

Republic of Moldova

GOVERNMENT

DECISION No. 301
of 24.04.2014

on the approval of the Environmental Strategy for the years 2014-2023 and of the Action Plan for its implementation

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In order to ensure the implementation of the provisions of the Programme of Activity of the Government of the Republic of Moldova “European Integration: Freedom, Democracy, Welfare” for the years 2013-2014 and creation of the strategic framework in the field of environmental protection, the Government DECIDES:

1. To approve:
the Environmental Strategy for the years 2014-2023, as in annex no. 1;
the Action Plan for the implementation of the National Environmental Strategy for the years 2014-2023, as in annex no. 2.
2. The Ministry of Environment:
shall cooperate with international organizations and potential donors in order to attract the necessary volume of investments for implementing the provisions of the Environmental Strategy for the years 2013-2023 and of the Action Plan for its implementation;
shall submit to the Government annually, before the 1st of March, the monitoring report on the implementation of the indicated Strategy.
3. Ministries and other central administrative authorities:
shall ensure the implementation of the measures provided for in the Environmental Strategy for the years 2014-2023 and in the Action Plan for its implementation, according to their competences;
shall submit to the Ministry of Environment annually, before the 1st of February, reports on the implementation of respective measures.
4. It is recommended to local public administration authorities to undertake the necessary measures for the implementation of the provisions of the Strategy.
5. It is established that the Action Plan for the implementation of the Environmental Strategy for the years 2013-2023 can be updated every three years, following an assessment of the progresses in the implementation process.
6. The control over the execution of this decision shall be the task of the Ministry of Environment.

PRIME MINISTER

Iurie LEANCA

Counter-signed by:
Deputy Prime Minister,
Minister of Economy
Deputy Prime Minister,
Minister of Foreign Affairs
and European Integration
Minister of Environment
Minister of Health
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Minister of Agriculture
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Chisinau, April 24, 2014.
No. 301.

ENVIRONMENTAL STRATEGY FOR THE YEARS 2014-2023

I. INTRODUCTION

Environmental protection is an issue of global importance, which has to become a national priority because it directly concerns the life conditions and health of the population, achievement of economic interests, as well as capacities for the society's sustainable development.

The existence of a clean environment contributes, undoubtedly, to ensure the fundamental human rights provisions of the Constitution of the Republic of Moldova: the right to life and the right to physical and moral health. This implies maintaining the quality of the main components of the environment (air, water, soil, flora and fauna) in terms of sustainable development.

As a result of changes produced over recent years in our society, in the structure of national economy, but also in the existing legal framework, it became necessary to develop a clear environmental policy that would:

a) establish basic principles and priorities in the field of environmental protection, rational use of natural resources and sustainable development of the country;

b) ensure the synergy of implementation of the international obligations assumed by the Republic of Moldova and realization of the policy framework through the European integration;

c) constitute the basis of an institutional reform and of capacity building for the implementation of the policy and legal framework in the field of environmental protection and sustainable use of natural resources.

The necessity to develop an environmental policy document has been noted over recent years both by national experts as well as by international experts engaged in various environmental missions in the Republic of Moldova.

Like the other countries in the region, Moldova is facing many significant environmental problems. Insufficient management of solid waste leads to soil, air and water pollution; inadequate management of forests and irrational agricultural practices result in soil degradation and biodiversity losses; small rivers and wells are heavily polluted due to agricultural activities, obsolete sewage infrastructure, illegal storage of waste and manure; industrial activities and a large number of old cars cause air pollution in urban areas, whereas the lack or renewable energy sources induces energy insecurity and contributes to climate change.

Elaboration of an Environmental Strategy has also been dictated by the political vector of our country's European integration, by the current requirements of national legislation alignment to the provisions of EU directives and of assuring the country's sustainable development by promoting green economy.

The process of European integration presents a challenge for the environmental sector and includes two main action directions: harmonization of national environmental legislation with the EU *acquis* in this field and institutional reform, which implies the development of an institutional mechanism capable to enforce the newly adopted legislation. The Environmental Strategy for the years 2014-2023 (hereinafter referred to as - the Strategy) covers exactly these challenges and aspires to be the key strategic planning document for the actions to be taken in the following decade.

The „Environment” Chapter of the Association Agreement provides for the concrete commitments and activities of the Government of the Republic of Moldova in the field of environmental protection, such as:

a) elaboration of legislation, norms and standards harmonized with the EU directives, institutional capacity building and the establishment of new required structures;

b) elaboration of a national Environmental Strategy that would include planned institutional reforms, within the established time frame, for the implementation of the environmental legislation and compliance;

c) elaboration of sectoral strategies for water, air, biodiversity conservation, climate change adaptation and mitigation etc.;

d) strict and clear separation of competences between the environmental authorities at national, regional and local levels;

e) integration of the environment into other sectoral policies, promotion of the green economy development and of eco-innovations.

State intervention in environmental protection is also determined by the need to achieve the objectives set out in the Outcome Document adopted at the Conference on Sustainable Development in Rio de Janeiro „The future we want”, the Astana Ministerial Declaration on the environment; the 26 principles of the Stockholm Declaration on the Human Environment; the Millennium Development Goals (in particular, Goal 7 „Ensure environmental sustainability”); the UN Partnership Framework for Moldova for the 2013-2017 period, which includes the priority №3 „Environment, Climate Change and Disaster Risk Management”, aiming straight to the protection of the environmental factors and natural ecosystems, regulation, rational and sustainable use of natural resources and minimization of the impact on environment and human health.

Currently, whole chapters that comprise environmental protection measures are included into the national documents of strategic planning, as the Government Activity Programme and Action Plan, National Security Strategy, National Action Plan on Human Rights, Medium-term budgetary framework. Environmental protection was recognized as an important area for socio-economic development of the country by the National Development Strategy „Moldova 2020”.

However, in these policy documents the environmental priorities are presented briefly and sporadically, without a background environmental policy document, being formulated in terms of requirements and needs highlighted at the time. Thus, the Environmental Strategy for the 2014-2023 period seeks to compensate this gap and establish concrete objectives in the field of environmental protection, whose implementation will lead to the sustainable development of the country, to the European integration, to the application of green economy principles, as well as to the obtaining of considerable benefits in terms of health improvement and mortality reduction, as well as to the appearance of economic opportunities and savings at a large scale, which, respectively, will contribute to the welfare of the community.

II. VISION, GOAL, OBJECTIVES

1. **The vision of the Strategy** is oriented towards an implemented environmental protection sector reform, so as an institutional, administrative and environmental management system, adjusted to the EU requirements will be functioning and ensuring environmental sustainability and increase the quality of the environment.

2. **The goal of the Strategy** is to guarantee the right of the population of the Republic of Moldova for a sustainable, unpolluted and healthy environment in harmony with economic development and social welfare.

3. **The general objective of the Strategy** is the creation of an efficient environmental management system, which would contribute to the increase in the environmental factors' quality and guarantee the right of the population for a clean, healthy and sustainable environment.

4. **Specific objectives of the Strategy:**

1) ensuring conditions for good governance and effectiveness of institutional and managerial potential in the field of environmental protection to achieve environmental objectives;

2) integration of environmental protection, sustainable development and green economy principles, of climate change adaptation principles into all sectors of the national economy;

3) raising the level of environmental protection knowledge among pupils, students and employees with at least 50% until 2023 and ensuring access to environmental information;

- 4) reducing the negative impact of economic activity on the environment and improving measures of environmental pollution prevention;
- 5) creation of an integrated monitoring and environmental quality control system;
- 6) ensuring rational use, protection and conservation of natural resources through:
 - a) improving the quality of at least 50% of surface waters by implementing hydrographic basins management system;
 - b) ensuring access of about 80% of the population to safe water supply systems and services and of about 65% to sanitation systems and services;
 - c) improving soil quality and ecological restoration of degraded, affected by landslides lands and farmland buffer strips up to 100%, as well as sustainable management and protection of useful mineral resources;
 - d) sustainable management and protection of useful mineral resources;
 - e) expansion of forest areas to 15% of the country's territory, of natural areas protected by state up to 8% and ensuring efficient and sustainable management of natural ecosystems;
- 7) creation of an integrated air quality management system, reduction of pollutants emissions into the atmosphere by 30% by 2023 and greenhouse gases emissions by at least 20% by 2020 compared to the baseline scenario;
- 8) creation of integrated waste and chemicals management systems that would contribute to a 30% reduction in the amount of landfilled waste and a 20% increase in recycling rate until 2023.

III. BACKGROUND, SPECIFIC OBJECTIVES, ACTION DIRECTIONS

Section 1

Institutional and managerial system in the field of environmental protection

5. Background:

1) *Strategic environmental planning*. First environmental policy document was the The Concept of Environmental Protection (1995), which encompassed, at that time, the main directions and mechanisms of environmental policy during the transition to a market economy.

Later the National Environment Strategic Action Programme was elaborated and approved by Presidential Decree no. 321 of 6 October 1995. The Action Plan for its implementation contained activities planned up to year 2005. Therefore this document is now obsolete and does not correspond to the contemporary tendencies of socio-economic development and of European integration. It was followed by the National Environmental Action Plan (1996), developed in accordance with the provisions of the Environmental Action Programme for Central and Eastern Europe.

The main directions of these documents were presented by the Strategic Guidelines of the Social Economic Development of the Republic of Moldova to 2005 (1998), where, for the first time, environmental issues were included alongside of economic and social problems.

In 2001 a new policy document – the Concept of Environmental Policy of the Republic of Moldova – was adopted, highlighting a series of new approaches, including orientation towards European integration and promotion of the inclusion of the environmental requirements into other sectoral policies. It is important to mention that the Concept did not determine the establishment of any strategic framework for the environment or the development of any policy documents defining measurable objectives.

Currently, the environmental policy framework it is in a development process and includes several policy papers that reflect objectives and actions in various fields such as waste and chemicals management, pollution prevention, biodiversity conservation, water supply and sanitation, desertification, forestry etc. However, most of these documents contain outdated concepts that have to be updated, whereas for the certain environmental components and aspects (air, soil and useful mineral resources protection) it is necessary to elaborate proper policy documents. Overall, the lack of an environmental strategy framework has caused a deficiency in environmental strategic planning in Moldova, lack of a general vision at the Government level and sector fragmentation.

Recently the Waste Management Strategy for the years 2013-2017 was approved, establishing a set of objectives and measures regarding the collection, transportation, treatment, recovery and disposal of waste in the Republic of Moldova.

At the same time,, certain provisions and actions regarding environmental protection have been included in a number of policy documents from other sectors (economic, agriculture, health, national security, regional development, transport, demographic, etc.), but the share of these actions and the level of their implementation remains low.

The implementation of provisions and measures of environmental protection and rational use of natural resources contained in the national and sectoral policy documents can not be imposed on local public administration authorities, being restricted by the legal base. Therefore, given the fact that local public administration authorities are responsible for ensuring the main facilities and services for the population, including water supply and sewage systems, collection of waste and reduction of their amount, sanitation, maintenance of green spaces and space planning, the realization of local environmental planning is crucial for their activity. However, it is quite difficult to accomplish, because, currently, environmental protection measures at the local level are largely coordinated by the agricultural divisions. Lack of relevant specialists, funds and equipment results in the sporadic character of these actions, which are not coordinated with policy documents at national or sectoral levels.

In between 1998-2001, the district councils contained specialized sections for environmental protection and rational use of natural resources, composed from 3-4 specialists who collaborated with central and local environmental structures. Thus, with the support of the United Nations Development Programme and of the World Bank, local environmental action plans were developed. However, the administrative-territorial reform of 2001 led to the liquidation of these sections, so that local environmental planning was suspended. This had a negative impact on the decision making process of the National Ecological Fund, which, lacking a clear vision of environmental problems and objectives at the local level, met difficulties in expenditure planning for the appropriate financing of the local environmental projects.

Taking into consideration all these facts, the present Environmental Strategy aims to remove the gaps outlined in strategic environmental planning.

2) *Legislative/regulatory framework in the environmental field.* The field of environmental protection is regulated by a set of laws and regulations elaborated, adopted and, if necessary, amended in accordance with new environmental conditions and provisions. Moreover, some of them were adjusted, partially, to the provisions of the European Union environmental legislation. The development of legislative/normative framework started with the adoption of the Law on Environmental Protection, no. 1515-XII of 16 June 1993.

Currently, environmental protection is covered by about 30 laws and a set of regulations, developed under the framework of the abovementioned organic law.

Despite the existence of the legislative and regulatory documents that cover, virtually, all environmental sectors, these do not fully comply with the international environmental treaties acceded by Moldova and do not ensure proper management of natural resources that would prevent environmental pollution, and the right to a healthy environment, strongly requiring their improvement. The same emerges from the necessity to adjust the national legislation to the European Union directives, action that gained momentum with the approval of the Government Action Programme „EUROPEAN INTEGRATION: FREEDOM, DEMOCRACY, WELFARE, 2011-2014”.

3) *Institutional framework for environmental protection.* The institutional framework in the field of environment includes the central authority for environmental protection, implementation agencies in some areas, inspectorates, services, state enterprises, scientific institutions. The Ministry of Environment has a mission to ensure the realization of governmental constitutional prerogatives by elaboration, promotion and implementation of the state policy on environmental protection and rational use of natural resources, waste management, use and protection of subsoil, irrigation, water resources management, water supply and sanitation, regulation of nuclear and radiological activities, state ecological control, hydrometeorology and environmental quality monitoring. The central body of the Ministry of Environment has 51 units, 5 profile divisions and 5 services. As subdivisions it has 7 institutions with regulatory, policy implementation and control

functions: State Ecological Inspectorate, Agency for Geology and Mineral Resources, Agency „Waters of Moldova”, National Agency for Regulation of Nuclear and Radiological Activities, State Hydrometeorological Service, Fisheries Service, State Enterprise „Hydrogeological Expedition of Moldova”. Besides, the Ministry of Environment also coordinates the activity of 7 offices and 3 units for implementation: „Carbon Finance” Office, „Climate Change” Office, „Sustainable Persistent Organic Pollutants Management” Office, „Ozone” Office, „Biodiversity” Office, „Biosafety” Office, „Environmental Pollution Prevention” Office, Water Supply and Sanitation Project Implementation Unit and the Enhanced Environmental Project Implementation Unit.

Although the institutional system for environmental protection seems organized and functional, its activities reveal a series of constraints and problems. They highlight the lack of clear separation of competences in between the Ministry of Environment and its subordinated institutions, namely, the competences of environmental policies’ elaboration, their implementation and control over compliance with the legislation, despite the Law no. 98 of 4 May 2012 on the Specialized Central Public Administration. The situations presented below will provide for relevant examples.

In accordance to its mission, the Ministry of Environment elaborates environmental policies, but also issues authorizations for certain activities (such as waste management or CITES certificates) and performs environmental assessment of draft regulations. On the other hand, the majority of agencies and services subordinated to the Ministry possess cumulative functions of environmental policy and legislation elaboration, implementation and control. For example, the State Ecological Inspectorate carries out supervision and control over compliance with environmental legislation, but also issues certain authorizations that also necessitate compliance control, thus provoking conflicts of interests and corruptible actions.

One of the promoted by the Ministry environmental policy components is the protection of the forest fund, forest flora and fauna. However, at the present time, the „Moldsilva” Agency, which is in another category of administrative authorities, provides for the functions of policy elaboration, implementation and control, contrary to Law no. 98 of 4 May 2012 on the Specialized Central Public Administration and Law no. 131 of 8 June 2012 on State Control over Entrepreneurial Activity, which stipulate that only one institution (State Ecological Inspectorate) has the authority to exercise control over forest fund and cynegetic fund.

Without a clear division of functions, powers and responsibilities in the field of environmental protection, avoiding ambiguity, duplication or overlapping, there remains the risk of having fragmentary legislation and, as a consequence, for the risk management to be inefficient and expensive.

Currently, the institutions subordinated to the Ministry ensure its policies implementation just in a few areas (management of mineral resources, water resources and fisheries). However, there is no structure to ensure sectoral policies implementation in the other areas, such as air and soil protection, biodiversity,

natural areas protected by state, waste and chemicals management, ecological expertise, environmental impact assessment of planned activities, strategic environmental assessment, integrated environmental authorization, climate change mitigation, etc.

Another problem in this context is the staff turnover, which reduces the degree of institutional experience, as well as the number of specialists and technical personnel in the environmental field.

It deems necessary to establish linkages between the institutions involved in environmental management, which is a rather arduous process. Interministerial cooperation is based mainly on personal contacts, and after the central public administration reform the ministries and authorities that contained few environmental specialists reduced these functions. The new system of regulatory impact analysis of legislative and normative acts, initiated by the Ministry of Economy, as well as ex ante public policy impact analysis, set the environmental impact assessment of the elaborated normative acts provisions that has to be carried out by environmental specialists, who are currently lacking from the central public authorities.

6. Problems outlined in the functioning of institutional and managerial system in the field of environmental protection:

1) lack of strategic environmental planning both at national and local level (policy documents are outdated and have to be updated, whereas for some components, such as air and soil protection, rational use of useful mineral resources and climate change such documents do not even exist);

2) the legal framework is outdated and not adjusted to the provisions of the European Union directives;

3) discrepancy between institutional framework and the existing requirements and challenges. Attributions of environmental policies' elaboration, implementation and legislation compliance control are not clearly divided between environmental institutions. There are no agencies to deal with environmental policies' implementation in all respective areas. There is a series of confusions and overlapping of responsibilities and competences in the fields of environmental protection with those of other, non-environmental institutions (forest fund protection, soil protection).

7. Specific objective 1: *Ensuring conditions for good governance and effectiveness of institutional and managerial potential in the field of environmental protection to achieve environmental objectives;*

8. Action directions

Improving environmental policies' and legislative framework is one of the conditions for realization of our country's development tendencies: European integration, promotion of green economy and sustainable development. The Strategy focuses on the adoption of new political, legislative and normative

framework in environmental sector, elaborated in line with the European Union requirements, directives and standards.

1) *Harmonization of environmental legislation with provisions of EU directives.*

The Annex to the „Environment” Chapter of the Association Agreement contains 25 European Union environmental directives regarding the following sectors:

- a) environmental governance and the integration of environment in the other sectoral policy documents;
- b) air quality;
- c) water quality and water resource management;
- d) waste management;
- e) nature protection;
- f) industrial pollution and industrial risks;
- g) chemical substances.

In conformity with these directives, the Republic of Moldova has to transpose and implement a set of requirements, which, respectively, involve significant costs.

Thus, in the legislative/normative area a new environmental framework law is going to be adopted, containing provisions of the 25 EU directives, such as: strategic environmental assessment, integrated environmental management, hydrographic basins management system, integrated environmental monitoring, environmental authorization/integrated environmental authorization, public involvement in environmental decision-making and access to environmental information. For a more comprehensive transposition of EU environmental directives special draft laws shall be elaborated: Law on drinking water, Law on air quality and protection, Law on soil protection, Law on biosafety, Law on strategic environmental assessment, Law on environmental impact assessment, Law on waste, Law on chemicals, Law on environmental authorization (including integrated one), Law on access to environmental information, etc., as well as their implementation regulations.

Once the adoption of these laws the development of a mechanism for their implementation shall be initiated (regulations, instructions, methodologies, etc.).

2) *Ensuring strategic environmental planning at national, sectoral and local levels* through elaboration of policy documents on the radioactive waste and chemicals management, biodiversity protection and conservation, air protection, management and protection of natural resources (soil, subsoil, water), in the field of ecological restoration of degraded lands and natural landscapes, climate change adaptation, environmental risk management (floods, droughts, calamities). Likewise, a process of returning to the local environmental planning shall be initiated through creating the institutional framework necessary for the implementation of this reform (establishment of ecological sections within rayon councils), ensuring methodological and instructive support for the elaboration of local environmental action plans, as well as for the elaboration of national plans. These plans shall represent a starting point for the sustainable development of localities, ensuring that each respective locality has adequately addressed and

examined environmental issues and those regarding rational use of natural resources, within its administrative limits. Plans elaborated by the local public administration authorities shall be coordinated with central environmental authority and shall serve as key documents for access to the financial resources of local budgets, Regional Development Fund, National Ecological Fund, as well as of foreign donors. Each project applied to financing by foreign financial assistance has to arise from a strategic planning document.

Local environmental planning is a continuous process, so that plans shall be renewed and updated, depending on the problem-solving process, on a periodic basis. Central environmental authority is to control and monitor the process.

3) *Ensuring institutional reform in the environmental sector.* A mere transposition of those 25 EU environmental directives contained in the Association Agreement to national legislation is not sufficient to meet the commitments laid down therein. First, the obligations set out in these Directives have to be implemented, ensuring further control over their application. This exercise requires capacities and a high level of expertise from the Ministry of Environment. Therefore, the Ministry should see the consolidation and capacity building of environmental institutions as a priority to meet the requirements arising from challenges of legal, institutional and administrative order, as well as ones determined by harmonization with EU environmental directives. Institutional capacity building shall focus on defining or ensuring the followings:

a) clear competences for elaboration of environmental and related legislation;

b) necessary capacities, human resources and sufficient financing to fulfill the tasks;

c) clear and effective procedures for decision-making and further implementation;

d) investments for compliance with EU legislation, especially for these parts that require substantial expenses, and a corresponding financing strategy.

Thus, an institutionalization of the Ministry of Environment is proposed to cover the functions of development of the policies in the fields of air protection and climate change, soil and forest fund protection.

