	Very important
	1.2. Insufficient investments in the interconnection of early warning systems of GIES and ANSP	The COVID-19 pandemic crisis has shown how fragile the early warning system is, especially the intercommunication between authorities. At the same time, the government did not take financing measures to develop a communication mechanism between authorities, so the information was reported according to an outdated system.	Important

	1.3. The need to create a command and alert center	The health sector has a public health emergency command center (ANSP Focal Point), which has all the necessary technologies, but this center is connected to international requirements for communicable diseases and does not take climate change into account.	Insignificant
	1.4. Large investments for rare situations	Although the impact of climate change is felt by the entire planet and at the same time by each of us, governments do not attach much importance to these phenomena because they occur gradually, and their impact will be felt in the long run, and financial investment priorities are often neglected.	Important
II. Technological barriers	2.1. Outdated software and equipment	The technical equipment within the coordinating institutions is often outdated or, in many cases, even missing, which often leads to deterioration of the early warning and adequate response process.	Very important
	2.2. Risk of cyber-processing of data	Climate change alerts in many cases can be categorized as a tool to manipulate public opinion, and false alerts about heat waves, cold waves, floods, pollution of drinking water, atmospheric air, can lead to undesirable reactions of society.	Important
	2.3. Reporting of information coming from unofficial sources by institutions subordinated to central public authorities, liable to trigger a public health emergency.	Due to the large number of information resources and the lack of an information management filter, the authorities do not have an information evaluation mechanism, and in this case the system risks being subject to false alerts of climate change, heat waves, floods, etc.	Important
	2.4. Lack of continuous international training of staff engaged in managing events caused by climate change	The staff trained in reporting public health events has training only on CBRN, but without considering trainings on public health emergencies directly caused by climate changes.	Important
III. Institutional and social barriers	3.1. Lack of personnel trained in activating the alert degree (yellow, orange, red)	The activation of the alert degree is done by decision makers within the Ministry of Health or GIES, depending on which normative framework is activated, based on epidemiological indicators or statistics. At the same time, there is a lack of indicators that could trigger a public health emergency or calamity, for activities caused by climate.	Very important
	3.2. Lack of decision-making algorithm for assessing and notifying events that may pose danger to public health	There is a lack of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. It is not clearly stipulated the role of the State Hydrometeorological Service in	Important

		informing all actors about the risks of flooding, air pollution, etc.	
	3.3. Insufficient collaboration of the health sector with other authorities mentioned above	Each sector becomes responsible both vertically and pre-horizontally only within its own system, without informing other authorities about the event.	Important
	3.4. Low level of remuneration of staff in the field of state supervision of public health	The salary of staff in the field of state supervision of public health is not insured from the fund of the mandatory health insurance system and therefore their increase does not fall under the scope of GD no. 837/2016.	Less important
IV. Policy and regulatory framework barriers	4.1. Communication strategy in emergency situations – epidemics, natural disasters.	The presence of a communication strategy in emergencies and calamities only keeps communication with society, but not with the authorities, which makes the regulatory framework insufficient or ambiguous.	Important
	4.2. One of the objectives of the Health Strategy 2022-2030 is to develop an early warning system for non-communicable diseases and climate-related public health events.	The Health Strategy 2022-2030 does not expressly provide for any point related to the impact of climate change on health, especially it does not provide early warning and response systems to extreme weather phenomena.	Important
	4.3. Health regulations on climate change	The present sanitary regulations developed by MoH with the support of NPHA date back to 1994, which are otherwise regulations translated from the standards of the Soviet Union and are not adjusted to the country's requirements.	Important

The analysis of the data from Table 5.3 shows that the main barriers to be addressed in the technology transfer assessment process "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change" are related to different areas directly or indirectly related and are quite complex. Most of the barriers result in the lack of communication between state institutions and the lack of SOPs that would come to improve coordination and interaction between authorities. The innovative part is that they focus on managing conditions caused by climate change. Also, part of the barriers is focused on the lack of staff trained on the impact of climate change and who in many cases are decision makers. Finally, these barriers or needs seriously affect the activity of the national health sector, essentially diminishing sectoral capacities in undertaking prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change.

5.3.3. Identification of measures to ensure technology transfer "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

To provide guiding principles in order to identify solutions to overcome barriers to transfer and diffusion of technology, to develop operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change, the WG has developed a number of solutions to establish the sufficient basis for overcoming it.

The next important step in the second phase of the ENT/TNA process was to identify the necessary measures to overcome the barriers identified in the context of ensuring technology transfer "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change". Logical problem analysis was used as a tool to identify measures to overcome barriers. The Objective tree of this technology is presented in Annex 2. The measures were assessed on their economic profile, the incentives used, and the effects achieved.

The need for a state system of early warning and response has always been necessary to ensure the detection of public health events or signals related to events caused by communicable, non-communicable diseases and not least caused by climate change.

At the same time, the ongoing systematic collection, analysis, interpretation and dissemination of highly structured information. For public health actions they are referred to as indicator-based surveillance. It will be complemented by event-based surveillance, detection, verification, analysis, evaluation and subsequent investigation of potential threats to public health. The European platform that finally integrates both forms of surveillance (of both communicable and non-communicable diseases) is EpiPulse, the European infectious disease surveillance portal. At the same time, the Republic of Moldova approves by GD 1431/2016 the Regulation on the Early Warning and Response System for the prevention, control of communicable diseases and public health events, but which is provided only for communicable diseases, and for the transmission, storage and dissemination of web-based data, the European Surveillance System (TESSy), to which ANSP has access, is used.

According to WHO data for Europe, climate change could have both direct and indirect impacts on health. They can cause loss of goods, resources, infrastructure, affecting local production and service provision in general, thus also having an impact on health. Developing early warning procedures in response to climate change can prevent severe socio-economic problems, including malnutrition, occupational stress and mental illness. The latter must be considered the current displacement of population and migrants, the escalation of conflicts, the loss of goods, etc., which strongly affect the state of health.

The main obligations to implement the technology belong to the National Agency for Public Health, which has the necessary experience with the alert system for communicable diseases and

at the same time has tools to apply the technology through territorial SPCs. The main barriers identified result from the lack of communication between state institutions and the lack of SOPs that would come to improve coordination and interaction between authorities, the innovative part is that they focus on managing conditions caused by climate change. Also, part of the barriers is focused on the lack of staff trained on the impact of climate change and who in many cases are decision makers. Finally, these barriers or needs seriously affect the activity of the national health sector, essentially diminishing sectoral capacities in undertaking prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.

The results of the process of identifying and detailing measures to overcome barriers are presented in Table 5.4.

Table 5.4: Measures to overcome barriers to technology transfer for Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change

Broad categories of barriers	Barriers within the category	Exceedance measures
I. Financial barriers	Lack of funding for early warning systems, due to sporadic cases of climate events	Evaluation of the Medium-Term Budget Framework for the Ministry of Health with the provision of allocating additional financial sources for the Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change.
		Working with external partners to attract funds to create operational procedures on early warning caused by climate change.
		Economic and financial substantiation of the prevention of the impact caused by climate change on the health of the population.
	Insufficient investments in the interconnection of early warning systems of GIES and ANSP	Detecting communication gaps and interconnection of early warning and response systems to public health events with the allocation of the necessary budget to overcome this barrier.
		Reengineering the current early warning system by updating it to European standards and delimiting the funds needed to develop operational procedures.
	Large investments for rare situations	Economic and financial argumentation of the development of operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena with prioritization of risk sectors.
Economic and financial substantiation of the risk of an extreme climate change event.		
II. Technological barriers	Outdated software and equipment	Appreciation of the degree of usefulness of technical equipment with allocation or attraction of additional sources of its renewal.
		Following the investment projects of the health development partners, the technical equipment within the public health institutions is constantly being renewed

	Risk of cyber-processing of data	Registration in the early warning system based on Government Decision no. 405/2014 on the integrated governmental electronic signature service (MSign), at the same time the Information Technology and Cyber Security Service (STISC), becomes responsible for the safety of personal or medical data.
	Reporting of information coming from unofficial sources by institutions subordinated to central public authorities, liable to trigger a public health emergency	Establishing an information processing filter only from official state sources or international information sources, establishing reliable indicators and an information evaluation mechanism, to prevent the risk of false alerts of climate change, heat waves, floods, etc. Strengthen public health surveillance with an integrated system for prevention, early warning, management and protection against increased levels of ultraviolet radiation
	Lack of continuous international training of staff engaged in managing events caused by climate change	Together with the department of preventive medicine and the School of Public Health Management within Nicolae Testemitanu State University of Medicine and Pharmacy, the creation of training courses for resident doctors in the field of state supervision of public health and continuous training of medical staff on operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold, flood, drinking water pollution, atmospheric air pollution, etc.) caused by climate change. Elaboration of Health Guidelines and Regulations on operational procedures for early warning in cases of climate change. Establishing early warning and response indicators according to the degree of alert (yellow, orange, red).
III. Institutional and social barriers	Lack of personnel trained in activating the alert degree (yellow, orange, red)	Establishing early warning and response indicators according to the degree of alert (yellow, orange, red). Development of cross-sectoral training courses with the participation of representatives of SHS, GIES and MS.
	Lack of decision-making algorithm for assessing and notifying events that may pose danger to public health	Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. It is not clearly stipulated the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc.
	Insufficient collaboration of the health sector with other authorities mentioned above	Review of the normative framework regarding the roles of state institutions according to the activated normative framework. (Law no. 10/2009 on state surveillance of public health or law 212/2004 on state of emergency, siege and war).
IV. Policy and regulatory framework barriers	Communication strategy in emergency situations – epidemics, natural disasters	Review contingency plans and protocols and risk communication with preliminary establishment to the communicators group.
	One of the objectives of the Health Strategy 2022-2030 is to develop the early warning system for non-communicable diseases and	Completing the Health Strategy with a new specific objective on developing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air pollution, etc.) caused by climate change

	climate-related public health events	
	Health regulations on climate change	Updating the regulatory framework on sanitary regulations and adjusting it to European standards.

5.4. Analysis of barriers and possible support measures for technology "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

5.4.1. General description of the technology "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

The technology "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" transposes Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, published in the Official Journal of the European Communities L 330 of 5 December 1998, and partially transposes Council Directive 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of public health, as well as Art. 55 of Law nr. 209 of 29 July 2016 on waste.

Among the diseases conditioned by water and hygiene conditions, we find that although there is a constant decrease in their incidence, there are high values compared to the European averages of morbidity through viral hepatitis A (18 cases per 100 thousand population) and hemorrhagic enterocolitis conditioned by E. coli (8 cases per 100 thousand population).

That technology will focus mainly on:

- Facilitating access to improved drinking water and sanitation systems for 30 district medical and sanitary institutions, by implementing appropriate measures to prevent and reduce water-conditioned diseases, by ensuring drinking water quality and a more efficient and sustainable management of water resources of district PMSI.
- Training of water operators in management of water supply and sanitation systems, water safety, construction of small water and sanitation systems for medical and sanitary institutions.
- Management of waste resulting from medical activity as an integral part of infection control.

- Making producers of waste resulting from medical activity aware that they are liable to bear the costs necessary for their management as waste producers.

At the same time, the Joint Order of the Ministry of Environment and the Ministry of Health no. 91/704 of October 20, 2010, which approved the target indicators and control deadlines, is difficult to apply without the involvement of all responsible authorities and it is necessary for the national target indicators to be approved at Government level to become a national priority. A pilot study on water, sanitation and hygiene services in healthcare institutions in the Republic of Moldova (2019) demonstrated adequate access to drinking water and hand hygiene (WASH) services, while sanitation emerged as a priority in terms of attention and interventions to ensure quality health services. Differences were observed in service coverage in rural and urban institutions, especially in sanitation, cleaning and management of medical waste. Testing of drinking water quality revealed a high rate of non-compliance in the health facilities visited, compared to national requirements indicating the need for priority attention in improving drinking water safety. Further efforts are needed to improve WASH, medical waste cleaning and management practices at healthcare settings, thereby ensuring patient safety and reducing the risk of healthcare-associated infections and strengthening national and local surveillance service.

The activity of transfer and dissemination of the technology for implementing in 30 rural medical and sanitary institutions the projects of water supply, sanitation and waste management resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided, provides for the consolidation of policies, standards, improvements at the level of institutions and activities to promote hygiene at community level as well as the strengthening of monitoring national water, sanitation and hygiene services for communities and medical and sanitary institutions by adapting SDG monitoring indicators applied internationally in the country-specific context.

Emphasis will also be placed on implementing effective health waste management programs, requiring multisectoral cooperation and interaction at all levels. Policies should be generated and coordinated globally, with management practices implemented locally. Establishing a national policy and legal framework, training staff and raising public awareness are essential elements for successful health waste management.

Technology is a priority direction of activity of the Government and civil society and is oriented towards permanently strengthening the health of the population and improving the socio-economic status of the country. Health implies as mandatory conditions economic and social security, harmonious interpersonal and social relations, a safe and healthy environment for work and life, adequate quality of drinking water, air and soil, sufficient and balanced nutrition, complemented by a healthy lifestyle and access to quality health services; etc.

The main and direct benefits of implementing the technology in question are:

1. Benefits for the state:

- a. Integrating water and health priorities into the government's action plan with national action planning processes in the sectors of water supply and sanitation and management of waste resulting from medical activity, to ensure infection control and increase the quality of medical services provided.
 - b. Development of regulations on water and sanitation based on the competences and responsibilities provided by national legislation and international conventions and agreements, ratified by the Republic of Moldova.
 - c. Establish a national policy and legal framework, train medical staff and raise awareness of society as essential elements for successful management of health waste.
2. Socio-economic benefits:
- a. Increasing the number of authorized economic agents in the collection, transportation and processing of deserts resulting from medical activities.
 - b. Health presupposes as mandatory conditions economic and social security, harmonious interpersonal and social relationships, a safe and healthy environment for work and life.
 - c. Strengthening water and sanitation systems and management of waste resulting from medical activity will indirectly lead to infection control and increased financial performance of healthcare institutions.
3. Capacity building, technology transfer and diffusion:
- a. It contributes to strengthening the quality of medical services at territorial level, which will have a direct impact on the health field, as well as increasing the resilience of 30 medical institutions to respond to the new challenges conditioned by extreme weather phenomena as a consequence of climate change.
 - b. Alignment with quality standards and regulations on the main environmental factors influencing health (air quality, water quality, food quality, waste management, etc.) so that they reflect a wider spectrum of possible climatic conditions.
 - c. Scheduling and provision of services in the fields of water supply and sanitation and waste management, considering new risks caused by climate change and/or new diseases arising from environmental factors.

5.4.2. Identification of barriers for technology transfer "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

The process of identifying barriers for technology transfer "Implementation in 30 rural medical-sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" was based on the same aspects and methodological approaches as in the case of other technologies, (study of policy documents and other relevant documents; identification of the long list of barriers; establishing the short list of barriers; decomposition of barriers, etc.). Thus, according to the Guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015) the technology "Implementation in 30 rural medical-sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided".

Because this technology is procured/fulfilled and disseminated by local public authorities as founder of district medical and sanitary institutions to a large population of users and/or beneficiaries. Major investments in selected technology tend to be decided at government level and largely depend on the budget allocated by governments to the healthcare system. The main result of the technology is to support the process of adaptation to climate change and to increase the quality of medical services provided to the population.

The main barriers to be addressed in the process of assessing the technology transfer of the implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided, refer to the capacities of local public authorities and to the deficit of public and private investments, as well as outdated aqueduct system and sewage, etc. The presence of these barriers in most cases seriously affects the capacity of the health system, especially the increase in intrahospital infections and infections caused by poor water quality.

The impact of these barriers can be felt especially in the Northern Region, where the level of connection to aqueduct networks is 2 times lower than in the Southern Region. Medical and sanitary institutions are not an exception and are a mirror of the situation in the locality. The presence of safe water supply and sanitation systems in medical institutions is an urgent necessity to ensure proper hygiene conditions and prevent infections.

Another tool used in the barrier analysis process was logical problem analysis (ALP/LPA) for analyzing causal relationships and basic problems in technology transfer. The problems were arranged in a hierarchy of causes and effects, with a central/generic startup problem for technology transfer. The problem tree outlined the main links between causes and effects and organized them into logical interrelations, addressing basic problems and highlighting links with external factors. The problem tree for this technology is included in Appendix No. 1.

The results of the barrier identification, detailing and ranking exercise are presented in Table 5.5.

Table 5.5: Long list and hierarchy of barriers to technology transfer for Implementation in 30 rural medical institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided

Identified barriers			
Broad categories of barriers	Barriers within the category	Detailed description of the barrier	The importance of the barrier
I. Financial barriers	1.1. Deficit in financial resources regarding the implementation of water supply, sanitation and waste management projects resulting from medical activity	The key actors in the process of regulating and developing the field of water supply and sanitation at the level of medical and sanitary institutions at district level are LPA, which do not have sufficient funds to ensure water supply and waste management projects resulting from medical activity.	Very important
	1.2. Lack of private investment in water supply and sanitation	The supply of medical sanitary institutions with water and sanitation is not an attractive economic area for private investors.	Insignificant
	1.3. The high cost of reconstruction of water supply and sewerage infrastructure in PMSI	In most PMSIs in the country, water supply infrastructure is outdated and can no longer undergo reconstruction. In this regard, the reengineering and construction of new aqueduct and sewerage systems becomes primarily an economic problem.	Important
II. Technological barriers	2.1 Lack of rural and urban water supply infrastructure in territories	There is an uncoordinated development of water supply and sanitation infrastructure at local level, often led by donors without coherent supervision at national level.	Important
	2.2. Outdated aqueduct and sewer that cannot be restored	The data on the water supply and sewerage sector of PMSI are mainly connected to centralized aqueducts of localities, and in most cases does not meet the requirements of Law nr. 303 of 13 December 2013 on the public water supply and sewerage service.	Important
	2.3. Non-compliance with sanitary rules on drinking water quality	Water Law nr. 272 of 23 December 2011, which brought great challenges to the sector by proposing a new Legal Framework in the field of management, protection and efficient use of surface water and groundwater.	Important
	2.4. Non-compliance with health regulations on the management of waste resulting from medical activity	These regulations and guidelines on the management of waste resulting from medical activity are already developed in 2014, but are not aligned with European requirements or are not sufficiently implemented.	Important
III. Institutional and social barriers	3.1. Lack of infrastructure for separate collection of infectious waste and its processing before disposal	Most PMSIs have an outdated infrastructure and the lack of incinerators or collection centers for waste resulting from medical activity becomes not only a health problem, but also an environmental problem.	Very important

	3.2. Lack of communication campaigns on awareness on consequences and improper practices in the field of waste management, including hazardous ones from the point of view of environmental protection.	Since 2013, when Order MH 652/2013 was drafted, until now, only 4 campaigns have been carried out to raise awareness of the phenomenon of waste resulting from medical activity and its impact on the environment. Lack of a program and a team of communicators at MH and ANSP level.	Very Important
	3.3. Insufficient collaboration of MoH with the Ministry of Environment in the field of water and sanitation	According to GD 1063/2016, MoH and the Ministry of Environment are institutions responsible for implementing the Protocol on Water and Health, but due to poorly managed intercommunication between the above-mentioned entities, the elaboration of the normative framework is done only ministerially, not between ministries.	Important
	3.4. Level of financial incentive for highly qualified research staff in the field of water safety and environmental impact of medical waste	The salary in the field of medical research within the National Agency for Public Health is among the lowest (on average 5000 lei)	Important
	3.5. Lack of research frameworks within the public health sector on the interrelation of climate change in relation to public health.	SUMP and NPHA lack trained and qualified specialists in the field of water safety and environmental impact of waste resulting from medical activity	Less important
IV. Policy and regulatory framework barriers	4.1. Low degree of implementation of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity	As a result of studies conducted by NPHA and SUMP, there were developed a series of recommendations to meet the target indicators on 20 areas of the Protocol on Water and Health, to which Moldova adhered in 1992 through the UN Convention "On the Protection and Use of Transboundary Water Courses and International Lakes".	Important
	4.2. Insufficient regulatory framework in implementing medical waste cleaning and management practices at the level of healthcare institutions, thus ensuring patient safety and reducing the risk of infections associated with healthcare provision and strengthening the national and local surveillance service	Sectoral legislative and regulatory framework not updated to include responsibilities for climate change and healthcare institutions, thus ensuring patient safety and reducing the risk of healthcare-associated infections.	Important

	4.3. The topic of scientific research does not encompass the entire spectrum of problems faced by the health sector regarding waste management	Lack of initiative in conducting applied and fundamental research to identify interactions related to climate change, and human health in relation to the environment.	Important
	4.4. Lack of a financing strategy for investment projects in the public health sector, incorporating water and sanitation requirements and management of waste resulting from medical activity	The regulatory framework does not provide for investment and financing decisions for recovery and response measures relevant to public health in the context of climate change	Important

The analysis of data from Table 5.5 shows that the main barriers to be addressed in the technology transfer assessment process "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" are related to different areas directly or indirectly related and are quite complex. Most of the barriers result from the lack of communication between state institutions and the lack of sanitary regulations and guidelines that would improve coordination and interaction between authorities, the innovative part is that it focuses on managing conditions caused by climate change. Finally, these barriers or needs seriously affect the activity of the national health sector, essentially diminishing sectoral capacities in taking actions to ensure infection control and increase the quality of medical services provided.

5.4.3. Identification of measures to ensure technology transfer "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Identifying the necessary measures to overcome barriers / needs in the context of ensuring technology transfer "The implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" is an important stage on which the success of this process largely depends. Logical problem analysis was used as a tool to identify measures to overcome barriers. The Objective tree of this technology is presented in Annex 2. The measures were assessed on their economic/technological profile, the incentives used, and the effects achieved.

The implementation of this technology will expressly provide for ensuring the legal and institutional framework for providing equitable access to water for medical institutions, as well as exposing into action the legal framework in identifying and allocating financial resources for urban and rural medical institutions in the northern region of the country.

The main obligations will be exercised as technical coordinator of the process of implementation and monitoring of the implementation of the technology "Implementation in 30 rural medical-sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided". As with previous technologies analyzed, financial barriers are relatively significant for the technology concerned. It is also necessary to reform the operational management of water and sanitation systems as well as waste management from medical activities to develop the capacities of all partners involved in the activities of achieving target indicators, strengthening the monitoring capacities of the implementation of the above-mentioned technology. At the same time, an important emphasis will be placed on carrying out feasibility and scientific studies in demonstrating the socio-economic impact following the implementation of the respective technology. In total, 16 actions were identified as measures aimed at overcoming barriers and ensuring technology transfer "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided". Most of them relate to the following general categories:

- a. Updating and completing the existing regulatory framework (Sanitary Regulation on the management of waste resulting from medical activity, Protocol on Water and Health in the Republic of Moldova, etc.).
- b. Research study of the regulatory framework on medical waste management in the Republic of Moldova and study of current practices of waste management resulting from medical activity in public medical and sanitary institutions. Also, assessing the capacities of medical institutions in medical waste management, possible risks, existing mechanisms for neutralization, destruction and recycling of medical waste and developing recommendations on harmonizing the legal framework and practices for medical waste management
- c. Elaboration and implementation of National Guidelines on the impact of waste management resulting from medical activity and creation of a necessary infrastructure for the management of hazardous waste streams resulting from medical activity or from medical research institutions.

The results of the process of identifying and detailing measures to overcome barriers are presented in Table 5.6.

