

L.E.A.P. AS A CONTRIBUTION TO LOCAL ENVIRONMENTAL MANAGEMENT IN THE REPUBLIC OF MOLDOVA

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ABSTRACT:

This article is dedicated to developing environmental management at local level, which has a major importance in Moldova. In the paper described preparation processes of the Local Environmental Actions Plan (LEAP) for two selected locations in the central part of the Republic of Moldova: communes Hrușova (district Criuleni) and Siret (district Straseneni).

It is known that environmental management is an essential process in reducing the negative influence of anthropogenic factor, in establishment of equilibrium in the natural environment and implementation of the rules of rational use of natural resources. Theoretical and methodological analysis of international and national environmental management has demonstrated the importance of the elaboration of LEAP for urban and rural communities.

Collection and analysis of information from published and electronic (INTERNET) sources, as well as from the localities have served at the presentation of the basic features of environmental status and environmental protection activities at local level.

Research methods used: selective analysis of water samples, biological and visual materials on the field, complex evaluation of the environmental status; topography and cartographic works on the land and in the laboratory; the methods of awareness, dialogue and questioning of experts in the field and interested public from selected localities, the deduction methods for formulation of the conclusion and ways of solving environmental problems, etc.

The LEAP elaborations have been included:

PLAM developments have included: 1. Making theoretical and methodological explanation for local environmental management, 2. Analysis and differentiated feature of state of the environment and its components. 3. Analysis of priorities in economic and social activities, feature impact of anthropogenic activities and of local ecological management in villages Hrusova (district Criuleni) and Siret (district Straseneni); 4. Developments complex specialized programs of LEAP. 5. Elaboration of implementation and monitoring mechanisms of LEAPs.

The conclusions emphasize the need to continue these practises in other localities of the Republic of Moldova.

1. Introduction

Environment protection is a vital issue in the Republic of Moldova [1] and is conditioned by the development of activities in ecological management [2-4].

The main purpose of ecological management is protection of the natural resources and successive improving of the environmental situations in all areas of human activity [5-9].

Addressing issues of environmental management according to the vision of the Conference in Rio de Janeiro (1992) is carried out in the republic of Moldova from 1994. But in most cases the study and implementation of environmental management is carried out at national and cities level, but at the district and rural localities are missing unwanted [3-5]. However, international practice has demonstrated the importance of developing the Local Environmental Actions Plan (LEAP) for urban and rural areas [7-9].

The development of the environmental management at local level is a major problem in the Republic of Moldova. With the beginning of reform of local administration the power centre of the public affairs, including environmental protection is placed at the local level [9].

In proposed paper are presented some results of research conducted in the years 2001-2005 on the analysis of the environmental state and of the environmental management activities at the local level and on LEAP drafting for two localities from the central part of the Republic of Moldova: communes Hrusova (district Criuleni) and Siret (district Straseni).

The research material for local environmental management and its implementation in practice of the Republic of Moldova have served:

- Currently existing publications on the topic covered;
- Materials taken from the Internet;
- Normative and legislative documents of international standing;
- Materials and data collected on the field (localities Hrușova and Sireti from central zone of the Republic of Moldova).

PLAM's elaborations were performed according to the methodology of developed by the Institute for Sustainable Communities of the U.S.A. and the Regional Environmental Centre for Central and Eastern Europe, Hungary [8] and in consultation with practical developments in Moldova [3-6].

Research methods used: selective analysis of water samples, biological and visual materials from the field [10-13], complex evaluation of the environmental state [14-16]; topography and cartographic works on the land and in the laboratory [17-23]; the methods of awareness, dialogue and questioning of experts in the field and interested public from selected localities, the deduction methods for formulation of the conclusion and ways of solving environmental problems [24-26], etc.

Framework researches were conducted during 2001-2005. In the activities for the elaborations of the LEAP were involved representatives of civil society, state organizations and students of the educational institutions, and obtained

results were subjected to analysis, public debates and to implementation in the localities concerned.

2. Results and discussions

The researches conducted in the years 2001-2005 have allowed the preparation of drafts for the environmental management (LEAP) for localities from the central part of the Republic of Moldova - Hrusova (district Criuleni) and Siret (districts Straseni), which included the following basic sections:

- Methodological bases of the LEAP;
- General characteristics and state of the environment in the settlements concerned;
- Analysis of anthropogenic influence on the environment;
- Action plan;
- Implementation of the environmental strategies.