Monitoring the implementation of environmental acquis requires strong environmental institutions equipped with adequate resources, fines systems and systems of penalty and criminal liability for serious violations. From an institutional perspective, the environmental inspectorates and implementation agencies form the base for the environmental acquis compliance systems.

To ensure the conditions of good governance in the field of environmental protection, the Strategy proposes, for the first 4-5 years, to realize an essential institutional reform in environmental sector, which would result in reorganization of specialized agencies and creation of new institutions in order to improve the operational capacities and optimize public expenses. It is proposed to conduct an institutional analysis of the Ministry of Environment and its subordinated institutions, regarding the functions, structure, policies and personnel, in order to determine the institutional structures capable to achieve the objectives set out in

this Strategy and the commitments undertaken in the Association Agreement. The analysis process the provisions and principles of Law no. 98 of 4 May 2012 on the Specialized Central Public Administration will be applied, which refers to clear separation of the functions regarding the elaboration, promotion and implementation of environmental policies, as well as the control of compliance with respective legislation.

In addition, the reform shall take into account the experience of environmental institutions from EU member countries that have undertaken certain measures of institutional reforms, including the establishment of institutions for implementation of environmental policies.

Moreover, the present Strategy seeks to institutionalize environmental functions within local public administration, through creating environmental protection units (green sections) to ensure elaboration and implementation of local environmental protection plans, as well as within other central public administration authorities, through creation of a unit (function) for environmental protection, which would ensure coordination and participation in the strategic environmental assessment procedures of draft policy documents elaborated by these authorities, including the inclusion of environmental protection activities in these documents and in other legislative and normative acts in the sector.

Section 2

Sustainable development and green economy development

9. Current situation

Sustainable development is defined as a mode of society development that meets the needs of the present generation while protecting and not compromising the level and quality of life of future generations. Thus, each generation should pursue the satisfaction of its own needs, but without affecting the future generations with: financial debts – long-lasting large foreign and domestic loans, social debts – neglected investment in human capital, demographic debts – uncontrolled population growth, or ecological debts – depletion of natural resources or soil, water and air pollution.

So far, economic development of Moldova was based on exploiting subsidized fossil fuel, imported to produce electricity, inefficient and irrational use of natural heritage, particularly water, and the neglect of environmental externalities. Therefore, our biggest challenge is to integrate environmental sustainability in the context of economic growth.

Interference between sustainable development and the green economy is obvious. The concept of „green economy” does not substitute that of sustainable development; however, the interconnection between sustainability and the green economy is increasingly recognised. This implies low-carbon emissions, resource efficiency and social inclusion. In this context, increasing incomes and employment are influenced by public-private investments that reduce carbon emissions and, respectively, environmental pollution, enhance energy and resource

efficiency, prevent biodiversity loss and ecosystem services degradation. A significant international momentum for the transition to green economy was served by the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012 (Rio +20), where the issues on the „green economy in the context of sustainable development and poverty eradication” were discussed. The UNEP 2011 publication „Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication” mentions that „an allocation of 2% of global GDP in key economic sectors would stimulate a transition to low-carbon emissions, green economy and resource efficiency. Among these key sectors are agriculture, fisheries, forests, water, transport, energy, waste, buildings, tourism and industry. This would create opportunities to scale up financing, to stimulate the transition and to increase the role of financial sector as an agent of change for the green economy”.

The Republic of Moldova participated in the work of the UN Conference on Sustainable Development „Rio +20” and, therefore, recognized at the highest level the importance of the sustainable development principles application both in all sectors of the national economy and in social sphere. Initially, the promotion of Agenda 21 ideas in our country did not meet the necessary support, so that the first years after the meeting yielded modest results. Most ministries, institutions and NGOs have not adhered to these principles from the beginning and have not provided for the respective approach in their strategies and action plans.

Public policies developed on these principles, such as present Environmental Strategy, aim to restore and maintain long-term rational balance between economic development and the integrity of natural environment, in the forms understandable and acceptable for the society. An increasing number of society representatives are being convinced that environmental protection and economic development issues have to be solved in conjunction, for the benefits of the whole contemporary society and future generations.

10. Problems outlined:

- a) current economic development strategies neglect the issues of environmental protection;
- b) the principles of environmental protection and sustainable development are not integrated into all sectoral policies and are not recognised as priorities.

11. Specific objective 2: *Environmental protection, sustainable development and green economy development, and climate change adaptation principles' integration into all sectors of national economy.*

12. Directions for action

The concept of „green economy development” marks the transition from the model of development that treats the environmental protection as an economic burden to the one that uses the environmental protection as one of the main driving forces of economic growth.

The green economy should be seen, in the context of sustainable development and poverty eradication, as one of the basic tools in attaining sustainable development and as a means of resource and energy efficiency, cleaner technologies application, with low-carbon emissions and reduced pollution, and of environmental risks minimization.

The transition to a green economy will create major economic opportunities. „Greening” the economy is a new growth engine, a generator of decent jobs and a vital strategy for the elimination of poverty. This process can transform many challenges into economic opportunities and prevent negative impacts on the environment. Also, the green economy will greatly enhance economic growth and the number of jobs in the environmental sector that require specific skills related to the environment.

13. Promoting green economy development nationwide is to be achieved through integration of green economy, environmental protection and climate change adaptation principles into sectoral policy papers, so that, by 2015, they are integrated into the priority sectors, such as energy and agriculture, and by 2020 – into industry, transport, buildings, trade, services and other areas of social and economic development of the country. This process presupposes modification of sustainable production and consumption models, and the change can be made through the regulations, taxation, legal decisions and requests from the public etc. With regard to sustainable production and consumption, to achieve or head towards EU objectives it is especially important to focus on raising business responsibility and civil society awareness, as Moldova is still taking its first steps in this field.

Integration of environmental and climate change adaptation issues into the sectoral development policies and in sustainable practices to be implemented at national and local level are essential to reduce pressures on policies and activities of other sectors on the environment and to achieve the following environmental and climate targets.

1) Integration of environmental provisions into the *agricultural policy* will help reduce the risks of environmental degradation and improve the sustainability of agricultural ecosystems. To increase the share of organic farming to 5% of total agricultural production to 2015 and to 10% in 2020 the following will be ensured:

a) promoting the production, processing and effective conduct of organic products in a way to increase farmers’ income and welfare;

b) encouraging the improvement of processing and marketing of primary agricultural products by supporting investments (providing support for farming practices that are environmentally friendly, deliver useful products to the society and respect and promote the efficient use of natural resources; promoting the processing of renewable energy natural resources, new technologies development and innovation, implementation of compensation for landowners whose properties belong to the natural areas protected by state);

c) conducting environmental training and awareness-raising programs for farmers and creating the necessary training and education infrastructure to further promote the sustainable agricultural system;

d) development of environmentally-friendly agricultural techniques and infrastructure (creating a mechanism for the periodical quality of irrigation water verification; effectuation of agrochemical and soil research to conduct a permanent monitoring of soils; providing for integrated plant protection against pests, diseases and pathogens; promoting implementation of conservative agriculture production techniques; preserving landscape/ agricultural ecosystems by determination of the extensive agriculture practices; development of mechanisms for waste management in agriculture, especially in livestock activities);

e) implementation of climate adaptation measures, aimed at promoting agricultural crops that have the potential to succeed in the changed climate conditions (drought, high temperatures), soil treatment, water conservation and reducing soil moisture loss through evaporation.

2) Integration of environmental principles into the national *energy policy*, aimed to consolidate the sustainable efforts of national and local authorities, to involve private sector and ensure active participation of the civil society in regulation and creation of the institutional and financial mechanism of energy saving.

Energy efficiency will be ensured by reducing energy intensity in housing, industrial, transport and agricultural sectors; modernization of energy system; implementation of energy efficient technologies; introduction to consumption balance of domestic energy resources, including the renewable ones. Special importance should be given to the public awareness on the need to save energy. Energy savings thus obtained will have a positive effect on the environment. It is envisaged that by 2020, 20% of total energy used and 10% of biofuel would be produced from renewable sources.

Adaptation measures to climate change in this sector will be aimed at reducing energy losses and the risks of not covering the energy demand. For this purpose the investments will be focused on infrastructure, equipment and technologies of renewable energy exploitation such as hydropower (sludge gates construction; dams height adjustment; small dams construction in upstream basins; adaptation of the operation power to the debit, adaptation of the system functioning according to the flow fluctuations); wind energy (placing the systems according to the expected changes in wind speed); solar energy (placing the systems according to the expected changes in solar intensity).

3) Integration of environmental provisions into the *transport policy*, aiming to protect the environment by promoting actions that would reduce noise and carbon dioxide emissions, encourage use of alternative fuels and new technologies in all forms of transport. Such courses of action will focus on:

a) promoting the transition from a polluting transport to the one that pollutes less, uses renewable energy and protects the environment;

b) promoting of European standards for machines, in view of alignment with EU requirements and standards;

c) adapting the requirements for road construction to the climate conditions, application of biodiversity protection and evaluation of the environmental impact requirements in the process of road construction;

d) evaluating of the economic and ecological potential for the diversification of the transport system (auto, railways, air, water);

e) elaborating of mechanism to stimulate and promote the national auto park renewal.

4) Environmental priorities in the *industrial sector* will be integrated through:

a) introduction of integrated control system of emissions and pollutants; introduction of voluntary participation system for organizations in the management and audit system; environmental risks' assessment in the process of activities' implementation; elaboration of ecological assurance mechanisms for industrial units etc.;

b) promotion of transition to the best available techniques; investing for techniques and management modernization for efficient use of natural resources (water, energy, mineral resources) and emission reduction techniques, and ensuring new installations to be under these requirements;

c) improvement of the system of quality management; elaboration of legal mechanisms; implementation and continuous improvement of the integrated management system in accordance with ISO 9001, ISO 14000 standards;

d) elaboration and promotion of measures for risk prevention and monitoring of environmental factors in the industrial units' location; compliance measures on greening polluted industrial lands;

e) creation of incentive mechanisms for upgrading and refurbishment of installations/stations of pre-treatment/wastewater treatment, for providing them with effective equipment for specific pollutants removal from wastewater and from emissions to the air; measures to minimize generation of industrial waste providing for specific temporary storage facilities (safe for the environment and human health) in order to eliminate/fully exploit the hazardous waste generated/possessed by economical agents;

f) application of the Resource Efficiency and Cleaner Production concept in enterprises and organizations;

g) promotion of eco-innovations that can prevent or reduce the adverse effect of products or activities on the environment and that can contribute to the creation of new business opportunities.

5) Integration of sustainable development and climate change adaptation into the *forestry sector*, focused on: designing stable and diversified forests; improving forest stability through species, origin and corresponding genotypes selection; increasing forest cover in order to mitigate climate change and enhance biological diversity; highlighting areas of stability and resistance of ecosystems, flora and

fauna to climate change; establishment of forest plantations for industrial and energy needs – energy forest planting; regulating the maintenance and conservation activities of forestry stations, conservation of forest genetic resource and ecological restoration of forests; forest certification; establishment of forestry production and management systems.

6) Integration of environmental and climate change provisions into the *health sector*, oriented to: identifying health risks associated with national environmental and climate factors; strengthening existing disease surveillance systems in order to include health consequences caused by unfavourable environment and climate factors (such as morbidity and mortality caused by high temperatures); raising awareness of medical professionals, public, risk groups and vulnerable population on measures to be taken during extreme weather conditions (such as heat waves, floods and droughts); enhancing access to healthcare in remote and vulnerable communities and those at risk.

14. Promotion of green economy development as a national priority, which will stimulate investment into environmental protection sector, contribute to the modernization of national economy sectors, export growth, infrastructure development and new jobs creation, to the reduction of environmental and health impact. It will also facilitate the process of promoting the country's image in the context of European integration and, regionally and globally, will ensure the realization in practice of the Association Agreement between the Republic of Moldova and European Union (chapter „Environment”) provisions.

Section 3

Environmental education and access to environmental information

15. Current situation

At the present time, the problems of environmental training and education take on a special significance, given the fact that the society, becoming acknowledged with the disastrous state of the environment, lives with the hope that humanity will realize the imminent danger and will carry out practical activities to achieve rapid improvement in the condition and quality of the environment. This, however, requires a new attitude towards environmental training and education. People have to understand, to perceive environmental problems, to make decisions and to take action to prevent pollution and to use the resources rationally, without causing harm to nature.

Although a number of environmental policy documents provide for some actions to promote environmental education, but these are few and do not make a significant contribution to promotion and formation of environmental responsibility. Insufficient are also the attempts of the Ministry of Environment to

promote environmental education through the edition of book series – „Animal World of Moldova”, „Plant World of Moldova”, „Geographical Environment”, „Water Resources of Moldova”, „Ecological Encyclopedia”, – which were provided to libraries of educational institutions, schools and universities. However, there is a useful practice of environmental competitions and Olympiads, for example, the Moldo-Turkish Lyceum „Orizont” has been organizing International Environmental Project Olympiad for several years.

Even though environmental scientists conceive ecology as an interdisciplinary science, organically bound up not only with geography and biology, but also with physics, chemistry, history and mathematics, most teachers of this profiles do not have enough competences to integrate, in the process of teaching, ecological elements with those purely chemical, physical, and the expected effect cannot be achieved in conditions of complementary status of environmental education. The ideal solution to this would be the removal of interdisciplinary barriers and integration of environmental training and education issues into school curriculum. The proposed approach seems to be the most effective one as environmental education involves not merely the accumulation of information, but also environmental protection activities, an appropriate attitude towards nature and awareness on nature-human-nature interrelations.

16. The Republic of Moldova was the first country to ratify the Aarhus convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. In order to achieve the objectives of of the Convention, it is necessary to create a mechanism for dissemination of environmental information and places of access to such information. Some ministries and institutions have separate databases with information relevant to their field of activity. However, there is no interconnection between these databases, so the information exchange does not have place as it should be.

Water monitoring data are collected, stored, generalized and analyzed statistically by the Environmental Monitoring and Information Management Center of the State Hydrometeorological Service. „Moldova’s Waters” Agency has a database on water use and its discharges. A large part of these data are stored on paper and thus become inaccessible to the public. Agency for Geology and Mineral Resources has an archive of all types of geological exploration activities, a database on groundwater and maps in an advancing state of degradation, which requires them to be promptly digitized.

The Ministry of Health, through the National Center of Public Health, administers a database with information on the quality of drinking water, on air, soil and persistent organic pollutants. This database is closed to the public, and the information can be presented only on request.

Thereby, the ministry of Environment and its subordinate institutions possess a number of databases classified by field, but of different format, some information is stored on paper and is not publicly available. So, they do not share information or communicate with each other. In this context, it is absolutely necessary to gradually develop an integrated environmental information system

that would make it possible to connect all the existent databases, digitizing databases stored on paper, sharing information between databases of different institutions, electronic data collection. The Ministry of Environment is experiencing major difficulties while dealing with the use of obtained environmental data and of information, because of the lack of a system that would be able to collect, receive, process and generate environmental reports.

17. Problems outlined with regard to environmental education and access to environmental information:

- 1) low level of awareness and environmental education among pupils, students, employees and population;
- 2) lack of programmes, of a school curriculum on environmental education;
- 3) shortage of places of access to environmental information;
- 4) lack of an integrated environmental information system.

18. Specific objective 3: *Raising the level of environmental protection knowledge among pupils, students and employees with at least 50% until 2023 and ensuring access to environmental information.*

19. Action directions

Education and training of all citizens compose an indispensable and fundamental component of all public policies related to environmental protection and sustainable development.

Each citizen or organization should be aware that environmental protection and sustainable development represent the only way to ensure a future. Thus, the Strategy will contribute to raising the level of knowledge on environmental priorities and sustainable development among pupils, students and employees by promoting environmental education and education for sustainable development.

1) *Development and incorporation of environmental education into formal education system (into all relevant disciplines), as well as into non-formal and informal education.* This shall be achieved through the integration of environmental education themes or modules into all relevant disciplines, programmes and courses, as well as through the promotion of ecology and environmental protection disciplines as required or optional disciplines. Formal educational institutions play an important role in capacity development at an early age, providing knowledge and influencing attitudes and behavior of the pupils. It is important to ensure a good knowledge base regarding environmental protection for all pupils and students, teachers, directors and parents, so that they would be aware of the effects of the decisions that are contrary to sustainable development. In addition to formal education, non-formal education emphasizes participation and promotes a life-long learning process. Informal education takes place at the workplace, adding value to both employees and employers' education. Therefore, cooperation between actors involved in various forms of environmental and sustainable development education is to be recognized, encouraged and promoted.

2) *Providing teachers with continuous training for acquiring competences needed to incorporate environmental education into their teaching.* Trainers shall benefit of an initial preparation and further training, as well as of opportunities to share experience with colleagues. Thus, they will gain knowledge on the use of various educational methods (discussion, planning, scenarios, modeling, case studies, surveys, excursions and education in the middle of nature, project method, best practices analysis, workplace experience, problem solving). Therefore, there is a need to consolidate the capacities of continuous training and research centers with regard to environmental education.

3) *Ensuring access to adequate tools and materials for environmental education and education for sustainable development,* through encouraging elaboration and publishing of educational materials for trainers, learners and researches, at all levels of education and training, of illustrations, brochures, case studies, best practices analysis, audio and video resources. In addition, special places of access to environmental information and relevant instruments are to be created (for example, Aarhus Centers, Environmental Information Centers, etc.).

4) *Promoting research in the field of education for sustainable development.* Research shall focus on the aspects connected to determining the methods of teaching/learning, assessment tools, formation of attitudes and values, to institutional development and implementation of information and communication technology. Pupils and postgraduate students will be encouraged to carry out research and innovation in the fields of cleaner production, resource efficiency, use of renewable resources, environmental protection, etc. The results of research and development efforts will be communicated to all stakeholders and will be integrated in different parts of the educational system, both in theory and practice.

5) *Environmental public information and awareness is the competence of public environmental authorities.* To this purpose, an integrated environmental information system shall be created, based on the principles of Common Environmental Information System that is developed on EU initiative and oriented to modernization and simplification of collection, exchange and use of data and information necessary for elaboration and implementation of environmental policy. This shall connect all registers, cadastres and databases kept both by environmental authorities and by other institutions, including data and information regarding state of the environment, level of pollution, environmental impact and responses to the society, etc. At the same time, it shall also include the Geographic Information Systems (as subsystems) of the National Ecological Network, which contain data on wetlands of international and national importance, of the Fund of Natural Areas Protected by State and other relevant data (on the biota, soil quality, etc.), all cadastres of natural resources, water cadastre, registry of controls, pollutants release and transfer register. Maintenance and update of this system is to be ensured by the Environmental Agency, in collaboration with all environmental institutions of the country.

Section 4

Regulatory framework for activities with impact on environment

20. Current situation

For the prevention or reduction of the impact of economic activities on the environment are applied the state ecological expertise and environmental impact assessment, resulting in the issuing of ecological conclusions, environmental authorizations and other permissive documents.

1) *State ecological expertise* is mandatory for the project documentation and planning of economic entities and activities that affect or may affect the state of environment and/or foresee the use of natural resources, regardless of destination, location, type of ownership and of subordination of these entities, volume of capital investments, financing sources and mode of construction process. In addition, under current legislation, the state ecological expertise have to be applied also to the draft legislative and normative acts elaborated by central public authorities, which may have an environmental impact, to international conventions before their ratification, as well as to draft concession contracts that provide for use of natural resources of the Republic of Moldova.

State ecological expertise is carried out by the Ministry of Environment or by the State Ecological Inspectorate, depending on the types of projects examined. State ecological expertise of project documentation for new technologies and facilities, including the ones adopted from other countries, is performed by the Institute of Ecology and Geography.

The ecological expertise system is regulated by Law no. 851-XIII of 29 May 1996 on Ecological Expertise and Environmental Impact Assessment, which is outdated and not fully implemented. Although the law provides for public ecological expertise effectuation by public associations, specialized NGOs, this mechanism is not applied, same as the one for public participation in decision-making during the environmental assessment process.

2) There is no mechanism for strategic environmental assessment, even though the law provides for ecological expertise of policy documents (programmes, plans, schemes, strategies and concepts) to assess their impact on the environment; procedures that would define the plans, programmes that require strategic environmental assessment are not clearly defined.

3) Uncertainties arise also in connection with mandatory character of *environmental impact assessment*, the criteria being applied equally both for large scale, technologically complicated constructions bound to have a crucial impact over environment, and for small scale constructions, whose degree of environmental impact can be evaluated at the project phase. In addition, it is not clearly established which projects have to undergo the ecological expertise procedure and which should be subjected to environmental impact assessment. Such an approach to the problem results in financial and bureaucratic impediments to the beneficiaries of the constructions.

It is also necessary to develop legal provisions for an appropriate methodology of payment for the state ecological expertise effectuation.

4) *Environmental authorization*. For economic activities having an impact on the environment, the environmental authorities issue authorizations or other permissive documents that regulate collection and trade, import and export of products of animal or vegetal origin, hunting, fishing, logging of trees and shrubs, waste management and transportation, use of water and useful mineral resources, pollutants emissions and discharges, etc. The “Moldsilva” Agency issues authorizations for hunting certain species of animals in state forestry fund, forest permits for collection of forest products and secondary forest products.

Environmental authorizations are based on separate environmental approaches and do not take into account the environmental impact of economic activities. Currently, such authorizations are issued separately for each environment component (air, water, waste, soil). As a result, an economic agent has to obtain a number of environmental authorizations, sometimes from several institutions, for just one economic activity. The environmental authorization is issued to all enterprises, regardless of their size and pollution potential. Thus, control of compliance with authorization provisions becomes a heavy task and administrative burden both for environmental control authorities and for enterprises, due to the shortage of ecological inspectors.