Table 5.6: Measures to overcome barriers to technology transfer for Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided

Broad categories of barriers	Barriers within the category	Exceedance measures
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I. Financial barriers	Deficit in financial resources regarding the implementation of water supply, sanitation and waste management projects resulting from medical activity	Application of projects by LPA to the Financing Agreement (loan) signed between the Government of the Republic of Moldova and the International Development Association (ratified by Law 169/2022) in the amount of EUR 44.1 million. It should be considered the need to launch the process of identification and examination of institutions, according to criteria established by the World Bank and subsequently the approval of the list of institutions by the Ministry of Health.
	II. Technological barriers	2.1 Lack of rural and urban water supply infrastructure in territories
II. Technological barriers	Outdated aqueduct and sewer that cannot be restored	The new water supply and sanitation strategy and the new law on public water supply and sanitation service are expected to bring considerable institutional changes in the sector, which will improve cooperation between all actors involved and allow for synergy of investments from both national and external sources.
	Non-compliance with sanitary rules on drinking water quality	Restructuring and orientation towards EU standards the mechanism of planning, design, construction, expertise, control and operation of water and sewerage infrastructure. The existing design rules include common provisions for urban and rural areas, with oversizing rural systems being high demands on fire flows and water storage volumes.
	Updating the regulatory framework to standards consistent with those of the European Union, including for small systems in rural areas. This sector is currently largely based on norms and rules in construction (NRC, SNIP and STAS State Standards, (GOST), which were developed and applied in the former Soviet Union. These acts are outdated and lead to capital investments and increased operational costs.	
III. Institutional and social barriers	Non-compliance with health regulations on the management of waste resulting from medical activity	Revision of sanitary regulations with their extension to the activity of all natural / legal persons and activities / research, regardless of the type of ownership and legal form of organization that generate waste resulting from medical activity, as defined in Article 55 of Law no. 209/2016 on waste.
		Regulation of separate collection by types, packaging, labeling, temporary storage, transportation within producing institutions, treatment, delivery, disposal and record keeping of waste resulting from medical activity.
	Lack of infrastructure for separate collection of infectious waste and its processing before disposal	Creation of infrastructure for the management of the following streams: waste resulting from medical activity (sharp waste, injections, infectious waste, organic waste, equipment, etc.).
	Lack of communication campaigns on awareness on consequences and improper practices in the field of waste management, including hazardous ones from the point of view of environmental protection.	Establish by Order the team of communicators on awareness on the consequences and inappropriate practices in the field of waste management, including hazardous ones from the point of view of environmental protection, and as indicators to establish the degree of awareness and the number of communications in mass media and social networks.
	Insufficient collaboration of MoH with the Ministry of	Elaboration and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and

	Environment in the field of water and sanitation	management of waste resulting from medical activity to ensure infection control and increase the quality of medical services provided.	
	Level of financial incentive for highly qualified research staff in the field of water safety and environmental impact of medical waste	Revision of GD 837/2016 for the approval of the Regulation on the remuneration of employees in public medical and sanitary institutions included in the mandatory health insurance system.	
IV. Policy and regulatory framework barriers	Low degree of implementation of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity	<p>Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity.</p> <p>Publication of study results to raise awareness and inform society about the health impact of water supply and waste resulting from medical activity.</p>	
	Insufficient regulatory framework in implementing medical waste cleaning and management practices at the level of healthcare institutions, thus ensuring patient safety and reducing the risk of infections associated with healthcare provision and strengthening the national and local surveillance service	Completing the regulatory framework with the elaboration of a Sanitary Regulation on the management of waste resulting from medical activity, the National Guide on the management of waste from medical activity and the safety of injections.	
	The topic of scientific research does not encompass the entire spectrum of problems faced by the health sector regarding waste management	Approaching scientific research, not only from an epidemiological aspect, but also from an aspect of their impact on the environment, as well as reviewing the regulatory framework, jointly with specialists from the Environment Agency.	
	Lack of a financing strategy for investment projects in the public health sector, incorporating water and sanitation requirements and management of waste resulting from medical activity	Review of the regulatory framework providing investment and financing decisions for recovery and response measures relevant to public health in the context of climate change.	

5.5. Links between identified barriers

The analysis of the links between the identified barriers faced by the health sector in the implementation and transfer of technologies prioritized by the WGs focuses on financial and regulatory aspects. At the same time, economic barriers have an indirect action on providing the

health sector with qualified and trained personnel on topics related to climate change and its impact on public health

As a result, 14 common barriers of the three leading technologies in the health sector have been identified and the results are presented in Table 5.7.

Table 5.7: Common barriers of prioritized technologies for climate change adaptation of the health sector

Barrier Types	Common Barriers
I. Financial barriers	Funding gap for health activities.
	Lack of financial mechanisms to motivate health professionals.
	Non-allocation of funds to study the impact of climate change on the public health system.
II. Technological barriers	Lack of monitoring and reaction information systems on the implementation of public health measures and early warning.
	Low implementation of the regulatory framework and lack of national regulations and guidelines for managing the technologies mentioned by the WP.
	Lack or outdated quality of technical equipment and software.
III. Institutional and social barriers	Shortage of medical personnel at territorial level and lack of trained personnel in the field of climate change.
	Climate change intersectoral communication gap.
	Low level of remuneration of public health staff.
IV. Policy and regulatory framework barriers	Low degree of implementation of policy documents and regulatory framework in the field of public health.
	Lack of a specific objective regulating human health in relation to climate change.
	Outdated legislative and regulatory framework in the field of health.

The purpose of identifying common links between barriers identified by the WG is to create common or at least comparable policies that would allow their exclusion and their integration into international requirements regarding the adaptation of the health system to climate change.

This process is complex and requires a balanced approach to consider the visions of all actors involved, not having to go through all stages to align with the standards required by international partners

Barriers to the health policy and regulatory framework are also closely linked to an insufficient number of experienced and highly qualified specialists with knowledge of modern processes and technologies. The economic impact also leads to the migration of medical staff in the field of health, thus a pronounced shortage of highly qualified personnel.

Access to information systems and an early warning system is one of the most important public health issues in the context of climate change and monitoring of climate-related diseases, so the medical system cannot regulate and develop correct and robust policies on public health assessment and the imposition of necessary public health measures. Thus, it is observed that most of the policy documents that have been developed to raise awareness among governments and civil society that climate change has a colossal impact on the health of the population or have not been approved or are insufficiently prepared to face the international regulatory framework.

5.6. Enabling framework for overcoming barriers in the health sector

The favorable framework for overcoming priority barriers becomes a main objective in implementing the technologies identified by the WG. The most important components for overcoming health barriers will be done by implementing the respective technologies/measures by requesting at the initial stage a PH analysis of regulatory and policy barriers, but also a list of activities aimed at solving (development and/or strengthening of the institutional framework for adjusting regulatory framework, communication and digitalization of surveillance information systems, definition of roles and responsibilities for stakeholders, etc.), which will partially change approaches and situation in the health sector. The adaptation options identified include achieving a wide spectrum of transfer and diffusion of existing and new technologies in the health sector of the Republic of Moldova.

At the same time, it provides for the revision of the normative framework on the development/adaptation of clinical protocols on the prophylaxis and treatment of diseases related to climate change, as well as the creation of an efficient information system in the field of environment and health with climate change aspects, for decision-making purposes and public access to information.

In this context, the normative framework will be reviewed (Health Strategy 2022-20230 (draft law), Law no. 10/2009 on state supervision of public health, GD 586/2017 for the approval of the Regulation on how to keep the medical register, GD 1063/2016 on the approval of the National Protocol on Water and Health 2016-2025, GD 696/2018 for the approval of the Sanitary Regulation on the management of waste resulting from medical activity) with provisions that will promote monitoring the health status of the population with the implementation of alert and response elements to climate change.

At the same time, the Medium-Term Budgetary Framework (MTBF) of the Ministry of Health will be reviewed with the revision of GD 837/2016 on the remuneration of employees in public medical institutions enrolled in the mandatory health insurance system, with the introduction of personnel employed in public health services. It will have a direct impact on increasing the degree of providing the health sector with highly qualified personnel and expertise in key areas as well as contributing to the continuous training of medical staff, with their involvement in studies on the impact of adaptation to climate change.

Raising awareness about climate change risks and the importance of adaptation measures can also become an effective measure for technology diffusion, as the health system currently has an ambiguity of climate change adaptation and potential climate change-related impacts on the health system. In this context, raising public awareness by implementing a communication regulation remains a priority for the health system.

The enabling framework for specific technologies for the health sector is detailed in the following tables.

Table 5.8: Enabling framework for technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including climate change conditions"

Activity framework	Comments
Legislation	Amending Government Decision no. 586/2017 approving the Regulation on how to keep the Medical Register, completing a point as follows: establishing the Information System for the Surveillance of Non-Communicable Diseases and their Risk Factors (SI SBN).
Financial policies	Review of the MTBF of the Ministry of Health and the National Agency for Public Health by allocating budgetary sources from the state budget and other sources according to the legislation (from the allocations of development partners).
Sectoral policies	Elaboration of a Government Decision on the establishment of an information system for surveillance of communicable diseases, including caused by climate change, which will aim to digitize the processes of systematic and continuous collection, analysis, interpretation and dissemination of health data on non-communicable diseases, including caused by climate change, in the context of their spread over time, space, population group and analysis of risk factors for contracting these diseases.
Technical regulations	Renewal of technical equipment and software in all state medical and sanitary institutions to develop capacities for recordkeeping, management, analysis and reaction to events with negative impact on public health, surveillance of public health events, including by implementing the early warning and rapid response system.
Qualified personnel and expertise	Continuous training of medical and non-medical staff trained in early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.)"
Communication and awareness	Training medical staff on the importance of climate change impacts on public health and the importance of reporting cases of non-communicable diseases caused by climate change

Table 5.9: Enabling framework for the technology "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.)"

Activity framework	Comments
Legislation	Completion of Government Decision nr. 1431/2016 for the approval of the Regulation on the early warning and response system for the prevention of the control of communicable diseases and health events, completing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air).
Financial policies	Review of the MTBF of the Ministry of Health and the National Agency for Public Health by allocating budgetary sources from the state budget and other sources according to the legislation (from the allocations of development partners).
Sectoral policies	The Ministry of Health, Ministry of Internal Affairs, Ministry of Agriculture and Food Industry, Ministry of Environment, Ministry of Finance, through subordinated institutions, National Agency for Food Safety, within the limits of their competences, will ensure the exchange of information about the occurrence of events on the territory of the country that may influence public health according to Government Decision nr. 961/2006 "On the approval of the Regulation of the national network for observation and laboratory control on environmental contamination (pollution) with radioactive, poisonous, highly toxic substances and biological agents".
Technical regulations	Renewal of technical equipment and software in all state medical and sanitary institutions to develop capacities for recordkeeping, management, analysis and reaction to events with

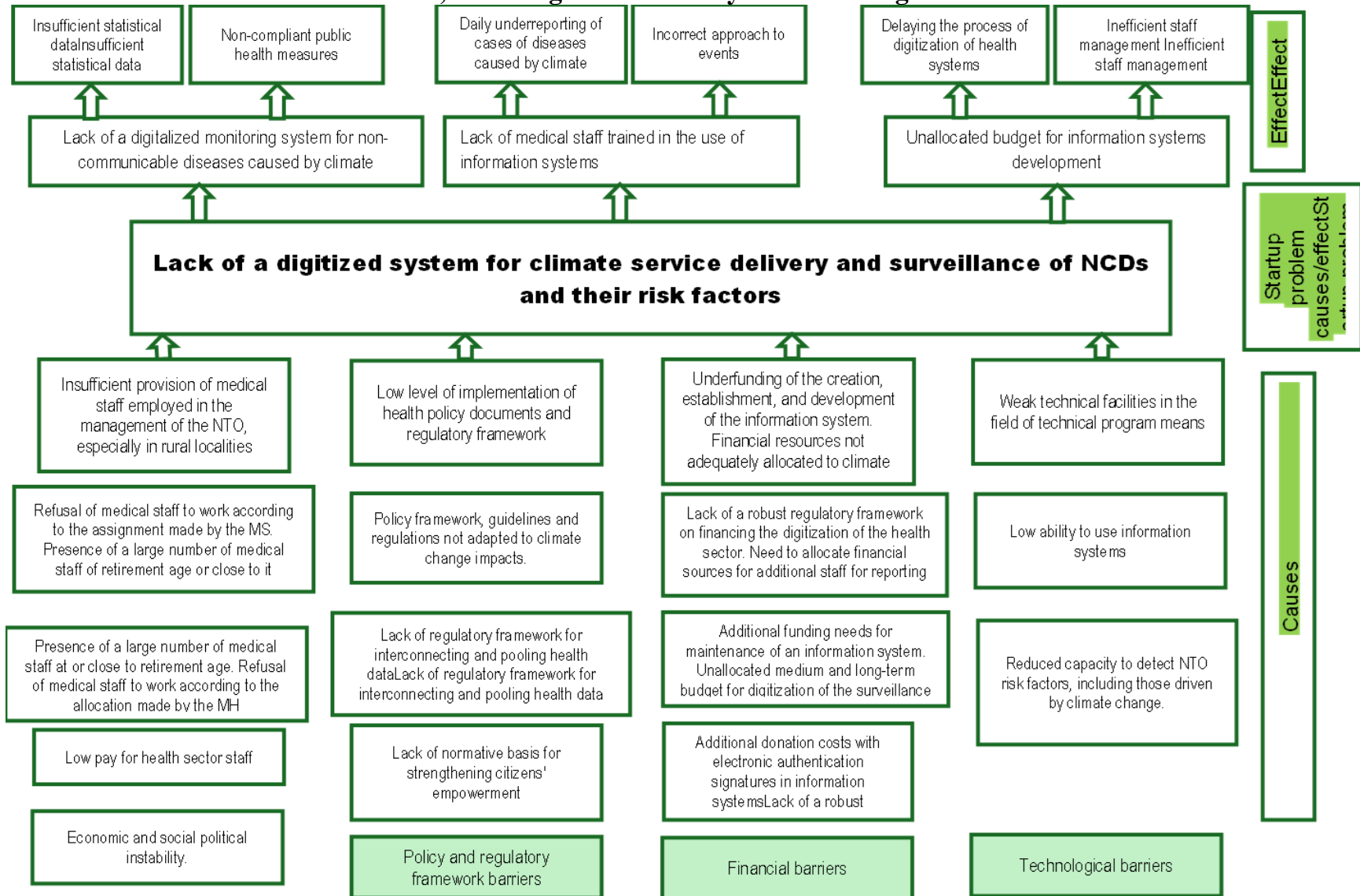
	negative impact on public health, surveillance of public health events, including by implementing the early warning and rapid response system.
Qualified personnel and expertise	Continuous training of medical and non-medical staff trained in early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution).
Communication and awareness	Raising awareness of health professionals about climate risks and the importance of climate change adaptation measures, as well as reviewing national clinical protocols and adapting them to diseases arising from climate change.

Table 5.10: Favorable framework for technology "Implementation in 30 rural medical-sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

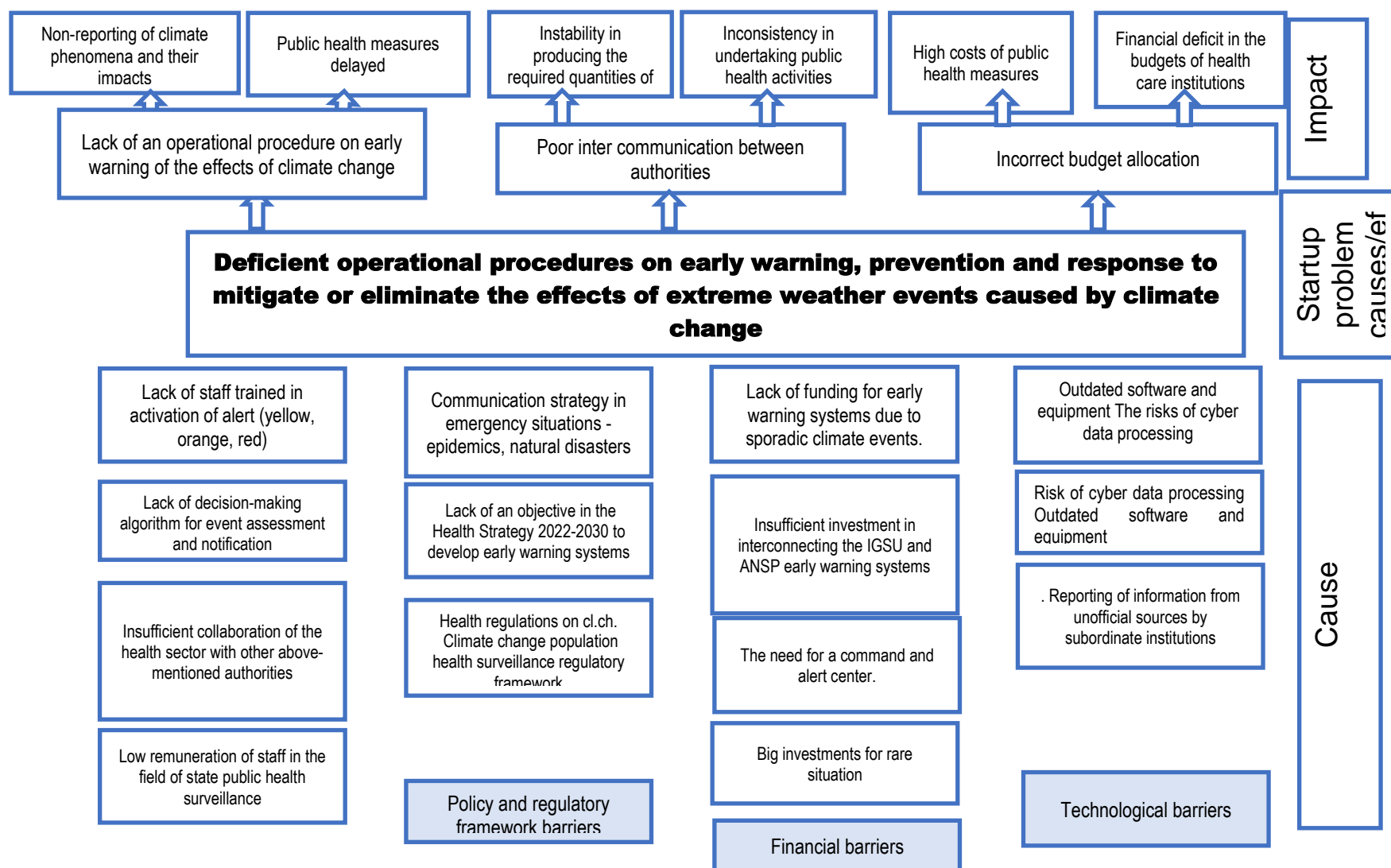
Activity framework	Comments
Legislation	Revision of the Protocol on Water and Health in the Republic of Moldova for 2016-2025 nr. Law no. 1063 of 16.09.2016 to review the new water supply and sanitation strategy and the new law on the public water supply and sewerage service to bring considerable institutional changes in the health sector.
Financial policies	International donors and financial institutions are an important source of funding for the sector. Donor coordination is ensured through the Sectoral Council "Environment, Water Supply and Sanitation" of the Ministry of Environment. The main donors in the Republic of Moldova are the European Union, World Bank, European Bank for Reconstruction and Development, Swiss Agency for Development and Cooperation, German Agency for International Cooperation, Austrian Development Agency.
Sectoral policies	The Ministry of Finance mobilizes and allocates the necessary budgetary means in accordance with established practices, the State Chancellery monitors on behalf of the Government the fulfillment of government programs by relevant ministries, the National Agency for Energy Regulation is responsible for regulating the water supply and sewerage service. At national level, two groups of non-governmental institutions with interests of major importance stand out, namely the Association of Water Supply and Sewerage Enterprises "Moldova Water-Canal" and the Congress of Local Authorities of Moldova.
Technical regulations	Evaluation of water sources, as well as evaluation of water supply and sanitation infrastructure of medical and sanitary institutions, as well as management of waste resulting from medical activity with the purpose of their restoration or reconstruction.
Qualified personnel and expertise	Continuous training of specialists from the National Agency for Public Health on water regulation, sanitation and management of waste resulting from medical activity and their impact on public health.
Communication and awareness	Continuous access of the population to studies on water supply, sanitation and management of waste resulting from medical activity with information in mass media sources on the impact of these problems.

Annex 1: Problem trees on selected technologies for the health sector

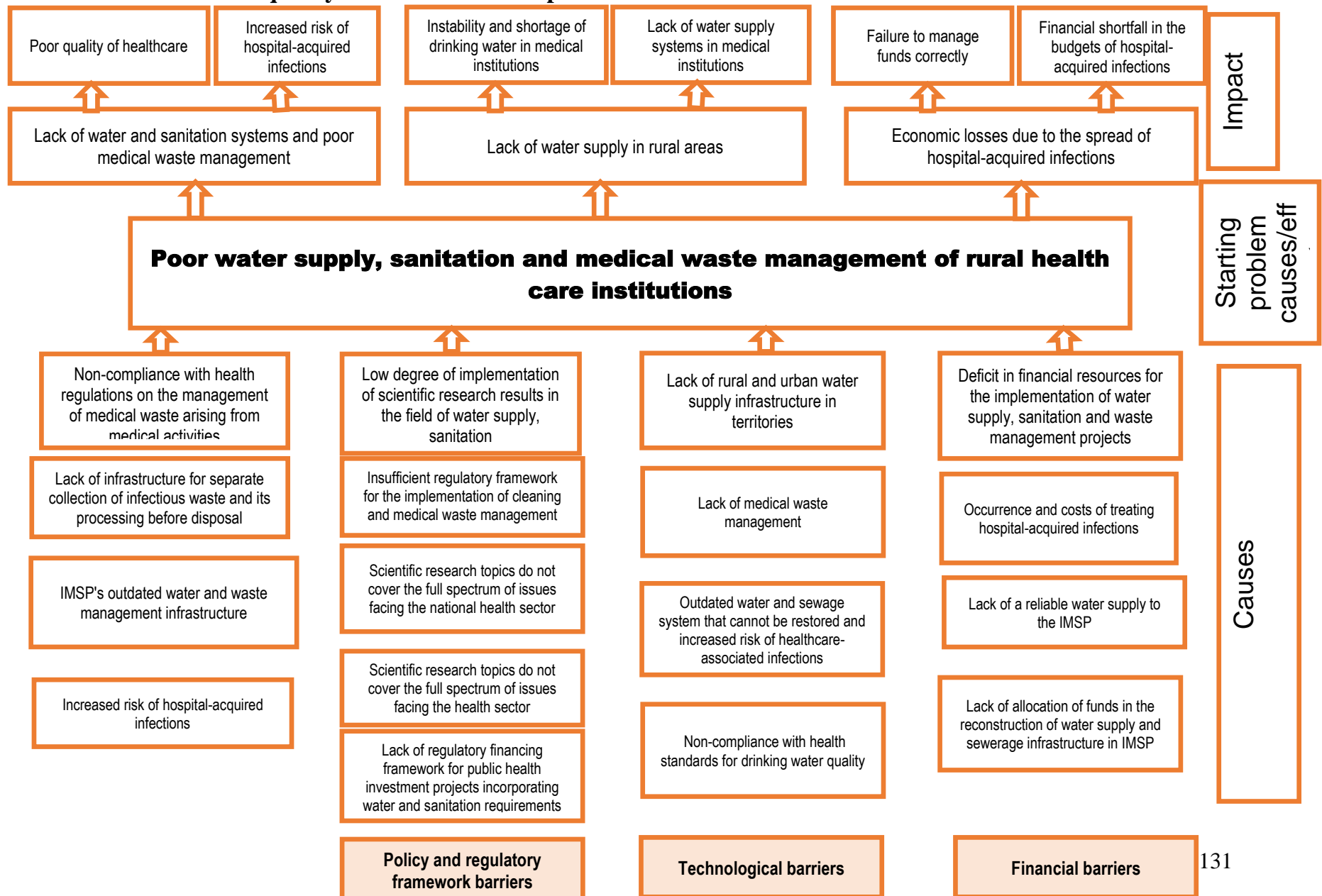
I.1. Problem Tree for technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change"



I.2. Problem Tree for technology "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

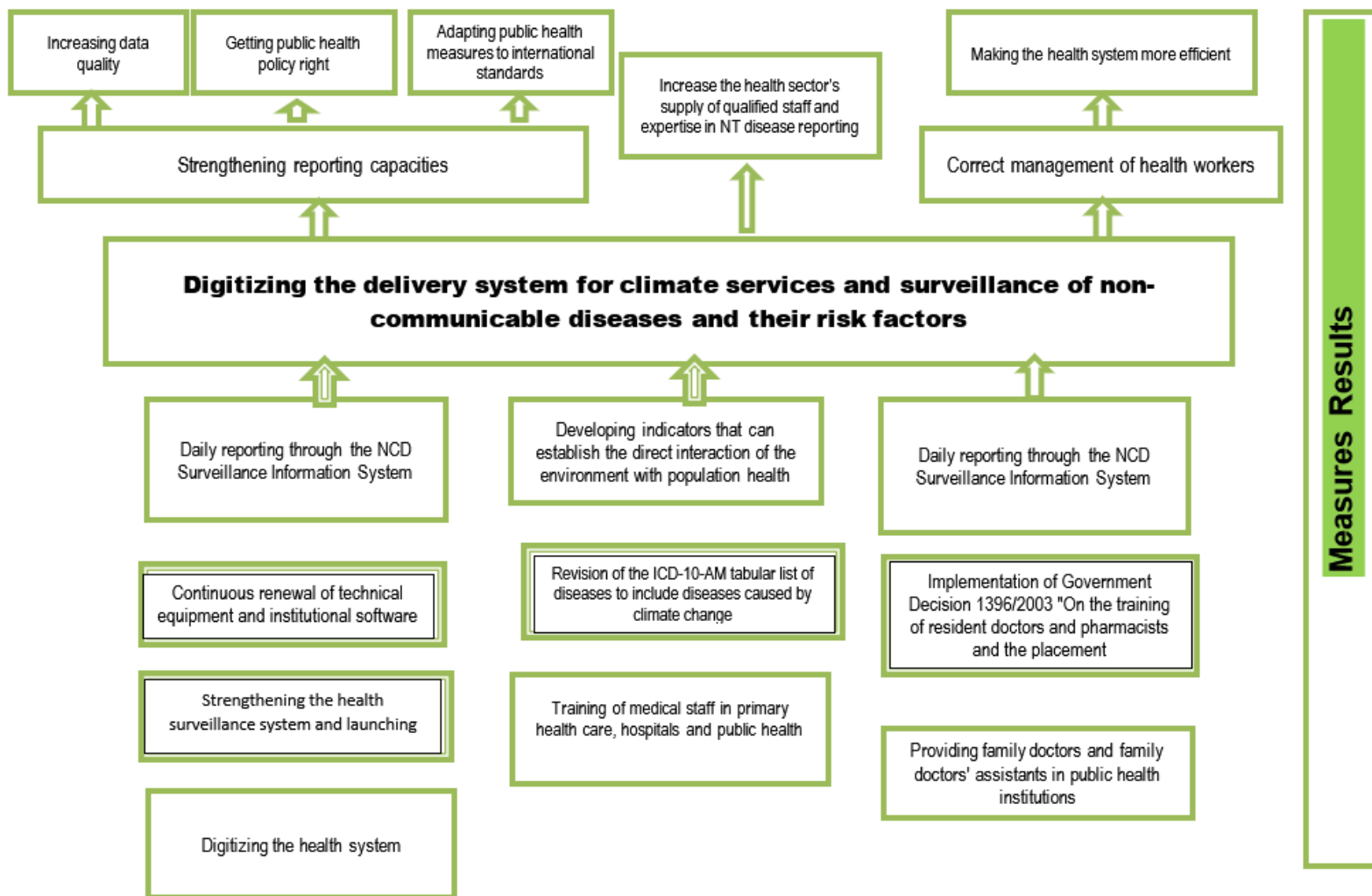


I.3. Problem tree for technology "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

