

MANAGEMENT OF ECOLOGICAL RISKS

Lilia ȘARGU

University of European Studies of Moldova,
MD-2069 Republic of Moldova
lsargu@mail.ru

Constantin LUPU

University of European Studies of Moldova,
MD-2069 Republic of Moldova
alinlupu@gmail.com

Abstract

This paper is a review of the timeliness range ecological in the world, including the Republic of Moldova. The authors present short landmarks of international projects for providing ecological system for Moldova, strategy and Government plan which enhances the timeliness and importance of the field. In text we are presented theoretical elements of typology ecological risks, sustainable management, benefits and risk preventing them.

Key words: risk, medium, management

JEL Classification: Q54

I. INTRODUCTION







The foundation of managerial risk is based on exposure to a potential danger to humans, the environment and goods. Environmental management is ensured under the current conditions of both industrial activity and human activities. By following a necessity for the integration of economic objectives with the ecological ones for environmental protection and reduction of ecological risks, it constitutes the basis of the environmental management concept of ecological risks and a major concern of modern societies.

II. CHALLENGES

The issue of environmental hazards became important both at micro- and macroeconomic level. In the process of identifying environmental issues and eliminating environmental hazards it has been found that only a global approach will be able to address this concern. In the conditions in which we want to protect natural resources such as water, air, soil, flora and fauna, etc., a state fighting individually is to fight the "windmills", that is to fight in vain. The awareness of the gravity of the ecological problem, as well as the deep knowledge of the meanings of the basic concepts of environmental protection, are the key to identifying and addressing environmental risks. It is obvious that enlightening environmental risks requires spending, sustainable investment, etc., which can not be achieved economically by each state. In this case, we have a global approach to setting priorities and basic principles for the whole community in terms of ecological concerns. Thus, in 1972 Stockholm was organized the UN Conference and one of the current issues was the issue of the environment. As a result of the discussions, the basic principles of international environmental cooperation were formulated. **The basic principle** is the right of a state to use its own natural resources in accordance with national environmental policies. Under these circumstances, the state is solely responsible for the results of the internal activities that may affect the environment or other surrounding states. In this chapter we can state that the Republic of Moldova's policies do not fully correspond to the principles of the international ecological interests.

Of all the threats to humanity, the ecological issue in the contemporary world is the most important. Of course, many of the ecological issues can be solved within a particular region or country, but on a global scale the ecological security of the planet can only be solved by jointly coordinated actions of different countries. The awareness of economic giants about global ecological dangers has raised solidarity with six more implications for addressing environmental risk issues. Thus, the United Nations has set up a series of international businesses and sections with specific segments in studying, identifying, monitoring and solving environmental issues at international level. Ensuring environmental risks covers several areas: environment, health, industry, patrimony, etc.

Table 1. International environmental organizations and their fields of activity

<p>UNEP- United Nations Environment Programme</p>	<p>Is a United Nations Program for the Protection of the Environment that aims to facilitate international cooperation to solve environmental problems</p>	
<p>UNESCO - United Nations Educational, Scientific and Cultural Organization</p>	<p>Is a specialized international organization of the United Nations that aims to examine the relationship between man and nature</p>	
<p>FAO - Food and Agriculture Organization of the United Nations</p>	<p>Is a United Nations organization dedicated to improving the production and processing of products in areas like agriculture, fishing and forestry</p>	
<p>WHO- World Health Organization</p>	<p>Is an international organization that has the role of maintaining and coordinating the population health status associated with the environment</p>	
<p>UNIDO- United Nations Industrial Development Organization</p>	<p>Is an organization within the United Nations that aims to ensure industrial development at international level</p>	
<p>IAEA - International Atomic Energy Agency</p>	<p>Is an international public organization that focuses on the development of safety standards to protect against radiation</p>	

In the Republic of Moldova, there are about 450 non-governmental organizations in the environmental field, with whom the Ministry of Environment and its subordinated institutions are collaborating permanently on the basis of a Memorandum of Cooperation. According to this document, both the Ministry and the NGOs are committed to ensuring transparency and broad public participation in the decision-making process in the field of environmental protection.

III. STRATEGIES

During the period 2007-2015, the National Program for Environmental Security, which aimed to ensure the ecological security of the state by diminishing the ecological risks, preventing the negative impact on the environment and the population's health, including in a cross-border context, the establishment of the legislative base and the institutional system etc. Ensuring environmental security has achieved the following objectives:

- the improvement of the national framework linked to the European Directives

- the development and implementation of operational measures to improve the quality of the environment
- prevention of negative environmental consequences
- optimization of the system for controlling and authorizing the use of natural resources
- expansion international collaboration
- integration of ecological requirements in the development strategies of the national economy sectors, etc.