5) *Environmental economic instruments* are comprised of taxes for the use of natural resources, pollution charges and fines for non-compliance with the existing legislation and for environmental damage recovery. Environmental taxes and pollution charges system has not changed significantly over the past 10 years. The size of these payments is insignificant and was not calculated in relation to the costs of environmental damage recovery over the process of pollution. In addition, these payments do not create incentives for polluters to take action for reducing pollution, so that they prefer to pay the existing taxes that are much lower than potential expenditures on pollution reduction measures. The role of current system of environmental payments and taxes is very small compared to the needs and challenges of financing environmental activities.

The market-based instruments used in the European Union and other countries (for example, emissions or permits trading) it is not applied in the Republic of Moldova. Moreover, there is no legal framework for application of mechanisms of green public procurement, ecological labeling and certification, environmental insurance, etc. Pollution charges and some environmental taxes are accumulated on accounts of environmental funds. Currently, there is a National Ecological Fund, managed by the Ministry of Environment, as well as local ecological funds (36), managed by the State Ecological Inspectorate. Ecological funds do not constitute separate legal entities, but, appreciating international experience and relevant expert recommendations, they require a reform based on consolidation and decisional transparency.

6) *Environmental control system*. The State environmental control is carried out by the State Ecological Inspectorate and is intended to ensure compliance by all state and public organs, state enterprises, institutions and organizations, mixed enterprises, individuals and legal entities, including foreign ones, with

environmental legislation provisions in order to ensure efficient use and adequate protection of the natural resources. The current system of environmental control has multiple gaps. Beside the State Ecological Inspectorate there are other institutions subordinated to the Ministry of Environment that exercise control over economic activities in various fields, for example, Fisheries Service exercises control in the field of fishery and fisheries, Agency for Geology and Mineral Resources – control and surveillance of useful mineral resources exploitation, National Agency for Regulation of Nuclear and Radiological Activities ensures control of radionuclear activities, and both “Moldsilva” Agency and State Ecological Inspectorate exercise control over forest fund and cynegetic fund utilization. It is necessary to improve efficiency and consolidate the control functions within a single organ of control in the field of environmental protection.

Carrying out the environmental control, the ecological inspectors face multiple problems that essentially reduce the quality of verification and, respectively, of the expected effect. This is related to the lack of qualified personnel (small number of inspectors, because of numerous staff reductions, does not permit to encompass all directions of control); the existence of a legislative/normative framework that is not adjusted to the current requirements, sometimes protecting the polluters instead of environment; lack of cooperation of some organs with those for environmental protection (appeals of environmental authorities are being ignored); lack of equipment and of laboratories equipped with advanced techniques that would meet current requirements; lack of evidence databases of polluters and non-compliance agents (being impossible to track repeated non-compliance cases). There is no database of enterprises, causing gaps in their control system, in environmental violations system, in efficient use of regulatory resources system. Moreover, inspectors often do not possess objective information about environmental management of enterprises and production processes, etc.

21. Problems outlined in the functioning of regulatory system for activities with an environmental impact are the following:

1) ineffectiveness of the regulatory framework for activities with an environmental impact (for example, the system of ecological expertise and environmental impact assessment does not meet EU standards; mechanism of strategic environmental assessment is not implemented; authorization system does not provide for an integrated approach to environmental pollution control; updated emission and discharge standards have not been approved; self-monitoring requirements are not included in the authorizations or implemented by enterprises);

2) environmental taxes and pollution charges system are inefficient and undeveloped, payments being too small compared to the environmental damage;

3) there are no economic mechanisms and tools to stimulate polluters to take actions to reduce pollution;

4) the system of environmental control, of penalties and environmental damage recovery is not effective, payments being too small, encouraging non-complying agents to pay rather than take measures to avoid pollution, which are, as it is, much more expensive.

22. Specific objective 4: *Reducing the negative impact of economic activity on the environment and improving measures of environmental pollution prevention.*

23. Action directions:

1) *Reforming and increasing efficiency of the existing ecological expertise system, as well as of environmental impact assessment for economic activities.* Identification, through the application of environmental assessment tools, of potential ecological consequences at the stage of decision-making regarding programmes, plans, planned activities (public or private projects) and at the stage of their public consultation with the public, in order to minimize the negative impact of human activities on the environment.

A mechanism is to be created for implementation of two environmental assessment tools: *Strategic Environmental Assessment* – a new assessment tool applied at the initial stage of planning of certain activities through evaluation of preliminary draft of strategic documents, that is, of policy documents, and *Environmental Impact Assessment*, applied at the planned activities' evaluation stage.

Implementation of Strategic Environmental Assessment process is to ensure:

- a) identification of the environmental impact of the planned activities in the draft policy documents;
- b) integration of environmental considerations in the process of policy documents adoption;
- c) reduction of negative environmental impact of the measures proposed in policy documents;
- d) increasing the effectiveness of decisions, promoting sustainable development and ensuring environmental security;
- e) public participation in environmental decision-making.

Strategic Environmental Assessment shall be performed over policy documents elaborated in the following areas: agriculture, forestry, fisheries, energy, industry, vehicles construction, regional development, waste management, water management, water supply and sanitation, telecommunications, tourism, urban and spatial planning, land use and use of special conservation areas. It is to be carried out by the initiator of a policy document, who will have to prepare an environmental report in this regard. The examination of policy documents and environmental report by the central environmental authority will result in issuing of an environmental conclusion, a document required for project promotion and approval. In order to regulate the procedure of Strategic Environmental

Assessment all the necessary legislation will be developed together with its implementation mechanism.

The activities (public or private projects) planned at national and transboundary level, with a significant environmental impact due to their nature, scale or location, shall be subject to the Strategic Environmental Assessment procedure. The Central environmental authority, based on the preliminary assessment and some procedures and criteria that are to be established by a special law, shall determine the activities or entities that have to be subject to the Environmental Impact Assessment. The initiators of the planned activities have to present to the central environmental authority the Environmental Impact Assessment documentation, based on which an environmental permit will be issued, mandatory to initiate the implementation of project activities.

The planned activities, which did not have a significant environmental impact, will be subject to ecological expertise, based on a decision made according to the criteria provided by a special law. As a result of examination of project documentation submitted to the ecological expertise a respective conclusion will be issued, containing the decision on the acceptance or rejection of the documentation.

2) *Simplifying and increasing efficiency of environmental authorization procedure.* In the context of planned changes in environmental legislation, actions will be undertaken to modify authorization system for activities with environmental impact / significant environmental impact, to determine the mechanism for issuing environmental authorizations or integrated environmental authorizations. This will be done in order to improve the authorization system for activities and to simplify the authorization procedure. Consequently, there will be no separate authorization systems for each activity regarding handling of natural resources (air, water, soil, waste, etc.) and there will be only two types of authorizations, depending on the significance of environmental impact. As such, there will be integrated environmental authorizations for industrial installations with significant environmental impact, and the implementation of new authorization system will be ensured by the mechanism of environmental impact assessment.

3) *Improving and increasing efficiency of fiscal and economic instruments in the field of environmental protection.* Taking into account the limited role of current environmental pollution payments system in terms of generating revenues for ecological funds, it is necessary to perform a comprehensive reform of the system, which would include:

a) review of environmental taxes and pollution charges, and the establishment of a credible timetable for their gradual increase, thus stimulating polluters to take actions to reduce pollution;

b) creation and implementation of a mechanism for the Republic of Moldova to participate in emission allowances trade through establishing environmental emission limits and allowances, the mode of their trade and certain obligations on reducing the quantity of environmental emissions;

c) creation and implementation of ecological assurance mechanism, which would guarantee assured protection of life, health and property interests of individuals and legal entities in form of partial or full compensation in case of environmental pollution, ecological disasters and natural calamities, and accidents and catastrophes with significant environmental impact. Ecological assurance will be compulsory and voluntary. So, criteria will be established to identify individuals and legal entities subject to mandatory ecological assurance, taking into consideration the significance of environmental impact of the activities undertaken.

Section 5

Monitoring and environmental quality control system

24. Current situation

Currently, the environmental quality monitoring process is fragmented, involving many institutions with limited exchange of information between them. Thus, monitoring of the quality of surface and groundwater, air, soil, biodiversity and radioactivity is provided by a series of institutions subordinated to the Ministry of Environment: State Hydrometeorological Service, Agency for Geology and Mineral Resources, “Moldova’s Waters” Agency, State Ecological Inspectorate, etc.

The Ministry of Health also has some responsibilities, set up in accordance with the health legislation, regarding monitoring of environmental factors quality, especially those related to human health: quality of drinking water, surface waters, of air in urban areas.

The environmental quality surveillance network has extended lately, covering a larger territory, more environmental components and an increased number of chemical compounds. However, the monitoring capacity is still not sufficient to cope with the demands of national legislation and international commitments.

1) *Water quality.* The monitoring of surface waters quality in the Republic of Moldova is performed by the State Hydrometeorological Service through a stationary hydrological network consisting of 2 hydrological stations located in Balti and Dubasari and 46 hydrological posts, of which 7 are placed on the Prut River, 8 – on the Dniester River and one on the Danube River. Water quality samples are collected on a monthly basis and tested for 49 hydrochemical and 7 hydrobiological parameters. However, there is no public access to this database.

The process of the river Prut waters quality monitoring has been improved through the creation of a modern automatic monitoring network, with 11 automatic hydrological stations being installed. The National Centre for Public Health monitors water quality in 11 surface water bodies, at 229 fixed points, including at 37 fixed points on the Dniester and Prut, which represent sources of drinking

water. Data are collected electronically into a database available on the website of the National Centre for Public Health. The Centre also monitors waters in places set for bathing during the bathing season (about four months a year). The monitoring of physical-chemical parameters of deep (interstratial) groundwater is performed by the State Enterprise “Hydrogeological Expedition of Moldova” through a state network consisting of 180 observation wells located all over the country and covering all the aquifers exploited today.

2) *Air quality.* Air quality monitoring is realized by the State Hydrometeorological Service through a network of 19 stationary posts located in 5 industrial centres of the Republic of Moldova (Chisinau – 6, Balti – 2, Bender – 4, Tiraspol – 3, Ribnita – 2), automatic post at Mateuti and a station in Leova. Observations are carried out in accordance with the European Monitoring and Evaluation Programme and with provisions of the Convention on Long-range Transboundary Air Pollution. The urban air quality is monitored by the Ministry of Health with respect to 8 atmospheric pollutants. The data collected are stored in a special database that is not available for public use. There is only one economic agent in the whole country to have a self-monitoring air quality system, the “Lafarge” Cement Plant.

3) *Soil quality.* Soil quality monitoring is conducted within a national surveillance network, maintained by the State Hydrometeorological Service, established on the basis of 9 localities where soil samples are taken, summarily, from 6257 ha of agricultural land (in spring before sowing crops and in autumn after harvest), and the subsequent analysis are effectuated by a number of indicators (heavy metals, pesticides, polychlorinated biphenyls, polyaromatic hydrocarbons, petroleum products, agrochemical indices, etc.). In addition, complex analyses are performed for sediments from rivers and artificial lakes, for soil along the railways, around pesticide deposits and from Chisinau parks and squares in order to determine the extent of contamination with chloral organic pesticides, polychlorinated biphenyls, polyaromatic hydrocarbons, heavy metals, petroleum products. The Ministry of Health monitors soil quality in recreational areas around the settlements, schools and playgrounds and in the areas surrounding drinking water sources. The Ministry of Agriculture and Food Industry supervises the quality of agricultural land, particularly for pesticide residues, whereas the “Moldova’s Waters” Agency ensures monitoring of irrigated areas. But despite all the measures taken in this respect, the system of soil quality monitoring is very weak, and data about the level of soil fertility are very outdated.

4) *Environmental radioactivity monitoring* is also realized by the State Hydrometeorological Service, based on 18 monitoring points located within the meteorological stations, where annually about 10,600 measurements are taken, and at the automatic post in the village of Mateuti, where about 4,150 measurements are effectuated on a continuous basis.

5) Lately, as a result of investment aimed at developing an environmental quality monitoring network in Moldova, it has expanded, covering a larger territory, more environmental components and an increased number of chemical compounds. However, the monitoring capacity is still not sufficient to cope with the demands of national legislation and international commitments. Phenomena such as groundwater pollution, diffuse pollution of surface waters or background pollution are not sufficiently monitored. *There is no noise and vibration monitoring.*

6) One major challenge is the *lack of a national biodiversity monitoring system*. Since this area is managed by many institutions (“Moldsilva” Agency – forests, Academy of Sciences of Moldova – certain plant and animal species, condition of habitats and of natural areas protected by state), the information collected is limited and sporadic, creating a fragmentary and incomplete picture of the condition and conservation of biodiversity in the country.

7) *Laboratories for environmental quality analysis*. Currently, many public institutions are involved in the process of quality analysis and monitoring of environmental components. Thus, the Ministry of Environment is in charge of 3 structures that effectuate investigations on quality of environmental components: State Hydrometeorological Service, State Ecological Inspectorate (with 3 investigation centres in Chisinau, Balti and Cahul) and Agency for Geology and Mineral Resources (coordinating activity of the Hydrogeological Expedition “EgGeoM”, which has its own laboratory for underground water quality). The Ministry of Health manages several environmental quality laboratories for air, water and soil in all districts of the country, as well as in cities of Chisinau and Balti. The activities of environmental quality laboratories in some cases overlap or are doubled, whereas their databases often are not available to the public and are not accumulated into a common database accessible to the interested public.

8) *Environmental quality standards*. Laboratory investigations are performed in accordance with national environmental quality standards. Currently 15 national standards of air and soil quality and 57 standards of water quality are applied. Although there is some progress in the process of harmonization of national environmental quality standards with international ones, particularly water quality standards (for surface, drinking water), which were established with the adoption of the Water Law and approbation of the mechanism for its implementation, for some environmental components old standards are still used. There is no registered progress on air quality standards, but international projects implemented over recent years are strongly focused on reviewing and harmonizing them. As a result, the number of parameters under monitoring has been reduced considerably and, gradually, new parameters were introduced in line with EU and international requirements. However, the process of environmental quality standards harmonization needs to be continued and intensified.

25. Problems outlined:

- 1) lack of an integrated, comprehensive and efficient environmental quality monitoring system that would bring together all data regarding quality of environmental components, ensure strengthening of cooperation and information exchange between different institutional actors;
- 2) lack of a national integrated environmental monitoring programme;
- 3) lack of activities regarding development and implementation of environmental monitoring at regional and local level (scientific and natural reserves, biodiversity, large river basins and other);
- 4) overlap or duplication of activities of environmental quality laboratories, databases held often are not available to the public and are not accumulated into a common system. In addition, a continuous capacity building of environmental quality laboratories is necessary in order to ensure analysis and monitoring of newly approved parameters in the process of harmonization of environmental quality standards;
- 5) failure to harmonize environmental standards to international ones, absence of an approved list of environmental indicators.

26. Specific objective 5: *Creation of an integrated monitoring and environmental quality control system*

27. Action directions:

- 1) *Elaboration and approval of an integrated environmental monitoring programme*, which would include actions in order to extend and develop the environmental quality surveillance system, through creation of new posts, stations for environmental components quality monitoring, and would establish measurable parameters of environmental quality.
- 2) Development of an efficient system for integrated monitoring of the phenomena of groundwater pollution, diffuse pollution of surface waters, air and soil pollution, of wetlands condition, of natural areas protected by state and of biodiversity – Integrated Environmental Monitoring System, which will ensure management of data on environmental quality or long-range forecasting. Implementation of the Integrated Environmental Monitoring System, for permanent observations of the environmental quality, of natural resources and human impact, based on parameters and indices of spatial and temporal coverage, will be carried out to ensure the informational framework necessary for elaboration of strategy and tactics for prevention of consequences of anthropogenic activity and natural disasters impact, for forecast development and exercising of operational control over the effectiveness of measures to redress the environmental situation. The databases, established on this data, are to be public and accessible to institutions and interested public.

3) *Modernization and development of an integrated water monitoring system* through development of monitoring networks, at the level of all hydrographical basins, and their operating. The Republic of Moldova is to implement a new system of water quality indicators g, which includes 5 specific classes in order to monitor ecological condition and quality of water.

4) *Developing of a monitoring system for the quality of soil, biodiversity, natural areas protected by state, noise*, taking into consideration its absence in the indicated areas;

5) *Strengthening institutional capacity of monitoring, research and investigation regarding the quality of environmental components*. Purchase and launching of mobile laboratories for the Regions of Development of the Republic of Moldova.

6) *Improving the effectiveness of environmental laboratories system*. Currently, environmental quality laboratories are managed by different institutions, so that, in some cases, their activities overlap or are doubled. Therefore, the process of improving their effectiveness includes a proposal to create, within the Environmental Agency, a Center for integrated environmental monitoring and of an Environmental Reference Laboratory, which will cover a wide range of analyses and investigations necessary for all involved institutions (Ministry of Health, Ministry of Agriculture and Food Industry, State Ecological Inspectorate, State Hydrometeorological Service).

7) Review of environmental quality standards and their harmonization with international environmental quality standards.

8) Drafting and approval of the list of environmental indicators on which environmental quality monitoring shall be based.

Monitoring and research results are very important in the process of elaborating programmes of action for the recovery and protection of environmental components, including in the control of pollutants emitted/discharged into the environment.

Section 6

Protection and conservation of natural resources

Specific objective 6: *Ensuring rational use, protection and conservation of natural resources.*

A. Water resources management, water supply and sanitation infrastructure

28. Background:

1) *Water resources* of the Republic of Moldova are represented by 3 621 rivers and rivulets with a total length of over 16,000 km, 4 126 natural and artificial lakes with an area of 40 878 ha, located and constructed along the

watercourses and their beds, underground water from over 7 801 artesian wells and around 166 542 wells and springs from groundwater sources.

The main water arteries are the Dniester and Prut, transboundary rivers, with the watercourse length on the territory of the Republic of Moldova of 660 and 695 km respectively, and with a total basin area of 19 070 km².

This network of water basins ensures surface flow regularization and discharge, drinking and technical water supply, irrigation, navigation and other uses. The most important water supply sources are surface waters, particularly the Dniester River, which supplies about 83%, the Prut River – 1,8%, and other surface waters – 0,2%. Groundwater sources accessed through artesian wells, common wells and springs supply about 15% of the consumption.

Currently there are 170 mineral water reserves in the Republic of Moldova, about half of which is not exploited due to various causes (mainly due to the content of fluorine and hydrogen sulphide that exceed the maximum allowable level by 10 and 8 times respectively).

The volume of water currently available in Moldova is about 500 m³ per capita per year or even less. Internationally recommended thresholds define a safe level of renewable drinking water availability as 1 700 m³ per capita per year. If the volume of water available is less than 1 000 m³ per capita per year, the resultant water shortage could decrease the economic development and affect the health and living standards of the population.

2) *Water resource management* is still poor and unbalanced, and the water quality is low. The causes are various:

a) existing institutional framework for water resource administration and management does not ensure effective promotion of the state policy in this domain, and this policy needs to be updated and adjusted to new challenges in the field;

b) aspects regarding property, rights and responsibilities are not fully regulated, whereas the normative basis for water resources administration and protection, recently approved in accordance with the provisions of the Water Law no. 272 of 23 December 2011 and with EU legislation, is yet to be implemented;

c) transmitting water resources into use without establishment of operating rules, without due control of their fulfillment, without ensuring damage compensation, finally leads to continuous degradation of both infrastructure (dikes, dams, drains, pipes, installations, etc) and of the water resources as a whole. Thus, the artificial division of problems related to the use of surface waters and groundwater resources, their protection, preservation of ecosystems, assessment of negative impact on drinking water quality and efficiency of water supply and sanitation sector, which affect human health, results in dispersal of functions, of rights and responsibilities among state structures, as well as to isolated, unorganized planning and decision-making (both at the level of water-consuming branches of economy and that of separate entities) that do not take into account the hydrographic basins management principles.

In accordance with the Government Decision no. 775 of 4 October 2012 “On the borders of hydrographic basins districts and sub-basins and the special maps on their determination”, in order to ensure the implementation of the mechanism for

water resource management on a basin principle, two hydrographic basins districts were demarcated: the Dniester basin district (with 74% of the population) and the district of the Danube-Prut rivers and the Black Sea basins (26% of the population). Within these districts a series of acute environmental problems were identified, generated by water pollution, flowing regime modifications, high diversity of human activities, and also by some natural phenomena (floods, droughts, landslides, etc.), with consecutive implications on the environment and livelihoods:

a) precarious state of ecological and hydrological conditions within the districts, especially of tributary rivers, due to pollution both from point sources (discharge of insufficiently treated waters) and diffuse sources (unauthorised dumps, transport, agriculture and other human activities);

b) reduction and deficit of water resources in certain areas of the districts, particularly in middle and lower course, but also throughout the districts in dry years;

c) accentuated chemical and microbiological pollution of groundwater – source of drinking water for the majority of the rural population;

d) modification of the hydrological regime of rivers (construction of accumulation lakes, including hydropower plants with problems in the operating of hydroelectric systems (Novodnestrovsk and Dubasari on the Dniester river, Costesti-Stinca on the Prut river), with impact on the state of the habitats (sudden oscillations in the water level downstream from HEPP Novodnestrovsk, thermal water pollution), which, consequently, generates other problems;

e) diminishing of biological diversity and of hydrobiological resources;

f) catastrophic floods within the districts – the phenomenon that could be explained by the climate change, but also by the increased human pressures on the environment (deforestation, excessive agriculture, rectification of river courses, accelerated erosion and clogging of minor riverbeds that leads to their volume reduction and, consequently, to the water transgression from the small riverbed to the major one (meadow or plain), resulting in flooding.