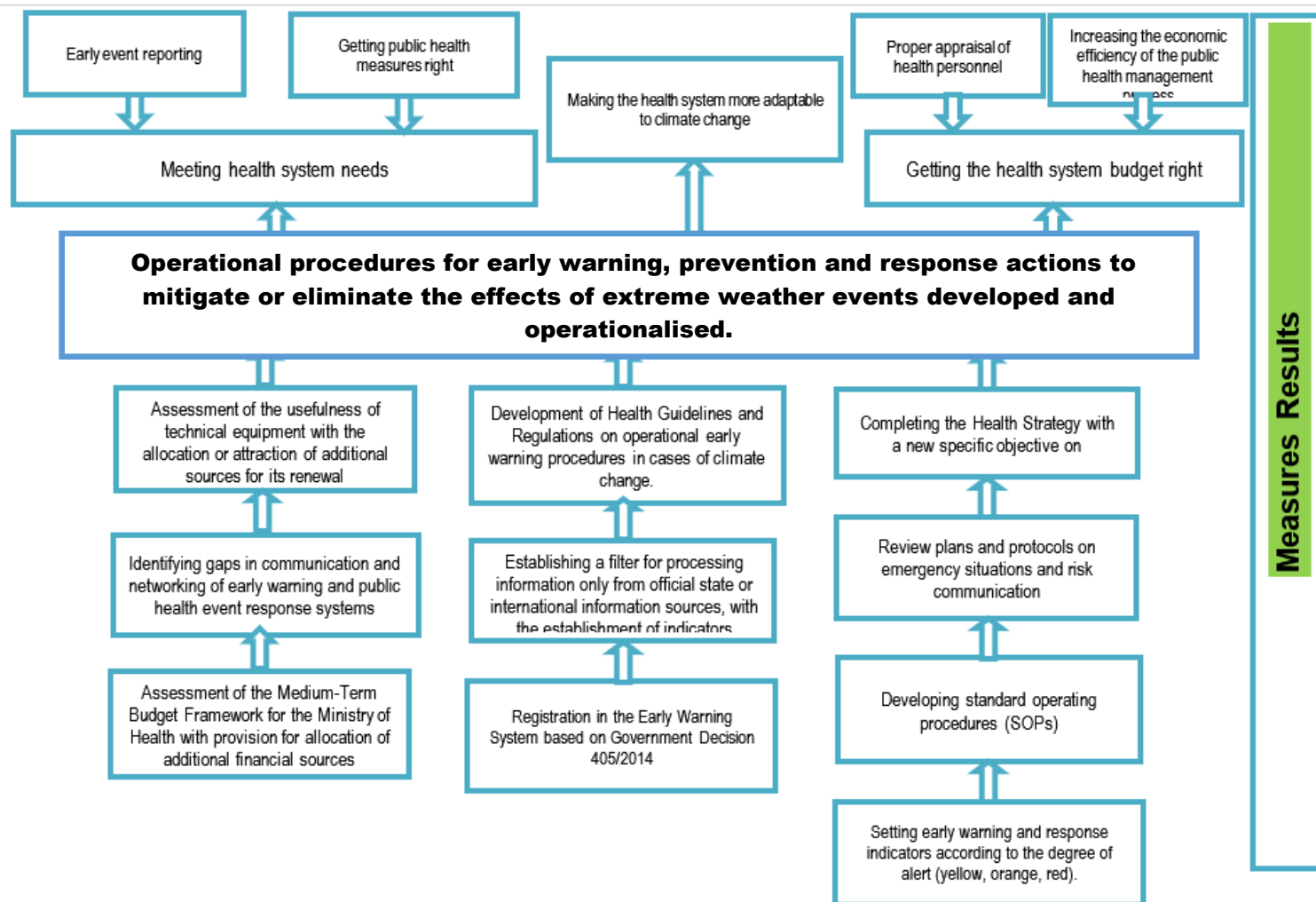


Annex 2: Objective trees of selected technologies for the health sector

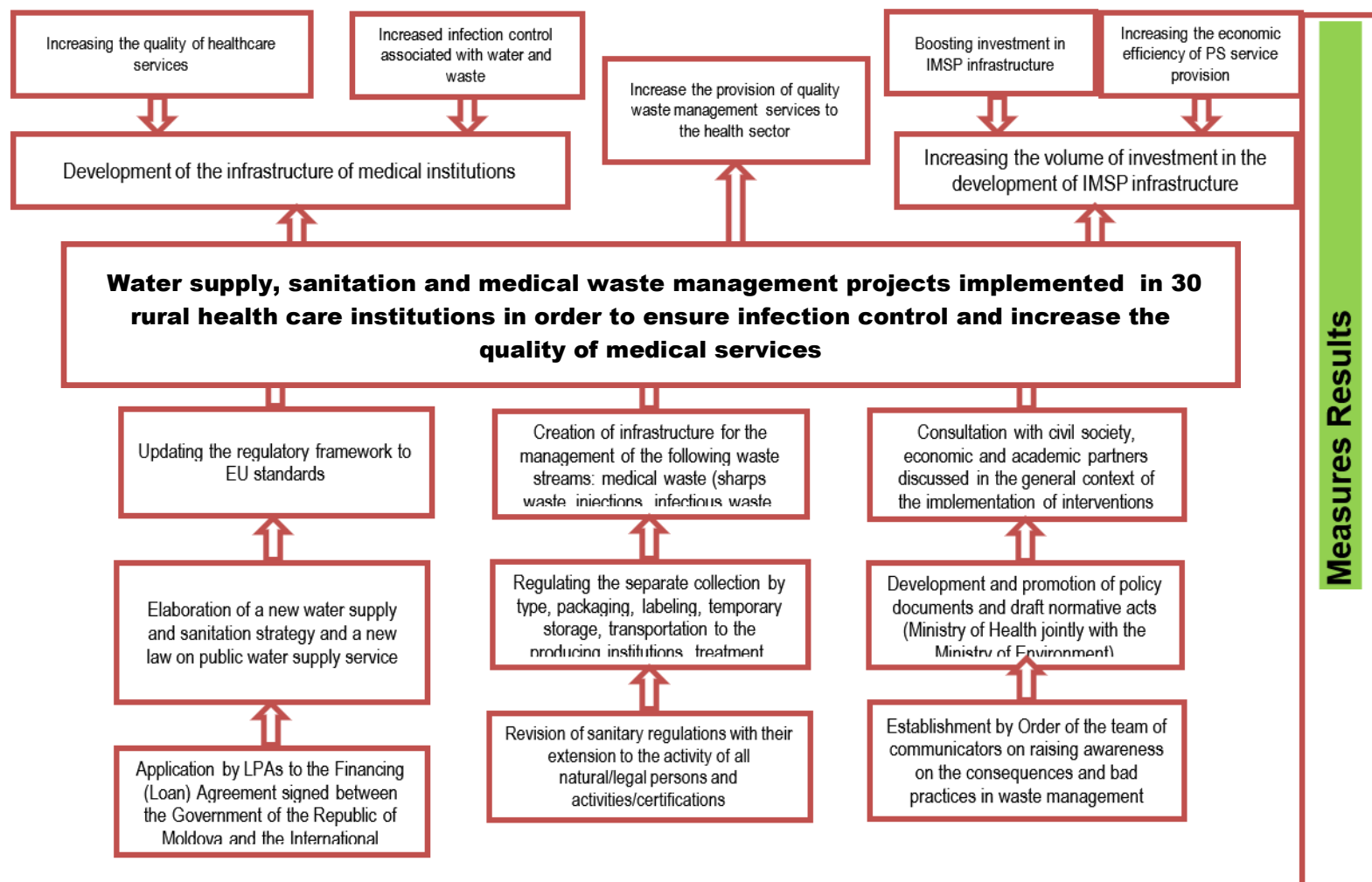
2.1. Objective tree for the technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change"



2.2. Objective tree for the technology "Development of operational procedures on early warning, actions of prevention and response to mitigate or eliminate the effects of extreme weather events"



2.3. Objective tree for the technology "Implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and growth"



**TECHNOLOGY ACTION
PLANS and PROJECT
IDEAS
REPORT (3)/TAPs**

Chapter 6. Action Plan of Prioritized Technologies for Health Sector Adaptation to Climate Change

Executive Summary

While agriculture is considered to be the sector most affected by climate change at national level, the impact on the health sector is also significant, as measures are needed to increase its resilience to face new challenges caused by climate extremes and other climate hazards.

In the last decade, the Republic of Moldova (RM) has experienced a series of extreme events, such as droughts and major floods, along with incremental effects caused by the increase in average temperature and uneven distribution of precipitation throughout the year, which have had negative consequences on the country's economy, well-being and health of the population, etc.

Life expectancy at birth is one of the basic health indicators of a nation's overall health. The Republic of Moldova is currently in a slightly better situation than in the pre-transition period in terms of life expectancy, which increased by 2.7 years in the last decade - in 2020 it was 72.3 years for both sexes (123rd place worldwide), including 68 years for men and 76.5 years for women, compared to 2015, when it was 71.7 years for both sexes, including 67.6 years for men and 75.7 years for women (in 2010 it was 69.6 years for both sexes).

While the general health of the population has registered an improving trend in the last decade, comparative statistics show that the situation in most transition countries has improved to a greater extent than in the Republic of Moldova.

Climate change and extreme weather events have direct impacts on health. At the same time, they can also affect forestry, agriculture and industry, which would cause problems in terms of food security and poor sanitary conditions that can in turn produce serious effects on health in the short and long term. The health effects of drought could, for example, cause a decrease in food production and dietary problems, making people more vulnerable to disease.

Rising extreme temperatures are estimated to cause between 30,000 and 40,000 deaths per year between 2030 and 2040. Climate variations will cause disturbances in people with chronic cardiovascular and respiratory diseases, with the most vulnerable population groups being those aged under 15 and people over 75.

There are some methodological difficulties in establishing and estimating the impact of climate change on the health system of the Republic of Moldova, as well as its vulnerabilities, because the indicators that can be used for this purpose belong to four interdependent components, all having different approaches. These are:

- Population health, which depends on several factors outside the health system (social, economic, environmental, hereditary, cultural, etc.).

- Volume and quality of services provided by healthcare providers (hospitals, primary care, emergency care, etc.).
- Level of state supervision of public health.
- The level of preparedness and resilience of health institutions to public health emergencies, including those caused by the impact of climate change factors, as well as preparedness (such as warning systems) and prevention (such as campaigns for changing behavior to cope with extreme climatic events, e.g. heat waves, etc.).

Following the identification of climate change adaptation technologies for the health sector in the Republic of Moldova and the analysis of barriers that would arise to the implementation and respective technologies, the working group on the health sector (WG) established by the order of the Ministry of Health (MoH) nr. 604-d of 11.08.2021, identified a series of actions for the transfer and dissemination of selected technologies for climate change adaptation of the health sector.

Following the consultations on prioritization of climate change adaptation technologies, 3 technologies were identified that would have the greatest impact on the adaptation process of the health sector in the Republic of Moldova, and the technology transfer and diffusion capacity: For the health sector, within the previous phases of the TNA process, 3 technologies considered with the greatest impact on the resilience potential of the health sector and the technology transfer and diffusion capacity were selected. In this context, TAPs have been developed for the following technologies:

- 1) Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors.
- 2) Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change.
- 3) Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.

The actions, activities, estimated time periods for implementation, as well as risks in implementing TAP are described in the Generalizing Table in this Summary, but also in the corresponding chapters dedicated to each technology. All actions selected for TAP on each technology are imperative for the development of an environment that allows achieving the specified target for each technology.

At the same time, actions that were recommended as project ideas were selected under each TAP and are considered to bring important effects for the further development and adoption of the

technology. Thus, the specified project ideas trigger the resilience of the health system to climate change.

The identification of actions was made based on sectoral development objectives, and in the description of each technology was established the goal of modernizing the health system into one capable of providing real access to quality health services, viable solutions for treatment and prevention of diseases, as well as adequate working conditions for medical staff under the conditions of a continuous national process of planning adaptation to climate change.

Following the examination of policy documents, the regulatory framework in force, as well as statistical data and studies on the epidemiological sanitary situation of communicable and non-communicable diseases and finally the study of scientific articles on climate change, the main actions were identified for them to be implemented to make the health sector resilient to climate change. The identified actions were qualified according to their power of influence on the medical system, especially through their action on the health of the population and the quality of services provided by public medical and sanitary institutions (PMSI). In the process of discussions addressed by the Working Group (WG) of the health sector, which was approved by the order of the Ministry of Health nr. 604-d of 11.08.2022 "On prioritization of climate change adaptation technologies of the health sector", many activities/measures were identified, of which the most important were selected, and non-essential elements were removed.

In the context of those discussed, 13 actions were identified for previously prioritized technologies for climate adaptation of the health sector. The most important part of the actions is occupied by the adaptation of the normative framework and the allocations from the state budget for the health sector, focused not only on the fight against communicable, non-communicable diseases, but also on the health of disadvantaged people, who otherwise suffer most from sudden climate changes.

At the same time, part of the actions is oriented on the financial aspect at the level of central public authorities (CPA), in terms of reviewing the allocations from the state budget for the health sector.

Following the analysis of the identified financial, technological, institutional and social actions, as well as those caused by the policy and normative framework, 26 activities were identified for the transfer and dissemination of technologies prioritized by the WG.

Identifying actions for these three priority technologies facilitates the process of identifying factors that will enable the resilience of the health system to climate change.

At the same time, at the previous stages by the GL, logical problem analysis (ALP) was applied, to identify basic problems in technology transfer. Also, based on cause/effect relationships, problem trees were established) for each of the three technologies and the consequences of not solving them.

Using problem trees, it was possible to bring together the key elements of problems, applying logical analysis of interconnected elements to identify links between problem elements and external factors. Thus, problem trees were used to identify actions and activities to remedy or eliminate problems that would stand in the way of implementing technologies prioritized by GL.

During the discussions of the WG appointed by the Ministry of Health, the recommendations of the Capacity Development Plan in support of the national climate change adaptation planning process in Moldova (developed in 2021 within the NAP-2 process supported by UNDP) were taken into account, the transfer and diffusion of technology in different market conditions were taken into account, and the identification of actions are intrinsically linked to market characteristics.

All 3 technologies selected for the health sector are assigned to the category "non-market goods – publicly supplied goods". This classification was made because these technologies will be implemented by public entities such as the Ministry of Health, the National Agency for Public Health (ANSP) as well as by SPIs, the community and medical staff. The allocation of financial means for the implementation of technologies depends directly on government policies. Also, the favorable environment that will be used across the institutional range, the existing regulatory framework or its adjustment possibilities, as well as policies to promote and facilitate technology transfer were also considered.

The identified actions were distributed into broad categories and subsequently activities were established for each action. In this respect, financial actions have largely focused on reviewing the investment policy framework and identifying means of financing around adapting the health system to climate change. Part of the actions identified were mostly aimed at technical equipment of the system, revision of programs and methodologies to ensure reporting, recording, retention and processing of information on diseases and public health events caused by climate change.

At the same time, institutional and social actions are also very important to the resilience of the health system to climate change. Here, for the most part, they are concerted around the identification of medical personnel trained and specialized in identifying cases of non-communicable and communicable diseases caused directly or indirectly by environmental factors and climate change.

Action on the policy and regulatory framework has proven to have a big impact on the health system. The policies developed by the Ministry of Health are proving to be relatively good, but overall, their degree of implementation seems low. At the same time, policy documents, guidelines and protocols related to the adaptation of the public health system to climate change will be developed.

Applying Logical Problem Analysis (ALP), the previous steps analyzed the circumstances under which these opportunities could be achieved and set goals for each technology, organizing them into the goal tree. This included country-specific circumstances, the existence of conditions and resources that could be upgraded or subject to change as government response actions. In this context, for the technologies prioritized for the adaptation of the health sector to climate change, actions and activities to overcome barriers were identified.

Activities in overcoming barriers related to financial aspects are common and are largely focused on identifying state financial means and/or allocated by external partners for the health system and adaptation to climate change.

To overcome technological barriers, activities have been established to restructure and reform the operational management of technologies and, to a large extent, to strengthen the capacities to monitor the implementation of technologies. At the same time, an important emphasis will be placed on carrying out feasibility and scientific studies in demonstrating the socio-economic impact following the implementation of the respective technologies.

In order to overcome social and institutional barriers, activities have been established that can place special emphasis on training staff in reporting cases of non-communicable diseases, alerts on public health events caused by climate change, as well as providing the health system with technical equipment, and infrastructure necessary to ensure continuous monitoring and reporting of cases of non-communicable diseases and creating conditions for adaptation to changes in the health status of the population, including caused by climate change.

Work on the policy and regulatory frameworks largely consists of updating and revising existing policy documents with the aim of further developing public health measures, including climate and environmental change.

The actions to implement these three technologies are also described the main areas where governments can influence changes in the regulatory framework to promote technology transfer.

The technology "Digitalization of the system for providing climate services and surveillance of non-communicable diseases and their risk factors" provides, as a pilot project, the establishment of an information system for surveillance of communicable diseases, including caused by climate change, managed by the National Agency for Public Health, which, as owner of the information system, following the examination of available information, will develop and consolidate; public health policies for the resilience of the health system to climate change in order to mitigate its impact on population health.

The technology "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" largely provides for the revision of the regulatory framework and standard operational procedures for early response to the impact of climate change on the health of the population by implementing relationships cross-sectoral activities of all actors and authorities having direct and/or indirect activities in addressing public health emergencies of any cause, but in particular those caused by sudden climate change.

The technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" provides as a pilot project the resilience to climate change of 35 public medical and sanitary institutions by providing them with water and sanitation, as well as access to safe sources of water supply and ensuring with infrastructure for recycling waste resulting from medical activities.

Summary of the action plan on prioritized technologies

Ambition	Actions	Necessary activities to implement	Period	Risks
I. Technology "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"				
Streamlining the processes of management and record of cases of non-communicable diseases and public health events, including those related to climate change, for the purpose of developing public health measures	1: Creation of an information system for surveillance of communicable diseases caused by climate change and provision of medical personnel employed in the management of NTDs	1.1: Establishment of an information system for surveillance of communicable diseases and their risk factors due to climate change.	2024	<ul style="list-style-type: none"> • Does not provide functionalities required under the Legal Framework in the field of state supervision in public health • Political and economic instability. • Bureaucratization of the process of adopting normative acts and updating the GD with long delays. • Lack of a consolidated mechanism to attract investment projects. • Lack of a mechanism to disaggregate non-communicable diseases caused by climate change. • Migration of trained medical personnel. • Identification of policy implementation indicators. • Lack of feasibility studies on the
		1.2: Review the sectoral legislative and regulatory framework and update the staff of institutions subordinated to the Ministry of Health and their subordinate agencies (as relevant) to include responsibilities on medical staff on climate change.	2024	
		1.3: Revision of Government Decision 1396/2003 On the training of resident doctors and pharmacists and the placement of young specialists.	2024	
	2: Technical endowment of medical institutions with technical means of interconnected program and methodologies designed to ensure the recording, storage and processing of data on diseases caused by climate change	2.1: provision of technical equipment to public medical and sanitary institutions to provide at least 5000 computers.	2023	
		2.2: Establish a mechanism for detecting NTD risk factors, including conditioned by climate change.	2023	
		2.3: Training of medical staff in the field of primary, emergency and hospital health care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change.	2024	
	3: Review of the policy and regulatory framework on digitalization of the health system and the impact of climate	3.1: Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change;	2023	

	change on population health	3.2: Create a system of interconnection and sharing of health data to facilitate research and undertake public health measures in relation to climate change, including gender.	2023-2024	implementation of regulations.
		3.3: Development of guidelines and regulations on health interrelations and resilience of the health system to climate change.	2023-2024	
II. Technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"				
Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. At the same time, the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. should be clearly stipulated. To remove these shortcomings, SOPs will be developed on early warning, on preventing and combating floods, on air pollution, etc.	1. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena	1.1. Interconnection of early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, to increase the resilience of the health system to climate change.	2023-2025	<ul style="list-style-type: none"> ● Inability to implement the regulatory framework on intersectoral relations on early warning. ● Failure to report alert cases and delay in the development of public health measures. ● Bureaucratization of the process of adapting operating standard procedures. ● Reduced time frame and reduced number of population health specialists in relation to climatic factors. ● Lack of indicators to assess the wear condition of technical equipment and software.
		1.2. Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within designated sectoral institutions (data holders).	Permanently	
		1.3. Develop and implement standard procedures for collecting and sharing climate-relevant data and information for the health sector, including gender.	2024	
	2. Targeted capacity building on management, use and sharing of climate information in relation to public health	2.1. Introduce mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change.	Annual	
		2.2. Identify data/information gaps on climate change, including gender and climate change, and develop research projects in collaboration with the scientific community.	2023-2024	

	3. Create a coordinated system for collecting and managing data on climate change in relation to the health status of the population	3.1. Making an inventory of information, existing tools and technologies and software used by medical and sanitary institutions and identifying the needs.	2023	<ul style="list-style-type: none"> ● Lack of mechanisms to assess climate impact on climate change. ● The presence of information gaps and skepticism among civil society about the risks caused by climate change. 	
		3.2. Digitization of climate and meteorological data available at the State Hydrometeorological Service and their report on the health status of the population.	2023-2024		
	4. Raising awareness and training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact	4.1. Implementation of a national information campaign on the risks caused by climate change on public health.	2025-2030		
		4.2. Development and implementation of gender-sensitive lifelong learning programs focusing on methodologies and approaches to assessing climate impact and health vulnerability to climate change, as well as public health measures.	2025-2030		
III. Technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"					
<p>Reduce by 20% by 2025 the number of epidemic outbreaks of infectious diseases and the incidence of diseases conditioned by water and water quality. At the same time, the Republic of Moldova must ensure by 2025 100% of the population's access to improved sanitation systems, including up to 50% to sewerage systems, so technology number 3 identified by GL becomes a priority and falls under the scope of this normative act.</p>	1. Increasing the resilience of the health sector through investments in water supply and sanitation and management of waste resulting from medical activities	1.1. Promoting investments in the development and modernization of aqueduct and sewerage infrastructure of 35 district medical and sanitary institutions.	2023-2027	<ul style="list-style-type: none"> ● Lack of investment funds. ● Lack of indicators to identify health costs in the absence of aqueduct and sewerage. ● Failure to identify water supply problems to medical and sanitary institutions. ● Aqueduct and recycling systems for waste resulting from impracticable medical activities. 	
			1.2. Implementation of recycling technologies for waste resulting from medical activities.		2023-2027
			1.3. Assessing the costs of health services for people (women/men), whose health was affected by the lack of aqueduct and sewerage and poor management of waste processing resulting from medical activities), as well as the costs of recovering the impact of climate change on the infrastructure of the health sector.		2024
		2. Evaluation of water supply infrastructure at rural and urban level	2.1. Mapping of vulnerable healthcare institutions regarding water supply and		2026

	based on the quantity and quality of water resources in the context of the new water supply and sanitation strategy, as well as medical waste management	sanitation, as well as of the management of waste resulting from medical activities, to make the health sector resilient to climate change.		<ul style="list-style-type: none"> ● Bureaucratization of the policy framework and delay in its implementation. ● Civil society's skepticism and mistrust in health risks in the context of climate change. ● Lack of action plans and response to public health emergencies in the context of sudden climate change.
		2.2. Adaptation of existing aqueduct and recycling systems of medical waste for resilience to extreme climate change.	2024-2026	
	3. Development and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity	3.1. Revision of sanitary regulations with their extension to the activity of all natural/legal persons and activities/research, regardless of the type of ownership and legal form of organization that generates waste resulting from medical activity.	2024-2025	
		3.2. Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity.	2024-2026	
		3.3. Regularly update and improve institutional contingency plans for preparedness and response to public health emergencies, including those caused by climate change, in the context of providing public healthcare institutions with aqueducts and recycling devices for waste resulting from medical activities.	Permanen t	

6.1. Health sector overview

The Health System of the Republic of Moldova is organized in accordance with the principles of universal access to the main health services, equity and solidarity in financing health care, being financed both by the state and by citizens, through mandatory health insurance.