However, the results achieved through the objectives of the National Program for Environmental Security have had **expected/underwhelming** results, including the effects of natural hazards (floods). Ensuring the ecological security activity is ensured by the principles of the priority of the population's safety with life and health.

Many social ecologists say that the quality of life means the relationship between an individual and the natural and social environment. The quality of life is often defined "*as a totality of relationships that bind the individual, society and the natural environment, so each of these elements has a character and specific needs.*" At the same time, the higher quality of life implies both the high quality of the environment and it's high social organization. In this regard, we would like to mention that both the objectives and the principles of the ecological security program do not reveal any aspect with a social impact in order to ensure the quality of human life. Providing opportunities for reducing consumption and spending on energy resources, which is one of the environmental risk factors, the consumer would be exempted from the issue of scary bills, while also contributing to lowering environmental risks. Awareness of the environmental problem's importance was the purpose of implementing different programs, elaborating strategies, designing chapters in the progression of governance, elaborating strategic plans, etc.

There needs to be mentioned the United Nations Assistance Program for the Republic of Moldova for the period 2013-2017, in which one of the priority chapters is "Environment, Climate Change and Risk Management". The aim of the program is to protect environmental factors and natural ecosystems, regulate and rational and sustainable use of natural resources and minimize impacts on the environment and human health.

In the same context, environmental protection and the National Development Strategy "Moldova 2020", which recognized this important area for the social and economic development of the country, are being considered.

Including the Association Agreement provides concrete commitments and activities undertaken by the Government of the Republic of Moldova in the field of environmental protection. One of the commitments is to integrate the environment into other sectorial policies, to promote green economic development and eco-innovations.

At the same time, the ENVIRONMENTAL STRATEGY for 2014-2023 is approved at national level. The need for the emergence of an environmental strategy influenced by the European political integration of our country, the current requirements of aligning the national legislation with the provisions of the EU directives and ensuring a sustainable development of the country by promoting the green economy. Based on the current state of management and institutional system of strategy, the central apparatus of the Ministry of Environment has 7 institutions with regulatory, policy implementation and control functions: *State Environmental Inspectorate, Agency for Geology and Mineral Resources, "Apele Moldovei" Agency, National Agency for Regulating Nuclear and Radiological Activities, State Hydrometeorological Service, Fisheries Service, State Enterprise "Hydrogeological Expedition of Moldova"*. The Ministry of the Environment also coordinates the work of 7 offices and 2 implementation units: the Carbon Financing Office, the Climate Change Office, Office for Sustainable Organic Pollutants Management, Ozone Office, the Biodiversity Office, Biosecurity Office, Environmental Pollution Prevention Office, Implementation Unit for Water Supply and Sewerage Projects and the Consolidation Unit for Environmental projects implementation. But, regrettably, the institutions subordinated to the ministry ensure the implementation of policies elaborated by the ministry in only a few areas such as:

- > mineral resources management,
- > water resources,
- > fish resources

For the areas listed below, there is no structure to ensure the implementation of these sectorial policies

- > air protection,
- > soil protection,
- > biodiversity,
- > state-protected natural areas,
- > waste and chemicals management,
- > environmental expertise,
- > assessing the environmental impact of the planned activities,

- > strategic environmental assessment,
- > integrated environmental authorization,
- > mitigation of climate change
- > etc.

The possibilities of ensuring the implementation of the strategy are in difficulty and the solution is the involvement of competent persons and the establishment of short-term operational plans to ensure the gradual realization of the planned goals. Awareness of the environmental problems is evident, but solving the problems related to this strategic area is an uninsured problem for the Republic of Moldova at this time.

Another document that assures the involvement of environmental protection is the Government Action Plan for 2016-2018. The objectives set for 2017 are:

- Elaborating the normative framework necessary for the creation of ecological sections within the local public authorities.
- Integration of climate change adaptation actions into energy, agriculture, health, transport, forestry and water management policies.
- Elaboration and approval of the draft law on environmental protection.
- Elaboration and approval of the Program for the development of integrated ecological monitoring system of the quality of environmental components.
- Efficiency of environmental control system, penalty for environmental contraventions and environmental damage recovery.
- Elaboration of the Action Plan for the implementation of the Sustainable Development Strategy of the Forestry Sector of the Republic of Moldova.
- Elaboration of the Forest Code (new version)
- Creation of the Information System "Registry of Chemicals on the Moldovan Market".
- Creation of Water Information System "Water State Cadastre".
- Elaboration of the study on the impact caused by the modification of the hydrological regime of water courses in the river basins on biodiversity.
- Sustainable management, protection and conservation of useful mineral resources, including oil and gas resources.
- Elaboration of the national strategic framework in the field of atmospheric air protection.
- Elaboration and finalization of Feasibility Studies for the development of solid waste management infrastructure in all three development regions of the Republic of Moldova.