There are other priority issues related to the problems of monitoring, rational use of water resources, flood protection infrastructure. Some problems are of a transboundary scale.

3) *Water quality* is largely influenced by human activity. The main specific pollution indicators analyzed by the Centers for Ecological Investigations are the content of ammonium, nitrates, nitrites, chemical and biological oxygen consumption, suspended particles. The concentration of pollutants in surface waters varies by season, reaching its highest level in the warm period.

The state and quality of water in the Dniester and Prut rivers, according to the hydrochemical indices, correspond to the class II (clean) and III (moderately polluted) of water quality. The water of these rivers is moderately polluted with biogenic elements, such as nitrogen, phenol, copper compounds, and petroleum products.

The quality of water in small rivers is characterized by a high level of pollution with ammonium ions, nitrites, copper compounds, petroleum products,

phenol, surface-active substances, substances that affect the biochemical oxygen demand (BOD₅), as well as by low content of oxygen dissolved in the water. Some rivers, especially those in the southern part of the country, cross over rock masses with high salt content, which does not allow for their direct use even for irrigation.

Only 54% of springs and wells correspond to the favourable drinking water quality parameters. Lack of waste disposal systems resulting in the insalubrity of localities and not compliance with the basic measures of water sources protection represent the main causes of decrease of the water quality in about 84,2% of the wells used as water source by about 75% of the rural population.

4) *Surface water pollution* is caused, in most cases, by the household sector (insufficiently treated wastewater, discharges of untreated water from communal system, inadequate solid waste management), agricultural sector (accumulated manure, pesticide deposits, etc.) and the energy sector, represented by petroleum storages, petrol stations, other sources of continuous pollution. Rainwater resulting from precipitation comes in contact with the ground and, in the process of runoff, meets with wastewater spills, waste, chemical fertilizers, pesticides, so that at the moment of discharge it contains a large number of pollutants. The imminent danger for underground water is represented by abandoned artesian wells, usually having a deteriorated casing or an opened wellhead, which results in the mix of rainwater with the deep one and decrease of water-bearing strata quality.

5) *Water supply and sanitation infrastructure*. Water supply and sanitation systems were designed and constructed in other economic conditions, so that they do not correspond to the current financial and economic possibilities of their normal maintenance and operation. Their continuous deterioration also causes losses of water and energy resources.

According to data from 2012, there are overall 828 aqueducts in the country, of which 73 are not functional. To these aqueducts are connected 378 localities (38,7%), of which 76,7% are cities and 36,2% - rural localities. The number of localities equipped with water supply systems increases annually due to intensified investment in the sector, which, over the past 5 years, constituted around 1,9 billion MDL (32% from internal sources and 68% from external donor's investments). Due to these investments, over 180 water supply systems have been put into service.

The major problem in the water supply and sanitation sector is the fact that water supply systems are not equipped with sanitation and wastewater treatment systems. Out of all aqueducts (828), only 158 are equipped with sanitation systems (of which only 110 are functional) and 124 – with wastewater treatment stations.

The connection rate to centralized water supply systems is approximately 43%, except Chisinau, and only 21,4% of the population benefit from centralized wastewater collection systems, of which only 1% of rural localities.

The institutional framework analysis shows that the institutions working in the field of water supply and sanitation are fragmented, have limited possibility to ensure effective management of current sectoral problems and financial planning of medium and long-term investments. Due to budget constraints, public funding is

low, whereas private capital attraction is a stringent necessity and can be realized on the basis of long-term partnerships between local public authorities and private investors. It is also necessary to implement measures for improving operational and financial performance of water supplying companies, to enhance safety and quality of services provided to the population.

29. Problems outlined regarding water resources quality and management, water supply and sanitation infrastructure:

1) inefficiency of sectoral policies for supervision, management and protection of water resources;

2) assumption of a partial and insufficient responsibility or recognition of overlapping of functions of the national-level coordination institutions (Ministry of Environment, Ministry of Health, Ministry of Economy, Ministry of Regional Development and Constructions);

3) lack of the water resources, which affect the country's capacity for economic development;

4) difficult, unbalanced and inadequate water resource management;

5) continuous degradation and pollution of surface water resources (especially small rivers) and underground water resources, caused by individual sanitation systems, discharges of insufficiently treated or untreated wastewater, infiltrations from sewage systems and inadequate solid waste deposits, agricultural activities, floods;

6) poor quality of drinking water and of the services provided to consumers;

7) high risks related to natural disasters (droughts, floods, drying wetlands);

8) unsatisfactory technical condition of water supply, sewerage and wastewater treatment infrastructure;

9) limited access of population (especially in rural areas) to safe water sources and sanitation systems;

10) budget constraints, investment insufficiency, lack of private sector interest for investment in developing water supply and sanitation infrastructure.

30. Specific objective 6.1: *Improving the quality of at least 50% of surface waters by implementing hydrographic basins management system.*

31. Action directions:

1) *Sustainable water management policy realization* through ensuring quantitative and qualitative water protection, protection against water destructive actions, as well as use of water potential in relation to the requirements of sustainable development of the society and in line with EU directives in this field. The modality of water resource management of the Republic of Moldova is not sustainable and needs to be strengthened and adjusted to EU requirements. An important step in the integration process of the Republic of Moldova into the

European Union is the realization of the national policy in the field of water resources and of the provisions of the EU Water Framework Directive 2000/60/EC. Therefore, there is a need to implement an integrated water resource management system, based on the hydrographic basins principle, taking into consideration the respective basin hydrology. For this, a characteristic analysis of the Dniester and Danube-Prut rivers and the Black Sea hydrographic basins is to be performed, together with assessment of pressures and human impact on them, identification and mapping of protected bordering areas along the courses, economic analysis of water use and assessment of current level of recovery of the costs of water services. The results of the analysis will serve as a basis for elaboration of hydrographic basins districts management plans, which will contain measures and actions related to:

- a) implementation of current legislation;
- b) improvement and restoration of all water bodies condition, maintenance of good condition of surface water and groundwater;
- c) identification of significant anthropogenic pressures on the state of surface and underground water;
- d) use of water potential in relation to the requirements of society sustainable development and implementation of the principles of recovery of the costs of water services;
- e) implementation of quality requirements for water resources and protection of drinking water sources;
- f) reducing pollution from priority substances and reducing pollution from point sources and other significant anthropogenic activities;
- g) prevention or reduction of accidental pollution impact.

2) *Developing cooperation between authorities.* Successful implementation of environmental policy in the water sector is based on the cooperation of local and central authorities, as well as public involvement, consultation and information, including water consumers. Through elaboration of hydrographic basin district management plans for the Dniester hydrographic basin district and the district of the Danube-Prut Rivers and the Black Sea basins and sub-basins, in accordance with the provisions of the Water Law no. 272 of 23 December 2011, decisions will be taken concerning the places of water use and pollution. Integrated management of areas designated to protection and autopurification of water courses and water bodies that are in possession, responsibility of subordination of different institutions (usually silvic authorities or local public authorities) is of special importance. Particular attention will be paid to actions within responsibility of local authorities associated over a single hydrographic basin, a wetland or a regional water supply aqueduct and sanitation network management system, as well as promotion of the public-private partnership in the field of water supply and sanitation, irrigation systems management, etc.

3) *Ensuring flood risk management.* To implement this action direction it is necessary to elaborate the flood risk management plans, flood risk maps, methodologies for flood damage assessment, etc. At the same time, each

hydrographic basin will be evaluated, on the basis of EU principles in this field, to determine hydrotechic works necessary to reduce flood risks. In order to implement the Management Plans, projects will be elaborated to access funds necessary to finance hydrotechnic works.

32. Specific objective 6.2: *Ensuring access of about 80% of the population to safe water supply systems and services and of about 65% to sanitation systems and services.*

33. Action directions:

1) *Decentralization of public water supply and sanitation services.* Responsibility for the organization and functioning of public water supply and sanitation services lies with local authorities. Measures are required to improve operational and financial capacities of the companies performing water supply and sanitation services to enhance safety and quality of services provided to the population.

The quality of water supply and sanitation services in the Republic of Moldova is to be improved through the mechanism of service regionalization, and an important factor in this process being the increase of responsibility of local authorities regarding the quality of services provided to the population.

While setting the charges for water use, special consideration should be paid to the principle of recovery of the costs of water services, environmental and resource costs associated with deterioration or negative impact on the aquatic environment, and the “polluter pays” principle. For this purpose, an economic analysis of the water resource management services will be carried out based on long-term forecasts of water supply and demand for the hydrographic district.

2) *Extension of centralized water supply and sanitation systems and increasing access of the population to these services.* Low level of technical infrastructure, as well as the lack of it in certain areas, reduces public access to water supply and sanitation services. Measures are required to expand centralized water supply and sanitation systems and to increase the level of public access to these services, therefore some centralized water supply systems are to be developed from the Prut and Dniester rivers to adjacent localities. Initially, feasibility studies are to be conducted for the development of the following systems: aqueduct Soroca-Balti, connecting towns of Floresti, Drochia, Riscani, Singerei, Telenesti and adjacent rural localities; aqueduct Vadul lui Voda – Chisinau – Straseni – Calarasi, aqueduct Prut – Leova – Basarabasca – Cimislia and Ceadir-Lunga.

To ensure the construction of water supply and sanitation systems, projects will be developed in order to attract funding for this works.

3) *Promoting market economy principles and attracting private capital.* Public water supply and sanitation services are characterized by monopoly

determined by the situation when the beneficiaries are captive customers connected to centralized systems. In order to ensure competition, service operators, financing capital and management in general will be subjected to measures implemented for bringing them into the competing position.

However, public funding is low, so that the attraction of private capital becomes a stringent necessity and can be realized on the basis of long-term public-private partnerships between local public authorities and private investors. This will contribute to the creation of new jobs and business development. For urban areas it will involve promotion of water-canal services to a charging system that would cover the costs of water production and distribution, allowing the companies to function on the basis of economic principles and to offer better quality services, and for the rural areas – introduction of an intensive promotion and social marketing programme of values related to good infrastructure and availability of adequate sanitation facilities for the social objects.

All the financial inputs provided by charges, taxes and transfers will be assessed in relation to costs of each phase of the project, thus ensuring that funds and revenues from charges are available for covering all the services provided. Thus, information about life cycle costs is to be supplied systematically by water companies in order to develop sector monitoring.

B. Quality and management of soil resources and useful mineral resources

34. Background:

The Republic of Moldova has qualitative soil resources, which largely ensure economic activity of the country. Chernozem soils, having a high natural productivity, occupy about 70% of the whole territory and 80% of the agricultural land. However, the qualitative condition of soil resources is mostly unfavorable, the use of them being inefficient and often destructive.

1) *Soil degradation processes.* The soils are permanently subject to intensive degradation processes caused both by natural and anthropogenic factors, leading, ultimately, to productivity loss and progressing desertification.

Soil degradation is also favored by natural factors such as torrential rains during the warm season, affected soils of the agricultural lands (about 80%), saline or unfavorable texture parent rocks, groundwater level and mineralization, etc...

But the major impact on soil quality, which facilitates the activation and intensification of degradation processes, is caused by anthropogenic factor. Land privatization and forestry fund parceling, lack of crop rotation and anti-erosion measures, non-implementation of recommendations and best practices for soil protection and conservation have complicated the possibility for efficient soil resource management. On the narrow privatized parcels, located along the hillslopes, soil cultivation is performed in the same direction (up-and-down the hill), thus accelerating erosion. Uncontrolled, from the own landowners' initiative considerable areas of most qualitative land are excluded from the agricultural circuit, remaining not worked or fallow.

Average fertility of soils in the country is of 63 points. This is reduced annually due to activation of degradation processes: erosion, dehumification, destruction, secondary compaction, solidification and salinization, sloughing, etc. Over the past 30 years, the area of eroded soils increased by 223,800 ha, advancing by about 6,400 ha annually, and at the moment is about 880,000 ha, which represents 25,93% of the total territory of the country or 40% of the agricultural land. The highest level of erosion of agricultural land is registered in the rayons Calarasi (56,1%), Cahul (44,4%), Hincesti (43,7%), Ungheni (43,4%), Nisporeni (43,4%). The annual loss of fertile soil from agricultural land due to erosion is, by some estimates, 26 million tons, including humus – 700,000 tons, nitrogen – 50,000 tons, phosphorous – 34,000 tons, potassium – 597,000 tons. Indirectly, this process has also other consequences: siltation of ponds and other water bodies, pollution of soil and groundwater with plant protection products and fertilizers, destruction of communication lines and hydrotechnical structures, etc.

Reduction of soil quality is primarily conditioned by dehumification processes. In cultivated arable lands, due to the reduction of organic matter and incorporation of fertilizers, humus content decreases annually by about 10 tons per hectare.

A significant damage to land resources is represented also by landslides. Their area, according to the cadastre, constituted 21,570 ha as of January 1, 2012.

The largest areas affected by landslides are registered in the rayons Nisporeni (2,956 ha), Calarasi (2,147 ha), Ungheni (2,065 ha), Hincesti (1,165 ha), Straseni (697 ha) and Telenesti (538 ha).

Landslides affect houses, roads, hydrotechnical structures, etc. Currently, 80% of the land affected by landslides are removed from the circuit and assigned to the reserve fund, registered as “land for forestation”.

Soil destruction also occurs through various excavation works such as mining industry, in the case of daily exploitation works, which result in increasing areas of unproductive soil surfaces.

According to the land cadastre, in 1991 the area of farmland buffer strips was 31,000 ha, and in 2008 – 30,800 ha. Officially, this area decreased by 200 ha, which does not reflect the reality, because during the years 1991 to 2012 about 3,000 ha of farmland buffer strips were destroyed. Currently, coverage of agricultural landscapes with protective buffer strips is, practically, two times less than the required 58,000 ha. Therefore, to improve the ecological situation within the land fund, it is necessary to encompass agricultural lands with a natural (green) carcass of protection with various functions.

2) *Soil pollution.* In recent decades, the background soil pollution has become less urgent due to the considerable reduction of diffuse sources of pollution. The quantities of fertilizers and pesticides used in agriculture have been significantly reduced and the problem of nitrates and heavy metals (zinc, nickel and lead) pollution is not actual any more. The pollution of soils with cooper, especially at the local level, still exists, due to application of chemicals with cooper in agriculture. The problem of local soil pollution with waste and toxic substances becomes even more acute. Waste of different categories and origin are transported

and deposited chaotically around localities. Apart from waste deposited in authorized and spontaneous locations (ramps, platforms and landfills), significant volumes of waste, mainly solid, are transported (discarded) to ravines, forest strips, channels and rivulets, roadsides, deteriorated lands, etc. These wastes pollute, primarily, the soil.

Still actual is the local pollution of soil with pesticides, persistent organic pollutants, especially around current and former storages of agricultural chemicals (mineral fertilizers, pesticides, etc.) and stations for preparation of plant protection solutions. Along with surface water runoff, these pollutants accumulate in soil and sediments of water basins. At the same time, building materials obtained from the demolition of old deposits are important factors of soil pollution in places of their use.

In between 2008-2010, national inventory and mapping of zones contaminated with persistent organic pollutants was realized. A total of 1,588 contaminated sites were identified, including 2,326 objects of agricultural chiminalization infrastructure: warehouses, stations for preparation of plant protection solutions, helicopter fields, evaporation tanks and illegal inhumations of pesticides.

Soil pollution by petroleum products is recorded throughout the country, the main sources being the storages and refueling stations, car washes and service stations, as well as accidental pollution.

In places, around electric installations intense soil pollution by polychlorinated biphenyls is detected, exceeding the maximum allowable concentrations by tens and hundreds of times.

3) *Exploitation of useful mineral resources.* The state balance of reserves of useful mineral substances recognizes and takes on record 414 deposits of useful minerals, of which 147 are exploited, 32 – prepared for exploitation, 218 – reserve ones, and only 20 are not planned to be used. Lately there is an increase in the volume of useful solid minerals retrievals, which only in 2009-2012 amounted up to 5 million tons. Most commonly used underground minerals are carbonate rocks, silica, clay, sand and gravel, and less used – caustobiolith rocks (oil, gas, brown coal), due to insignificance of their amounts, registered only at Valeni, Victorovca and Vladiceni.

The imperfection of legal and regulatory framework, as well as lack of strategies and action plans regarding sustainable development of natural resources led to inefficient management of underground natural resources both at central and local public administration authorities' level, to uncontrolled exploitation of underground natural resources, to failure to exercise control functions in this field, to soil degradation in the areas of mining extraction. As a result of rapid development of the industrial sector, there is an increase in the demand for construction materials and, implicitly, in the demand of raw mineral materials for their production. The fact that useful mineral resources of the country are exploited more intensively imposes the necessity of control over rational use and protection of subsoil, in terms of compliance, by the beneficiaries, with legislation governing relations on subsoil use and protection and with technical (technological) project

documents, to prevent environmental damage and emergence of direct danger to life and health of people living and working in the area of influence of exploitation works.

35. Problems outlined:

1) defective, unbalanced and inadequate management of soil resources (characterized by lack of crop rotation and anti-erosion measures, neglect of the best soil conservation practices, mass land parceling) and useful mineral resources;

2) soil resources pollution caused by waste and dangerous chemicals, non rational use of fertilizers and pesticides (1,588 locations are contaminated with persistent organic pollutants);

3) continuous activization of soil degradation processes (40% of agricultural land, which is 880,000 ha, is degraded, whereas 21,570 ha of land are subject to landslides);

4) destruction of 3,000 ha of soil protection forests and their absence on at least 50% of agricultural land;

5) poor management of underground natural resources.

36. Specific objective 6.3: *Improving soil quality and ecological restoration of degraded, affected by landslides lands and farmland buffer strips up to 100%, as well as sustainable management and protection of useful mineral resources.*

37. Action directions:

Land resources require proper, motivated management, focused on effective use and protection of soil as a multifunctional natural object and as an important mean of production in agriculture, which cannot be multiplied.

Main action directions in the field of rational use and protection of soil resources are aimed at creating the necessary institutional system in this area; combating land degradation and mitigating the impact of desertification; ecological reconstruction of lands that have been degraded and affected by landslides; creation of a sustainable carcass of farmland forest buffer strips; remediation of land affected by persistent organic pollutants and exploitation of useful mineral resources.

1) In order to *combat soil degradation* and reduce the impact of desertification, is required the elaboration and implementation of complex regional systems of measures, adapted to specific natural conditions of each region and based on the concept of resource productive technologies. Therefore, minimum tillage systems and works that ensure the maintenance of vegetal residues at the surface of soil for water accumulation and conservation, reduction of water and wind erosion, as well as saving fuel, will be promoted. At the same time, it follows to propose for cultivation certain varieties of crops with shorter vegetation period and tolerance to drought and heat. Crop rotation will be organized, seeking to ensure soil water accumulation and conservation, improvement of physical, chemical and biological soil properties, avoidance of pathogens, pests and weeds development. Soil fertility is to be improved mainly through organic fertilization

with manure or composted organic waste, with green fertilizers (mixtures of annual leguminous and gramineous grasses, with green mass harvested and incorporated into soil) and with annual and perennial leguminous crops, as well as through application of minimum amount of chemical fertilizers needed.

Agricultural system is to be based on the pedoecological antierosional principles. Organization of agricultural land has to provide for ensuring effective soil protection, which is quite difficult to accomplish in conditions of land fragmentation and parceling. From these considerations it is needed to promote the policy of “consolidation” of parceled agricultural land, which lies in creating opportunities for antierosional organization, implementation of crop rotation and regional systems for efficient use and protection of soil. Consolidation can also be performed in terms of privatization – value shares and private parcels can be incorporated into a massive organized by antierosional principles, compelling owners to respect common rules of land use and soil protection technologies. A system of grants and subsidies will be developed to contribute to rational use and protection of soil resources; irrigation will be promoted and encouraged for a wide range of farms with various management types in viable zones.

2) *Ecological restoration of degraded, affected by landslides lands*, through development of a programme of complementary and compensatory measures of cleaning, recovery and/or ecological restoration of degraded soils, in order to bring them as close as possible to their natural state, through eliminating any significant risk of impact on them. The main cause of erosion and landslides is the lack of vegetation that ensures soil stability. Therefore, the least productive and eroded lands will be excluded from arable land fund and transferred to a special “recovery” fund to be subject to ecological restoration. As a result, condition and quality of 880,000 ha of eroded land and 21,570 ha of land subject to landslides will be improved.

3) *Creating the natural carcass for soil conservation*. Farmland buffer strips fulfill sanitary and hygienic functions, functions of soil protection, territorial hydrological regime regulation, water protection, etc. To improve the ecological condition of land fund, it is necessary to create forest (green) carcasses for agricultural land protection. The necessity of farmland buffer strips planting is 3,5%, or 58,000 ha. The current area of buffer strips is 30,800 ha, of which 3,000 ha were destroyed in the past ten years. So, based on these numbers, works of planting, regeneration and ecological reconstruction have to create about 28-30,000 ha of farmland buffer strips and rehabilitate 3,000 ha that were destroyed.