Public medical and sanitary institutions (PMSI) at the level of primary and secondary health care (territorial hospitals) provide services to communities and belong to local public authorities. In

each district there are also providers of urgent medical assistance (ambulance services), belonging to the Ministry of Health (MoH). The PMSI at tertiary level provides specialized and highly specialized support to the entire population; Most tertiary level institutions are in mun. Chisinau and belong to MS.

PMSIs are autonomous, non-profit, self-financing organizations that are contracted directly by National Insurance Health Company (NIHC) for the provision of medical services within mandatory health insurance. Some medical services are provided by the private sector and private healthcare providers may be contracted by NIHC.

The institutions with regulatory, licensing, accreditation functions, as well as carrying out state supervision of public health, are financed from the state budget through the Ministry of Health, under whose subordination they are. Through state public health surveillance institutions, MoH collects and analyzes data to generate relevant information to help develop sectoral policies.

The health system in Moldova includes a combination of public and private medical and sanitary management institutions, as well as public agencies and authorities involved in the provision, financing, regulation and administration of health services.

To build health systems and climate resilience, in the context of health system adaptation actions, the functions of the health system need to be clearly defined based on a common understanding. In line with WHO recommendations, it is proposed that the health sector must take on a key role in protecting the health and well-being of the population from the impacts of climate change. Of major importance in developing an adaptability strategy is the fact that the health system has direct control over the functions of prevention, treatment or, indirectly, the function of guiding policies. This means that the Ministry of Health or another public health institution at national level must assume leadership and regulatory roles, advocacy in collaboration with institutions in other health-related sectors, such as those in aquatic resources management, emergency situations and communications, urban planning, housing, transport, waste management, food industry and agriculture.

Currently, the Republic of Moldova is facing economic and social difficulties, and the burden of non-communicable diseases (NCDs) caused by climate change is causing pressures on both the health system and the sustainable development of the country. Awareness of the impact of climate change on public health, as well as adaptation of global and regional instruments to the national context, will encourage the setting of national priorities and the strengthening of public health policies in the field of prevention and control of diseases caused directly or indirectly by climate change.

The documents adopted by the Republic of Moldova in the field of climate change include, on the one hand, the health sector among vulnerable sectors, and on the other hand, among the sectors that can make a significant contribution to mitigating the effects of climate change, including for other sectors (water, agriculture, forestry, etc.). The most important documents to address the impact on public health because of climate change are:

- 1) National Strategy for Public Health for 2022-2031, draft law approved by GD 377/2022.

- 2) National Program for Prevention and Control of Priority Non-Communicable Diseases in the Republic of Moldova for 2023-2030 (draft GD).
- 3) National Program for the implementation of the Water and Health Protocol for 2016-2025, approved by GD 1063/2016.

These documents emphasize that one of the specific objectives of the health system is to ensure health protection by streamlining control over behavioral and environmental risk factors, and to achieve the specific objective, the following tasks are drawn:

- 1) Improving the legal and regulatory framework in the field of health protection by aligning it with international regulations.
- 2) Strengthening the capacities of the State Public Health Surveillance Service to assess, manage and communicate information on public health risks and establishing the collaboration mechanism with other services in this field.
- 3) Strengthening the capacities to identify and manage health risks of other authorities with responsibilities in the field of health protection (environmental health, occupational health, food safety).

At the same time, for the technologies prioritized on the health sector, as preliminary objectives and targets, the following are foreseen:

- 1) Elaboration of an Information System for Statistical Evidence of Non-Communicable Diseases that will allow the collection of data on health indicators for the general population, and their disaggregation into men, women, by age groups, children, adults, ethnic group, level of education and quintile by income. This system will allow obtaining real-time data for detailed analysis and argumentation of actions to reduce the prevalence of diseases and influence health determinants in relation to the environment.
- 2) Reduce by 20% by 2025 the number of epidemic outbreaks of infectious diseases and the incidence of diseases conditioned by water and water quality. At the same time, the Republic of Moldova must ensure by 2025 100% of the population's access to improved sanitation systems, including up to 50% to sewerage systems, so technology number 3 identified by GL becomes a priority and falls under the scope of this normative act.
- 3) Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. At the same time, the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. should be clearly stipulated. To remove these

shortcomings, SOPs will be developed on early warning, on preventing and combating floods, on air pollution, etc.

- 4) Location of dam incineration plants in healthcare institutions to reduce emissions caused by DAM and ensure better infection control in medical institutions.

6.2. Technology Action Plan "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

6.2.1. General description of the technology "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

The continuous analysis of public health indicators, including through information technologies, is an important area for monitoring non-communicable diseases (NCDs) and the risk factors that determine them, but the various databases that are collected by several institutions involved in the analysis of data in public health (NSB, NIHC, ANSP), are not interoperable, remain fragmented, generalized, without complete disaggregation and difficult to manage. Data on health determinants and risk factors including caused by climate change, especially related to targets and progress indicators, are not collected systematically, operational research is not a priority and is conducted ad hoc and inconsistent, existing data are incomplete and reflect only part of the problems. There is a lack of a system for checking the quality of data, for which reason their comparability at national and international level cannot be ensured.

The technology "Digitalization of the system for climate service delivery and surveillance of non-communicable diseases and their risk factors" (SI SBNT) has been selected as the main activity for enhanced management to ensure the digitalization of processes for systematic and continuous collection, analysis, interpretation and dissemination of health data on non-communicable diseases, in the context of their spread over time, space, population group and analysis of risk factors for contracting these diseases, including in epidemiological studies. The overall aim of SI SBNT is to improve the process of record-keeping, management and reporting of cases on non-communicable diseases and to assess risk factors, including those related to climate change.

The owner of SI SBNT will be the state that will realize its ownership, management and use of data from it and the implementation will be carried out by NPHA with the participation of PMSI regardless of legal status and form of ownership. The legal framework of SI SBNT will consist of national legislation, international agreements and conventions to which the Republic of Moldova is a party, as well as normative acts regulating the health system. Technology activities include exchange of experience between national institutions involved in the process, but also with similar institutions in neighboring countries (Romania, Ukraine, etc.). The technology will facilitate the management and record keeping in the field of state epidemiological surveillance of non-communicable diseases, covering business-processes related both to ANSP activity and to relations with healthcare providers in healthcare sectors.

The basic tasks to be performed in the operation of SI SBNT are as follows:

- 1) Streamlining the processes of managing and recording cases of non-communicable diseases and public health events, including those related to climate change.
- 2) Automation and digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors.
- 3) Creating and developing the information source for recording and monitoring the direct and indirect climate impacts, as well as their effects on the health of the population, laboratory investigations, as well as other relevant information.
- 4) Standardizing procedures, forms and nomenclatures for reporting cases of climate-related non-communicable diseases.
- 5) Collecting and processing information on determinants of health.

The realization of the mechanism and responsibility in decision-making within the information system will be transparent and clear for society, patients and medical staff. Permanent reporting to citizens of health indicators and strategic results achieved will be ensured.

Taking public health measures is a very complex operation and is qualified as an indispensable component of the health sector's adaptation to climate change. The main effects/benefits of implementing the respective technology being:

1. Benefits for the state:

- a. Monitoring the emergence of new cases or recurrence of cases of non-communicable diseases subject to registration and notification in the SI SBNT, as well as cases of non-communicable diseases of unknown origin caused by climate change.
- b. Monitoring the evolution of a public health situation through non-communicable diseases in a territory in case of sudden changes in weather.
- c. Phasing out paper-based data management using electronic information and documents.
- d. Rapid communication between SI SBNT entities, using electronic means to ensure the flow of information.
- e. Using the potential of contemporary electronic technologies in collecting and processing data to identify climate impacts, vulnerabilities and risks to support the development of policies for adaptation of the medical system to climate change.

- f. Developing and providing electronic services to citizens, including by submitting applications online.
 - g. Ensuring interoperability with other information systems for the delivery and consumption of information.
 - h. Securing information with limited accessibility, by implementing a system access policy for each entity/user, depending on specific competences.
2. Socio-economic benefits:
- a. Following the implementation of public health measures and behavioral changes, it is foreseen to reduce the human and economic consequences caused by NTDs, including caused by climate change, felt by authorities and entrepreneurs, regardless of legal status and form of ownership.
 - b. Ensuring that different sectors are responsive to health issues related to NTDs and exposure to risk factors caused by climate change; reducing the medical, social and economic burden associated with non-communicable diseases.
 - c. Ensuring financial protection of the population; creating environments, places, conditions to facilitate the adoption of a healthy lifestyle; increasing the effectiveness of the system of provision of health, social and education services by rationalizing the distribution of financial resources; ensuring transparency of financing actions and interventions in the field of inclusive prevention of NTDs caused by climate change and health promotion, increasing the degree of funding for this field and rationalizing the use of state budget resources.
3. Capacity building, technology transfer and diffusion:
- a. Coordinating health promotion activities and determining priorities for interventions through NPHA and territorial subdivisions, by strengthening institutional capacities, motivating and employing specialists in the field of health promotion, which otherwise remains a priority for the health system of the Republic of Moldova.
 - b. Providing primary and continuous health care services, including climate change health promotion services at individual, family and community levels by providing minimal advice on responding to potential climate change and its indirect influence on the health status of the individual.

- c. Capacity building in joint activities to promote health and prevent diseases caused by environmental factors by involving community health care and ensuring the collaboration of the multidisciplinary team within LPA.

SI SBNT will have the following objectives:

1. Digitization, automation and streamlining of processes aimed at improving the prevention and control of non-communicable diseases and public health events caused by determinants and climate change.
2. Developing capacities to record, manage, analyze and react to events with negative impact on public health, surveillance of public health events, including by implementing the early warning and rapid response system.
3. Improving the work of the health system in the context of managing cases of non-communicable diseases and public health events.

6.2.2. Ambition of technology deployment "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

The technology will correspond to sectoral priorities on the digitalization of the health system in the context of the lack of an information system for collecting data on the epidemiological situation through non-communicable diseases and the methods used by NPHA have multiple deficiencies both physically and operationally. The technologies currently applied are outdated by time, do not provide the necessary functionalities according to the Legal Framework in the field of state supervision in public health and are not aligned with the current requirements of national information systems. At the same time, the technology will represent an advanced IT solution for creating and managing notifications about cases of non-communicable diseases and public health events, including because of climate change. This will involve automating the process of recording and managing notifications and relevant information, such as primary diagnosis; final diagnosis; symptoms/manifestations of the disease; results of laboratory investigations, information on treatment and evidence of treatment administration, but also evidence and dissemination of information on the investigation of public health events.

SI SBNT will have the following objectives:

1. Digitization, automation and streamlining of processes aimed at improving the prevention and control of non-communicable diseases and public health events caused by determinants and climate change.
2. Developing capacities to record, manage, analyze and react to events with negative impact on public health, surveillance of public health events, including by implementing the early warning and rapid response system.

3. Improving the work of the health system in the context of managing cases of non-communicable diseases and public health events.

6.2.3. Actions and activities selected for inclusion in TAP

6.2.3.1. Summary of barriers and measures to overcome barriers

Following the barrier assessment exercise, the long list of key and non-key barriers was screened, keeping the focus on the objective, namely the transfer and diffusion of the above-mentioned technology.

Another tool used in the barrier analysis process was logical problem analysis (ALP/LPA) for analyzing causal relationships and basic problems in technology transfer. The problems were arranged in a hierarchy of causes and effects, with a central/generic startup problem for technology transfer. As a fundamental cause of the problem, the small-scale use of information technologies within the health system was identified, as the endowment of PMSIs with computers and software that are outdated by time, does not provide necessary functionalities according to the Legal Framework in the field of state supervision in public health

The results of the barrier identification, detailing and ranking exercise are presented in Table 6.1.

Table 6.1: Ranking list of barriers to technology transfer for developing a surveillance information system for non-communicable diseases and their risk factors, including climate change

NR	Key barriers	Detailed description of the barrier
I	Funding gap for the creation, establishment, and development of the information system	According to estimated calculations, the cost of such technology will have an impact on the budget allocated to the health system in the person of the Ministry of Health and ANSP, in the amount of 198 thousand USD.
	Funding gap for the creation, establishment, and development of the information system	In accordance with Government Decision nr. 375/2020, powers of attorney in information systems are made based on electronic signature, which must also be provided from the health system budget.
II.	Poor technical facilities in the field of interconnected program technical means and methodologies, which is intended to ensure the recording, storage, processing and use of information	The technical equipment within public medical institutions is often outdated or in many cases even missing, which often leads to deterioration of the process of record-keeping, management and reporting of cases on non-communicable diseases.
III.	Insufficient provision of medical personnel employed in NTD management, especially in rural localities	The provision of family doctors and assistants to family doctors in public medical-sanitary institutions is insufficient and uneven, especially the population in districts is poorly provided with medical staff, and in some regions.

	Refusal of medical staff to work according to the distribution made by MoH	Graduates of postgraduate residency studies do not engage in the labor market in accordance with the signed contract, and MH does not have real mechanisms to attract them to accountability, in this regard a large part of the population remains uninsured with medical personnel.
	Political, economic and social instability	Political problems can lead to the disadvantage of vulnerable groups and the rapid progression of non-communicable diseases, which will be addressed by developing and implementing a mechanism to manage the increased risks of vulnerable people, including those living with NTDs.
IV.	Low degree of implementation of policy documents and regulatory framework in the field of health	The regulatory framework in the field of health is relatively good, but insufficiently implemented and put into practice. Especially in the field of digitalization and state supervision of public health. Most policy documents are implemented without considering collaboration mechanisms with local and central public authorities.
	Lack of regulatory framework to interconnect and pool health data to facilitate research and take measures to improve health.	The enormous potential of health data for medical research is not realized without a single database on the health status of the population, including in the context of continuous climate change.

6.2.3.2. Activities identified for the implementation of selected actions

Analyzing the aspects related to the technology "Digitalization of the climate service delivery system and surveillance of non-communicable diseases and their risk factors", a set of actions aimed at implementing that technology was identified. Thus, to overcome the barriers that stand in the way of technology implementation, 12 measures were identified to overcome the barriers. In the current process, for the technology Digitalization of the climate service delivery system and surveillance of non-communicable diseases and their risk factors were selected and consolidated in 3 major actions. At the same time, the WGs identified 12 activities that would simplify the implementation of this technology, also based on the purpose of gradually overcoming the barriers identified to its transfer.

Table 6.2: Actions and activities aimed at implementing the technology "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

Name of shares	Necessary activities to implement
1. Creation of an Information System for surveillance of non-communicable diseases caused by climate change and provision of medical personnel employed in NTB management	1.1 Establish an information system for surveillance of non-communicable diseases and their risk factors due to climate change
	1.2 Review the sectoral legislative and regulatory framework and update staff of institutions subordinated to the Ministry of Health and their subordinate agencies (as relevant) to include responsibilities on medical staff on climate change
	1.3 Revision of Government Decision 1396/2003 on the training of resident doctors and pharmacists and the placement of young specialists

2. Technical endowment of medical institutions with technical means of interconnected program and methodologies designed to ensure the recording, storage, and processing of data on diseases caused by climate change	2.1 Attracting investment projects to provide public medical and sanitary institutions with technical equipment to provide at least 5000 computers
	2.2 Establish a mechanism for detecting NTD risk factors, including conditioned by climate change
	2.3 Training of medical staff in the field of primary, emergency and hospital health care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change
3. Review of the policy and regulatory framework on digitalization of the health system and the impact of climate change on population health	3.1 Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change;
	3.2 Create a mechanism to interconnect and pool health data to facilitate research and undertake public health measures in relation to climate change, including gender.
	3.3 Development of guidelines and regulations on health interrelations and resilience of the health system to climate change

The technology for digitizing the system for providing climate services and surveillance of non-communicable diseases and their risk factors will start with the establishment of an information system that will aim to continuously screen the health status of the population in relation to environmental factors, and as a result the trained specialists of the National Agency for Public Health will develop public health measures aimed at adapting the health system to changes Climate.

At the same time, the Ministry of Health will review the sectoral legislative and normative framework, updating the staff of the institutions subordinated to the Ministry of Health and their subordinated agencies (according to relevance) to include responsibilities on medical staff regarding climate change.

At the same time, it remains imperative to technically equip medical institutions with technical means of interconnected programs and methodologies designed to ensure the recording, storage and processing of data on diseases caused by climate change, as long as the computer technology and software currently used by medical institutions.

6.2.4. Stakeholders and timeline for TAP implementation

The owner of SI SBNT will be the state that will realize its ownership, management and use of data from it and the implementation will be carried out by NPHA with the participation of PMSI regardless of legal status and form of ownership. The legal framework of SI SBNT will consist of national legislation, international agreements and conventions to which the Republic of Moldova is a party, as well as normative acts regulating the health system. Technology activities include

exchange of experience between national institutions involved in the process, but also with similar institutions in neighboring countries (Romania, Ukraine, etc.). The technology will facilitate the management and record keeping in the field of state epidemiological surveillance of communicable diseases, covering business-processes related both to ANSP activity and to relations with healthcare providers in healthcare sectors.

Table 6.3: Stakeholder analysis by implementation activities for the technology "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

Actions/components	Necessary activities to implement	Institutions/structures involved	Period
1. Creation of an Information System for surveillance of non-communicable diseases caused by climate change and provision of medical personnel employed in NTB management	1.1 Establish an information system for surveillance of non-communicable diseases and their risk factors due to climate change	Ministry of Health, National Agency for Public Health	2024
	1.2 Review the sectoral legislative and regulatory framework and update the staff of institutions subordinated to the Ministry of Health and their subordinate agencies (as relevant) to include responsibilities on medical staff on climate change	Ministry of Health	2024
	1.3 Allocation of sources, procurement of software and servers to ensure the functioning of the information system and surveillance of non-communicable diseases caused by climate change:	Ministry of Health	2024
2. Technical endowment of medical institutions with technical means of interconnected program and methodologies designed to ensure the recording, storage and processing of data on diseases caused by climate change	2.1 Attracting investment projects to provide public medical and sanitary institutions with technical equipment to provide at least 5000 computers	Ministry of Health, National Agency for Public Health, Ministry of Finance, WHO Regional Office	2023
	2.2 Establish a mechanism for detecting NTD risk factors, including those conditioned by climate change	Ministry of Health, National Agency for Public Health, National Health Insurance Company	2023-2024
	2.3 Training of medical staff in the field of primary, emergency and hospital health care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change	Ministry of Health, National Agency for Public Health, State University of Medicine and Pharmacy "Nicolae Testemitanu"	2024
3. Review of the policy and regulatory framework on digitalization of the health system and the impact of climate change on population health	3.1. Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change	Ministry of Health	2023
	3.2 Create a mechanism to interconnect and pool health data to facilitate research and undertake public health measures in relation to climate change, including gender.	Ministry of Health, National Agency for Public Health, National Health Insurance Company	2023-2024

	3.3 Development of guidelines and regulations on health interrelations and resilience of the health system to climate change	Ministry of Health Ministry of Environment, National Agency for Public Health, Nicolae Testemitanu State University of Medicine and Pharmacy	2023-2024
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At the same time, in order to implement the digitization technology, in parallel with the above-mentioned activities, training actions will be carried out for medical staff in the field of primary, urgent and hospital health care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change, and the creation of a mechanism to interconnect and pool health data to facilitate research and undertake public health measures in relation to climate change, including gender.

For the development of direct technology, the mechanisms established by the legislation in the field of digitization of the health system (GD 586/2017 on the approval of the Regulation on how to keep the Medical Register) will be used. Technology activities include the establishment of a system of reporting by PMSIs regardless of the form of legal ownership and organization of cases of non-communicable diseases caused directly or indirectly by climate change. The technology will facilitate the monitoring of cases of non-communicable diseases caused as well as the assessment of their risk factors for a subsequent undertaking of health measures and the revision of the regulatory framework to make the health system resilient to the continuous change of weather.

6.2.5. Estimate of resources needed for actions and activities

The estimated value of the financial resources needed for the actions aimed at implementing the technology "Digitization of the climate services provision system and surveillance of non-communicable diseases and their risk factors" amounts to a total of 6,846,000 lei.

Due to the current state in the health sector (shortage of trained personnel in climate change management, in the field of using reporting software; shortage of technique and equipment, etc.), the technology implementation process must start with extensive capacity building activities (institutional; staff; technical equipment; creation/rehabilitation, etc.).

Table 6.4: Resources needed for actions to implement technology "Digitalization of climate service delivery system and surveillance of non-communicable diseases and their risk factors"

Name of shares	Implementation period	Action budget, MDL	Proportion%
1. Creation of an Information System for surveillance of non-communicable diseases	2023-2024	800.000	11,6

caused by climate change and provision of medical personnel employed in NTB management			
2. Review the sectoral legislative and regulatory framework and update the staff of institutions subordinated to the Ministry of Health and their subordinate agencies (as relevant) to include responsibilities on medical staff on climate change	2023-2024	1.640.000	23,9
3. Allocation of sources, procurement of software and servers to ensure the functioning of the information system and surveillance of non-communicable diseases caused by climate change;	2023-2025	4.400.000	64,3
Total		6.840.000	100

"The development of an information system for surveillance of non-communicable diseases and their risk factors, including those conditioned by climate change" are essential and largely depend on the regulatory framework and the capacities of medical staff to interact with information systems and understanding the need to transfer such technology. The awareness of the Government, Central Public Authorities and finally by the Ministry of Health, the importance of collecting informational data about the health of the population influenced by climate change and taking the necessary public health measures will have a great impact on the implementation of health policies.

6.2.6. Management planning

6.2.6.1. Risk and emergency assessment

According to the classification within the guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015) the technology "Development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change "non-market goods - publicly supplied goods". Because that technology is will be fulfilled and disseminated by a public entity (ANSP) to a large population of users and/or beneficiaries. Major investments in the technology tend to be decided at government level and depend largely on policies adopted by the Ministry of Health. It also notes that the main result of the technology is to reduce the medical, social and economic burden associated with non-communicable diseases and their risk factors, including those conditioned by climate change.

An initial step in identifying barriers to the diffusion of this technology was to study policy documents and other pertinent documents to identify the main reasons why this technology has not been widely used today and why central public authorities (CPAs) have not invested in it. In conclusion, since for non-market technologies, it is generally not the user who decides to invest in the technology in question and, consequently, it is difficult to predict that the user will see a benefit in using the technology after it has been purchased/implemented. The conclusion is supported by the experience that the Ministry of Health has with other information systems (SIPHC, SIAMS,

SISAE) that beneficiaries did not find exactly useful, and which were underdeveloped and do not provide necessary functionalities according to the Legal Framework in the field of state supervision in public health and are not aligned with the current requirements of national information systems. It also notes that the costs and benefits for most non-market technologies are not experienced by the same person or entity.