IV. RISKS

Changes made on the terrain over the last hundred years, of an economic, ecological, social, innovative nature, are accompanied by numerous undesirable risks.

Types of risks

Environmental risks are an approach of modern society that has become a concern at both national and international level. The theoretical concept of environmental risks includes:

- risks to human health,
- environment,
- material goods.

Depending on the source of the risk potential we define:

- chronic risks (which continually pollute with small amounts of toxic substances)
- acute risks (apparently through accidents but with a high concentration of toxic substances)

Based on intensity there are:

- bearable risks
- Critical risks (fatal)

Risk management

The Republic of Moldova in the context of its integration into the European Union is obliged to harmonize the national strategies in the field with those of the Community. Thus, in the European Union Strategy for Sustainable Development, "A Sustainable Europe for a Better World", we are talking about the global objective of the European community in sustainable development, but also the widening of this topic internationally. So with or without the Association Agreement, we are forced to make sustainable strategies and programs as a country. Essentially, sustainable development includes elements of sectorial policies, ensuring a qualitative side in the agro-food sector, reducing pollution, and guiding policy towards less developed areas. If we analyze each of these elements with certainty, the project of joining the performance technologies into constructions is tangential to each of them. In this context, we consider it appropriate to open as a current topic for the Republic of Moldova, regardless of which initiative comes from (governmental or private business), it is

important to cooperate and concentrate all partners in ensuring results with efficiency and effectiveness. If the results of the development of sustainable programs in the context of the application of the innovative processes in the field of construction in the Republic of Moldova will be successful then the beneficiaries will be both the state and the consumers.

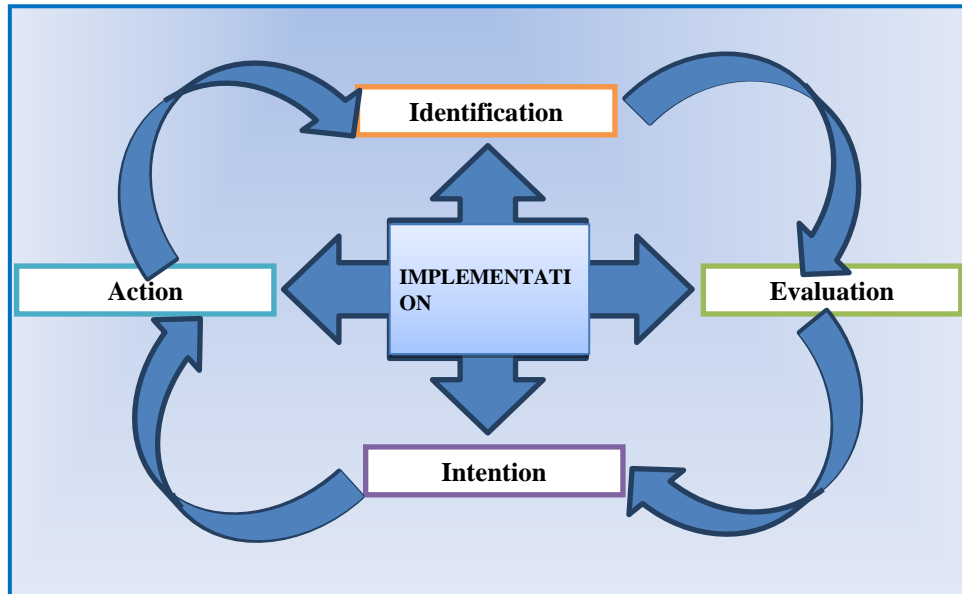


Figure 1. Sustainable Risk Scheduling Cycle for Risk Management

Knowledge and management of environmental risks is related to management elements and especially to sustainable planning. Risk Management Plan is the document that sets out the purpose, risks and actions required to prevent, avoid, or address risk situations. Sustainable planning for environmental risk management is represented by the process in Figure 1.