4) *Remediation of land contaminated by persistent organic pollutants and other hazardous chemical substances*. Consolidation of efforts to attract the investment necessary to continue the work on identification of contaminated lands, effectuation of remediation measures at those 1,588 contaminated sites, detected in the process of inventory, with their reintroduction into economic circuit, and prevention of new accumulations of pesticides, other hazardous substances and chemicals, and of their spread across the country.

5) *Ensuring rational use, protection and conservation of useful mineral resources.* Measures for rational use of useful mineral resources will be oriented to:

- a) providing national economy with local raw materials;
- b) rational use of existing mineral resources, extending the areas of their use in the national economy;
- c) prevention of negative impact of exploration, exploitation of mineral resources on the environment and population.

In order to realize the established directions it is necessary to carry out scientific research for the discovery of new underground deposits and to develop, on a continuous basis, of the raw material base. The results of geological and hydrogeological studies will present the basis for the development of mineral resource potential of the Republic of Moldova, appreciation of regional particularities and forecast of negative consequences of geological processes.

In addition, it is strictly necessary to develop, improve and adjust our legislative and regulatory base to the EU requirements in order to use existing natural resources in a rational way and to prevent the negative impact of mining on the environment and population. This, the main task will be oriented to the elaboration of the strategy of mineral resource exploration and exploitation in the Republic of Moldova, improvement of the Subsoil Code, as well as the elaboration of regulatory framework for its enforcement, focused on the gradual study of deposits, classification and approval of mineral deposits, mode of recovery, regime of evidence/registration of mining activities, of annual reporting of economic agents benefitting from subsoil (in total about 30 regulations, instructions, rules, guidebooks, etc.).

At the same time, it is necessary to analyze the opportunity to review the sphere of competence and structural reorganization of the institutions that ensure the management of mineral resources in order to create an efficient and transparent monitoring system. In particular, it is necessary to consolidate the structures and to unify the geological policy (geological explorations, technical geology, cadastre of geological explorations, monitoring of dangerous geological processes, natural deposits' excavation projects), to improve the administrative and economical mechanisms of their management, elaboration of incentive mechanisms in this area.

At the same time, a geological mapping of the Republic of Moldova at 1:50,000 scales will be carried out, together with creation of an electronic geological database.

C. Condition of biological resources and the mode of their management

38. Background:

The biological resources of the Republic of Moldova are composed of a specific variety of plants, animals, mushrooms and microorganisms, whose value is indisputable for any terrestrial, aquatic or aerial ecosystem. The diversity of

species is determined primarily by geographic position of the country, climate and paleogeographical conditions, exchange of biota with neighboring regions and, not the least, by human impact.

1) Flora of the Republic of Moldova is relatively rich and includes 5,568 species of plants. According to the floristic richness, ecosystems form the following string: forests (about 850 species), meadows (about 650 species), steppe (about 600 species), petrophyte (about 250 species), aquatic and wetlands (about 160 species).

a) *Forest resources* are important strategic natural resources and are composed of forest fund resources and other areas covered by forest vegetation outside of it. Forests have an unique role in maintaining the ecological balance, in combating desertification and degradation of land and soil, in biodiversity conservation, landscape, water and hydrographic basins protection, in food and energy security, in mitigation of climate change impact, and, not lastly, in natural disaster risk prevention and reduction.

As of January 1, 2012, in the Republic of Moldova the area covered by forest vegetation constituted 462,700 ha or 13,7% of the country, the forest fund occupying an area of 419,500 ha, including forests – 375,300 ha and forest vegetation outside the forest fund – 51,900 ha. Most of the lands of the forest fund are in public property of the state (86,3%), the rest being owned by municipalities (13,1%) and only 0,6% by private owners. Secular forests occupy a territory of around 6,000 ha, which is 1,6% of the forest fund. Forestation of the territory is 11,1%, which is much below the European average (about 30%).

Although in the past 50 years there is an increasing tendency in the percentage of forestation, expressed through forestation of degraded and impracticable for agriculture lands (figure 1), the path of forest covering is quite slow, and the share of native species – reduced.

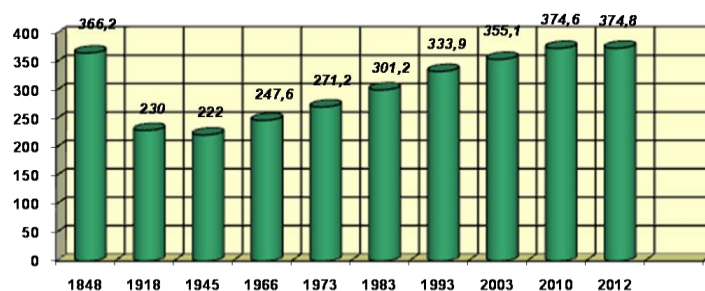


Figure 1. Evolution of areas covered with forests in the Republic of Moldova, thousand ha

The biggest problems identified in this sector relate to inadequate forest management, reduced bioproductive potential and insufficient security and protection. An important aspect in the process of ensuring the productive capacity of forests is ensuring their security and integrity. The activities implemented by

relevant authorities are still insufficient to stop considerable losses caused by illegal logging, grazing, etc. According to official records, only in the last five years illegal logging amounted to about 40,000 m³ (about 65% are concentrated in the forests managed by municipalities and 35% - by the “Moldsilva” Agency). Some studies estimate illegal logging in volume of about 400-600,000 m³ annually.

b) *Green spaces* in urban and rural localities used for recreation constitute 21,553,56 ha, including: of general purpose – 6,790,560 ha, of limited access – 3,166,290 ha, with special profile – 106,170 ha, with utility functions - 9,805,700 ha, and touristic area – 36,43 ha. Nowadays a massive reduction of green spaces is taking place due to their conversion into areas occupied by constructions. Considerable areas of green spaces of the Republic of Moldova are sold or leased. The degradation draws in many green spaces adjoining water basins, as well as in squares between quarters and municipal parks. Apart from reducing the territory covered by vegetation, green spaces pollution is another serious environmental problem. Restriction of green spaces increases urban environmental risks, having an immediate negative impact on their viability and sustainability, on the quality of life and health condition of the population.

c) *Pastures*, which are currently owned by local authorities, are in a total lack of management system, are overloaded and destroyed; in general, only 5% of them maintain high biological value, whereas about 70% have lost the ability of recuperation. Improvement of their management could bring both economical and ecological benefits.

Natural ecosystems have degraded and have been dismantled due to intensive agricultural activities, but their continuity has to be restored. It is necessary to improve biodiversity protection and to develop the National Ecological Network.

2) *Fauna*. By the number of species inhabiting the country, Moldova is ranked among the states with a relatively rich fauna. Vertebrate fauna includes 70 species of mammals, 281 species of birds, 14 species of reptiles, 14 species of amphibians and 41 species of fish. Invertebrate fauna is quite rich – about 15,000 species, of which only 13,000 are species of insects.

Use and intense exploitation of forest, aquatic, steppe, meadow and petrophyte ecosystems endangered animal diversity, causing deterioration of food chains of the living world. The process of degradation of natural and manmade ecosystems has a significant influence on the richness of the animal world. Forest ecosystems provide animals with variable living conditions, but essential forest fragmentation reduces the possibility of population exchange between them. Along with the reduction of forest areas and intensification of excessive grazing in meadow and steppe ecosystems, some species of rodent mammals have become vulnerable and rare. The reduction of rodents, an important link in the food chain, led, in turn, to reduction and even disappearance of certain species of carnivorous mammals, 6 species (of the existing 14) being already included in the Red Book of Moldova.

Analysis of the ecological status of the 14 species of amphibians results in the conclusion that due to pollution of lakes where the breeding takes place,

drainage of aquatic habitats, fragmentation and/or partial or total destruction of terrestrial habitats, the recent years have resulted in reducing the number of their population by 2,5-3 times. This situation is observed in the big cities area and in the agrocoenoses of the centre and north of the country.

Hunted animal species are in a dramatic decline, caused by excessive poaching, large number of predators (jackals and foxes) and lack of effective cynegetic management.

Thus, based on the mentioned issues, the Red Book of the Republic of Moldova is constantly supplemented with new species in danger of disappearance and to be taken under state protection. If the first edition of the Red Book (1978) included 29 animal species and 26 plant species, the second one (2001) includes 126 plant species and 116 animal species, whereas the 3rd edition, which is to be published, will comprise at least 213 animal species and more than 126 plant species.

3) *Natural areas protected by state.* The surface of natural areas protected by state in the Republic of Moldova is of 189,400 ha, or 5,5% of the territory of the country, which is much lower than in the majority of European countries.

According to the Law no. 1538-XIII of 25 February 1998 on the Fund of Natural Areas Protected by State, there are 12 categories of natural areas protected by state, including scientific, natural, landscape and biosphere reserves, national parks, natural monuments, dendrological and zoological gardens, wetlands, etc.

The analysis of the functional structure of natural areas protected by state indicates that the core of these areas is constituted by landscape and scientific reserves. The majority of natural areas protected by state are referred to the forestry sector, representing 15,3% of the forest fund area and about 17% of the areas covered with forests.

The relatively low share of natural areas protected by state does not ensure effective conservation of biological diversity, as required by the international conventions in this field. From the scientific point of view, expanding a nationwide network of protected natural areas to 10% of the territory could ensure the protection of about 50% of all species that reflect the biological diversity of natural ecosystems. The situation is worsened by the fact that the protection regime is not respected in the majority of natural areas protected by state and that there are deficiencies in institutional framework (lack of administrative units for protected areas, of management plans, of monitoring plans, insufficient qualification of staff and reduced responsibility of local authorities). The importance of protected areas is determined by the state of plant and animal associations, particularities of landscape and substrate, etc., so it is necessary to periodically assess their state by conducting ongoing scientific research on the reevaluation of the objects protected by state.

Another problem in this field is that the network of natural areas protected by state does not fully meet the criteria of the International Union for Conservation of Nature and of the Convention on Biological Diversity, and needs to be adjusted to their requirements.

4) *Wetlands*. In the Republic of Moldova there are three natural areas protected by state that have the status of a wetland of international importance, with a total area of 94,700 ha, where the largest variety of fauna is concentrated, and which are aimed at the protection and conservation of natural habitats and the migratory birds both at national and at European levels („Lower Prut Lakes”, „Lower Dniester” and „Unguri–Holosnita” sites).

The natural, economic or cultural importance of these areas is not acknowledged. Wetlands are used for economic purposes, irrigation, fishing, grazing, hunting or recreation, being transformed or completely destroyed, causing a major negative impact on the environment. The land of these zones of international importance are managed by different owners, including the “Moldova’s Waters” Agency, the “Moldsilva” Agency, local public administration authorities and other owners. Due to inefficient management of these zones, about 150,000 ha of wetlands and meadows require restoration and ecological reconstruction in order to be used for economic purposes.

The management of wetlands of international importance has to be governed by certain management plans. So far, draft management plans were elaborated for two Ramsar sites, with preparation of the documents required to transform one of them into a national park. However, it is necessary to improve the management policy in this field at all levels, to elaborate relevant documents and regulations for wetlands of international importance. At the same time, a part of these are recognised as core areas of the National Ecological Network, but there is no authorized list of wetlands of national importance and officially approved criteria with regards to them.

39. The **problems outlined** regarding management, protection and conservation of natural resources are:

1) illegal and irrational use and exploitation of biodiversity (illegal logging, hunting, fishing, poaching, illegal and unorganized pastures, illegal commercialization of natural products);

2) intensification of biodiversity loss processes, obvious increase in the number of critically endangered species that have to be protected in the national context;

3) lack of the National Ecological Network and fragmentation of natural ecosystems and habitats of many species that lead to restriction of migration routes of many animal species;

4) insufficient institutional and managerial framework for objects and complexes of natural areas protected by state and lack of financial sources necessary to ensure their sustainable management;

5) small share of the natural areas protected by state (only 5,5% of the territory), as well as of forests (only 11,1% of the country’s territory);

6) insufficient assurance and development of sustainable management of forests, green spaces, pastures, wetlands, there are about 150,000 ha of meadow and wetland areas requiring ecological restoration and economic recovery;

7) continuous degradation of riparian and water basins protection strips, which causes loss of habitats and ecosystems;

8) degradation of biodiversity and ecosystems is costly for the society, especially for the economic agents that depend on ecosystem services.

40. **Specific objective 6.4:** *Expansion of forest areas to 15% of the country's territory, of natural areas protected by state up to 8% and ensuring efficient and sustainable management of natural ecosystems.*

41. **Action directions:**

1) *Expansion of forest areas and ensuring their sustainable management.* The problems regarding sustainable forest management in the Republic of Moldova can be successfully resolved only in case of promotion of a forestry policy adjusted to the new requirements, which would ensure forestation of degraded lands, creation of forest buffer strips and of green spaces, remodeling of national landscape and, not in the least, improvement of living conditions of the population.

There is a need to strengthen institutional capacities of administration and control of activities in the forestry sector, to ensure rational use of forest products, to perform forest management works at lands covered with forest vegetation, to enhance the efficiency of forest fund security and protection activities, to ensure forest biodiversity conservation.

Expansion of forest areas from 11,1% to 15% is to be achieved by planting 150,000 ha of forest and forest plantations on degraded lands, in the woods of forest fund and outside of it, with promoting higher proportion of native species. At the same time, about 30,000 ha of riparian and water basins protection strips will be planted.

To ensure the sustainability of newly planted forests and to prevent illegal logging, a management, security and protection system is to be created and developed.

2) *Expansion of natural areas protected by state and ensuring their sustainable management.* In order to increase the coverage of natural areas protected by state from 5,5% to 8% it is necessary to assign a special status to natural areas valuable in terms of biodiversity, in order to reduce human intervention in these zones. Therefore it is proposed to create and develop two large natural areas protected by state, such as the "Lower Dniester" National Park and the Danube Delta Biosphere Reserve, with the involvement of Romania, Moldova and Ukraine. In 2013, the first national park of the Republic of Moldova was created – the "Orhei" National Park. In the nearest future, it is necessary to assign a special status to this area, through capacity building and ensuring appropriate management.

The importance of protected areas is determined by the state of plant and animal associations, particularities of landscape and substrate, etc., so it is planned to periodically assess their condition by conducting ongoing scientific research on

the reevaluation of the objects protected by state. Based on the practice of European countries (Czech Republic, Latvia, Romania), it is necessary to establish a special body for the management of natural areas protected by state, which is to ensure improvement of management system of these areas, compliance with their specific regime, their inventory and registry, maintenance and completion of the Cadastre of Natural Areas Protected by State, elaboration and implementation of management and sustainable development plans, attraction of necessary funds from the international bodies, development of ecotourism values in these zones.

About 150,000 ha of degraded wetlands are to be restored, with their inclusion in the economic circuit of the country.

3) *Ensuring protection and conservation of biological diversity.* Since natural habitats continue to be deteriorated and an increasing number of animal and plant species is endangered, it is necessary to undertake a set of measures that would allow the proper protection, use and restoration of ecosystems. To ensure the protection and conservation of vulnerable wild plant and animal species, the Strategy will focus on activities concerning the review and improvement of legislative framework in the area of biodiversity conservation, elaboration of new strategic framework in this field, enhancing quality of natural ecosystems and prevention of their fragmentation, restoration and rehabilitation of degraded ecosystems and important ecological corridors, increasing responsibility of central and local authorities and strengthening participation and intersectoral coordination for the protection and rational use of natural resources and natural values in favour of national viability.

In order to ensure scientific research on reproduction, spreading, cultivation/growth, acclimatization of disappearing plant and animal species, critically endangered, endangered, vulnerable, rare and undetermined on the territory of the Republic of Moldova, the third edition of the Red Book of the Republic of Moldova will be released, including an almost double number of endangered species, as well as animal and vegetal kingdom cadastres.

The aspect of biological safety in the Republic of Moldova also would not be neglected, an institutional framework being developed in this area.

In order to prevent the losses of valuable genetic fund of wild plant and animal species, to reduce fragmentation of natural ecosystems and to create connecting ecological corridors, it is necessary to develop the National Ecological Network and to create an Emerald Ecological Network as component parts of Pan-European Ecological Network.

In order to stop the practice of reducing the green spaces in the public patrimony, it is necessary to involve local community, to enhance transparency in their management and to increase the quality of green zones. This could be done through increasing the territory covered with seedlings during greening season, through diversifying the structure of parks, through creation of dendrological collections that can grow in our environmental conditions and through applying retrofit works to bring the landscape architecture to another level.

Section 7.

Ambient air quality

42. Current situation:

1) *Ambient air pollution* is generated by three main sources: stationary sources, including heat and power plants and heating plants, operating industrial enterprises; mobile sources, including auto, railway, aerial and water transport, agricultural machinery, and long-distance pollutants transportation.

According to statistics, the quality of air in cities (for example, Chisinau, Balti) is influenced mainly by emissions from transport, power plants, large enterprises, while in district centers and rural areas – by emissions of smaller enterprises, heating plants and household sources.

The main causes of air pollution are: use of old vehicles and low-quality fuel, outdated technologies, lack of emissions self-monitoring, inadequate environmental damage assessment and compensation, etc.

Monitoring data show that the state of ambient air does not meet the requirements of legislative and normative acts currently in force. Actions to protect and improve air quality at the source of pollution are insufficiently implemented by economic agents and local public authorities.

The level of air pollution over the past 20 years shows a decreasing tendency during 1990-2000 and an increasing one during 2000-2010, with a slight decrease between 2011 and 2012, due to the outage of industrial enterprises during the first period and the growing number of auto vehicles since 2000.

In 2012, the total volume of emissions both from stationary and mobile sources constituted about 200,000 tons.

Currently, within the territory of the Republic of Moldova more than 5,000 polluting entities are recorded, including heating plants of economic agents and local public administrative sector, the number of which is increasing from year to year.

The majority of polluting industrial entities feature one or more stationary sources of pollution. A considerable increase of toxic emissions was registered in the period of 2005-2006, followed by their reduction by 27% around 2012 (Figure 2).

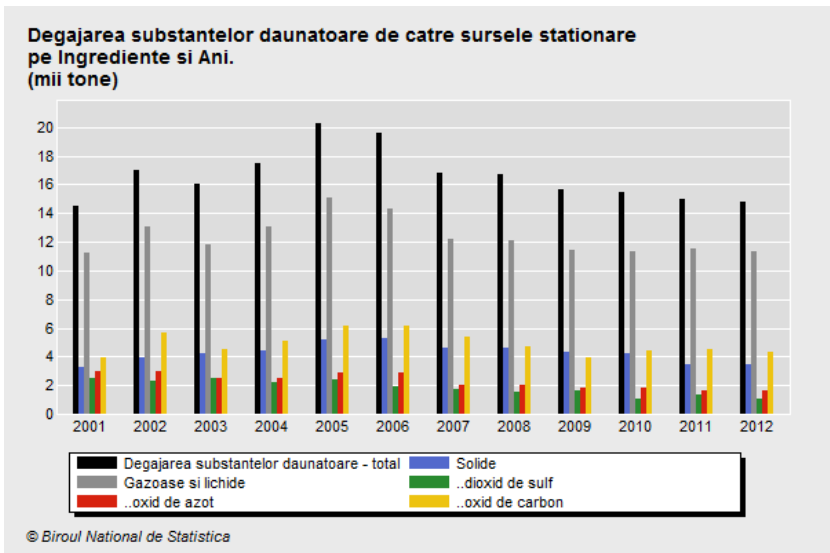


Figure 2. Emission of pollutants into ambient air by stationary sources from economic agents

This demonstrates that managers of industrial enterprises, which are generating toxic emissions into the atmosphere, as well as the heating plants of the social objects, are already taking action to reduce emissions and achieve certain environmental performance in this regard.

About 60% of the pollutants in the atmosphere are produced by the exhaust gases of mobile sources (Figure 3). It was found that 80% of the amount of CO is produced in the first two minutes of engine operation and represent 11% of total exhaust gases emission.

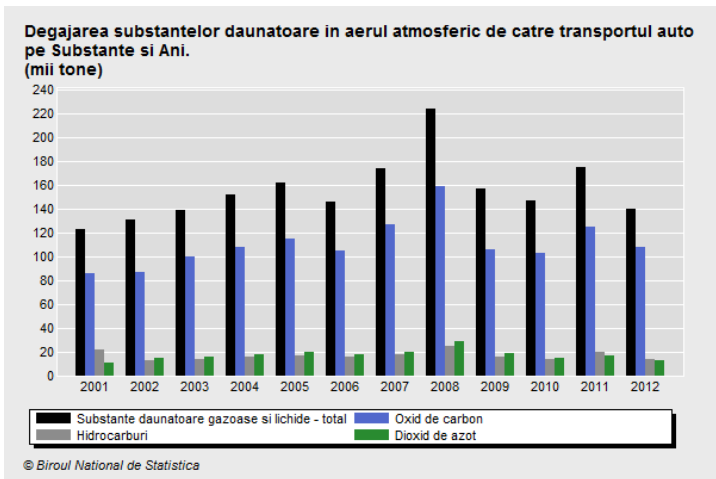


Figure 3. Emissions of toxic substances into the atmosphere by auto vehicles

The norms on air pollutant emission limits are outdated and are not adjusted to EU standards. Admissible limit values for air emissions of major pollutants have to be introduced gradually, starting with large heat and power plants and extended progressively to other pollution sources and pollutant substances. In addition, pollution charges do not have any discouraging effect over polluters and are applied for too many substances. For these reasons, the system should be reviewed.

Likewise, the amount of payments for emissions of significant pollutants has to be increased.