Table 6.5: Risks associated with the implementation of the technology "Digitalization of the climate service delivery system and surveillance of non-communicable diseases and their risk factors"

Risks	Categories	Anticipation/mitigation actions
I. Financial and social risks		
1.1. Funding gap for the creation, establishment, and development of the information system	Medium	The digitalization of the health system is one of the specific objectives of the draft Health Strategy 2022-2030 "Strengthening the surveillance system in the field of public health and assessing the impact of public health interventions", with the subpoint digitalization with the integration of surveillance systems
1.2. Lack of a robust regulatory framework on financing the digitalization of the health sector	Minim	These aspects are to be reassessed following the strategy of strengthening the health surveillance system and initiating the digitalization campaign of the health sector as one of the objectives of the health strategy.
II. Institutional, technological and regulatory risks		
2.1. Poor technical facilities in the field of interconnected program technical means and methodologies, which is intended to ensure the recording, storage, processing and use of information	Medium	Following the investment projects of the partners for the development of the health field, the technical equipment within the public medical institutions is constantly renewed. Thus, by the end of 2024, with the help of WHO, the public health system is to regenerate the entire communicable disease surveillance network.
2.2. Low ability to use information systems	Minim	Training of medical staff in the field of primary, hospital and public health care by implementing training courses within the public health department of Nicolae Testemitanu State University of Medicine and Pharmacy
2.3. Reduced ability to detect NTD risk factors, including climate change	Minim	The institutions involved in the process (National Public Health Agency with the Territorial Centers of Public Health) have certain technical capabilities and qualified personnel to ensure the conduct of information

		<p>campaigns on population resilience and Institutions Health and Health at climate change</p> <p>In the process of implementing the technology, the Health Promotion Directorate will train specialists to conduct these informative campaigns</p>
III. Policy and regulatory framework risks		
3.1. Low degree of implementation of policy documents and regulatory framework in the field of health	Medium	Daily reporting through the Information System for the Surveillance of Non-Communicable Diseases, including cases caused by climate change, of cases of diseases and systematic evaluation of these reports by including an execution point in the government decision by which it is to be established.
3.2. Lack of regulatory framework to interconnect and pool health data to facilitate research and take measures to improve health.	Minim	Digital services will empower citizens by making it easier for them to take a greater role in managing their health, if they can follow prevention guidelines and if they are motivated to adopt healthier lifestyles, manage chronic conditions and provide feedback to healthcare providers.

6.2.6.2. Next Steps

The main objective of implementing TAP is to establish an information system and an evaluation of computer technology in PMSI with the establishment of training courses for medical staff engaged in monitoring and evaluation of climate risk factors, as well as to review the policy framework directly related to the implementation of public health measures in order to protect the health of the population and the resilience of the health system to changes in environmental factors and sudden changes in climate.). This prioritization, but also the new technical capabilities are the foundation for the successful implementation of the technology.

6.2.7. TAP overview table for Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors

Technology Action Plan "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"	
Sector	Health
Technology	Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors
Ambitions	Elaboration of an Information System for Statistical Evidence of Non-Communicable Diseases that will allow the collection of data on health indicators for the general population, and their disaggregation into men, women, by age groups, children, adults, ethnic group, level of education and quintile by income. This system will allow obtaining real-time data for detailed analysis and argumentation of actions to reduce the prevalence of diseases and influence health determinants in relation to the environment.
Benefits	Benefits for the state: (i) monitoring the emergence of new cases or recurrence of cases of non-communicable diseases subject to registration and notification in SI SBNT, as well as cases of non-communicable diseases of unknown origin caused by climate change; (ii) monitoring the evolution of a public health situation through non-communicable diseases in a territory in the event of sudden changes in weather; (iii) phasing out paper-based data management through the use of electronic information and documents; (iiii) rapid communication between SI SBNT entities, using electronic means to ensure the flow of information; Socio-economic benefits: (i) following the implementation of public health measures and behavioral changes, it is foreseen to reduce the human and economic consequences caused by NTDs, including caused by climate change, felt by authorities and entrepreneurs regardless of legal status and form of ownership; (ii) ensuring that different sectors are responsive to health issues related to NTDs and exposure to risk factors caused by climate change; reducing the medical, social and economic burden associated with non-communicable diseases; (iii) ensuring the financial protection of the population; creating environments, places, conditions to facilitate the adoption of a healthy lifestyle; increasing the effectiveness of the system of provision of health, social and education services by rationalizing the distribution of financial resources; ensuring transparency of financing actions and interventions in the field of inclusive prevention of NTDs caused by climate change and health promotion, increasing the degree of funding for this field and rationalizing the use of state budget resources.

Actions	Implementation activities	Sources of funding	Responsible institutions	Time frame	Risks	Expected result	Monitoring indicator	Estimated cost
MDL								
Action 1 Creation of an Information System for surveillance of non-	1.1 Establishing an information system for surveillance of non-communicable diseases and their risk factors due to climate change	Budget allocated to the Ministry of Health and other sources not prohibited by legislation	Ministry of Health, National Agency for Public Health	2024	Underdeveloped information system does not provide functionality required	The presence and operation of a health data management database that will provide disaggregated data	Government Decision on the establishment of an approved information system.	800,000

communicable diseases caused by climate change and provision of medical personnel employed in NTB management					under the Legal Framework in the field of state supervision in public health	on the health status of the population and will allow the creation of a mechanism for monitoring the health status of the population in relation to climate change		
	1.2 Review the sectoral legislative and regulatory framework and update the staff of institutions subordinated to the Ministry of Health and their subordinate agencies (as relevant) to include responsibilities on medical staff on climate change	State budget	Ministry of Health	2024	Political and economic instability	Creating a framework of policies and standard operational procedures that will indicate the roles and responsibilities of each entity in the application and implementation of response measures in the resilience of the health system to climate change	Revised and implemented legislative framework	96,000
	1.3 Allocation of sources, procurement of software and servers to ensure the functioning of the information system and surveillance of non-communicable diseases caused by climate change:	State budget and other sources not prohibited by legislation	Ministry of Health, National Public Health Agency	2024	Lack of funding for equipment procurement and maintenance	A secure and efficient database of data on climate-induced non-communicable diseases	Endowment of the National Agency for Public Health with a storage server for non-communicable diseases	4.440,000
Action 2	2.1 Provision of technical equipment to public medical and	State budget, Budget allocated to	Ministry of Health, National Public Health	2023	Lack of a consolidated mechanism	Strengthened mechanism for reporting cases of	35 public medical institutions	1,240,000

<p>Technical endowment of medical institutions with technical means of interconnected program and methodologies designed to ensure the recording, storage and processing of data on diseases caused by climate change</p>	<p>sanitary institutions to provide at least 5000 computers</p>	<p>the Ministry of Health and external assistance (NAP-2, OMS)</p>	<p>Agency, Ministry of Finance, Biroul regional OMS</p>		<p>to attract investment projects</p>	<p>climate-related diseases</p>	<p>equipped with computers, software and advanced equipment for reporting diseases caused by climate change.</p>	
	<p>2.2 Establish a mechanism for detecting NTD risk factors, including conditioned by climate change;</p>	<p>Budget allocated to the Ministry of Health, Budget NIHC</p>	<p>Ministry of Health, National Public Health Agency, National Health Insurance Company</p>	<p>2023-2024</p>	<p>Lack of a mechanism to disaggregate climate-related non-communicable diseases</p>	<p>The presence of indicators establishing the interaction of the environment in relation to the health of the population</p>	<p>Tabulated list of ICD-10-EA diseases revised, including diseases caused by climate change and the presence of a mechanism for disaggregation of diseases resulting from climate change</p>	<p>300,000</p>
	<p>2.3 Training of medical staff in the field of primary, emergency and hospital health care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change</p>	<p>Budget allocated to the Ministry of Health, National Agency for Public Health and Nicolae Testemitanu State University of Medicine and Pharmacy</p>	<p>Ministry of Health, National Public Health Agency, SUMP „Nicolae Testemitanu”</p>	<p>2024</p>	<p>Migration of trained medical personnel</p>	<p>Official mandates and responsibilities assigned to relevant subordinated institutions, with financial and human resources provided</p>	<p>User Manual of the information system SI SBNT, approved, Training programs developed; trainings conducted</p>	<p>100,000</p>

Action 3 Review of the policy and regulatory framework on digitalization of the health system and the impact of climate change on population health	3.1 Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change;	The budget allocated to the Ministry of Health and from sources not prohibited by legislation.	Ministry of Health	2023	Lack of policy implementation on indicators	Policy implementation capacity building mechanism	Approved order establishing with nominal composition of the working group	No funding required
	3.2 Create a system of interconnection and sharing of health data to facilitate research and undertake public health measures in relation to climate change, including gender.	The budget allocated to the Ministry of Health and from sources not prohibited by legislation.	Ministry of Health, National Public Health Agency, National Health Insurance Company	2023-2024	Political, economic instability and bureaucratization of policymaking	Mechanism for monitoring the health status of the population in relation to environmental factors and climate change	Government Decision approved on the establishment of a single database for the management of health data, including diseases caused by climate change.	1,000,000
	3.3 Develop guidelines and regulations on health interrelations and resilience of the health system to climate change	The budget allocated to the Ministry of Health and other sources not prohibited by legislation.	Ministry of Health Ministry of Environment, National Public Health Agency, SUMP Nicolae Testemițanu	2023-2024	Lack of feasibility studies on the implementation of regulations	Capacities and skills to address climate-related health challenges and interventions	Nominal revision of the Order of the Ministry of Health no. 867/2020 Approved guidelines	90,000

6.3. Technology Action Plan "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" caused by climate change"

6.3.1. General description of the technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

The technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" provides for the detection as soon as possible of hazards and risks caused by heat waves, cold waves, floods, drinking water pollution, of atmospheric air, for public health in order to approve health measures to prevent the spread of communicable diseases and health events, with the reduction of their consequences for the population.

Operational procedures for early warning and prevention and response actions to mitigate or eliminate the effects of extreme weather events will include the following aspects:

- a. Detection (triage, filtering and selection), verification of information, risk assessment and interpretation of data relating to sudden changes in weather phenomena.
- b. Exchange of information relevant to public health between competent authorities for public health surveillance.
- c. Developing, initiating public health measures and monitoring impacts.
- d. The maintenance of specific surveillance networks by the competent authorities for the surveillance of public health and weather phenomena which may directly or indirectly harm human health.

Monitoring weather hazards that would have a direct impact on public health, assesses the risks of triggering public health emergencies and, if necessary, could declare a state of alert as follows:

- a. Yellow code alert – possible risk of triggering a public health emergency (activation level 1), which includes the occurrence of the public health event with minor/moderate risk of harm to the health of the population and requires precautionary/response measures, in particular information.

- b. Code Orange alert – likely risk of triggering a public health emergency (activation level 2), which includes the occurrence of the public health event at high risk of harm to public health and requires information and response measures.
- c. Code Red alert – imminent risk of triggering a public health emergency (activation level 3), which includes high-risk public health events (national and/or international with major impact on population health) and requires, firstly, concomitant control, surveillance and information measures.

The technology corresponds to the sectoral priorities regarding the early warning system for responding to health events and aims to detect as soon as possible the dangers and risks caused by heat waves, cold, floods, pollution of drinking water, atmospheric air to approve health measures to prevent health events, reducing their consequences for the population.

NPHA in the context of public health surveillance, will be the competent authority responsible for monitoring health hazards and determinants, assessing risks of triggering public health emergencies, communicating risks and carrying out public health measures in cases of extreme weather events.

At the same time, the State Hydrometeorological Service (SHS), the State Ecological Inspectorate (IES), in the first 3 hours after detection, will ensure the operative information of the National Agency for Public Health about extreme weather phenomena in the country, which can influence public health.

At the same time, in certain areas (technical equipment, staff training in the field of acting in extreme situations such as massive fires and / or extreme air pollution) will be coordinated according to competences by the specialists of the General Inspectorate for Emergency Situations (GIES) and other authorities depending on the normative framework to be activated.

Early detection technology for extreme weather events that would pose a threat to health requires continuous robust surveillance and early warning and response mechanisms. The Republic of Moldova lacks structures that allow rapid exchange of information between public health authorities and other authorities such as SHS or GIES, to detect threats as soon as possible. The Early Warning and Response System for the prevention of public health events caused by climate change can be aimed at maintaining and ensuring public safety and health through collaboration and cross-sectoral cooperation, joint efforts of public and private institutions, involving every citizen and society. The technology will specify the activities to be executed by the authorities involved in early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change.

For the transfer of the above-mentioned technology, it is necessary to revise the regulatory basis aimed at early warning and rapid response to changes caused by climate.

6.3.2. The ambition of technology implementation "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

The establishment of this technology involves the activation of intersectoral working mechanisms between the Ministry of Internal Affairs, the Ministry of Agriculture and Food Industry, the Ministry of Environment, the Ministry of Finance, through subordinated institutions, the National Agency for Food Safety, within the limits of their competences, will ensure the exchange of information about the occurrence of events on the territory of the country that may influence public health according to Government Decision nr. 1076 of 16 November 2010 "On the classification of exceptional situations and on the manner of accumulation and presentation of information in the field of protection of population and territory in case of exceptional situations" and Government Decision nr. 961 of 21 August 2006 "On the approval of the Regulation of the national network for observation and laboratory control on contamination (pollution) of the environment with radioactive, poisonous, highly toxic substances and biological agents".

The main and direct benefits of implementing the technology in question are:

1. Benefits for the state:

- a. Proper coordination of the health system due to early warning and rapid response of health services with the undertaking of prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena.
- b. Diminishing the economic and social impact due to the correct management of the personnel employed in diminishing the impact of the weather event.
- c. Preventing partial overloading of services essential for the proper functioning of society and the State.

2. Socio-economic benefits:

- a. To mitigate the social and economic consequences of climate change, cross-sectoral collaboration with all actors and providers of medical, social, educational and psycho-social services, etc., is necessary, so the burden of the event will not fall only on the health system.
- b. The economic impact of the extreme weather crisis varies across industries and companies, and early warning will enable them to adapt to supply chain disruptions, stockpiles or early dependence on production processes.

3. Capacity building, technology transfer and diffusion:

- a. Strengthening intersectoral interaction that can lead to strengthening the capacities of the Public Health Agency and its territorial structures with the direct involvement of Governments and finally civil society.
- b. State flexibility that will allow development partners to introduce aid schemes (e.g. development of the early warning mechanism, humanitarian aid, etc.) to support authorities in strict accordance with its field of competence.
- c. Review the regulatory basis providing operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.

6.3.3. Actions and activities selected for inclusion in TAP

6.3.3.1. Summary of barriers and measures to overcome barriers

According to the classification in the guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015), at previous stages the WG identified essential and non-essential barriers for technology transfer "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change". Because the technology will be developed and disseminated by a public entity (ANSP) to a large population of users and/or beneficiaries, major investments in that technology tend to be decided at government level and depend primarily on policies adopted not only by the Ministry of Health but also by other authorities responsible for adapting to extreme weather phenomena and disasters. It is also mentioned that the main result of the technology is to reduce the medical, social and economic burden associated with diseases caused by heat waves, cold, floods, pollution of drinking water, atmospheric air. Thus, the technology is assigned to the category "non-market goods – goods supplied to the public". The main barriers to the transfer of this technology and their characteristics aspects are set out in Table 6.6.

Table 6.6: Key barriers to technology transfer "Early warning operational procedures, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change"

Nr. d/ o	Key barriers	Detailed aspects of barriers
1.	Lack of funding for early warning systems, due to sporadic cases of climate events.	Due to the small number of public health events and disasters caused by extreme weather phenomena, the government does not see the need to allocate financial sources for developing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena.

2.	Insufficient investments in the interconnection of early warning systems of GIES and ANSP	The COVID-19 pandemic crisis has shown how fragile the early warning system is, especially the intercommunication between authorities. At the same time, the government did not take financing measures to develop a communication mechanism between authorities, so the information was reported according to an outdated system.
3.	The need to create a command and alert center.	The health sector has a public health emergency command center (ANSP Focal Point), which has all the necessary technologies, but this center is connected to international requirements for communicable diseases and does not take climate change into account.
4.	Reporting of information coming from unofficial sources by institutions subordinated to central public authorities, liable to trigger a public health emergency.	Due to the large number of information resources and the lack of an information management filter, the authorities do not have an information evaluation mechanism, and in this case the system risks being subject to false alerts of climate change, heat waves, floods, etc.
5.	Lack of continuous international training of staff engaged in managing events caused by climate change.	Staff trained in reporting public health events have training only on CBRN, but without considering trainings on public health emergencies directly caused by climate change
6.	Lack of decision-making algorithm for assessing and notifying events that may pose danger to public health	There is a lack of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. It is not clearly stipulated the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc.
7.	Low level of remuneration of staff in the field of state supervision of public health	The salary of staff in the field of state supervision of public health is not insured from the fund of the mandatory health insurance system and therefore their increase does not fall under the scope of GD no. 837/2016.

The analysis of the data in Table 6.6 shows that the main barriers to be addressed in the technology transfer assessment process "Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change" are related to different areas directly or indirectly related and are quite Complex. Most of the barriers result in the lack of communication between state institutions and the lack of SOPs that would come to improve coordination and interaction between authorities, the innovative part is that they focus on managing conditions caused by climate change. Also, part of the barriers is focused on the lack of staff trained on the impact of climate change and who in many cases are decision makers. Finally, these barriers or needs seriously affect the activity of the national health sector, essentially diminishing sectoral capacities in undertaking prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air).

6.3.3.2. Activities identified for the implementation of selected actions

To provide guiding principles in order to identify solutions to overcome barriers to transfer and diffusion of technology, to develop operational procedures on early warning, prevention and

response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change, 3 actions and 13 activities were identified to establish concrete measures to implement the technology.

Table 6.7: Actions and activities aimed at implementing technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

Name of activities	Necessary activities to implement
1. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena	1.1. Interconnection of early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, to make the health system resilient to climate change.
	1.2. Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions.
	1.3. Develop and implement standard procedures for collecting and sharing climate-relevant data and information for the health sector, including gender.
2. Targeted capacity building on management, use and sharing of climate information in relation to public health	2.1. Introduce mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change.
	2.2 Identify data/information gaps on climate change, including gender and climate change, and develop research projects in collaboration with the scientific community
3. Strengthening the capacities of the National Public Health Agency and the structures of the territorial Public Health Centers in line with the new climatic conditions.	3.1. Making an inventory of information, existing tools and technologies and software used by medical and sanitary institutions.
	3.2 Digitization of climate and meteorological data available at the State Hydrometeorological Service and their report on the health status of the population.
4. Raising awareness and training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact	4.1. Implementation of a national information campaign on the risks caused by climate change on public health
	4.2. Development and implementation of gender-sensitive lifelong learning programs focusing on methodologies and approaches to assessing climate impact and climate vulnerability, as well as public health measures

The need for a state system of early warning and response has always been necessary to ensure the detection of public health events or signals related to events caused by communicable, non-communicable diseases and not least caused by climate change.

At the same time, the ongoing systematic collection, analysis, interpretation and dissemination of highly structured information. For public health actions they are referred to as indicator-based surveillance. It will be complemented by event-based surveillance, detection, verification, analysis, evaluation and subsequent investigation of potential threats to public health. The European platform that finally integrates both forms of surveillance (of both communicable and non-communicable diseases) is EpiPulse, the European infectious disease surveillance portal. At the same time, the Republic of Moldova approves by GD 1431/2016 the Regulation on the Early Warning and Response System for the prevention, control of communicable diseases and public

health events, but which is provided only for communicable diseases, and for the transmission, storage and dissemination of web-based data, the European Surveillance System (TESSy) to which ANSP has access is used.

6.3.4. Stakeholders and timeline for TAP implementation

The main obligations to implement the technology belong to the National Agency for Public Health, which has the necessary experience with the alert system for communicable diseases and at the same time has tools to apply the technology through territorial SPCs. The main actions identified result from establishing communication between state institutions and developing SOPs that would improve coordination and interaction between authorities, the innovative part is to focus on managing conditions caused by climate change. Also, part of the actions is focused on training medical staff and decision makers on issues related to the impact of climate change. Finally, these actions and activities aim to adapt the health sector by essentially improving sectoral capacities in undertaking prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air. The total implementation period of the technology will be 4 years.

Table 6.8: Stakeholder analysis by implementation activities for the technology "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

Name of action	Necessary activities to implement	Responsible institutions and focal points	Period
1. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena	1.1. Interconnection of early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, to make the health system resilient to climate change.	Ministry of Health General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	2023-2025
	1.2. Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions.	Ministry of Health, General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	Permanent
	1.3. Develop and implement standard procedures for collecting and sharing climate-relevant data and information for the health sector, including gender.	Ministry of Health, General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	2024
2. Targeted capacity building on management,	2.1 Introduce mandatory annual on-the-job training for health	Ministry of Health,	Annual

use and sharing of climate information in relation to public health	professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change.	General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	
	2.2 Identify data/information gaps on climate change, including gender and climate change, and develop research projects in collaboration with the scientific community.	Ministry of Health, Nicolae Testemitanu State University of Medicine and Pharmacy	2023-2024
3. Create a coordinated system for collecting and managing data on climate change in relation to the health status of the population	3.1. Making an inventory of information, existing tools and technologies and software used by medical and sanitary institutions.	Ministry of Health	2023
	3.2. Digitization of climate and meteorological data available at the State Hydrometeorological Service and their report on the health status of the population.	Ministry of Health, National Public Health Agency, State Hydrometeorological Service	2024-2025
4. Raising awareness and training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact	4.1. Development and implementation of gender-sensitive lifelong learning programs focused on methodologies and approaches to assessing climate impact and climate vulnerability, as well as public health measures.	Ministry of Health, National Public Health Agency, General Inspectorate for Emergency Situations	2023-2034
	4.2. Development and implementation of gender-sensitive lifelong learning programs focusing on methodologies and approaches to assessing climate impact and climate vulnerability, as well as public health measures.	Ministry of Health, Nicolae Testemitanu State University of Medicine and Pharmacy	2023-2025

According to WHO data for Europe, climate change could have both direct and indirect impacts on health. They can cause loss of goods, resources, infrastructure, affecting local production and service provision in general, thus also having an impact on health. Developing early warning procedures in response to climate change can prevent severe socio-economic problems, including malnutrition, occupational stress and mental illness. The latter must be considered the current displacement of population and migrants, the escalation of conflicts, the loss of goods, etc. which strongly affect the state of health.

6.3.5. Estimate of resources needed for actions and activities

The estimated budget required for actions aimed at implementing the technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" is 5,410,000 MDL or an annual average of about 1.5 million lei. At the same time, it is estimated that with the implementation of this technology, important financial sources resulting from the implementation of public health measures aimed at preventing and controlling communicable and non-communicable diseases that have climate change as etiology will be saved.

Table 6.9: Resources needed for actions aimed at implementing technology "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

Action Names	Period	Action budget MDL	Percent %
1. Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena	2023-2025	3.200.000	59,1
2. Targeted capacity building on management, use and sharing of climate information in relation to public health	2023-2024	850.000	15,7
3. Create a coordinated system for collecting and managing data on climate change in relation to the health status of the population	2023	920.000	17
4. Raising awareness and training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact	2023-2025	440.000	8,1
TOTAL		5.410.000	100,0

Evaluation of the Medium-Term Budgetary Framework for the Ministry of Health with the provision of allocating additional financial sources for the Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air, etc.) caused by climate change). At the same time, cooperation with external partners is foreseen to attract funds to create operational procedures on early warning caused by climate change.

6.3.6. Management planning

6.3.6.2. Risk and emergency assessment

The process of identifying and planning data technology implementation activities also includes the assessment of possible risks for which actions and activities to implement the technology and reduce risks have been identified. Due to the lack of a robust regulatory framework on financing digitalization and the creation of standard operational procedures for health system action in cases of climate change. At the same time, underdeveloped reporting systems and lack of interconnection methodologies are risks that require measures to be identified to overcome them.

The main risks associated with the implementation of this technology are minimal and medium. At the same time, the experience of the country and the institutions involved offers the certainty of overcoming them.

Table 6.10: Risks associated with the implementation of the technology "Use of modern biotechnologies for the propagation of vegetative material in providing the health sector with reproductive material in the new climatic conditions"

Risks	Categories	Anticipation/mitigation actions
I. Financial and social risks		
1.1. Lack of funding for early warning systems, due to sporadic cases of climate events.	medium	Evaluation of the Medium-Term Budget Framework for the Ministry of Health with the provision of allocating additional financial sources for the Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air pollution, etc.) caused by climate change.
1.2. Insufficient investments in the interconnection of early warning systems of GIES and ANSP	minim	Reengineering the current early warning system by updating it to European standards and delimiting the funds needed to develop operational procedures.
1.3. Large investments for rare situations	medium	Economic and financial argumentation of the development of operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena with prioritization of risk sectors.
II. Institutional, technological and regulatory risks		
2.1. Lack of staff (decision makers) trained in activating the alert degree (yellow, orange, red)	medium	Development of cross-sectoral training courses with the participation of representatives of SHS, GIES and MS.
2.2. Insufficient collaboration of the health sector with other authorities	minim	Review of the normative framework regarding the roles of state institutions according to the activated normative framework. (Law no. 10/2009 on state surveillance of public health or law 212/2004 on state of emergency, siege and war).
III. Policy and regulatory framework risks		
3.1. Lack of a communication strategy in emergency situations – epidemics, natural disasters.	medium	Review contingency plans and protocols and risk communication with preliminary establishment to the communicators group.
3.2. Lack of health regulations on climate change	minim	Updating the regulatory framework on sanitary regulations and adjusting it to European standards.

The main objective of implementing TAP is standard operational procedures for acting in situations of sudden climate change and establishing training courses for medical staff engaged in monitoring and assessing climate risk factors, as well as reviewing the policy framework directly related to the implementation of public health measures in order to protect the health status of the population and the resilience of the health system to changes in environmental factors and sudden changes in climate.). This prioritization, but also the new technical capabilities are the foundation for the successful implementation of the technology.