Identification: identification presupposes the collection of accurate, real and complex information about the foreseeable and unpredictable risks of the ecological aspects at the macroeconomic level. Let's describe the protection of risk factors. Information is the benchmark for further planning and monitoring. Ensuring the collection of information on environmental risks is an activity carried out by means of research methods. In some cases the risk factors for the permanent monitoring of the environment are ensured. Relevance of information about risk factors is an important factor in the development of safe and promising solutions.

Evaluation: The evaluation must provide the logical basis for the management decisions taken. It needs to assess strengths and weaknesses in relation to possible risks. It will also provide the threats that are faced and the existing opportunities. Assessing the situation and knowing the real possibilities of the state or organization will be the starting point for making the right decisions in critical situations to address unforeseen risks.

Intention: Intents will define the strategies that will be adopted for the implementation of the long-term plan to ensure the management of identified risks. Strategies will be accompanied by organizational and coordination management elements. Financial sources are identified to ensure risk management. In the planning of risk factors it is quite useful to know the impact or the intensity of the risk. Risk management in sustainable management provides for the formation of support programs, the involvement of tangent elements in areas related to the environmental sector. Involvement of international projects and application of practices of other strategic partners interested in solving environmental risks.

Action: It is the operational part that will present details of the specific activities required to reduce or exclude defined risks. The results of the actions are monitored, providing useful information for the next strategic planning cycle. Preventive action plans or monitoring of risk factors may be established. In the case of foreseeable risks, activities followed by fixed terms and stable periods of realization can be used.

Risk prevention

To prevent or reduce risks, three types of instruments are used at international level:

- ✓ **voluntary measures** – actions include agreements between enterprises and governmental organizations on the voluntary limitation of emissions with potential environmental risk. In other cases, limiting or prohibiting the manufacturing, marketing and the use of substances dangerous to the environment and humans.
- ✓ **economic instruments** – there are used fiscal measures such as taxes, subsidies, etc. These instruments oblige manufacturers to reduce the risks associated with their activity to the accepted levels.

- ✓ **regulations** – this is the most effective risk mitigation tool and at the same time the driving force of developing alternative technologies with low risk potential. As regulations there are: control of potential sources of risk; requirements for eco-marking, reduction of existing limit values, improvement of testing methods; risk analysis and assessment, etc.

Analysis of the environmental benefits of environmental risk

Possible risk of climate change. With global warming, energy consumption in climate-sensitive sectors may change.

The possible effects of heating, which could be relevant for Moldova, include: reducing the amount of energy consumed in residential, commercial and industrial premises for space heating/cooling (which uses a bigger amount of energy); reducing the amount of energy directly used in certain processes such as heating/cooling in industrial processes (eg thermal power plants); changing the energy use balance between delivery forms and fuel types as between the electricity used for conditioning the air and the natural gas used for heating; etc.

V. CONCLUSIONS

Modern ecology is in a deep crisis, and we can not underestimate the prospect of losing natural wealth. Only with joint efforts, with the involvement of international partners, we can solve the ecological problems of the Republic of Moldova. Because nature can not be divided into individual property, it belongs to all mankind, and the responsibility to ensure that it is kept unchanged for future generations is a citizen's duty. In this respect, the work of international environmental organizations, the implementation of projects and actions has only one purpose - protect the environment against and/or for humanity.

Environmental protection is a matter of global importance, which must become a national priority, since it directly targets the living conditions and health of the country's population. But the realization of economic interests as well as the capacities for sustainable development of society must be closely related to the protection of the environment.

The apparent environmental risks in the modern economy caused by industrial development, excessive consumption of goods and services, unreasonable consumption of natural resources that can be controlled needs to be reviewed, updated and given priority. Managing risks of natural origin must be a national environmental safety strategy and the competent governmental bodies should pay more attention to ensuring programs and strategies to prevent these risks. Safety in tomorrow is in our hands, the mankind.

VI. REFERENCES

1. Angelescu A., s.a., (1999) Mediul ambiant și dezvoltarea durabilă, Ed. ASE, București, pp 45-150.
2. Brown L., (2000) Probleme globale ale omenirii, Ed. Tehnică, București, pp 120-170.
3. Negulescu M., ș.a., (1995) Protecția mediului înconjurător, Ed. Tehnică, București, pp15-45
4. Părăușanu V., Ponoran I., (2003), Dezvoltarea durabilă și protecția mediului, Editura Sylvi, București, pp 35-79.
5. Platon V., (1997), Protecția mediului și dezvoltarea economică, Ed. Economică, București, pp.13-34.