2) *Greenhouse gases emissions.* The Republic of Moldova is a party to the United Nations Framework Convention on Climate Change, as well as to the Kyoto Protocol to the UN Framework Convention on Climate Change, under which the humanity has to make a common effort to maintain the tendency of increasing average global temperature for the next 100 years below 2°C limit. In this context measures are required for implementing policies, programs, activities and projects aimed to reduce greenhouse gases emissions in all sectors of the national economy.

In our country, greenhouse gases emissions are consistently monitored and estimated through the national inventory of emissions sources and sequestration. A number of assessments have been carried out during the years 2000-2013, their result revealing a downward tendency of greenhouse gas emissions compared to 1990. Between 1990 and 2010, respective emissions were reduced at national level by about 69,3%: from 43,26 megatons CO₂ equivalent in 1990 to 13,28 megatons CO₂ equivalent in 2010 (Figure 4).

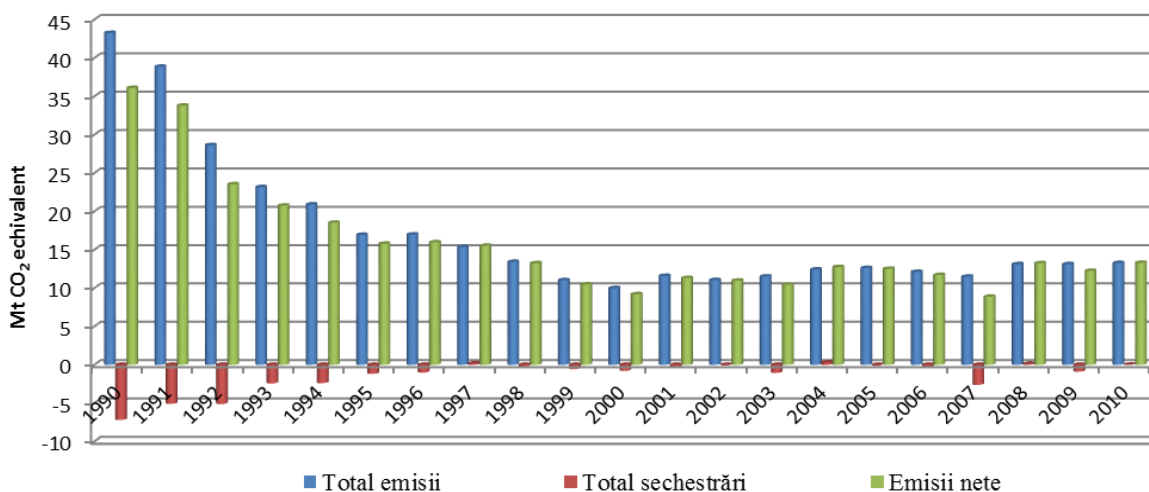


Figure 4. Dynamics of emissions and sequestrations of greenhouse gases in the Republic of Moldova, 1990-2010

Significant reduction of national greenhouse gases emissions is, first of all, a consequence of the economic crisis that followed the collapse of the Soviet Union, leading to changes also in the supply and consumption structure of energetic resources. Consumption of fossil fuels (mainly coal and oil) decreased substantially, while natural gas, which is less polluting, has become the main fuel used in heat and power plants, reaching a share of 40-50% of primary energy supply.

During 2001-2010, greenhouse gases emissions tended to increase by about 32,9%, mainly due to about 120,6% increase in the amount of emissions from mobile combustion sources and about 58,1% increase of emissions generated by fossil fuels combustion for electricity and heat production, as well as a 42,7%

increase of emissions generated by burning fossil fuels in residential, institutional and commercial sectors.

The main source of national greenhouse gases emissions is the energetic sector – about 67,4% of total emissions. Other ones are the industrial, forestry, agriculture and housing sectors and, not in the least part, the stored waste.

43. Problems outlined:

1) lack of institutional capacity of the central public environmental authority regarding the development and implementation of policy and legislation on air protection and climate change;

2) imperfect design/organization of emission inventory system; lack of an emission estimation and forecast system and of national emission ceilings;

3) excessive air pollution from mobile and stationary sources;

4) industrial use of outdated installations and equipment;

5) use of low-quality fuels and old vehicles;

6) air quality approaches and standards that are outdated and non-compliant with those of EU;

7) large greenhouse gas emissions from all sectors of the national economy, leading to ozone layer depletion, climate change and global warming.

44. Specific objective 7: *Creation of an integrated air quality management system, reduction of pollutants emissions into the atmosphere by 30% by 2023 and greenhouse gases emissions by at least 20% by 2020 compared to the baseline scenario.*

45. Action directions

Current state of air quality, sectoral problems and the need for air protection all require the development of necessary measures to reduce pollutant emissions at the source, action directions designed to avoid, prevent or reduce the impact of air pollution on environmental components, ecosystems and human health, including in the context of meeting the commitments undertaken by the Republic of Moldova upon the ratification of international treaties.

1) *Creation of an integrated air quality management system.* First, it is necessary to delimit the territory of the Republic of Moldova into zones or agglomerations reflecting their pollution level. Stationary sources, installations/activities generating pollutant emissions into the atmosphere, will be inventoried and classified into three categories according to the level of pollutant emissions: large, medium and small.

For zones and agglomerations where the concentration of pollutants in ambient air exceeds target values or air quality limits, temporary tolerance margins will be added. In case of necessity, air quality plans will be elaborated, in accordance with plans and programmes of environmental quality rehabilitation. These plans are to be provided at the stage of issuing the environmental authorizations.

An emission inventory, estimation and forecasting system will be created and launched, national emission ceilings for certain pollutants will be established as well, limiting specific aggressive pollutants, particularly sulphure content in liquid fuels, sulphure dioxide, nitrogen dioxide and nitrogen oxides, particulate matter (PM₁₀ and PM_{2,5}), lead, benzene, carbon monoxide and ozone depleting substances in ambient air.

All the information on air quality has to be publicly available in a standardized form, adjusted to EU requirements, and accessible.

Procedures will be adopted for the provision, assessment and reporting of air quality data, to enable the use of electronic facilities and of the Internet as the main tool to make information available.

Particular emphasis will be placed on promotion of various measures to reduce the emissions of pollutants generated by road traffic by improving the technical condition of vehicles in circulation and adopting some fiscal measures or promoting special programmes that would encourage the replacement of old vehicles with high pollutant emissions by new vehicles with low pollutant emission level. Certain studies show that replacing the vehicles that are older than 10 years with new ones would reduce air pollution by 3 times. Also, studies will be intensified on the use of alternative energies, which generate low pollutant emissions, as could be: electricity, liquefied petroleum gas, compressed natural gas, and biofuels.

Therefore, the action directions aimed at ensuring air protection and pollution reduction will be as follows:

- a) creating the institutional, legislative and regulatory framework necessary for the development and implementation of an economically efficient integrated air quality management system;
- b) undertaking measures to maintain/improve air quality in relation to the relevant pollutants;
- c) reducing air pollution level from transport sources and from the fuels used;
- d) providing information and raising public awareness on air quality management.

2) *Reduction of greenhouse gas emission and climate change impact mitigation.* Under the Convention on Climate Change, Moldova's commitment is to realize climate change mitigation measures focused on reducing, at the national level, of total greenhouse gas emissions by no less than 20% as compared to the basic year (1990) by 2020. In order to achieve the commitments, the Republic of Moldova will implement efficient measures of greenhouse gases emission reduction through the potential of improving energy efficiency, especially in the following sectors: energy, industry, agriculture and waste management. The first decisional action is the elaboration of strategic and institutional framework in the field of climate change mitigation and adaptation, elaboration of climate change adaptation measures for all branches of the national economy.

For that purpose, a number of actions will be taken to contribute directly to the reduction, compared to the baseline scenario:

a) by 25% of greenhouse gases emissions generated by the energy sector (through increasing the efficiency of energy supply and consumption, as well as green energy production– based on a series of methodologies already approved by the Clean Development Mechanism of the Kyoto Protocol, which facilitate carbon finance for investment in production of electricity, thermal energy and fuels from renewable energy sources);

b) by 20% of those from the housing sector, industry (through the application of energy efficient technologies in buildings – wall insulation, heat meters installation, use of energoefficient bulbs and application of small-scale renewable energy installations – solar, photovoltaic, etc.) and agriculture (through creating the best possible favourable balance of soil carbon and maintaining long-term soil fertility, so that secondary products of crops (straw and other vegetable residue) will be incorporated into soil instead of being used as energy source, animal waste management, use of sidereal fertilizers and conservative technologies of soil cultivation);

c) by 15% of the transport sector (through wider use of motor vehicles on compressed natural gas and liquefied petroleum gas; use of hybrid electric vehicles, through production of biodiesel and bioethanol), waste sector (through biogas recovery from managed municipal solid waste at landfills and through biogas recovery from wastewater treatment station, using the technology of anaerobic sludge treatment);

d) by 25%, by 2020, of the capacity of carbon dioxide sequestration in the land use sector, changes in land use and forestry, compared to the baseline scenario. Actions will be aimed to expanding forest-covered land area, increasing capacity of carbon sequestration and consolidation of ecoprotective and bioproductive potential of existing forests, supporting communities' sustainable and integral management of forests, planting of energetic forests consisting of rapid-growing species managed at small production cycle (10-15 years).

Given the fact that our country is in association process with the European Union, we will have to join EU emissions trading system. Thus, a national greenhouse gases emissions trading system will be launched. Initially, it will go on the mandatory inclusion of the aviation sector, setting an official emission ceiling by 5%, after which the possibility will be negotiated regarding the inclusion of other sectors of national economy in this emissions trading scheme.

46. As regards the energy efficiency improvements, a regulatory framework will be elaborated to promote and encourage the energy efficiency in enterprises, buildings and public institutions. Likewise, it is expected that until 2020 at least 20% of total national energy consumption will be provided by renewable sources. For this purpose, particular attention will be paid to the promotion and production of green energy, generated from:

1) exploitation of wind and hydraulic energy (wind power plants, wind electric pumping systems, small hydropower plants without dams and small hydroelectric plants);

2) exploitation of solar energy through its conversion into electrical and thermal energy (photovoltaic energy, thermal energy from biomass, etc.);

3) development of biomass energy potential (biofuel production from grain, sorghum, technical oil crops – rapeseed, sunflower, grape seeds from wine industry, etc), as well as of other sources.

Section 8.

Waste and chemicals management

47. Current situation:

1) Waste management is an essential part of all environmental protection programmes. Waste management issues can be adequately addressed only if environmental standards have been developed to regulate waste management activities.

Annually, through urban sanitation services, around 1144-2303 thousand m³ of municipal solid waste are transported to landfills. There is no statistical evidence for the volume of accumulated waste, only some estimates on the total volume of municipal solid waste accumulated in landfills – about 30-35 million tons. Although only 10% of municipal solid waste landfills are authorized, they do not meet the environmental requirements.

Another negative aspect of improper waste management is that many recyclable and useful materials are stored together with non-recyclable ones, thus losing their potential to be recycled and reused later (paper, glass, metals, plastics). The fact that they are mixed and contaminated both chemically and biologically makes their recovery quite challenging.

Aggravation of the waste problem, especially of municipal waste, is generated by the improper mode in which the current difficulties that arise at different stages of waste processing are resolved.

The most common method of municipal waste treatment – landfill – is a major source of soil and groundwater pollution. In this context, sanitation of localities, urban and rural waste management represent an important objective for central and local public authorities. Landfills waste storage remains the basic way of waste disposal.

According to statistics, in 2011 about 1,8 million tons of industrial waste were produced. The largest amount of waste is generated by the following sectors: mining, food and beverage industry, animal husbandry. Waste represent up to 25-40% of the materials procured by the enterprises extracting raw materials (for constructions).

Table 1. Amount of non-hazardous industrial waste, generated by some sectors of economy, thousand tons

Generating source	Year		
	2009	2010	2011
Municipal waste	341,5	416,6	461,9
Inorganic chemical manufacturing waste	0,9	0,0	0,0
Phytotechnic waste	32,7	37,5	33,6
Waste from forest industry	12,8	11,2	49,2
Animal husbandry waste	333,3	279,2	328,3
Waste from food and beverage industry	258,7	368,8	394,6
Secondary materials for ferrous metallurgy	9,4	8,6	10,6
Secondary materials for non-ferrous metallurgy	0,3	0,2	0,2
Waste from mining companies	1256,2	439,3	423,4

Toxic waste poses a particular threat to the environment and human health. The volume of such waste produced in 2011 consisted 528 tons, total stocks reaching 6,100 tons. There is a decrease in the amount of reused and neutralized waste, and an increase in the amount of waste transported to landfills and transferred to other companies. This is explained by the stopping of the process of industrial waste recycling. In 2011 only 985,8 tons of toxic waste were neutralized and used, which is less than the volume of existing stocks. Statistical evidence of waste is not strict enough and often does not reflect the reality (for example, about 2,500 tons of galvanic waste were not included in the waste amount; data concerning accumulation of cyanide-bearing and other compositions waste also differs).

2) *Chemicals and their stocks.* Currently, a wide range of chemicals is used in various economic activities and in household sector. If certain substances and chemicals are handled inadequately during different stages of manufacturing, depositing, storage, distribution, use and disposal, they produce environmental pollution, causing a negative impact on ecosystems, human health and wildlife.

According to statistics, the Republic of Moldova manufactures a limited range of chemicals and in relatively small amounts (up to 1,000 t/year – pharmaceutical products, detergents and essential oils; from 1,000 to 10,000 t/year – paints and varnishes, etc.), most of the needs being covered by imports. The main chemicals imported are: fertilizers, pesticides, detergents, pharmaceutical and cosmetic products, various raw materials, products and substances for processing and other industries, constituting 13,5% of all imported products.

A particular negative impact on the environment and population is exerted by large stocks of chemicals that contain obsolete and prohibited pesticides, including persistent organic pollutants. Following the inventory conducted in 1997, 344 deposits located across the country contained 1,712 tons of obsolete and prohibited pesticides, accumulated during the Soviet period. During 1997-2007, their quantity increased to 3,300 tons. Approximately 4,400 tons of pesticide

wastes are buried at the pesticide landfill at Cismichioi, Vulcanesti district. In 2012 new pesticide accumulations were identified, in the amount of 45,3 tons in the districts Taraclia, Anenii Noi, Cahul, Singerei, confirming the inadequacy of the applied policy in the field of pesticide regulation. During 2007-2008, 1,293 tons of pesticides and contaminated packaging from 11 districts were evacuated abroad and destroyed, whereas in 2011-2013 – 200 tons of pesticides, packaging and heavily contaminated soil from the districts Causeni, Ocnita and Cantemir. Also in this period, 3,245 tons of obsolete and prohibited pesticides from 424 locations/deposits in 32 districts, 2 municipalities and A.T.U. Gagauz-Yeri were repackaged and allocated in 37 district deposits.

The situation is aggravated by the accumulation of stocks of other dangerous chemicals, including chemical reagents from laboratories, maintained at enterprises, organizations, academic and educational institutions. Simultaneously, over the past few years, were identified major problems in the management of mercury and items containing mercury, of other heavy metals and other unknown substances detected at the citizens of the Republic of Moldova and/or across the country.

The current legislative framework does not ensure an integrated chemicals management throughout their lifecycle, the classification, packaging, labeling, registration of substances and mixtures, restriction of certain chemicals, including hazardous ones, insufficiently regulating the responsibilities of producers/importers to inform the customers about the hazardous qualities of chemical substances, of their classification and labeling.

To address the key challenges associated with chemical substances, both solving of legislative and normative problems is required, as well as raising awareness and environmental education on the impact of chemicals, their stocks and waste on the environment, ecosystems, human health.

48. Problems outlined:

1) storage/disposal of waste in inappropriate places, non-compliance with environmental requirements, large number of unauthorized storages and landfills that do not meet the criteria;

2) existence of obsolete stockpiles of persistent organic pollutants and chemical substances, as well as lands contaminated with these pesticides, polychlorinated biphenyls and other chemicals;

3) insufficient infrastructure, services and waste management capacity;

4) lack of integrated waste and chemicals management systems, in accordance with international requirements;

5) lack of classifications of chemical substances and waste, in conformity with international standards;

6) lack of responsibility of local public authorities to address waste management problems at the local level.

49. **Specific objective 8.** *Creation of integrated waste and chemicals management systems that would contribute to a 30% reduction in the amount of landfilled waste and a 20% increase in recycling rate until 2023.*

50. Action directions

In response to the current situation regarding waste and chemicals management and the tendencies of economic and social development for the next decade, it is planned to establish an integrated waste management system that, while being environmentally safe and economically efficient, would ensure their recycling, prevention of environmental pollution and of decreasing of the level of human health, and sustainable use of natural resources.

Special attention will be paid to waste formed from hazardous chemical substances, as well as to waste appliances, articles and equipment containing hazardous chemical substances and mixtures.

1) *Creation of an integrated waste management system.* National waste management policy will be directed towards the development of infrastructure and services necessary for the adequate environmental protection at global, national and local levels against the effects associated with management of waste generated by citizens, businesses and institutions, according to the National Waste Management Strategy of the Republic of Moldova for 2013-2027, approved by Government Decision no. 248 of 10 April 2013.

To support gradual alignment of national waste management practices with those of the European Union, a legal, institutional and informational framework is to be established. Partnerships at international, national and local levels are to ensure necessary investment for sustainable development of the sector, in conformity with the priorities and pace accessible to the society.

The development of integrated waste management system will start with the regional development (geographical position, economic development, existence of access roads, pedological and hydrogeological conditions, population, etc.) and territorial division of the country into 8 waste management regions. Thus, to solve the waste problem, 2 mechanical-biological waste treatment plants are to be constructed for Chisinau and Balti, also covering 5-6 adjacent districts: 7 regional deposits of municipal solid waste, to serve localities from 3-4 associated rayons and about 100 transfer stations for waste accumulation and their subsequent transfer to regional deposits.

To establish such systems at regional level, inter-district cooperation and institutional consolidation in the field of municipal waste management will be promoted and supported through the creation of associations of local public authorities at regional level, thus ensuring the establishment of the platform for attracting investments to the sector. Associations will plan and implement regional waste management strategies and projects, but will not provide waste collection and disposal services.

Separate collection arrangements facilitate waste reuse and recycling, having the desired effect in many countries. Special measures will be directed at

supporting the use of recycled materials, such as paper and cardboard, glass, plastics, metal, textiles and biodegradable organic waste, in conformity with the waste hierarchy, in order to apply the recycling principle not only to support the storage of recycled materials in waste deposits or their possible incineration.

In order to realize the precautionary principle and the transition to new management system, a strategic framework will be developed for prevention, reduction and, if possible, elimination, from the beginning, of sources of pollution or toxic emissions through the adoption of measures for the elimination of known risks. It is intended to apply the principle of extended producer responsibility, including financial responsibility, which represents one of the means to support the design and production of goods, facilitating at the same time efficient use of resources throughout their lifecycle, as well as their proper repair, reuse, disassembly and recycling, without compromising free movement of goods on the internal market, and not affecting the environment.

One of the major problems of waste management system is the medical waste. These include medicinal, pharmaceutical waste, medical devices/equipment, radioactive materials, body parts, biological material, blood, etc. Currently, they are collected by hospitals, clinics, etc. Collection of medical waste together with municipal waste cannot be tolerated, so that there is a need for a special mechanism for the disposal of such waste to be elaborated and implemented.

The main action directions in the field of integrated waste management have the following goals:

a) to consolidate the political, legal and informational framework in the field of integrated waste management, harmonized with EU legislation and international treaties to which the Republic of Moldova is a party;

b) to minimize the negative effects of waste generation and management on human health and environment;

c) to reduce resource consumption and to encourage application of the waste hierarchy practices, more efficient use of resources and changing production and consumption patterns;

d) to significantly reduce the amount of waste deposit on land/waste platforms through development of regional solid waste disposal infrastructures and transfer stations, through creating systems of collection, treatment, recovery or disposal of specific and hazardous waste streams, through promoting the principle of extended producer responsibility and through establishing a waste collection point in each region;

e) to encourage reuse, recovery and recycling of waste instead of their use as energy source, in case if these are the best ecological options;

f) to ensure pollution prevention and reduction of the negative impact of stocks and hazardous waste on environmental components and human health.

2) *Ensuring sustainable management of chemical substances.* The national policy in this field will be oriented to ensure an integrated chemicals management throughout their lifecycle, a high level of environmental protection, protection of

ecosystems and property, thus minimizing the risks to human health and biodiversity.

Political and regulatory framework on chemical substances will be promoted in strict connection with the provisions of international policy framework and international environmental treaties to which the Republic of Moldova is a party. For implementation of the provisions of the UN Globally Harmonized System of Classification and Labeling of Chemicals and for informing all the stakeholders, economic agents and the public about hazardous properties of chemical substances and mixtures, a system for classification and labeling of chemical substances and mixtures will be established. The Minamata Convention on Mercury is yet to be signed, ratified and implemented.

Efforts of central public authorities and, primarily, of profile authorities, will be consolidated for addressing the problems related to the historical stocks of persistent organic pollutants and of contaminated land through attraction of investments necessary to continue the work of identification of such stocks and lands, and through taking measures regarding packaging and disposal of persistent organic pollutants, remediation of contaminated locations, with their reintroduction into the economic circuit, prevention of further accumulation of pesticides, hazardous chemical substances and products, and their spread across the country.

IV. STRATEGY IMPLEMENTATION STAGES

51. The Environmental Strategy is a long-term strategic planning document to be implemented in the period of 2014-2023. One argument in favor of this term is related to the commitments assumed by the Republic of Moldova in the “Environment” Chapter of the Association Agreement with the European Union, which are to be implemented in the first decade since its signing. Those commitments are fully included in this Strategy, whereas from the level of their implementation strongly depends, whether the Republic of Moldova will join the European Union.