6.3.6.3. Next steps

The main objective of implementing TAP is to review and implement standard operational procedures for cross-sectoral activity and an evaluation of computing technology in PMSI with the establishment of training courses for medical staff engaged in monitoring and evaluation of climate risk factors, as well as reviewing the policy framework directly related to the implementation of public health measures in order to protect the health of the population and the resilience of the system health to changes in environmental factors and sudden changes in climate. This prioritization, but also the new technical capabilities, are the foundation for the successful implementation of the technology.

6.3.7. TAP overview table for Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change

Technology Action Plan "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" caused by climate change"	
Sector	Health
Technology	Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change
Ambitions	Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. At the same time, the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. should be clearly stipulated. To remove these shortcomings, SOPs will be developed on early warning, on preventing and combating floods, on air pollution, etc.
Benefits	Benefits for the state: (i) Proper coordination of the health system due to early warning and rapid response of health services with the undertaking of prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena; (ii) Diminishing the economic and social impact due to the correct management of the personnel employed in mitigating the impact of the weather event; (iii) Preventing partial overloading of services essential for the proper functioning of society and the State. Socio-economic benefits: (i) In order to mitigate the social and economic consequences of climate change, intersectoral collaboration is required with all actors and providers of medical, social, educational and psycho-social services, etc., so the burden of the event will not fall only on the health system. (ii) The economic impact of the extreme weather crisis varies across industries and companies, and early warning will enable them to adapt to disruptions in the supply chain, stock availability or early dependence on production processes.

Actions	Implementation activities	Sources of funding	Responsible institutions	Time frame	Risks	Expected result	Monitoring indicator	Estimated cost
Action 1 Development of operational procedures on early warning,	1.1 Interconnection of early warning systems of the General Inspectorate for Emergency Situations and the	State budget and external assistance	Ministry of Health, General Inspectorate for Emergency	2023-2025	Lack of regulatory implementation framework on cross-	Functionally interconnected early warning system	Wide-ranging, accessible climate data and information provided in a	3,000,000

prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena	State Hydrometeorological Service with the National Agency for Public Health, to increase the resilience of the health system to climate change.		Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency		sectoral relations on early warning.	populated with data, including gender-disaggregated data, on the health status of the population in relation to climate change.	timely manner and updated regularly	
	1.2 Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within designated sectoral institutions (data holders)	State budget and external assistance	Ministry of Health, General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	Permanent	Failure to report alert cases and delay in the development of public health measures	Complex sectoral data and information on climate change in relation to public health for policymakers	Information management system with procedures and management formats based on the implementation of public health measures	200,000 annuals
	1.2 Develop and implement standard procedures for collecting and sharing climate-relevant data and information for	State budget and other sources not prohibited by legislation	Ministry of Health, General Inspectorate for Emergency	2024	Bureaucratization of the process of adapting operating	Sector-complex data and information on climate	Standard procedures for collecting and sharing information on the collection of	100,000

	the health sector, including gender.		Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency		standard procedures	change in relation to public health	information relevant to public health	
Action 2 Targeted capacity building on management, use and sharing of climate information in relation to public health	2.1 Introduce mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change	Budget allocated to the Ministry of Health, National Agency for Public Health	Ministry of Health, General Inspectorate for Emergency Situations, State Hydrometeorological Service, ANSP Electronic Governance Agency	Annual	Migration of trained medical personnel. Lack of training programs	Strengthened capacities in climate data application for planning public health measures in the context of sudden climate change	Mandatory annual on-the-job trainings for all medical staff.	150,000
	2.2 Identify data/information gaps on climate change, including gender and climate change, and develop research projects in collaboration with the scientific community	Budget allocated to the Ministry of Health, National Agency for Public Health	Ministry of Health, Nicolae Testemitanu State University of Medicine and Pharmacy	2023-2024	Reduced time frame and reduced number of population health specialists in relation	Cooperation between governmental institutions and the scientific community ensured	4 collaborative research projects with scientific institutions implemented to address specific information needs for the health sector	700,000

					to climatic factors			
Action 3 Create a coordinated system for collecting and managing data on climate change in relation to the health status of the population	3.1 Making an inventory of information, existing tools and technologies and software used by medical and sanitary institutions and identifying the needs	Budget allocated to the Ministry of Health.	Ministry of Health	2023	Lack of indicators to assess the wear condition of technical equipment and software	Report on existing data and tools on reporting the health status of the population in relation to climate change elaborated .	Data and information on how to report are processed in an integrated way, thus ensuring the implementation of public health measures	120,000
	3.2 Interconnection of meteorological reports available at the State Hydrometeorological Service and their report on the health of the population.	The budget allocated to the Ministry of Health and from other sources not prohibited by legislation.	Ministry of Health, National Public Health Agency, State Hydrometeorological Service	2023-2025	Lack of mechanisms to assess climate impact on climate change	Information on sudden climate change is presented in a digital format and can be used to identify public health measures	Climate change data from the State Hydrometeorological Service digitized and implemented in public health measures	800,000
Action 4 Raising awareness and	4.1 Implementation of a national information campaign on the risks	Budget allocated to the Ministry of Health and	Ministry of Health, National Public Health Agency, General	2023-2024	The presence of information gaps and	Key stakeholder groups know and	National information campaign on coordinated	140,000

training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact	caused by climate change on public health	External Assistance (NAP-2)	Inspectorate for Emergency Situations		skepticism among civil society about the risks caused by climate change	can identify, collect, use and share information on public health measures	actions for and necessary public health measures	
	4.2 Development and implementation of gender-sensitive lifelong learning programs focusing on methodologies and approaches to assessing climate impact and health vulnerability to climate change, as well as public health measures	Budget allocated to the Ministry of Health and external assistance (NAP-2)	Ministry of Health, Nicolae Testemitanu State University of Medicine and Pharmacy	2023-2025	Bureaucratization of policymaking	Strengthened capacity of public health medical staff to identify health risks in climate change, assess impacts, select and implement public health measures	Training modules on gender-sensitive climate change impacts developed. 5 workshops for opinion-forming medical staff	800,000

6.4. Action Plan for technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

6.4.1. General description of the technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

The technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" transposes Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, published in the Official Journal of the European Communities L 330 of 5 December 1998, and partially transposes Council Directive 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of public health, as well as Art. 55 of Law nr. 209 of 29 July 2016 on waste.

That technology will focus mainly on:

- Facilitating access to improved drinking water and sanitation systems for 30 district medical and sanitary institutions, by implementing appropriate measures to prevent and reduce water-conditioned diseases, by ensuring drinking water quality and a more efficient and sustainable management of water resources of district PMSI.
- Training of water operators in management of water supply and sanitation systems, water safety, construction of small water and sanitation systems for medical and sanitary institutions.
- Management of waste resulting from medical activity as an integral part of infection control.
- Making producers of waste resulting from medical activity aware that they are liable to bear the costs necessary for their management as waste producers.

At the same time, the Joint Order of the Ministry of Environment and the Ministry of Health no. 91/704 of October 20, 2010, which approved the target indicators and control deadlines, is difficult to apply without the involvement of all responsible authorities and it is necessary for the national target indicators to be approved at Government level to become a national priority. A pilot study on water, sanitation and hygiene services in healthcare institutions in the Republic of Moldova (2019) demonstrated adequate access to drinking water and hand hygiene (WASH) services, while sanitation emerged as a priority in terms of attention and interventions to ensure quality health services. Differences were observed in service coverage in rural and urban institutions, especially

in sanitation, cleaning and management of medical waste. Testing of drinking water quality revealed a high rate of non-compliance in the health facilities visited, compared to national requirements indicating the need for priority attention in improving drinking water safety. Further efforts are needed to improve WASH, medical waste cleaning and management practices at healthcare settings, thereby ensuring patient safety and reducing the risk of healthcare-associated infections and strengthening national and local surveillance service.

The activity of transfer and dissemination of the technology for implementing in 30 rural medical and sanitary institutions the projects of water supply, sanitation and waste management resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided, provides for the consolidation of policies, standards, improvements at the level of institutions and activities to promote hygiene at community level as well as the strengthening of monitoring national water, sanitation and hygiene services for communities and medical and sanitary institutions by adapting SDG monitoring indicators applied internationally in the country-specific context.

6.4.2. The ambition of technology implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided

Emphasis will also be placed on the implementation of efficient programs for the supply of aqueduct and sewerage, as well as the management of waste resulting from medical activities that require cooperation and multisectoral interaction at all levels. Policies should be generated and coordinated globally, with management practices implemented locally. Establishing a national policy and legal framework, training staff and raising public awareness are essential elements for successful health waste management.

Technology is a priority direction of activity of the Government and civil society and is oriented towards permanently strengthening the climate resilience of health system institutions, population health and improving the socio-economic status of the country. Health implies as mandatory conditions economic and social security, harmonious interpersonal and social relationships, a safe and healthy environment for work and life, adequate quality of drinking water, air and soil, sufficient and balanced nutrition, complemented by a healthy lifestyle and access to quality health services. These conditions contribute significantly to the resilience of the system to direct and indirect climate impacts, as well as to adaptation to climate change with a gradual but aggressive effect, etc.

The main and direct benefits of implementing the technology in question are:

1. Benefits for the state:
 - a. Integrating water and health priorities into the government's action plan with national action planning processes in the sectors of water supply and sanitation and management of waste resulting from medical activity, to ensure infection control and increase the quality of medical services provided

- b. regulations on water and sanitation based on the competences and responsibilities provided by national legislation and international conventions and agreements, ratified by the Republic of Moldova.
 - c. national policies and a legal framework, training of healthcare professionals and raising awareness of society as essential elements for successful management of health waste.
2. Socio-economic benefits:
- a. Increasing the number of authorized economic agents in the collection, transportation and processing of deserts resulting from medical activities.
 - b. Health presupposes as mandatory conditions economic and social security, harmonious interpersonal and social relationships, a safe and healthy environment for work and life,
 - c. Strengthening water and sanitation systems and management of waste resulting from medical activity will indirectly lead to infection control and increased financial performance of healthcare institutions.
3. Capacity building, technology transfer and diffusion:
- a. It contributes to strengthening the quality of medical services at territorial level, which will have a direct impact on the health field, as well as increasing the resilience of 30 medical institutions to respond to the new challenges conditioned by extreme weather phenomena because of climate change.
 - b. Alignment with quality standards and regulations on the main environmental factors influencing health (air quality, water quality, food quality, waste management, etc.) so that they reflect a wider spectrum of possible climatic conditions.
 - c. Scheduling and provision of services in the fields of water supply and sanitation and waste management, considering new risks caused by climate change and/or new diseases arising from environmental factors.

6.4.3. Actions and activities selected for inclusion in TAP

6.4.3.1. Summary of barriers and measures to overcome barriers

The process of identifying barriers for technology transfer "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" was based on the same aspects and methodological approaches as in the case of other technologies, (study of policy documents and other relevant documents; identification of the long list of barriers; establishing the short list of barriers; decomposition of barriers, etc.). Thus, according to the Guide "Overcoming barriers to the transfer and diffusion of climate technologies" (Nygaard I., Hansen U. E., 2015) the technology "Implementation in 30 rural medical-sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided".

Because this technology is procured/fulfilled and disseminated by local public authorities as founder of district medical and sanitary institutions to a large population of users and/or beneficiaries. Major investments in selected technology tend to be decided at government level and largely depend on the budget allocated by governments to the healthcare system. The main result of technology is to support the process of adaptation to climate change and to increase the quality of medical services provided to the population.

The main barriers to be addressed in the process of assessing the technology transfer of the implementation in 30 rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided, refer to the capacities of local public authorities and to the deficit of public and private investments, as well as outdated aqueduct system and sewage, etc. The presence of these barriers in most cases seriously affects the capacity of the health system, especially the increase in intrahospital infections and infections caused by poor water quality. The main categories of barriers to the transfer of this technology and their characterization aspects are set out in Table 6.11.

Table 6.11: Key barriers identified to technology transfer "Implementation in rural medical institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Nr. d/o	Key barriers	Detailed aspects of barriers
1.	Deficit in financial resources regarding the implementation of water supply, sanitation and waste management projects resulting from medical activity	The key actors in the process of regulating and developing the field of water supply and sanitation at the level of medical and sanitary institutions at district level are LPA, which do not have sufficient funds to ensure water supply and waste management projects resulting from medical activity.
2.	The high cost of reconstruction of water supply and sewerage infrastructure in PMSI	In most PMSIs in the country, water supply infrastructure is outdated and can no longer undergo reconstruction. In this regard, the reengineering and construction of new aqueduct

		and sewerage systems becomes primarily an economic problem.
3.	Outdated aqueduct and sewer that cannot be restored	The data on the water supply and sewerage sector of PMSI are mainly connected to centralized aqueducts of localities, and in most cases does not meet the requirements of Law nr. 303 of 13 December 2013 on the public water supply and sewerage service.
4.	Non-compliance with health regulations on the management of waste resulting from medical activity	These regulations and guidelines on the management of waste resulting from medical activity are already developed in 2014, but are not aligned with European requirements or are not sufficiently implemented.
5.	Lack of infrastructure for separate collection of infectious waste and its processing before disposal	Most PMSIs have an outdated infrastructure and the lack of incinerators or collection centers for waste resulting from medical activity becomes not only a health problem, but also an environmental problem.
6.	Lack of communication campaigns on awareness on consequences and improper practices in the field of waste management, including hazardous ones from the point of view of environmental protection.	Since 2013, when Order MH 652/2013 was drafted, until now, only 4 awareness campaigns have been carried out on the phenomenon of waste resulting from medical activity and its impact on the environment. Lack of a program and a team of communicators at MH and ANSP level.
7.	Level of financial incentive for highly qualified research staff in the field of water safety and environmental impact of medical waste	The salary in the field of medical research within the National Agency for Public Health is among the lowest (on average 5000 lei).

The impact of these barriers can be felt especially in the Northern Region, where the level of connection to aqueduct networks is 2 times lower than in the Southern Region. Medical and sanitary institutions are not an exception and are a mirror of the situation in the locality. The presence of water supply and sanitation systems and management of waste resulting from medical activities in PMSI is a pressing necessity to ensure adequate hygiene and infection prevention conditions.

Another tool used in the barrier analysis process was logical problem analysis (ALP/LPA) for analyzing causal relationships and basic problems in technology transfer. The problems were arranged in a hierarchy of causes and effects, with a central/generic startup problem for technology transfer.

6.4.3.2. Activities identified for the implementation of selected actions

Identifying the necessary actions to ensure technology transfer "The implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of

medical services provided" is an important stage on which the success of this process largely depends. The actions were assessed based on their economic/technological profile, the incentives used, and the effects achieved.

The implementation of this technology will expressly provide for ensuring the legal and institutional framework for providing equitable access to water for medical institutions, as well as exposing into action the legal framework in identifying and allocating financial resources for urban and rural medical institutions in the northern region of the country.

Table 6.12: Actions and activities aimed at implementing technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Name of actions	Necessary activities to implement
1. Increasing the resilience of the health sector through investments in water supply and sanitation and management of waste resulting from medical activities	1.1. Promoting investments in the development and modernization of aqueduct and sewerage infrastructure of 35 district medical and sanitary institutions
	1.2. Implementation of recycling technologies for waste resulting from medical activities to control infections and streamline their processing in relation to the environment
	1.3 Assessment of the costs of health services for people (women/men), whose health was affected by the lack of aqueduct and sewerage and poor management of waste processing resulting from medical activities), as well as the costs of recovering the impact of climate change on the infrastructure of the health sector
2. Evaluation of water supply infrastructure at rural and urban level based on the quantity and quality of water resources in the context of the new water supply and sanitation strategy, as well as medical waste management	2.1. Mapping of vulnerable healthcare institutions regarding water supply and sanitation, as well as of the management of waste resulting from medical activities, to make the health sector resilient to climate change
	2.2. Adapting existing aqueduct and recycling systems for medical waste for resilience to extreme climate change
3. Development and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity	3.1. Revision of sanitary regulations with their extension to the activity of all natural/legal persons and activities/research, regardless of the type of ownership and legal form of organization that generates waste resulting from medical activity.
	3.2 Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity
	3.3 Regularly update and improve institutional contingency plans for preparedness and response to public health emergencies, including those caused by climate change, in the context of providing public healthcare institutions with aqueducts and recycling devices for waste resulting from medical activities.

The main obligations will be exercised as technical coordinator of the process of implementation and monitoring of the technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided". As with the previous technologies analyzed, the actions are relatively significant for the technology in question. It is also necessary to reform the operational management of water and sanitation systems as well as waste management from medical activities to develop the capacities of all partners involved in the activities of achieving target indicators, strengthening the monitoring capacities of the implementation of the above-mentioned technology. At the same time, an important emphasis will be placed on carrying out feasibility and scientific studies in demonstrating the socio-economic impact following the implementation of the respective technology. In total, 3 actions and 12 activities were identified aimed at ensuring the transfer and implementation of technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided".

6.4.4. Stakeholders and timeline for TAP implementation

Because this technology is procured/fulfilled and disseminated by local public authorities as founder of district medical and sanitary institutions to a large population of users and/or beneficiaries, major actions in case of implementation of the selected technology tend to be decided at government level and depend largely on the budget allocated by governments to the health system. The main result of the technology is to support the process of adaptation to climate change and to increase the quality of medical services provided to the population.

Table 6.13: Analysis of stakeholders by implementation activities for the technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Name of shares	Necessary activities to implement	Institutions/structures involved	Period
1. Increasing the resilience of the health sector through investments in water supply and sanitation and management of waste resulting from medical activities	1.1. Promoting investments in the development and modernization of aqueduct and sewerage infrastructure of 35 district medical and sanitary institutions	Ministry of Health, Ministry of Finance, Central Public Authorities as founder.	2023-2027
	1.2. Implementation of recycling technologies for waste resulting from medical activities to control infections and streamline their processing in relation to the environment	Ministry of Health, Ministry of Finance, Central Public Authorities as founder.	2023-2027

	1.3 Assessment of the costs of health services for people (women/men), whose health was affected by the lack of aqueduct and sewerage and poor management of waste processing resulting from medical activities), as well as the costs of recovering the impact of climate change on the infrastructure of the health sector	Ministry of Health and Central Public Authorities	2024-2025
2. Evaluation of water supply infrastructure at rural and urban level based on the quantity and quality of water resources in the context of the new water supply and sanitation strategy, as well as medical waste management	2.1. Mapping of vulnerable healthcare institutions regarding water supply and sanitation, as well as of the management of waste resulting from medical activities, to make the health sector resilient to climate change.	Ministry of Health, National Public Health Agency	2025-2026
	2.2. Adaptation of existing aqueduct and recycling systems of medical waste for resilience to extreme climate change.	Ministry of Health Local Public Authorities	2023-2027
3. Development and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity	3.1. Revision of sanitary regulations with their extension to the activity of all natural / legal persons and activities / research, regardless of the type of ownership and legal form of organization that generates waste resulting from medical activity.	Ministry of Health, Ministry of Environment, National Public Health Agency	2023-2025
	3.2 Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply,	Ministry of Health, National Public Health Agency, Nongovernmental Organizations	2024-2026

	sanitation and management of waste resulting from medical activity.		
	3.3. Regularly update and improve institutional contingency plans for preparedness and response to public health emergencies, including those caused by climate change, in the context of providing public healthcare institutions with aqueducts and recycling devices for waste resulting from medical activities.	Ministry of Health, National Agency for Health Public	Permanent

Most of the actions identified relate to the following general categories:

- a. Updating and completing the existing regulatory framework (Sanitary Regulation on the management of waste resulting from medical activity, Protocol on Water and Health in the Republic of Moldova, etc.).
- b. Research study of the regulatory framework on medical waste management in the Republic of Moldova and study of current practices of waste management resulting from medical activity in public medical and sanitary institutions. Also, assessing the capacities of medical institutions in medical waste management, possible risks, existing mechanisms for neutralization, destruction and recycling of medical waste and developing recommendations on harmonizing the legal framework and practices for medical waste management
- c. Elaboration and implementation of National Guidelines on the impact of waste management resulting from medical activity and creation of a necessary infrastructure for the management of hazardous waste streams resulting from medical activity or from medical research institutions.

6.4.5. Estimate of resources needed for actions and activities

The estimated value of the financial resources needed for the actions aimed at implementing the technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" is 168,850,000 MDL or an annual average of about 24 million MDL (Table 6.14). Due to the current state of aqueduct and sewerage sources and the medical waste management infrastructure, the implementation process of this technology

must start with capacity building activities (institutional, personnel, technical equipment; infrastructure creation/rehabilitation, etc.) to facilitate the implementation of basic activities.

Table 6.14: Resources needed for actions aimed at implementing technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Name of action	Period	Action budget, MDL	Ponder, %
1. Increasing the resilience of the health sector through investments in water supply and sanitation and management of waste resulting from medical activities	2023-2027	155.100.000	91,8
2. Evaluation of water supply infrastructure at rural and urban level based on the quantity and quality of water resources in the context of the new water supply and sanitation strategy, as well as medical waste management	2024-2026	10.300.000	6,1
3. Development and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity	2024-2026	3.450.000	2
TOTAL		168.850.000	100,0

It should be mentioned that the application of projects by LPA to the Financing Agreement (loan) signed between the Government of the Republic of Moldova and the International Development Association (ratified by Law 169/2022) in the amount of EUR 44.1 million is a solution in attracting funds and in the future it is expected that the new water supply and sanitation strategy and the new law on the public water supply and sewerage service will bring considerable institutional changes in this sector, which will improve the cooperation of all actors involved and allow for synergy of investments from both national and external sources.

6.4.6. Management planning

6.4.6.1. Risk and emergency assessment

The process of planning technology deployment activities also includes the assessment of possible risks for which certain mitigation measures have been identified. In this context, risks that have a major influence on the activities and processes expected to be implemented within mapping technology, availability of performing technique/equipment, provision of technical regulations, etc. are subject to priority assessment.

The main risks associated with the implementation of this technology are minimal and medium. At the same time, the experience of the country, the health sector and the institutions involved, offers the certainty of overcoming them. Table 6.15 reviews and analyzes the main identified/potential risks for the technology "Implementation in rural medical institutions of water

supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided".

Table 6.15: Risks associated with technology implementation "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Risks	Categories	Anticipation/mitigation actions
I. Financial and social risks		
1.1. Deficit in financial resources regarding the implementation of water supply, sanitation and waste management projects resulting from medical activity	Medium	The need to launch the process of identification and examination of institutions should be considered, according to criteria established by the World Bank and subsequently the approval of the list of institutions by the Ministry of Health.
II. Institutional, technological and regulatory risks		
2.1. Lack of rural and urban water supply infrastructure in territories	Minim	Restructuring and orientation towards EU standards the mechanism of planning, design, construction, expertise, control and operation of water and sewerage infrastructure. The existing design rules include common provisions for urban and rural areas, with oversizing rural systems being high demands on fire flows and water storage volumes.
2.2. Non-compliance with sanitary rules on drinking water quality	Medium	Updating the regulatory framework to standards consistent with those of the European Union, including for small systems in rural areas. This sector is currently largely based on norms and rules in construction (NRC, SNIP and STAS State Standards, (GOST), which were developed and applied in the former Soviet Union. These acts are outdated and lead to capital investments and increased operational costs.
2.3. Lack of communication campaigns on awareness on consequences and inappropriate practices in the field of waste management, including hazardous ones from the point of view of environmental protection.	Medium	Establish by Order the team of communicators on awareness on the consequences and inappropriate practices in the field of waste management, including hazardous ones from the point of view of environmental protection, and as indicators to establish the degree of awareness and the number of communications in mass media and social networks.
III. Risks to the policy and regulatory framework		
3.1. Low degree of implementation of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity	Medium	Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and

		management of waste resulting from medical activity
3.2. Insufficient regulatory framework in implementing medical waste cleaning and management practices at the level of healthcare institutions, thus ensuring patient safety and reducing the risk of infections associated with healthcare provision and strengthening the national and local surveillance service	Minim	Completing the regulatory framework with the elaboration of a Sanitary Regulation on the management of waste resulting from medical activity, the National Guide on the management of waste from medical activity and the safety of injections

6.4.6.2. Next steps

The main requirements for the subsequent provision of TAP are to strengthen the normative/legislative framework to ensure the mapping of medical institutions requiring modernized aqueduct and infrastructure for processing waste resulting from medical activity, as well as modernization and restoration of the affected infrastructure. The actions identified, respectively, must be with the process of creating new sectoral capacities to carry out research and development activities. The mentioned prioritization, but also the new technical capabilities are the foundation for the successful implementation of the technology.