The measures for the implementation of the Strategy are classified into three stages:

a) the first stage covers the years 2014-2016, featuring the application of mechanisms and institutional structures for an improved environmental management in the Republic of Moldova and approval of a new political and legislative/regulatory framework adjusted to EU directives in the field;

b) the second stage will cover the period of 2017-2020, during which the initiation of construction and development of infrastructure necessary to improve the quality of services and living standards (water supply and sanitation, waste management, separate collection, recycling, destruction and disposal infrastructure), so that the quality of environmental services will discourage attraction of foreign investment;

c) the third stage refers to the period after 2020, when the results of the implementation of the Strategy will become apparent in a better environment,

causing a significant reduction in health problems provoked by environmental issues.

V. COST ESTIMATION

52. Environmental objectives have to be supported by adequate investments. The cost of implementing this Strategy during 2014-2023 is estimated at 9,1 billion MDL, which is about 910 million MDL per year (approximately 1% of annual GDP). Most of the allocations are assigned to the second and third implementation periods, when significant investments in environmental infrastructure will be required.

Strategy implementation costs come largely from the requirements of the Association Agreement and the Deep and Comprehensive Free Trade Area Agreement and were estimated in accordance with best international practices on economic and cost-benefit analyses, taking into account the following components:

1) *costs tied to necessary investments*, including not only investments required for infrastructure, but also other non-recurring issues, which are not related to human resources. External co-financing will be required for capital investment. Recurring costs (for example, maintenance and replacement of assets at the end of their life) will be founded from internal sources;

2) *technical assistance costs*, which are expenditures for local and international consultants. Uniform rates used for estimation are the typical ones for interventions financed by the United Nations and the European Union;

3) *time cost of government employees*, which cannot be ignored without violating the principles of economic analysis in accordance with best international practices. Time dedicated to a particular action cannot be used for alternative ones. Therefore, there is an opportunity cost related to this time, which was taken into account when determining the costs. Its significance is not just theoretical: when the Republic of Moldova requests external financial assistance, the Government must be able to demonstrate the ability of co-financing of measures for which the assistance is sought. Time costs of government employees' takes part of this commitment and, therefore, was quantified. However, it should be noted that this cost represents less than 1% of the total cost of this Strategy implementation.

53. The volume of necessary capital investment is large enough to require a substantial amount of external co-financing. The Republic of Moldova has to ensure at least 20% of capital investment required in the short and medium term, that is, around 1,8 billion MDL. If such investments are required for basic public services, such as water supply and sanitation, at least part of the costs should be covered from tariffs provided by the population benefitting from such services.

54. Internal financing can be provided both by the state budget and other financial mechanisms. These will include promotion of market-based economic instruments aimed at environmental protection (raised payments for municipal services; charges for pollutants emitted into the air and discharged into water and soil; tax reductions or exemptions for use of technologies with low environmental impact; tax reduction for import and/or production, and/or marketing of goods

produced from recycled materials and introduction of taxes for use of certain categories of non-renewable resources, in order to ensure their conservation and protection). Specialized funds (National Ecological Fund, National Regional Development Fund, Energy Efficiency Fund, etc) will represent an important tool to direct internal monetary flows into environmental investment and a mean of consolidating external and internal financing.

Allocation of public resources for maintaining and improving the quality of environment in the Republic of Moldova should be based on environmental benefits that can be obtained as a result of investment, and not on the monetary costs.

VI. EXPECTED RESULTS AND IMPACT

55. Successful implementation of the present Strategy is to result in major changes, primarily in the field of environmental protection, having an inclusive impact on the economic and social environment. For social benefits to become evident, considerable investments are required both for environmental infrastructure and institutional framework. Therefore, during the implementation of the first two stages, costs will heavily outweigh the economic benefits. Their burden will be translated into actual tariffs for environmental services, such as water supply, sanitation, wastewater treatment and waste management.

Main objective implementation is to determine appropriate environmental management at all levels, ensured by the following indicators:

1) strategic, legislative and regulatory framework harmonized with EU environmental directives, approved and implemented efficiently, including at local level (local environmental plans);

2) environmental sector reform, which is to ensure conditions for good governance and efficiency of institutional and managerial potential in the field of environmental protection, as well as implementation of approved legislation;

3) provisions for environmental protection and sustainable development in sectoral policies, integrated, as well as green investment in branches of the national economy (industry, agriculture, energy, transport, constructions, trade, services, etc.), ensured;

4) integrated environmental information system, which is to ensure access to environmental information and provide state structures, businesses and civil society with the possibility to know environmental information, use it when necessary and participate in environmental decision-making, created and functional;

5) environmental education integrated in educational system; environmental education level raised to 50%;

6) system of environmental impact assessment and strategic environmental assessment, of environmental authorization/integrated environmental authorization, which is to ensure reduction, at the initial stage, of risks to environmental factors and human health, streamlined and developed;

7) new economic and fiscal instruments – taxes, subsidies, grants, ecological assurance, financial guarantees, producer responsibility, payments for ecosystem services, etc., developed and applied;

8) integrated environmental monitoring system, which is to ensure permanent supervision of the state and quality of the environment, natural resources and human impact, based on parameters and indices of spatial and temporal coverage, developed and applied;

9) integrated water resource management system based on hydrographic basin principle, created and developed, and the quality of at least 50% of surface waters, improved;

10) water supply and sanitation infrastructure, developed and extended; 80% of population are provided access to safe water supply systems and services, and 65% to sanitation systems and services;

11) quality of about 880,000 ha of degraded and eroded land, of 21,570 ha of land subject to landslides, of 800 ha land and 1588 locations contaminated with persistent organic pollutants, improved;

12) forest-covered areas extended to 15% of the country (about 150,000 ha of forest planted); territory of natural areas protected by state extended to 8% of the country; 30,000 ha of riparian and aquatic basins strips are restored and 150,000 ha of wetlands, rehabilitated;

13) integrated air quality management system, which would ensure a 30% reduction in pollutant emission and a 20% reduction of greenhouse gases emission, based on the best available techniques and on the best environmental practices, developed and implemented;

14) integrated waste management system (2 mechanical-biological waste treatment plants, 7 regional deposits and 100 transfer stations), created and developed; amount of deposited waste reduced by 30%; level of waste recycling increased by 20%;

15) investment in environmental infrastructure and, respectively, social, economic and environmental benefits, ensured.

56. Socio-economic impact

Naturally, such significant results cannot be achieved over a ten year period, the term established in this Strategy. On the way to the European Union, with the respective advantages and obligations, the costs and burden are fully assumed, however, in the long term, these investments will be fully justified by the resultant benefits. Full implementation of the environmental acquis is a solid investment both for environment and for human health and economy.

The reduction of air pollution, of greenhouse gases and exhaust gases emissions from vehicles and installations can bring annual benefits up to 2,5% of GDP.

Development of infrastructure for the treatment and supply of drinking water will result in reduced risk of pathogenic infection and, respectively, to reduction of costs for public and private medical assistance. Rehabilitation of existing water

supply infrastructure, although requiring an initial capital investment, will reduce network losses and, respectively, operational costs of water supply. In the long term, these benefits could be equivalent to 0,21% – 0,39% of GDP.

The benefits obtained as a result of improvements in sanitation, wastewater collection and treatment systems are more difficult to be quantified. It is obvious that they will lead to improvements in the health status of aquatic ecosystems, which could produce benefits in terms of recreation and tourism development. Besides, better quality of water in aquatic ecosystems will reduce the treatment costs and will determine reaching an acceptable standard for drinking water quality. In the long term, the economic benefits would be about 0,44% up to 1,73% of GDP.

Improvements in waste management sector (especially separate collection and processing of solid municipal waste) can generate employment opportunities. As a result of more responsible waste management, the aesthetic value of the landscape and environment would increase, whereas the level of pollution and public health risks would decrease. Recycling will increase the availability of secondary resources. In the longer term, capturing methane and waste incineration would create significant potential for electricity production and, respectively, for obtaining economic benefits. The long-term economic benefit, obtained as a result of waste management measures implementation, will be approximately 0,98% – 1,43% of GDP.

It is more difficult to evaluate and appreciate the economic value of benefits derived from nature and biodiversity protection. However, increasing biodiversity and better protection of woodlands will contribute to species conservation, maintaining and improving the potential of ecosystems, flood risk mitigation, decreasing land degradation rate and strengthening environmental resistance to climate change. In the long term, the minimum economic benefit of these and other related impacts will be between 1,49% an 2,14% of GDP. If this includes agricultural benefits derived from reducing efficiency losses resulting from agricultural land degradation, the economic benefit could reach 5,05% of GDP.

The adjustment of state policy in the field of climate change adaptation will result in improved medical assistance, functioning early warning systems, systems for emergency preparedness and rescue operations in case of emergencies, which will contribute to the reduction of risks resulting from the impact of climate change and other natural disasters, which affect the population.

Due to the application of green economy principles in the sectors of the national economy, employment rate could increase by 10% – 20%, compared to the existing situation in the following sectors: agriculture, energy, transport, industry and forestry. Application of these principles favors the improved quality of services and products, the increased competitiveness and exports, and, as a result, growth of GDP and population welfare. In addition, promotion of green economy will facilitate the achievement of the country's economical development priorities, which include increasing and, possibly, doubling the share of industry, agriculture and trade in GDP, and contribute to positive change in export-import balance.

VII. MONITORING, REPORTING AND EVALUATION MECHANISMS

57. The Environmental Strategy will be implemented through the Action Plan for the period of 2014-2023.

58. The responsibility for the implementation of this Strategy belongs to all relevant institutions identified in the Plan.

59. The monitoring of the implementation of the Strategy will be carried out by the Ministry of Environment, which will nominate a special subdivision for this purpose.

To ensure the monitoring process, a Monitoring Group will be created by the Order of the Minister of Environment, which will periodically evaluate the level of realization of indicators and objectives. Based on the information collected and systematized, it will prepare annual reports on the Strategy implementation. In addition, the Monitoring Group shall notify the Government on the progress of the Strategy implementation.

60. The activities planned in the Action Plan for the Implementation of the Strategy are to be included in the medium-term sectoral expenditure strategies and in annual activity plans of the institutions involved in the Strategy implementation.

61. *Reporting.* Within the monitoring process annual monitoring reports are to be elaborated, which will include information on the implementation of indicators established for each action, and every three years will be developed evaluation and progress reports, which will assess the impact of activities realized in the respective period and the level of the implementation of established objectives. Monitoring and evaluation reports shall be submitted to the Government for examination.

Towards the end of the Strategy implementation, a final evaluation report will be elaborated, which would contain information on the level of achievement of objectives and expected impact. Based on this report, the next step of strategic environmental planning will be decided.

62. *Ensuring transparency.* The official website of the Ministry of Environment will be updated with a special section for current information on the progress of the implementation of the Strategy. Civil society and the key environmental institutions will have the possibility to provide suggestions and comments on this information. Also, press conferences, public meetings of the Board of the Ministry will be organized, where the results of the implementation shall be presented.

All these measures will contribute to ensuring transparency in the process of implementation of environmental protection measures and of sustainable use of natural resources, providing the general public with the opportunity to engage and participate in the decision-making process.

**ACTION PLAN FOR THE IMPLEMENTATION OF THE NATIONAL ENVIRONMENTAL STRATEGY
FOR THE YEARS 2014-2023**

№	Action title	Time frame	Responsible institution	Monitoring indicators	Estimated costs, MDL	Sources of financing
1	2	3	4	5	6	7
<i>Specific objective 1. Ensure conditions for good governance and effectiveness of institutional and managerial potential in the field of environmental protection to achieve environmental objectives</i>						
<i>Action direction 1. Harmonization of environmental legislation with provisions of EU directives</i>						
1.	Elaboration of a draft law on environmental protection (harmonized with 25 EU environmental directives)	2015	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget
2.	Elaboration of a draft law on drinking water (harmonized with <i>Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption</i>)	2017	Ministry of Health; Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget
3.	Elaboration of a draft law on the quality and air protection (harmonized with <i>Directive 2008/50/EC of the European Parliament and</i>	2018	Ministry of Environment; Ministry of	Draft, approved	Within the annually approved	State budget; foreign assistance

1	2	3	4	5	6	7
	<i>of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air)</i>		Transport and Roads Infrastructure; Ministry of Health		limits in the state budget law	
4.	Including chapter on „soil protection” into the draft Land Code and elaboration of a mechanism to enforce this chapter	2014	Agency for Land Relations and Cadastre; Ministry of Agriculture and Food Industry; Ministry of Environment	Draft, approved; chapter included	Within the annually approved limits in the state budget law	State budget
5.	Adjusting legislation on biodiversity protection and conservation to the EU directives in this field (<i>Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora</i>)	2016	Ministry of Environment	Drafts, approved	Within the annually approved limits in the state budget law	State budget
6.	Elaboration of a draft law on biosafety, in accordance with <i>Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms</i>	2015	Ministry of Environment; Ministry of Agriculture and Food Industry	Draft, approved	Within the annually approved limits in the state budget law	State budget
7.	Elaboration of a draft law on waste (in accordance with <i>Directive 2008/98/EC of the</i>	2015	Ministry of Environment	Draft, approved	Within the annually	State budget

1	2	3	4	5	6	7
	<p><i>European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, Directive 1993/31/EC of 26 April 1999 on the landfill of waste and Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC)</i></p>				<p>approved limits in the state budget law</p>	
8.	<p>Elaboration of draft laws on chemicals (harmonized with <i>Regulation (EC) no. 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals, Regulation (EC) no. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, and Regulation (EC) no. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)</i>)</p>	2014	<p>Ministry of Environment; Ministry of Health</p>	<p>Draft, approved</p>	<p>Within the annually approved limits in the state budget law</p>	<p>State budget</p>
9.	<p>Elaboration of a draft law on environmental impact assessment, harmonized with <i>Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment</i></p>	2014	<p>Ministry of Environment</p>	<p>Draft, approved</p>	<p>Within the annually approved limits in the state budget law</p>	<p>State budget</p>
10.	<p>Elaboration of a draft law on strategic environmental assessment, harmonized with <i>Directive 2001/42/EC of the European</i></p>	2015	<p>Ministry of Environment</p>	<p>Draft, approved</p>	<p>Within the annually approved</p>	<p>State budget</p>

1	2	3	4	5	6	7
	<i>Parliament and of the Council of 27 June 2001 on the assessment of certain plans and programmes on the environment and Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up or certain plans and programmes relating to the environment</i>				limits in the state budget law	
11.	Elaboration of a draft law on access to environmental information (harmonized with <i>Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC</i>)	2014	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget
12.	Elaboration of a draft law on integrated environmental authorization (harmonized with <i>Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)</i>)	2018	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget
13.	Improving and amending the Law on State Ecological Expertise and Environmental Impact Assessment	2015	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget
14.	Elaboration of a draft law on ratification of the Minamata Convention on Mercury	2015	Ministry of Environment; Ministry of Health	Draft, approved	Within the annually approved limits in the state budget	State budget

1	2	3	4	5	6	7
					law	
15.	Elaboration of the regulatory framework necessary for the implementation of newly adopted legislation	2018	Ministry of Environment; Ministry of Health	Draft, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
16.	Ensuring scientific support of the Academy of Sciences of Moldova in the implementation of EU Directives on environmental protection	2023	Academy of Sciences of Moldova; Ministry of Environment	Coordination system created; financing ensured	Within the annually approved limits in the state budget law	State budget; foreign assistance; National Ecological Fund
<i>Action direction 2. Ensuring strategic environmental planning at national, sectoral and local levels</i>						
17.	Elaboration of policy documents in the field of water resources protection	2015	Ministry of Environment; Ministry of Health	Draft, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance; National Ecological Fund
18.	Elaboration of policy documents in the field of air protection	2015	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
19.	Elaboration of policy documents in the field of biodiversity protection and conservation	2014	Ministry of Environment	Draft, approved	Within the annually approved	State budget; foreign assistance;

1	2	3	4	5	6	7
					limits in the state budget law	Global Environmental Fund
20.	Elaboration of the Low Emissions Development Strategy of the Republic of Moldova to the year 2020 and of the Climate Change Adaptation Strategy of the Republic of Moldova	2014	Ministry of Environment	Two drafts, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance; Global Environmental Fund
21.	Elaboration of the Action Plan for implementation of the National Programme for Sustainable Management of Chemicals in the 2016-2020 period	2015	Ministry of Environment; Ministry of Health	Coordination system created; financing ensured	Within the annually approved limits in the state budget law	State budget; foreign assistance
22.	Review and update of the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants	2015	Ministry of Environment; Ministry of Health	Draft, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
23.	Elaboration of the Action Plan on implementation of the Waste Management Strategy in the Republic of Moldova in the 2018-2022 period	2017	Ministry of Environment	Draft, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
24.	Ensuring the elaboration of local environmental action plans, of local action plans in the environmental field for each region, rayon and locality apart	2015	Ministry of Environment; local public administration authorities	Instructions, guidelines – elaborated; number of local action	Within the annually approved limits in the state budget	State budget; foreign assistance

1	2	3	4	5	6	7
				plans – coordinated and approved	law	
<i>Action direction 3. Ensuring institutional reform in the environmental sector</i>						
25.	Realization of a functional analysis of environmental structures and elaboration of the concept of their reorganization and optimization	2014	Ministry of Environment	Reorganization concept - elaborated	228 000	State budget; foreign assistance; National Ecological Fund
26.	Ensuring institutional reforms and capacity building in the environmental sector, according to the results of functional analysis	2015	Ministry of Environment	Project approved; institutions – reorganized; new institutions - created	12 850 370	State budget; foreign assistance
27.	Institutionalization of protective functions for the forest fund, soils, air and climate change within the environmental protection system	2015	Ministry of Environment	Drafts, approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
28.	Review of the environmental quality laboratories and creation of a national environmental reference laboratory	2015	Ministry of Environment	Project, approved; environmental laboratory – created	66 325 600	State budget; foreign assistance
29.	Elaboration of the legal framework necessary for the creation of environmental sections within local public administration	2015	Ministry of Environment	Projects, approved; sections -	Within the annually approved	State budget

1	2	3	4	5	6	7
	authorities			created	limits in the state budget law	
30.	Establishment of environment protection functions within central public administration authorities	2016	Ministry of Environment; central public administration authorities	Environmental units within central public administration authorities - created	Within the annually approved limits in the state budget law	State budget
<i>Specific objective 2. Integration of environmental protection, sustainable development and green economy, climate change adaptation into all sectors of the national economy</i>						
31.	Integration of environmental protection, green economy development and climate change adaptation provisions into sectoral policy documents and relevant legislation	2020	Ministry of Environment; central public administration authorities	Environmental protection provisions integrated into sectoral policy documents (energy, agriculture, industry, trade, transport, constructions and public health)	Within the annually approved limits in the state budget law	State budget
32.	Implementation of Green Offices through the e-Governance principles	2023	Ministry of Environment; E-Government Centre; central public administration	Green Offices – implemented in all governmental structures	355 600	State budget; foreign assistance

1	2	3	4	5	6	7
			authorities			
33.	Strengthening public-private partnership to promote principles and actions of green economy development	2023	Ministry of Environment; Ministry of Economy	Public-private partnerships - created; projects, technologies - implemented	105 600	State budget; foreign assistance
34.	Elaboration of the „Green Moldova” national trademark for ecologically clean products and processes. Identification of „green” companies that will be entitled to use the registered trademark	2020	Ministry of Environment; Ministry of Economy	National trademark – elaborated and registered; „green” companies - identified	152 800	State budget; foreign assistance
35.	Introduction of eco-labeling system	2018	Ministry of Environment; Ministry of Economy	System introduced and applied	126 400	State budget; foreign assistance
36.	Development of green certificates system to reduce environmental pollution	2019	Ministry of Environment	System, developed and applied	1 800 000	State budget; foreign assistance
37.	Mitigating the impact and climate change adaptation by promoting biomass as a renewable source of energy, biogas installations, to be used in rural households and communities, promoting organic farming, promoting products with high energy efficiency (machinery and electrical equipment) that are operating on environmentally friendly technologies	2023	Ministry of Environment; Ministry of Economy; Ministry of Regional Development and Constructions; Energy	Energy efficiency of 1,8-2% annually ensured; greenhouse emissions reduced by 20%; energy intensity	83 000 000	State budget; foreign assistance; National Ecological Fund; Energy Efficiency Fund

1	2	3	4	5	6	7
			Efficiency Agency	reduced with 10%; share of energy-efficient products on the internal market increased to 100%		
<i>Specific objective 3. Raising the level of environmental protection knowledge among pupils, students and employees with at least 50% until 2023 and ensuring access to environmental information</i>						
38.	Elaboration of programmes and modules of environmental education and integration of environmental education into the formal education system	2016	Ministry of Education; Ministry of Environment	Programmes and modules – elaborated; environmental education course – introduced into formal education system	922 400	State budget; foreign assistance; National Ecological Fund
39.	Strengthening capacities of training centers regarding environmental education	2023	Ministry of Environment; Ministry of Education; Academy of Sciences of Moldova	Training and instructive materials-provided	2 000 000	State budget; foreign assistance; National Ecological Fund;
40.	Ensuring teachers' training for acquiring skills needed for teaching environmental education course	2023	Ministry of Education; Ministry of	Teachers' training courses –	2 000 000	State budget; foreign assistance

1	2	3	4	5	6	7
			Environment	conducted; teachers - trained		
41.	Creating a mechanism for ensuring public access to environmental information and for dissemination of environmental information	2020	Ministry of Environment; Academy of Sciences of Moldova	30 environmental information centers created in rayons; dissemination mechanisms – created;	45 000 000	Foreign assistance; National Ecological Fund
42.	Establishment of the integrated environmental information system, linked to the government system, and ensuring access of interested public to this system	2017	Ministry of Environment	System functioning; free access - ensured	100 000 000	State budget; National Ecological Fund; foreign assistance
<i>Specific objective 4. Reducing the negative impact of economic activity on the environment and improving measures of environmental pollution prevention</i>						
43.	Developing mechanisms to implement the laws on Environmental Impact Assessment and Strategic Environmental Assessment	2016	Ministry of Environment	Projects approved	Within the annually approved limits in the state budget law	State budget
44.	Evaluation and determination of plans and programmes, environmental reports to be mandatorily submitted to the strategic environmental assessment procedure in accordance with <i>Directive 2001/42/EC of the European Parliament and of the Council of 27</i>	2016	Ministry of Environment	List developed	Within the annually approved limits in the state budget law	State budget; foreign assistance

1	2	3	4	5	6	7
	<i>June 2001 on the assessment of the effects of certain plans and programmes on the environment</i>					
45.	Establishing the procedure of consultations with environmental authorities and of public consultations on plans, programmes, environmental reports, projects and activities in accordance with <i>Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of drawing up of certain plans and programmes relating to the environment</i>	2016	Ministry of Environment	Project approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
46.	Developing mechanisms for consultation and the exchange of information with neighboring countries on plans, programmes, environmental reports, projects and activities planned	2016	Ministry of Environment	Project approved	Within the annually approved limits in the state budget law	State budget; foreign assistance
47.	Developing a mechanism for applying the integrated environmental authorization/ environmental authorization	2018	Ministry of Environment	Mechanism – developed and applied	2 225 766	State budget
48.	Review of economic and fiscal environmental instruments and promotion of new tools in line with EU practices	2018	Ministry of Environment	Projects approved; new economic tools - implemented	500 000	State budget; National Ecological Fund; foreign assistance
49.	Developing a mechanism for implementation of the ecological assurance system and improving the accountability system to compensate environmental damages	2018	Ministry of Environment	Projects approved	Within the approved state budget limits	State budget; external assistance
50.	Creation of the economic mechanisms	2016	Ministry of	Projects	1 705 869	State budget;

1	2	3	4	5	6	7
	necessary for the implementation of the extended producer responsibility principle		Environment; Ministry of Finance	approved		foreign assistance; National Ecological Fund
51.	Strengthening National Environmental Fund and local ecological funds, and enhancing their activity	2015	Ministry of Environment; Ministry of Finance	Projects approved	Within the approved state budget limits	State budget; foreign assistance
52.	Improving the system of environmental control, penalty for environmental offences and recovery of environmental damage	2016	Ministry of Environment	Database of economic agents and businesses – created; plan for controls based on risk – elaborated; registry of controls – created; penalty system - enhanced	Within the approved state budget limits	State budget; foreign assistance
<i>Specific objective 5. Creation of an integrated monitoring and environmental quality control system</i>						
53.	Elaboration and approval of an integrated environmental monitoring programme for environmental components quality (including monitoring of soil quality, biodiversity, state protected natural areas, wetlands, noise and radon concentrations etc.)	2015	Ministry of Environment; Ministry of Health; Academy of Sciences of Moldova	Monitoring programme - approved	Within the annual allocations limit	State budget
54.	Creation and implementation of an	2017	Ministry of	Monitoring	388 561	State budget;

1	2	3	4	5	6	7
	integrated environmental monitoring system		Environment; Academy of Sciences of Moldova	system – functioning		foreign assistance; National Ecological Fund
55.	Developing of a monitoring system for quality of soil, air, water (including drinking water), biodiversity, state protected natural areas and wetlands	2023	Ministry of Environment	Stations, monitoring posts - created	800 000 000	State budget; foreign assistance; National Ecological Fund
56.	Review of environmental quality standards (including those for drinking water) and their harmonization with international environmental quality standards	2018	Ministry of Environment; Ministry of Health; Academy of Sciences of Moldova	Quality standards - approved	Within the approved state budget limits	State budget; foreign assistance
57.	Drafting and approval of the list of environmental indicators	2017	Ministry of Environment; National Bureau of Statistics	List approved	Within the approved state budget limits	State budget; foreign assistance
<i>Specific objective 6. Ensuring rational use, protection and conservation of natural resources</i>						
<i>Specific objective 6.1. Improving the quality of at least 50% of surface waters by implementing hydrographic basins management system</i>						
58.	Creating a system for management of water resources based on the hydrographic basins principle through: identification of hydrographic basins and districts and establishment of administrative arrangements for transboundary rivers, lakes and other	2020	Ministry of Environment	Hydrographic basins – identified; analyses – effectuated; management plans -	8 903 064	State budget; National Ecological Fund; foreign assistance

1	2	3	4	5	6	7
	water bodies; ensuring an economic analysis of water use, of human activity impact on the water state and of the characteristics of hydrographic districts, Management Plans for river hydrographical districts of basins of Dniester, Danube-Prut and the Black Sea			approved		
59.	Development of an accountability mechanism for the protection of surface waters	2015	Ministry of Environment; Ministry of Health	Mechanism (including tools for its implementation) – developed and approved	270 850	State budget
60.	Identification of natural waters contaminated or likely to be affected, designation of nitrate vulnerable zones and elaboration of action plans and codes of good environmental practices for these areas	2018	Ministry of Environment; Ministry of Health; Ministry of Agriculture and Food Industry	Nitrate Vulnerable Zones – identified; action plans – elaborated and implemented	Within the approved state budget limits	State budget; foreign assistance; National Ecological Fund
61.	Elaboration of national guide on drinking water safety plans, their implementation and evaluation in accordance with the recommendations of the World Health Organization and obligations under the Protocol on Water and Health	2016	Ministry of Health; Ministry of Environment	Guide approved	Within the approved state budget limits	State budget; foreign assistance
62.	Elaboration of a feasibility study on flood risks, development of hazard maps and maps for flood risk for areas with increased flood risk, elaboration of flood risk management	2015	Ministry of Environment; Ministry of Internal Affairs	Feasibility study – elaborated; maps	24 000 000	Foreign assistance

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	plans			elaborated; management plans - approved		
63.	Review and update of the localities' flood protection scheme	2016	Ministry of Environment	Scheme updated	226 850	State budget
64.	Elaboration of a methodology for implementation of subsidies system for population vulnerable to flooding	2018	Ministry of Environment	Methodology elaborated and approved	1 946 230	State budget
<i>Specific objective 6.2. Ensuring access of about 80% of the population to safe water supply systems and services and of about 65% to sanitation systems and services</i>						
65.	Development of the water supply and sanitation infrastructure, as well as ensuring access, by the year 2023, of around 80% of the population to safe water supply and sanitation systems and services, and development of regional water supply and sanitation systems Soroca – Balti, Vadul lui Voda – Chisinau – Straseni – Calarasi, Prut – Leova – Basarabasca – Cimislia and Ceadir-Lunga	2023	Ministry of Environment; Ministry of Regional Development and Constructions	Aqueducts, sewerage networks – built; wastewater treatment stations, population - connected	3 910 415 850	State budget; foreign investment and assistance; National Ecological Fund; Regional Development Fund
66.	Promoting the principles of market economy and promoting public-private partnership in the field of water supply and sanitation	2015	Ministry of Environment; Ministry of Economy	Economic instruments – applied, public-private partnerships – established	105 600	State budget
67.	Assessment of the situation regarding urban wastewater collection and treatment and identification of sensitive and less sensitive areas	2020	Ministry of Environment; Ministry of Health	Assessment study – realized; sensitive areas – identified	Within the approved state budget limits	State budget; foreign assistance

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68.	Elaboration of technical and investment programmes to implement the requirements for urban wastewater treatment in accordance with the provisions of <i>Council Directive 91/271/EEC of 21 May 1991 concerning urban wastewater treatment</i>	2022	Ministry of Environment	Directive provisions – transposed and implemented	2 825 068 800	State budget; foreign assistance
<i>Specific objective 6.3. Improving soil quality and ecological restoration of degraded, affected by landslides lands and farmland buffer strips up to 100%, as well as sustainable management and protection of useful mineral resources</i>						
69.	Ecological restoration of degraded lands subject to landslides and used for the extraction of minerals	2023	Ministry of Environment; Ministry of Agriculture and Food Industry	880,000 ha degraded land – restored, reforested; 21 500 ha of land subject to landslides - reconstructed	100 000 000	State budget; National Ecological Fund; foreign assistance
70.	Restoring farmland buffer strips and creating natural carcass of soil conservation by linking them to existing forest massive	2020	„Moldsilva” Agency; Ministry of Environment; Ministry of Agriculture and Food Industry	30,000 ha of buffer strips – restored; natural carcass created	4 000 000	National Ecological Fund; foreign sources
71.	Mitigating the impact of soil desertification by implementation of resource productivity technologies	2023	Ministry of Environment; Ministry of Agriculture and Food Industry	New technologies used	500 000	State budget; National Ecological Fund; foreign sources
72.	Improving the irrigation system through expansion and rehabilitation of 11 irrigation systems	2016	Ministry of Environment; Ministry of Agriculture and	11 irrigation systems – rehabilitated and expanded	35 998 140	State budget; budgetary support in agricultural

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			Food Industry			sector
73.	Development of subventions and subsidies system that would contribute to the rational use and protection of soil resources	2016	Ministry of Environment; Ministry of Agriculture and Food Industry	Projects approved	Within the state budget limits	State budget; National Ecological Fund; Global Environmental Facility
74.	Decontamination of lands historically contaminated with pesticides, including from the persistent organic pollutants category	2017	Ministry of Health; Ministry of Environment; local public administration authorities	800 ha land – decontaminated; 1588 locations – decontaminated	45 000 000	State budget; National Ecological Fund; foreign assistance
<i>Action direction: Sustainable management and protection of useful mineral resources</i>						
75.	Creating a mechanism for the Subsoil Code enforcement	2015	Ministry of Environment	Projects approved	Within annual allocations	State budget
76.	Effectuation of subsoil scientific research to discover new deposits and continuous development of the raw material base	2023	Ministry of Environment; Academy of Sciences of Moldova	Research realized; new deposits registered	30 000 000	State budget; National Ecological Fund; foreign assistance
77.	Geological mapping of the territory of the Republic of Moldova at 1:50,000 scale and creation of electronic geological database	2017	Ministry of Environment	Database created and integrated into environmental information	1 000 000	State budget; National Ecological Fund; foreign assistance

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				system		
<i>Specific objective 6.4. Expansion of forest areas to 15% of the country's territory, of natural areas protected by state up to 8% and ensuring efficient and sustainable management of natural ecosystems</i>						
78.	Creation of an accountability mechanism for beneficiaries of natural resources on their protection and sustainable use	2020	Ministry of Environment	Projects approved, mechanisms applied	26 400	State budget
79.	Establishment of strict protection regime for rare and endangered species of flora and fauna	2016	Ministry of Environment; Academy of Sciences of Moldova	Drafts approved, Red Book - published	200 000	State budget; National Ecological Fund
80.	Elaboration of sustainable management plans for natural areas protected by state and core areas of the National Ecological Network	2023	Ministry of Environment	Management plans, approved and implemented	26 400	State budget
81.	Development of the National Ecological Network through ensuring management and protection of the National Ecological Network elements apart from the natural areas protected by state system, updating the list of core areas of the National Ecological Network and the Geographic Information System of the National Ecological Network	2020	Ministry of Environment	Effective management of the National Ecological Network ensured; list and system – updated	2 059 000	State budget; National Ecological Fund; foreign assistance
82.	Creation of the „Lower Prut” Biosphere Reserve and „Lower Dniester” National Park, and establishment of the special regime for valuable ecosystems and natural old forests	2023	Ministry of Environment	Protected areas – created; territory extended to thousands ha	2 105 600	State budget; National Ecological Fund
83.	Strengthening the capacities of the system of	2016	Ministry of	Capacity	5 000 000	State budget;

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	natural areas protected by state, involving research-development sector and public in their management		Environment; Academy of Sciences of Moldova	building programme – developed and implemented		National Ecological Fund
84.	Creation and restoration of riparian and water basins protection strips, of forests on degraded lands and of green spaces	2023	„Moldsilva” Agency; Ministry of Environment	30,000 ha of riparian protection strips – restored/ created; 150,000 ha of forest plantations, green areas - created	80 000 000	State budget; National Ecological Fund; foreign sources
85.	Creation and restoration of road protection strips	2023	Ministry of Transport and Roads Infrastructure; Ministry of Environment; „Moldsilva” Agency	Protection strips – 100% rehabilitated by 2020; extended by 10% until 2023	50 000 000	State budget; National Ecological Fund; foreign sources
86.	Establishing the importance of wetlands as a tool for biodiversity conservation and rational use of water resources, and ensuring the restoration and ecological reconstruction of degraded wetlands, with their inclusion in the economic cycle	2023	Ministry of Environment; Academy of Sciences of Moldova	150,000 ha of wetlands - rehabilitated	30 000 000	State budget; National Ecological Fund; foreign assistance

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87.	Creating accountability mechanism for beneficiaries of woodlands, haylands, wetlands and creating incentives and economic tools in order to ensure their sustainable management and protection	2020	Ministry of Environment; Ministry of Agriculture and Food Industry	Projects approved; economic tools implemented	45 000	State budget
88.	Ensuring protection and rational use of water dependent species and migratory species in wetlands outside of the state protected areas	2018	Ministry of Environment; Academy of Sciences of Moldova	Mechanism implemented	559 186	State budget
89.	Development of a mechanism for implementation of the Law on Biosafety	2017	Ministry of Environment; Ministry of Agriculture and Food Industry; Ministry of Health; Academy of Sciences of Moldova	Project approved; Risk assessment procedures - tested	Within the limits of annual budget allocations	State budget
90.	Creation, equipping and accreditation of a laboratory for identification and detection of genetically modified organisms	2016	Ministry of Environment; Ministry of Health; Ministry of Agriculture and Food Industry	Detection Laboratory created and subsidized; methods validated, accredited in <i>MS System SR EN ISO/IEC 17025:2006</i>	1 000 000	State budget; foreign assistance

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<i>Specific objective 7. Creation of an integrated air quality management system, reduction of pollutants emissions into the atmosphere by 30% by 2023 and greenhouse gas emissions by at least 20% by 2020 compared to the baseline scenario</i>						
<i>Action direction 1. Creation of an integrated air quality management system</i>						
91.	Assessment of the institutional framework of the air management and protection, and elaboration of an assessment study regarding the situation in this field	2014	Ministry of Environment; Ministry of Transport and Roads Infrastructure	Study elaborated	796 092	State budget; National Ecological Fund; foreign assistance
92.	Ratification of the Protocol on Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) and amendments to it	2018	Ministry of Environment; Ministry of Foreign Affairs and European Integration	Project approved	Within the approved state budget limits	State budget
93.	Setting criteria and air quality assessment regime in relation to atmospheric pollutants	2016	Ministry of Environment; Ministry of Health	Project approved	Within the limits of annual budget allocations	State budget
94.	Determination of zones and agglomerations where the levels of pollutants are below the limit values and of those where the levels of pollutants exceed the established limit values; developing lists of those zones	2019	Ministry of Environment; Ministry of Health	Lists of zones/ agglomerations - elaborated	Within the approved state budget limits	State budget
95.	Elaboration of plans for air quality in zones and agglomerations where levels of pollutants exceed the maximum allowable value and short-term action plans for zones and agglomerations where there is a risk of exceeding the threshold	2022	Ministry of Environment; Ministry of Health; local public administration authorities	Plans for all the established zones and agglomerations – approved	Within the approved state budget limits	State budget; foreign assistance

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96.	Improving air quality prevention, control and surveillance systems in zones and agglomerations	2023	Ministry of Environment; Ministry of Health	Control setpoints – determined; stations - installed	35 000 000	Foreign assistance; National Ecological Fund
97.	Creation of the national emission inventory system and establishment of national emission ceilings under the Gothenburg Protocol	2023	Ministry of Environment; Ministry of Health	System created; emissions inventory – elaborated; national emissions ceilings - approved	50 000 000	State budget; National Ecological Fund; EU funds
98.	Creation of Pollutant Release and Transfer Register and its inclusion in the integrated environmental information system	2016	Ministry of Environment	Register created	10 000 000	State budget; National Ecological Fund; foreign assistance
99.	Developing mechanisms, methodology and tools for determination of limit values for pollutants emissions in accordance with local conditions and industrial capacity	2016	Ministry of Environment, Ministry of Health; Institute for Standardization	Mechanism, methodology and tools - approved	3 472 704	State budget; foreign assistance
100.	Limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints, varnishes and vehicle refinishing products	2018	Ministry of Environment; Ministry of Health	Project approved	Within the approved state budget limits	State budget; foreign assistance
101.	Introduction of emission standards for various types of vehicles and fuel quality standards	2020	Institute for Standardization; Ministry of	Euro standards – approved;	10 600 000	State budget; National Ecological Fund;

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			Environment; Ministry of Transport and Roads Infrastructure	Euro 4 standard – applied to imported cars; limit values for sulfur content in fuels – fixed; sulfur dioxide emissions - reduced		foreign assistance
<i>Action direction 2. Reduction of greenhouse gas emission and climate change impact mitigation</i>						
102.	Stimulating the market promotion of cars with hybrid and electrical propulsion, and small cylindrical volume of the engine (up to 1,4)	2023	Ministry of Transport and Roads Infrastructure; Ministry of Environment	Imported cars with hybrid and electrical propulsion – 30% of the existing number; with small cylindrical volume of the engine – 50% of the existing	15 215 310	Foreign assistance; National Ecological Fund
103.	Promoting wider use of biofuels as combustible	2023	Ministry of Environment; Ministry of Economy	Biofuels – 15% of combustibles	15 215 310	Foreign assistance; National Ecological Fund; Energy Efficiency Fund
104.	Promoting programmes for gradual	2023	Ministry of	Programmes	25 215 310	National

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	elimination of old cars, trucks and tractors		Environment; Ministry of Transport and Roads Infrastructure	implemented		Ecological Fund; foreign assistance
105.	Developing a mechanism for applying the „best available techniques” and „best practices” for industry sectors with a significant impact on air quality	2020	Ministry of Environment; Ministry of Economy	Mechanism elaborated and implemented	200 505 386	Foreign assistance
106.	Applying the concept of Resource Efficiency and Cleaner Production in enterprises and organizations	2023	Ministry of Environment; Ministry of Economy	Number of enterprises that implement the concept	17 188 425	National Ecological Fund; foreign assistance
<i>Specific objective 8. Creation of integrated waste and chemicals management systems that would contribute to a 30% reduction in the amount of landfilled waste and a 20% increase in recycling rate until 2023</i>						
107.	Expanding waste collection services in urban and rural areas through the introduction/extension of the separate/selective collection at the source	2015	Ministry of Environment	Services and collection systems – number created	80 105 600	State budget; National Ecological Fund; foreign assistance
108.	Elaboration of feasibility studies for the construction of municipal solid waste infrastructure and of mechanical-biological treatment stations, in accordance with regional strategies for integrated waste management for northern and central regions	2014	Ministry of Environment; Ministry of Regional Development and Constructions	Feasibility studies elaborated	10 101 580	State budget; National Ecological Fund; foreign assistance
109.	Implementation of investment projects in the field of waste management (construction of landfills for municipal solid waste, regional transfer stations and mechanical-biological	2023	Ministry of Environment; Ministry of Regional	7 landfills, 100 transfer stations and 2 mechanical-	134 686 111	State budget; National Ecological Fund; foreign

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	treatment stations)		Development and Constructions	biological treatment stations		assistance
110.	Inventory of items and products containing mercury and its compounds, mercury stocks and waste, paints containing lead and its compounds	2015	Ministry of Environment; Ministry of Health	Inventory created	2 000 000	State budget; National Ecological Fund; foreign assistance
111.	Inventory, mapping and database creation on lands contaminated with hazardous chemicals	2015	Ministry of Environment; Ministry of Health	Inventory created	2 000 000	State budget; National Ecological Fund; foreign assistance
112.	Evacuation and disposal of waste/obsolete pesticides, including from persistent organic pollutants category, accumulated over territory of the country from the Soviet period	2020	Ministry of Environment; Ministry of Defense; Ministry of Agriculture and Food Industry; Ministry of Health	6000 tons of pesticides – evacuated and destroyed; number of storages - eliminated	261 000 000	National Ecological Fund; foreign assistance
113.	Establishment of chemicals classification and labeling system	2016	Ministry of Environment; Ministry of Health	System created	3 200 000	State budget; National Ecological Fund; foreign assistance
114.	Creating the registry of chemicals placed on the Moldovan market	2015	Ministry of Environment; Ministry of Health	Electronic registry created	1 285 000	State budget; National Ecological Fund; foreign assistance

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115.	Implementation of training and awareness programmes on ensuring integrated waste management at intercommunity/interdistrict level; producer accountability obligation and polluter pays principle; chemical substances and mixtures of a major risk to the environment and public health	2018	Ministry of Environment; Ministry of Regional Development and Constructions; Ministry of Health	Awareness and training programmes - organized	12 561 399	State budget; National Ecological Fund; foreign assistance