Report on project ideas for climate change adaptation technologies prioritized by health sector

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Chapter 7. Brief summary of project ideas for adapting the health sector to climate change

Due to vulnerabilities caused by recorded and forecast global climate change, as well, the health sector remains to be one of the key sectors dedicated to the TNA process. In the context of diminishing and/or anticipating the impact of climate change, variability and climate extremes, following the consultations on prioritization of climate change adaptation technologies, at the previous stages of the project were identified 3 technologies that would have the greatest impact on the adaptation process of the health sector in the Republic of Moldova, and the capacity to transfer and disseminate technology.

In this context, 3 specific project ideas were recommended for the adaptation of the health sector to climate change:

1. Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors.
2. Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change.
3. Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided.

The actions, activities, estimated time periods for implementation, as well as risks in implementation were described at the stage of developing the action plan for prioritized technologies for adapting the health sector to climate change. All actions selected for TAP on each technology are imperative for the development of an environment that allows achieving the specified target for each technology. Sectoral technological needs are major, urgent and urgent. The actions that were selected at the TAP stage on each technology can be classified into three broad categories: capacity development/consolidation (regulatory, institutional, personnel, etc.), investments (infrastructure creation, technical endowment, etc.) and information. All actions correspond and are interconnected in the direction of developing an environment that allows achieving the specified target for each technology. The actions recommended as project ideas for the health sector have been selected as key actions of the corresponding technology, which means that the implementation of the project ideas determines the formation of a situation that facilitates the adoption/implementation of that technology. Thus, the project idea triggers a "shift" in the adoption and dissemination of the appropriate prioritized technology.

All 3 technologies selected for the health sector are assigned to the category "non-market goods – publicly supplied goods". This classification was made because these technologies will be implemented by public entities such as the Ministry of Health, the National Agency for Public Health (ANSP) as well as by SPIs, the community and medical staff. The allocation of financial means for the implementation of technologies depends directly on government policies. Also, the favorable environment that will be used across the institutional range, the existing regulatory framework or its adjustment possibilities, as well as policies to promote and facilitate technology transfer were also considered.

The project "Digitalization of the system for climate service delivery and surveillance of non-communicable diseases and their risk factors" (SI SBNT) was selected as the main activity aimed at a consolidated management to ensure the digitalization of the processes of systematic and continuous collection, analysis, interpretation and dissemination of health data on non-communicable diseases, in the context of their spread over time, space, population group and analysis of risk factors for contracting these diseases, including in epidemiological studies. The overall aim of SI SBNT is to improve the process of record-keeping, management and reporting of cases on non-communicable diseases and to assess risk factors, including those related to climate change.

The project "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" provides for the detection as soon as possible of hazards and risks caused by heat waves, cold waves, floods, drinking water pollution, of atmospheric air, for public health in order to approve health measures to prevent the spread of communicable diseases and health events, with the reduction of their consequences for the population.

Operational procedures for early warning and prevention and response actions to mitigate or eliminate the effects of extreme weather events will include the following aspects:

- a) Detection (triage, filtering and selection), verification of information, risk assessment and interpretation of data relating to sudden changes in weather phenomena.
- b) Exchange of information relevant to public health between competent authorities for public health surveillance.
- c) Developing, initiating public health measures and monitoring impacts.

- d) The maintenance of specific surveillance networks by the competent authorities for the surveillance of public health and weather phenomena which may directly or indirectly harm human health.

The project "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" transposes Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, published in the Official Journal of the European Communities L 330 of 5 December 1998 and partially transposes the Directive Council Regulation (EC) No 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of public health, as well as Art. 55 of Law nr. 209 of 29 July 2016 on waste.

That technology will focus mainly on:

- a) Facilitating access to improved drinking water and sanitation systems for 30 district medical and sanitary institutions, by implementing appropriate measures to prevent and reduce water-conditioned diseases, by ensuring drinking water quality and a more efficient and sustainable management of water resources of district PMSI.
- b) Training of water operators in management of water supply and sanitation systems, water safety, construction of small water and sanitation systems for medical and sanitary institutions.
- c) Management of waste resulting from medical activity as an integral part of infection control.
- d) Making producers of waste resulting from medical activity aware that they are liable to bear the costs necessary for their management as waste producers.

7.1. Aspects regarding the project idea "Digitalization of the climate service delivery system and surveillance of non-communicable diseases and their risk factors (SI SBNT)"

The continuous analysis of public health indicators, including through information technologies, is an important field for monitoring non-communicable diseases (NCDs) and the risk factors that determine them, but the various databases that are collected by several institutions involved in the analysis of data in public health (NSB, NIHC, ANSP), are not interoperable, remain fragmented, generalized, without complete disaggregation and difficult to manage. Data on health determinants and risk factors, including those caused by climate change, especially on targets and progress indicators, are not collected systematically, operational research is not a priority and is conducted

on an ad hoc and inconsistent basis, existing data is incomplete and reflects only part of the problems. There is a lack of a system for checking the quality of data, for which reason their comparability at national and international level cannot be ensured.

The owner of SI SBNT will be the state that will realize its ownership, management and use of data from it and the implementation will be carried out by NPHA with the participation of PMSI regardless of legal status and form of ownership. The legal framework of SI SBNT will consist of national legislation, international agreements and conventions to which the Republic of Moldova is a party, as well as normative acts regulating the health system. Technology activities include exchange of experience between national institutions involved in the process, but also with similar institutions in neighboring countries (Romania, Ukraine, etc.). The technology will facilitate the management and record keeping in the field of state epidemiological surveillance of non-communicable diseases, covering business-processes related both to ANSP activity and to relations with healthcare providers in healthcare sectors.

The estimated value of financial resources needed for actions aimed at implementing the technology "Digitization of the system of provision of climate services and surveillance of non-communicable diseases and their risk factors" amounts to a total of about 6,846,000 lei.

Table 7.1: Components of the pilot project idea "Digitalization of climate service delivery and surveillance of non-communicable diseases and their risk factors"

Components	General component content
General information	The project on Digitization of the climate service delivery system and surveillance of non-communicable diseases and their risk factors is intended to ensure the digitization of the processes of systematic and continuous collection, analysis, interpretation and dissemination of health data on non-communicable diseases, in the context of their spread in time, space, population group and analysis of risk factors for contracting these diseases, including in epidemiological studies in the context of climate change. The overall aim of SI SBNT is to improve the process of record-keeping, management and reporting of cases on non-communicable diseases and to assess risk factors, including those related to climate change. The institution most interested in implementing and transferring this technology is the Ministry of Health through the National Agency for Public Health, which according to Government Decision 1090/2017 has the mission to ensure the implementation of state policy in the areas of state surveillance, promotion and protection of public health, monitoring and evaluation of the health status of the population in the established manner and within the limits assigned by the normative framework. Currently, NPHA owns four information systems and at the same time will have another information system for the Surveillance of Communicable Diseases and Public Health Events, which is connected and will be interconnected to the European network of Communicable Diseases. Technology <i>The development of an information system for surveillance of non-communicable diseases and their risk factors, including conditioned by climate change</i> , is to be implemented by the ten territorial

	<p>Public Health Centers (SPCs), which have the necessary experience and tools for the transfer of the above-mentioned technology. At the same time, an important role in technology transfer will be played by the State University of Medicine and Pharmacy "Nicolae Testemitanu", by the public health department, namely by implementing a residency training module on the application of technical solutions and digitization of the public health system.</p> <p>The establishment of SI SBNT was assessed according to the capacity of the system to overcome public health problems caused by climate change and finally by the economic capacity of the public health system in establishing, developing and maintaining such a database. At the same time, external partners would also be interested in the establishment of this technology, and the costs can be covered by external partners working in the field of health such as (World Health Organization, Swiss Development Agency "Healthy Life Project", UNICEF, etc.) with subsequent allocation of sources from the state budget.</p>
<p>Objectives (What will the project achieve?)</p>	<p>As specific objectives pursued during the implementation of the project, the following are established:</p> <ul style="list-style-type: none"> ● Digitization, automation and streamlining of processes aimed at improving the prevention and control of non-communicable diseases and public health events caused by determinants and climate change. ● Development of capacities to record, manage, analyze and react to events with negative impact on public health, surveillance of public health events, including by implementing the early warning and rapid response system. ● Improving the activity of the health system in the context of managing cases of non-communicable diseases and public health events.
<p>Link with the country's development priorities</p>	<p>The project will correspond to the sectoral priorities on the digitalization of the health system in accordance with the provisions of the Health Strategy 2023-2030 on the digitalization of the health system, in the context of the lack of an information system for collecting data on the epidemiological situation through non-communicable diseases. The methods used by NPHA have multiple deficiencies at both the physical and operational levels. The technologies currently applied are outdated by time, do not provide the necessary functionalities according to the Legal Framework in the field of state supervision in public health and are not aligned with the current requirements of national information systems. At the same time, the technology will represent an advanced IT solution for creating and managing notifications about cases of non-communicable diseases and public health events, including as a result of climate change. This will involve automating the process of recording and managing notifications and relevant information, such as primary diagnosis; final diagnosis; symptoms/manifestations of the disease; results of laboratory investigations, information on treatment and evidence of treatment administration, but also evidence and dissemination of information on the investigation of public health events.</p>
<p>Project deliverables</p>	<p>The main results/deliverables of the project implementation will be the following:</p>

	<ul style="list-style-type: none"> ● Outcome 1: A surveillance information system for non-communicable diseases and their risk factors caused by climate change will be established. ● Outcome 2: The sectoral legislative and regulatory framework will be reviewed, and staff lists of institutions subordinated to the Ministry of Health and their subordinated agencies updated (as relevant) to include responsibilities on medical staff on climate change. ● Outcome 3: A mechanism will be created to detect NTD risk factors, including those conditioned by climate change. ● Output 4: Medical staff trained in primary, emergency and hospital care, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change. ● Outcome 5: Identify a control/audit on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change. ● Outcome 6: A mechanism to interconnect and pool health data will be created to facilitate research and public health measures in relation to climate change, including gender.
<p>Scope and activities</p>	<p><i>The project implementation area</i> is the National Agency for Public Health, with all Public Health Centers in the country, with the participation of Medical and Sanitary Institutions, regardless of status and legal form of organization.</p> <p><i>Project activities:</i></p> <p><u>Result 1:</u></p> <ul style="list-style-type: none"> ● Creating an Information System for surveillance of non-communicable diseases caused by climate change and providing medical personnel employed in NTD management. ● Technical endowment of medical institutions with technical means of interconnected program and methodologies designed to ensure the recording, storage and processing of data on diseases caused by climate change. ● Review of the policy and regulatory framework on digitalization of the health system and the impact of climate change on population health. <p><u>Result 2:</u></p> <ul style="list-style-type: none"> ● Establish an information system for surveillance of non-communicable diseases and their risk factors caused by climate change.

	<ul style="list-style-type: none"> ● Review the sectoral legislative and regulatory framework and update the staff of institutions subordinated to the Ministry of Health and their subordinated agencies (as relevant) to include responsibilities on medical staff on climate change. ● Revision of Government Decision 1396/2003 On the training of resident doctors and pharmacists and the placement of young specialists. <p><u>Result 3:</u></p> <ul style="list-style-type: none"> ● Attracting investment projects to provide public medical and sanitary institutions with technical equipment to provide at least 5000 computers. ● Establishing a mechanism for detecting NTD risk factors, including climate change conditions. ● Training of medical staff in the field of primary, emergency and hospital healthcare, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change. <p>➤</p> <p><u>Result 4:</u></p> <ul style="list-style-type: none"> ● Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change. ● Create a mechanism to interconnect and share health data to facilitate research and undertake public health measures in relation to climate change, including gender. ● Develop guidelines and regulations on health interrelations and resilience of the health system to climate change.
<p>Implementation period, timeline</p>	<p>The total implementation period will be 2 years, including:</p> <p>Year 1:</p> <p><u>Outcome 1, activities:</u></p> <ul style="list-style-type: none"> ● Elaboration of project documentation (specifications, Concept, Regulation, User Manual, etc.) for initiating the programming of an automated information system for surveillance of non-communicable diseases conditioned by climate change, degree of finality necessary to reach 100%. ● Setting up the working group with the designation by tender of the company responsible for the technical programming of the information system and the

implementation of the specifications, degree of finality necessary to reach 100%.

- Allocation of financial resources necessary for the procurement of software and servers, degree of finality necessary to reach 30%.

Result 2, activities:

- Revision of Government Decision 586/2017 on the Regulation on keeping the medical register, degree of finality necessary to reach 100%.
- Review the sectoral legislative and regulatory framework and update the staff of the institutions subordinated to the Ministry of Health and their subordinated agencies (as relevant) to include responsibilities on medical staff on climate change, degree of finality necessary to achieve 100%.
- Revision of Law nr. 10/2009 on state surveillance of public health, on the compartment of diseases caused by climate change; degree of finality required to reach 20%.

Result 3, activities:

- Providing software, technical equipment and servers necessary to ensure the proper functioning of the information system for surveillance of communicable diseases, degree of finality necessary to reach 50%.
- Providing computers and electronic signatures to medical institutions responsible for reporting cases of non-communicable diseases caused by climate change; degree of finality required to reach 50%.
- Establish a mechanism for detecting risk factors of NCDs conditioned by climate change (Tabulated list of diseases ICD-10-EA revised); degree of finality required to reach 75%.

Result 4, activities:

- Training of medical staff in the field of primary, emergency and hospital healthcare, as well as specialists from the National Agency for Public Health on the use of information systems for reporting non-communicable and communicable diseases caused by climate change; degree of finality required to reach 65%.

Year 2:

Outcome 1, activities:

- Elaboration and approval of the Government Decision approving the concept and regulation of the functioning of the Information System for the Surveillance of Non-Communicable Diseases caused by climate change; degree of finality required to reach 100%.
- Recruitment and training of personnel for the administration of the Information System for the Surveillance of Non-Communicable Diseases caused by climate change; degree of finality required to reach 100%.

Result 2, activities:

- Consultation of the Government Decision with all Central Public Authorities and those co-interested, completing the table of divergences and no objections and proposals, including personal data; degree of finality required to reach 100%.
- Establishing the infrastructural space to ensure the preservation and proper functioning of information servers within the National Agency for Public Health.

Result 3, activities:

- Development of indicators for establishing the interaction of the environment with health and revision of the regulatory framework for their implementation; degree of finality required to reach 45%.
- Training of medical staff in rural areas and implementation of Government Decision no. 1396/2003 on training doctors and pharmacists and placement of young specialists; degree of finality required to reach 45%.

Result 4, activities:

- Development of mechanisms for additional remuneration of medical staff in rural areas and attraction of young and able to work medical staff in these localities; degree of finality required to reach 45%.
- Review the regulatory framework for interconnecting and pooling health data to facilitate research and take measures to improve health; degree of finality required to reach 25%.

Result 5, activities:

- Develop and establish a mechanism for detecting NTD risk factors, including climate change conditions; degree of finality required to reach 100%.
- Identification of a control/audit body on the degree of implementation of the regulatory and policy framework in the field of health, including its interrelation in relation to climate change; degree of finality required to reach 100%.

	<ul style="list-style-type: none"> ● Create a mechanism to interconnect and share health data to facilitate research and undertake public health measures in relation to climate change, including gender; degree of finality required to reach 30%.
Budget	<p>The estimated total cost for project implementation will be 6,846,000 MDL including:</p> <ol style="list-style-type: none"> 1. Result 1 – 800 thousand MDL or 11.6% of the project budget. 2. Result 2 – 1,640,000 MDL or 23.9%. 3. Result 3 – 2,600,000 MDL or 38.01%. 4. Result 4 – 800 thousand MDL or 11,6,7%. 5. Result 5 – 700,000 MDL or 10.2%. 6. Project management and monitoring – 300,000 MDL or 4.38%.
Sources of funding	<p>The costs will be covered by external partners working in the field of health such as (World Health Organization, Swiss Development Agency "Healthy Life Project", UNICEF, etc.) (65% of the total budget) with subsequent allocation of sources from the state budget (35%) with ensuring system maintenance.</p>
Measurement/Evaluation	<p>Government Decision on the establishment of an approved information system, Revised and implemented legislative framework, Endowment of the National Agency for Public Health with a storage server for non-communicable diseases, 35 public medical institutions equipped with computers, software and high-performance equipment for reporting diseases caused by climate change, Tabulated list of diseases ICD-10-EA revised, with the inclusion of diseases caused by climate change and the presence of a mechanism for disaggregation of diseases resulting from climate change, User Manual of the SI SBNT Information System, approved, Training programs developed; trainings performed, Approved Order establishing with nominal composition of the working group, Government Decision approved on Establishing a single database for data management in health including diseases caused by climate change, Nominal revision of the Order of the Ministry of Health no. 867/2020 Approved guidelines, as well as the establishment of a team to supervise medical institutions in a randomized manner on the correctness of data entry in The information system to finally be the information system to be functional.</p>
Potential risks	<ul style="list-style-type: none"> ● Funding gap for the creation, establishment, and development of the information system. ● Lack of a robust regulatory framework on financing the digitalization of the health sector. ● Poor technical facilities in the field of interconnected program technical means and methodologies, which is intended to ensure the recording, storage, processing and use of information.

	<ul style="list-style-type: none"> ● Low ability to use information systems. ● Reduced capacity to detect risk factors of NTDs, including conditioned by climate change. ● Low degree of implementation of policy documents and regulatory framework in the field of health. ● Lack of regulatory framework to interconnect and pool health data to facilitate research and take measures to improve health.
Project beneficiaries	<p>The owner of SI SBNT will be the state that will realize its ownership, management and use of data from it and the implementation will be carried out by NPHA with the participation of PMSI regardless of legal status and form of ownership, with the delivery of statistical data to the State University of Medicine and Pharmacy "Nicolae Testemitanu" and other medical education institutions.</p>
Responsibilities and coordination	<p>The implementation of the project will be carried out in coordination by the Ministry of Health, in collaboration with the National Agency for Public Health, and the internal control on keeping SI SBNT is carried out by ANSP. External control over compliance with the requirements for the creation, maintenance, operation and reorganization of SI SBNT shall be carried out by competent and certified institutions in the field of audit. At the same time, SI SBNT is registered in the Register of State Information Resources and Systems.</p> <p>Responsibility for the organization and functioning of the SI SBNT is assigned to the NPHA which develops the type and model of related documents, instruction on how to fill in and other materials necessary for the operation of the information system.</p> <p>All subjects of Si SBNT as well as the applicant for information containing personal data are responsible according to the legislation in force for the processing, disclosure, transmission of information from SI SBTESP as well as third parties, contrary to the provisions of the legislation.</p> <p>The registrars of SI SBNT are medical workers, responsible persons within Medical Service Providers, Departmental Medical Service Providers, Social Assistance and Rehabilitation and Recovery Institutions, Temporary Placement Centers, Public Health Centers, National Agency for Public Health, medical laboratories, National Center for Blood Transfusion.</p>

7.2. Aspects regarding the project idea "Operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change"

Within the project proposal "Operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change, provides for the detection as soon as possible of hazards and risks caused by heat waves, cold, floods, pollution of drinking water, atmospheric air, for public health in order to approve health measures to prevent the spread of communicable diseases and health events, reducing their consequences for the population.

Operational procedures for early warning and prevention and response actions to mitigate or eliminate the effects of extreme weather events will include the following aspects:

- a) Detection (triage, filtering and selection), verification of information, risk assessment and interpretation of data relating to sudden changes in weather phenomena.
- b) Exchange of information relevant to public health between competent authorities for public health surveillance.
- c) Developing, initiating public health measures and monitoring impacts.
- d) The maintenance of specific surveillance networks by the competent authorities for the surveillance of public health and weather phenomena which may directly or indirectly harm human health.

The estimated budget required for actions aimed at implementing the technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" is 5,410,000 MDL or an annual average of about 1.5 million lei. At the same time, it is estimated that with the implementation of this technology, important financial sources resulting from the implementation of public health measures aimed at preventing and controlling communicable and non-communicable diseases that have climate change as etiology will be saved.

Table 7.2: Components of the pilot project idea "Early warning operational procedures, prevention and response actions to mitigate or eliminate the effects of extreme weather events (heat waves, cold waves, floods, drinking water pollution, air pollution, etc.) caused by climate change"

Components	General content components
General Information	An important step in the second phase of the ENT/TNA process was the identification of a technology to develop operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change, and at the previous stages of the project by the WG established by the order of the Ministry of Health was prioritized the project

	<p>Operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.</p> <p>The above-mentioned project proposal provides for a technology for early detection of extreme weather phenomena that would pose a threat to health, and which requires continuous robust surveillance and early warning and response mechanisms. The Republic of Moldova lacks structures that allow rapid exchange of information between public health authorities and other authorities such as SHS or GIES, to detect threats as soon as possible. The Early Warning and Response System for the prevention of public health events caused by climate change can be aimed at maintaining and ensuring public safety and health through collaboration and cross-sectoral cooperation, joint efforts of public and private institutions, involving every citizen and society as a whole. This project will specify the activities to be executed by the authorities involved in early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change.</p> <p>The establishment of this technology involves the activation of intersectoral working mechanisms between the Ministry of Internal Affairs, the Ministry of Agriculture and Food Industry, the Ministry of Environment, the State Hydrometeorological Service, the Ministry of Finance, through subordinated institutions, the National Agency for Food Safety, within the limits of their competences, will ensure the exchange of information about the occurrence of events on the territory of the country that may influence public health according to Government Decision nr. 1076 of 16 November 2010 "On the classification of exceptional situations and on the manner of accumulation and presentation of information in the field of protection of population and territory in case of exceptional situations" and Government Decision nr. 961 of 21 August 2006 "On the approval of the Regulation of the national network for observation and laboratory control on contamination (pollution) of the environment with radioactive, poisonous, highly toxic substances and biological agents".</p> <p>The need for a state system of early warning and response has always been necessary to ensure the detection of public health events or signals related to events caused by communicable, non-communicable diseases and not least caused by climate change.</p>
<p>Objectives (What will the project achieve?)</p>	<p>As specific objectives pursued during the implementation of the project, the following are established:</p> <ul style="list-style-type: none"> ● Creating training courses for medical staff engaged in monitoring and assessing climate risk factors. ● Review the policy framework directly related to the implementation of public health measures to protect the health status of the population and the resilience

	<p>of the health system to changes in environmental factors and sudden changes in climate.</p> <ul style="list-style-type: none"> ● Strengthening the capacities of the National Agency for Public Health regarding the alert system in case of extreme weather phenomena.
<p>Link with the country's development priorities</p>	<p>The project will correspond to sectoral priorities regarding the optimization of the notification and early warning process, prevention and response actions to mitigate or eliminate the effects on public health of extreme meteor phenomena, because the methods currently used by NPHA and the authorities responsible for the implementation of Law no. 10/2009 on state supervision of public health have multiple deficiencies both at physical level, as well as operational.</p> <p>Early detection technology for extreme weather events that would pose a threat to health requires continuous robust surveillance and early warning and response mechanisms. The Republic of Moldova lacks structures that allow rapid exchange of information between public health authorities and other authorities such as SHS or GIES, to detect threats as soon as possible. The Early Warning and Response System for the prevention of public health events caused by climate change can be aimed at maintaining and ensuring public safety and health through collaboration and cross-sectoral cooperation, joint efforts of public and private institutions, involving every citizen and society as a whole.</p>
<p>Project deliverables</p>	<p>The main results/deliverables of the project implementation will be the following:</p> <ul style="list-style-type: none"> ● <i>Result 1: The development of operational procedures regarding early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena will lead to the interconnection of the early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, in order to ensure the resilience of the health system to climate change and to a collection of data with development of public health measures for planning, implementation, monitoring and assessment of public health risks also within sectoral institutions;</i> ● <i>Result 2: Targeted capacity building on the management, use and sharing of climate information in relation to public health will result in the introduction of mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change, and will also lead to the identification of climate change gaps. data/information on climate change, including gender and climate change, with the development of research projects in collaboration with the scientific community.</i> ● <i>Result 3: Strengthening the capacities of the National Agency for Public Health and its territorial structures in the field of public health emergencies in accordance with the new climatic conditions will have the impact of carrying out an inventory of information, tools and existing technologies and software used by</i>

	<p><i>medical and sanitary institutions that will lead directly to the digitization of climate and meteorological data available at the Service State hydrometeorological and their report on the health of the population.</i></p> <ul style="list-style-type: none"> ● <i>Result 4: Increasing the level of awareness and training of decision-makers and medical staff on climate risks and implementing public health measures to mitigate their impact will be done with the implementation of a national campaign for information on the risks caused by climate change on public health, which will directly lead to the development and implementation of gender-sensitive lifelong training programs, focused on methodologies and approaches for assessing climate impact and climate vulnerability, as well as on public health measures</i>
<p>Field of application and activities</p>	<p><i>The project implementation area is the entire health system in the country, centralized on the National Agency for Public Health, with all Public Health Centers in the country, with the participation of Medical and Health Institutions, regardless of status and legal form of organization.</i></p> <p><i>Project activities:</i></p> <p><u><i>Result 1:</i></u></p> <ul style="list-style-type: none"> ● Elaboration of project documentation for the elaboration of standard operational procedures on early warning and development of cloud prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena. ● Development of mechanisms for interconnecting the early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, to make the health system resilient to climate change. ● Data collection with the development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions. <p><u><i>Result 2:</i></u></p> <ul style="list-style-type: none"> ● Introduce mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change. ● Identify data/information gaps on climate change, including gender and climate change, by developing research projects in collaboration with the scientific community.

	<ul style="list-style-type: none"> ● Review of the continuing medical education curriculum with the development and implementation of response courses to public health emergencies caused by sudden changes in weather. ● Development and implementation of a common cross-sectoral database on population health prediction on climate change and extreme weather events. ● Updating and completing the set of technical regulations on health system actions in case of extreme weather phenomena. ● Review of the medium-term budgetary framework of the health system with allocation of financial and human sources on early warning and management of public health emergencies in case of public health emergencies. <p><i><u>Result 3:</u></i></p> <ul style="list-style-type: none"> ● Implementation of awareness communication campaigns with the elaboration of trainings for decision-makers and medical staff on climate risks and implementation of public health measures to reduce their impact. ● Updating and implementing early warning procedures on public health emergencies by revising the regulatory framework, namely GD 951/2013 on the national surveillance system for communicable diseases and public health events. <p><i><u>Result 4:</u></i></p> <ul style="list-style-type: none"> ● Review of the medium-term budgetary framework of the National Agency for Public Health identifying financial resources to strengthen integrated management capacities in case of extreme weather events. ● Identification of existing tools and technologies and software used by medical and sanitary institutions that will directly lead to the digitization of climate and meteorological data available at the State Hydrometeorological Service and their report on the health status of the population. ● Increasing capacities for intersectoral interaction in case of public health emergencies in accordance with Law nr. Regulation (EU) No 10/2009 on state oversight of public health in the context of health system resilience to sudden climate change.
<p>Implementation period, timeline</p>	<p>The total implementation period of the project will be 4 years, including:</p> <p>Year 1:</p> <p><i><u>Result 1, activities:</u></i></p>

- Elaboration of project documentation for the elaboration of standard operational procedures on early warning and development of new prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena, degree of finality necessary to achieve 100%.
- Development of mechanisms for interconnection of early warning systems of the General Inspectorate for Emergency Situations and the State Hydrometeorological Service with the National Agency for Public Health, to make the health system resilient to climate change; degree of finality required to reach 80%.
- Data collection with the development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions; degree of finality required to reach 80%.
- Establishing early warning and response indicators according to the degree of alert (yellow, orange, red); degree of finality required to reach 80%.

Result 2, activities:

- Introduce mandatory annual on-the-job training for health professionals, jointly with stakeholders, on the relevance and use of climate data and information and the resilience of the health system to climate change; degree of finality required to reach 100%.
- Identify data/information gaps on climate change, including gender and climate change, by developing research projects in collaboration with the scientific community; degree of finality required to reach 100%.

Result 3, activities:

- Review of the continuing medical education curriculum with the development and implementation of response courses to public health emergencies caused by sudden climate change; degree of finality required to reach 100%.
- Development of standard operational procedures (SOPs) that explicitly stipulate what to do in case of: cold waves, floods, high air pollution, etc. and who has these responsibilities. It is not clearly stipulated the role of the State Hydrometeorological Service in informing all actors about the risks of flooding, air pollution, etc. degree of finality necessary to achieve 100%.

Year 2:

Result 1, activities:

- Development and implementation of a common cross-sectoral database on predicting the health status of the population on climate change and extreme weather events; degree of finality required to reach 90%.
- Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions; it will be done permanently, which will be necessary to reach 80% annually.
- Interconnection of early warning systems of the General Inspectorate for Emergency Situations and State Hydrometeorological Service with the National Agency for Public Health, to make the health system resilient to climate change; degree of finality required to reach 60%.

Result 2, activities:

- Updating and completing the set of technical regulations on health system actions in case of extreme weather phenomena; degree of finality required to reach 100%.
- Review of the medium-term budgetary framework of the health system with allocation of financial and human sources on early warning and management of public health emergencies in case of public health emergencies; degree of finality required to reach 100%.
- Completing the Health Strategy with a new specific objective on the Development of operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change, degree of finality necessary to achieve 100%.

Result 3, activities:

- Implementation of awareness communication campaigns with the elaboration of trainings for decision-makers and medical staff on climate risks and implementation of public health measures to reduce their impact; degree of finality required to reach 60%.
- Updating and implementing early warning procedures on public health emergencies by revising the regulatory framework, namely GD 951/2013 on the national surveillance system for communicable diseases and public health events; degree of finality required to reach 50%.

Year 3:

Result 1, activities:

- Data collection and development of public health measures for planning, implementation, monitoring and assessment of public health risks and within sectoral institutions; it will be made permanently, which will be necessary to reach 100% annually.
- Identification of existing tools and technologies and software used by medical and sanitary institutions that will directly lead to the digitization of climate and meteorological data available at the State Hydrometeorological Service and their report on the health status of the population; degree of finality required to reach 100%.

Result 2, activities:

- Working with external partners to attract funds to create operational procedures on early warning caused by climate change; degree of finality required to reach 100%.
- Economic and financial substantiation of the prevention of the impact caused by climate change on the health of the population; degree of finality required to reach 100%.

Result 3, activities:

- Reengineering the current early warning system by updating it to European standards and delimiting the funds necessary for the development of operational procedures; degree of finality required to reach 75%.
- Economic and financial argumentation of the development of operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena with prioritization of risk sectors; degree of finality required to reach 70%.
- Appreciation of the degree of usefulness of technical equipment with allocation or attraction of additional sources of its renewal; degree of finality required to reach 85%.
- Registration in the early warning system based on Government Decision no. 405/2014 on the integrated governmental electronic signature service (MSign), at the same time the Information Technology and Cyber Security Service (STISC), becomes responsible for the safety of personal or medical data; degree of finality required to reach 85%.

Result 4, activities:

- Establishing an information processing filter only from official state sources or international information sources, establishing reliable indicators and an

information evaluation mechanism, to prevent the risk of false alerts of climate change, heat waves, floods, etc.; degree of finality required to reach 85%.

- Strengthen public health surveillance with an integrated system for prevention, early warning, management and protection against increased levels of ultraviolet radiation; degree of finality required to reach 80%.

Year 4:

Result 1, activities:

- Together with the department of preventive medicine and the School of Public Health Management within Nicolae Testemitanu State University of Medicine and Pharmacy, training courses for resident doctors in the field of state supervision of public health and continuous training of medical staff will be created on operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold, flood, pollution of drinking water, atmospheric air, etc.) caused by climate change; degree of finality required to reach 100%.
- Elaboration of Health Guidelines and Regulations on operational procedures for early warning in cases of climate change.; degree of finality required to reach 85%.
- Review of the normative framework regarding the roles of state institutions according to the activated normative framework. (Law No 10/2009 on State Supervision of Public Health or Law 212/2004 on State of Emergency, Siege and War); degree of finality required to reach 95%.

Result 2, activities:

- Strengthening intersectoral interaction that will lead to strengthening the capacities of the National Agency for Public Health and its territorial structures with the direct involvement of governments and finally civil society; degree of finality necessary to achieve 100%.
- Review of the regulatory basis providing operational procedures on early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change; degree of finality required to reach 100%.
- Proper coordination of the health system following early warning and rapid response of health services with the undertaking of prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena; degree of finality required to reach 100%.

Budget	<p>The estimated budget required for actions aimed at implementing the technology "Operational procedures for early warning, prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, pollution of drinking water, atmospheric air, etc.) caused by climate change" is 5,410,000 MDL, including:</p> <ul style="list-style-type: none"> ● Result 1 – 3,200,000 MDL or 59.1% of the project budget. ● Result 2 – 850,000 MDL or 15.7%. ● Result 3 – 920,000 MDL or 17%. ● Result 4 – 440,000 MDL or 8.1%.
Sources of funding	<p>The costs will be covered by external partners working in the field of health such as (World Health Organization, Swiss Development Agency "Healthy Life Project", UNICEF, etc.) (65% of the total budget) with subsequent allocation of sources from the state budget (35%)</p>
Measurement/Evaluation	<p>Comprehensive accessible climate data and information provided in a timely manner and regularly updated, Information Management System with management procedures and formats based on the implementation of public health measures, Standard procedures for collecting and sharing information on the collection of information relevant to public health, Mandatory annual on-the-job trainings for all healthcare professionals, 4 research projects in collaboration with scientific institutions implemented to address specific information needs for the health sector, Data and information on how to report are processed in an integrated way, thus ensuring the implementation of working public health measures, Climate change data from the State Hydrometeorological Service digitized and implemented in public health measures, National information campaign on coordinated actions for and necessary public health measures, Training modules on gender-sensitive climate change impacts elaborated. 5 workshops for opinion-forming medical staff,</p>
Potential risks	<ul style="list-style-type: none"> ● Lack of funding for early warning systems, due to sporadic cases of climate events. ● Insufficient investments in the interconnection of early warning systems of GIES and ANSP. ● Large investments for rare situations. ● Lack of staff (decision makers) trained in activating the alert degree (yellow, orange, red). ● Limited capacities to develop the performant regulatory and technical framework. ● Insufficient collaboration of the health sector with other authorities.

	<ul style="list-style-type: none"> • Lack of a communication strategy in emergency situations – epidemics, natural disasters. • Lack of sanitary regulations on climate change.
Project beneficiaries	The Ministry of Health and NPHA in the context of public health surveillance will be the beneficiary authority on information on health hazards and determinants, by assessing the risks of triggering public health emergencies, communicating risks and carrying out public health measures in cases of extreme weather phenomena to the Government and Central Public Authorities concerned
Responsibilities and coordination	The main obligations to implement the technology belong to the National Agency for Public Health, which has the necessary experience with the alert system for communicable diseases and at the same time has tools to apply the technology through territorial SPCs. The main actions identified result from establishing communication between state institutions and developing SOPs that would improve coordination and interaction between authorities, the innovative part is to focus on managing conditions caused by climate change Also, part of the actions is focused on training medical staff and decision makers on issues related to the impact of climate change. Finally, these actions and activities aim to adapt the health sector by essentially improving sectoral capacities in taking prevention and response actions to mitigate or eliminate the effects of extreme weather phenomena (heat waves, cold waves, floods, drinking water pollution, atmospheric air

7.3. Aspects regarding the project idea "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

The project "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" transposes Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, published in the Official Journal of the European Communities L 330 of 5 December 1998 and partially transposes the Directive Council Regulation (EC) No 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of public health, as well as Art. 55 of Law nr. 209 of 29 July 2016 on waste.

That technology will focus mainly on:

1. Facilitating access to improved drinking water and sanitation systems for 30 district medical and sanitary institutions, by implementing appropriate measures to prevent and reduce water-conditioned diseases, by ensuring drinking water quality and a more efficient and sustainable management of water resources of district PMSI.

2. Training of water operators in management of water supply and sanitation systems, water safety, construction of small water and sanitation systems for medical and sanitary institutions.
3. Management of medical waste as an integral part of infection control.
4. Making producers of medical waste aware that they are liable to bear the costs necessary for their management as waste producers.

Table 7.3: Components of the pilot project idea "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided"

Components	General content components
General information	<p>The joint order of the Ministry of Environment and the Ministry of Health no. 91/704 of October 20, 2010, approving the target indicators and control deadlines, is difficult to apply without the involvement of all responsible authorities and it is necessary for the national target indicators to be approved at Government level to become a national priority. A pilot study on water, sanitation and hygiene services in healthcare institutions in the Republic of Moldova (2019) demonstrated adequate access to drinking water and hand hygiene (WASH) services, while sanitation emerged as a priority in terms of attention and interventions to ensure quality health services. Differences were observed in service coverage in rural and urban institutions, especially in sanitation, cleaning and management of medical waste. Testing of drinking water quality revealed a high rate of non-compliance in the health facilities visited, compared to national requirements indicating the need for priority attention in improving drinking water safety. Further efforts are needed to improve WASH, medical waste cleaning and management practices at healthcare settings, thereby ensuring patient safety and reducing the risk of healthcare-associated infections and strengthening national and local surveillance service.</p> <p>The technology "Implementation in rural medical institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" transposes Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, published in the Official Journal of the European Communities L 330 of 5 December 1998 and partially transposes Council Directive 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of public health, as well as Art. 55 of Law nr. 209 of 29 July 2016 on waste.</p> <p>That technology will focus mainly on:</p> <ol style="list-style-type: none"> 1. Facilitating access to improved drinking water and sanitation systems for 30 district medical and sanitary institutions, by implementing appropriate measures to prevent and reduce water-conditioned diseases, by ensuring

	<p>drinking water quality and a more efficient and sustainable management of water resources of district PMSI.</p> <ol style="list-style-type: none"> 2. Training of water operators in management of water supply and sanitation systems, water safety, construction of small water and sanitation systems for medical and sanitary institutions. 3. Management of medical waste as an integral part of infection control. 4. Making producers of medical waste aware that they are liable to bear the costs necessary for their management as waste producers.
<p>Objectives (What will the project achieve?)</p>	<p>As specific objectives pursued during the implementation of the project, the following are established:</p> <ul style="list-style-type: none"> ● Integrating water and health priorities into the government's action plan with national action planning processes in the sectors of water supply and sanitation and management of waste resulting from medical activity, to ensure infection control and increase the quality of medical services provided. ● Increasing the number of authorized economic agents in the collection, transportation and processing of deserts resulting from medical activities. ● Alignment with quality standards and regulations on the main environmental factors influencing health (air quality, water quality, food quality, waste management, etc.) so that they reflect a wider spectrum of possible climatic conditions
<p>Link with the country's development priorities</p>	<p>The implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, to ensure infection control and increase the quality of medical services provided requires cooperation and multisectoral interaction at all levels. Policies should be generated and coordinated globally, with management practices implemented locally. Establishing a national policy and legal framework, training staff and raising public awareness are essential elements for successful health waste management.</p> <p>Technology is a priority direction of activity of the Government and civil society and is oriented towards permanently strengthening the climate resilience of health system institutions, population health and improving the socio-economic status of the country. Health implies as mandatory conditions economic and social security, harmonious interpersonal and social relationships, a safe and healthy environment for work and life, adequate quality of drinking water, air and soil, sufficient and balanced nutrition, complemented by a healthy lifestyle and access to quality health services. These conditions contribute significantly to the resilience of the system to direct and indirect climate impacts, as well as to adaptation to climate change with a gradual but aggressive effect, etc.</p>
<p>Project deliverables</p>	<p>The main results/deliverables of the project implementation will be the following:</p>

	<ul style="list-style-type: none"> ● <i>Result 1: Increasing the resilience of the health sector through investments in water supply and sanitation and management of waste resulting from medical activities.</i> ● <i>Result 2: Assessment of water supply infrastructure at rural and urban level based on the quantity and quality of water resources in the context of the new water supply and sanitation strategy, as well as medical waste management.</i> ● <i>Result 3: Development and promotion of policy documents and draft normative acts (Ministry of Health jointly with Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity.</i>
<p>Field of application and activities</p>	<p><i>The project implementation area is 35 Public Medical Sanitary Institutions where it will be felt especially in the Northern Region, where the level of connection to aqueduct, sewerage and waste management networks resulting from medical activities is 2 times more underdeveloped than in the South and Center regions.</i></p> <p><i>Project activities:</i></p> <p><u><i>Result 1:</i></u></p> <ul style="list-style-type: none"> ● <i>Promoting investments in the development and modernization of the aqueduct and sewerage infrastructure of 35 district medical and sanitary institutions.</i> ● <i>Implementation of recycling technologies for waste resulting from medical activities to control infections and streamline their processing in relation to the environment.</i> ● <i>Assessing the costs of health services for people (women/men), whose health was affected by the lack of aqueduct and sewerage and poor management of waste processing resulting from medical activities), as well as the costs of recovering the impact of climate change on the infrastructure of the health sector.</i> <p><u><i>Result 2:</i></u></p> <ul style="list-style-type: none"> ● <i>Mapping vulnerable healthcare institutions regarding water supply and sanitation and management of waste resulting from medical activities to make the health sector resilient to climate change.</i> ● <i>Adaptation of existing aqueduct and recycling systems for medical waste for resilience to extreme climate change.</i> <p><u><i>Result 3:</i></u></p> <ul style="list-style-type: none"> ● <i>Revision of sanitary regulations with their extension to the activity of all natural/legal persons and activities/research, regardless of the type of</i>

	<p>ownership and legal form of organization that generates waste resulting from medical activity.</p> <ul style="list-style-type: none"> ● Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and waste management resulting from medical activity. ● Regularly update and improve institutional contingency plans for preparedness and response to public health emergencies, including those caused by climate change, in the context of providing public health care institutions with aqueducts and recycling devices for waste resulting from medical activities.
<p>Implementation period, timeline</p>	<p>The total implementation period of the project will be 5 years, including:</p> <p>Year 1:</p> <p><u>Result 1, activities:</u></p> <ul style="list-style-type: none"> ● Promoting investments in the development and modernization of the aqueduct and sewerage infrastructure of 35 district medical and sanitary institutions; degree of finality required to reach 100%. ● Assessing the costs of health services for people (women/men), whose health was affected by the lack of aqueduct and sewerage and poor management of waste processing resulting from medical activities), as well as the costs of recovering the impact of climate change on the infrastructure of the health sector; degree of finality required to reach 100%. <p><u>Result 2, activities:</u></p> <ul style="list-style-type: none"> ● Mapping vulnerable healthcare institutions regarding water supply and sanitation and management of waste resulting from medical activities to make the health sector resilient to climate change; degree of finality required to reach 70%. ● Revision of sanitary regulations with their extension to the activity of all natural / legal persons and activities / research, regardless of the type of ownership and legal form of organization that generates waste resulting from medical activity. degree of finality required to reach 70%. <p><u>Result 3, activities:</u></p> <ul style="list-style-type: none"> ● Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs

identified in the context of scientific research results in the field of water supply, sanitation and waste management resulting from medical activity; degree of finality required to reach 70%.

- Regularly update and improve institutional contingency plans for preparedness and response to public health emergencies, including those caused by climate change, in the context of providing public health care institutions with aqueducts and recycling devices for waste resulting from medical activities. degree of finality required to reach 70%.

Year 2:

Result 1, activities:

- Implementation of recycling technologies for waste resulting from medical activities to control infections and streamline their processing in relation to the environment; degree of finality required to reach 40%.

Result 2, activities:

- Adaptation of existing aqueduct and recycling systems for medical waste for resilience to extreme climate change; degree of finality required to reach 50%.
- Updating and completing the existing regulatory framework (Sanitary Regulation on the management of waste resulting from medical activity, Protocol on Water and Health in the Republic of Moldova; degree of finality necessary to reach 50%.

Result 3, activities:

- Research study of the regulatory framework on medical waste management in the Republic of Moldova and study of current practices of waste management resulting from medical activity in public medical and sanitary institutions. Also, assessing the capacities of medical institutions in medical waste management, possible risks, existing mechanisms for neutralization, destruction and recycling of medical waste and developing recommendations on harmonizing the legal framework and practices for medical waste management; degree of finality required to reach 50%.

Year 3:

Result 1, activities:

- Elaboration and implementation of National Guidelines on the impact of waste management resulting from medical activity and creation of a necessary infrastructure for the management of hazardous waste streams resulting from

medical activity or from medical research institutions; degree of finality required to reach 100%.

Result 2, activities:

- Restructuring and orientation towards EU standards the mechanism of planning, design, construction, expertise, control and operation of water and sewerage infrastructure. The existing rules for design include common provisions for urban and rural areas, the oversizing of rural systems being the high requirements for fire flows and water storage volumes; degree of finality required to reach 75%.
- Updating the regulatory framework to standards consistent with those of the European Union, including for small systems in rural areas. This sector is currently largely based on norms and rules in construction (NRC, SNIP and STAS State Standards, (GOST), which were developed and applied in the former Soviet Union. These acts are outdated and lead to capital investments and increased operational costs.; degree of finality required to reach 75%.

Result 3, activities:

- Revision of sanitary regulations with their extension to the activity of all natural/legal persons and activities / research, regardless of the type of ownership and legal form of organization that generate waste resulting from medical activity, as defined in Article 55 of Law no. 209/2016 on waste; degree of finality required to reach 75%.

Year 4:

Result 1, activities:

- Regulation of separate collection by types, packaging, labeling, temporary storage, transportation within producing institutions, treatment, delivery, disposal and record keeping of waste resulting from medical activity; degree of finality required to reach 100%.
- Creating infrastructure for managing the following streams: waste resulting from medical activity (sharp waste, injections, infectious waste, organic waste, equipment, etc.; degree of finality required to reach 100%.

Result 2, activities:

- Establishing by Order the team of communicators on awareness on the consequences and inappropriate practices in the field of waste management, including hazardous ones from the point of view of environmental protection, and as indicators to be established the degree of awareness and the number of

	<p>communications in mass media and social networks; degree of finality required to reach 100%.</p> <p><u>Result 2, activities:</u></p> <ol style="list-style-type: none"> 1. Elaboration and promotion of policy documents and draft normative acts (Ministry of Health jointly with the Ministry of Environment) in the field of water, sanitation and management of waste resulting from medical activity to ensure infection control and increase the quality of medical services provided. 2. Revision of GD 837/2016 for the approval of the Regulation on the remuneration of employees of public medical and sanitary institutions included in the mandatory health insurance system. <p>Year 5:</p> <p><u>Result 1, activities:</u></p> <ol style="list-style-type: none"> 1. Consultation with partners from civil society, economic and academic environment debated in the general context of implementation of interventions but also development priorities established to meet the needs identified in the context of scientific research results in the field of water supply, sanitation and management of waste resulting from medical activity. <p><u>Result 2, activities:</u></p> <ol style="list-style-type: none"> 2. Publication of study results to raise awareness and inform society about the health impact of water supply and waste resulting from medical activity. 3. Completing the regulatory framework with the elaboration of a Sanitary Regulation on the management of waste resulting from medical activity, the National Guide on the management of waste from medical activity and the safety of injections. <p><u>Result 3, activities:</u></p> <ol style="list-style-type: none"> 1. Approaching scientific research, not only from an epidemiological aspect, but also from an aspect of their impact on the environment, as well as reviewing the regulatory framework, jointly with specialists from the Environment Agency. 2. Review of the regulatory framework providing investment and financing decisions for recovery and response measures relevant to public health in the context of climate change.
Budget	The estimated value of the financial resources needed for the actions aimed at implementing the technology "Implementation in rural medical and sanitary

	<p>institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" is 168,850,000 MDL or an annual average of about 24 million MDL, including:</p> <ol style="list-style-type: none"> 1. Result 1 – 155,100,000 MDL or 91.8% of the project budget. 2. Result 2 – 10,300,000 MDL or 6,10%. 3. Result 3 – 3,450,000 MDL or 2%.
Sources of funding	<p>State budget, Budgets of Central Public Authorities, through the agreement of the International Development Association (ratified by Law 169/2022) in the amount of EUR 44.1 million.</p> <p>Partnerships: relevant NGO.</p>
Measurement/Evaluation	<p>Number of investment projects for the construction and/or rehabilitation of aqueduct and sewerage systems, Number of new recycling centers implemented, The study on health costs related to climate extreme events is completed and includes gender-disaggregated data, Adaptation in 35 institutions aqueduct and sewerage systems, including medical waste management, strengthened and fortified in the context of health system resilience to climate change, Health Regulations approved by Government Decision and put into action, High priority projects for the resilience of the health sector to climate change, updated and improved territorial and institutional plans for preparedness and response to public health emergencies.</p>
Potential risks	<ul style="list-style-type: none"> ● Deficit in financial resources regarding the implementation of water supply, sanitation and waste management projects resulting from medical activity. ● Lack of rural and urban water supply infrastructure in the territories. ● Non-compliance with sanitary norms on drinking water quality. ● Lack of communication campaigns on awareness on consequences and inappropriate practices in the field of waste management, including hazardous ones from the point of view of environmental protection. ● Low degree of implementation of scientific research results in the field of water supply, sanitation and waste management resulting from medical activity. ● Insufficient regulatory framework in implementing medical waste cleaning and management practices at the level of healthcare institutions, thus ensuring patient safety and reducing the risk of infections associated with healthcare provision and strengthening the national and local surveillance service.
Project beneficiaries	<p>35 Public Medical and Sanitary Institutions and local public authorities as founders of district medical and sanitary institutions.</p>

Responsibilities and coordination	The main obligations will be exercised as technical coordinator of the process of implementation and monitoring of the technology "Implementation in rural medical and sanitary institutions of water supply, sanitation and waste management projects resulting from medical activity, in order to ensure infection control and increase the quality of medical services provided" by local Public Authorities with the support of the Government, Ministry of Health and NGO
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