2.1. Methodological bases of the PLAM

In accordance with international and national normative documents [3-5,8] and accumulated practical experience [6], were described in a succinct and popular mode the methodology of the LEAP elaboration, that included the following paragraphs: What is LEAP? LEAP's need. Parties involved in the elaboration and implementation of LEAP. How was prepared LEAP?

2.2. General overview of the localities Hrusova and Sireti

Obtained results had envisaged localities main indices on the human development and agricultural land structure. The summary is presented in Table 1.

2.3. State of the environment in the localities Hrusova and Sireti

Obtained materials targeted the components: atmospheric air, land resources, water resources, biodiversity and human health.

Atmospheric air. Atmospheric air quality is significantly influenced by anthropogenic sources, which largely depend on the type of business. In these communities were highlighted following sources of pollution:

Fixed Sources: boiler stations, local heating systems, stoves, etc.

Mobile sources: agricultural technique, auto transport.

It is known, that in case of incomplete combustion of fuel in the atmospheric air are liberate a enormous quantities of gases - CO, NO_x, N₂O, powders, Pb in case of leaded gasoline use, as well as CO, NO_x, N₂O, powders and SO_x in case for using diesel.

Land resources. It was highlighted and analyzed the structure of land fund of the communes Hrusova and Siret (Table 2).

On the communes territories have been notified a surface, linear erosion, and landslides. These processes are caused by the fragmented nature of relief,

frequent rainfalls, dominance easily eroded rocks, and a number of anthropogenic factors [18-20].

Water resources. The main sources of drinking water are shallow and groundwater wells, and springs. Water pollutions in the communes studied are caused by the activities of population in the individual households: increasing of domestic animals and vital activities of citizens.

Table 1. General characteristics of communes Hrusova and Sireti.

Main indices	Com. Hrușova	Com. Sireți
Human Capital		
<i>Total population, inhabitants</i>	2755	5800
<i>Retired</i>	504	902
<i>Unemployed</i>	8	-
<i>Disabled</i>	105	219
<i>Birth rate per 1000 inhabitants</i>	7,26	10,5
<i>Overall mortality per 1000 inhabitants</i>	12,7	11,62
<i>Natural population growth</i>	-5,44	-1,12
Natural capital		
<i>The total area of the commune, km²</i>	3182	2729
<i>Arable land, total, ha</i>	1476	1175
<i>Multi-annual plantations, ha</i>	335	754
<i>Pasture, ha</i>	324	112
<i>Forest fund, ha</i>	420	305
<i>Climate:</i> Average annual rainfall is 450-550mm. Approximately 2/3 of the annual precipitation falls during warm period of the of the year (April-September). Late frosts in spring and those in early autumn are frequent.		
<i>Units of relief:</i> Units of relief Fragmented region with maximum elevation about 100-150m.		
<i>Soils:</i> In localities Hrusova and Siret prevailing ordinary and carbonated black soils (cernozioms), grey forest and aluvial soils. Average quality of agricultural land is 64 - 70 points.		
<i>Hydrographic network, ha</i>	River Ichel	-
<i>Land under water, ha</i>	36	13
<i>Expected afforestation area, ha</i>	30	15
Economic capital		
<i>Industry:</i> Commune Hrusova - individual households, 896; S.L.R. ^{*)} – 6. Commune Sireti - industrial enterprises in operation are missing.		
<i>Agriculture:</i> Principal branches within the field are: viticulture, fruit tree growing, cultivation of cereals.		
<i>Infrastructura:</i> The main town sectors which ensuring viability to the localities are providing of drinking water to population and economic, waste management, provision of space heating of buildings and dwellings, management and maintenance of green spaces.		

^{*)} S.L.R. – Society with Limited Responses

Analysis of groundwater quality confesses that in depending on how the management of land is made, the share of wells polluted by nitrates, sulfates, chlorides and increased fixed residue is substantially the major in the commune area. According to the results of laboratory analysis, in commune Hrusova of all water samples subjected to analysis, only one - the power supply (spring entry into the village), meets the requirements for drinking water for all parameters, as well as in commune Sireti any of the 10 water sources analyzed does not meet the requirements envisaged. Example, the water fountain at school: water samples contain the highest values of fixed residue, the total hardness (about 24 mg. equivalent / l) and a highest values of nitrate (about 220 mg / l).

Table 2. Structure of land resources in selected communes (ha).

Commune	Total area	Arable	Fallow ground	Multi annual plantations	Pasture	Forest fund	Water fund land	Râpi	Landslides
Hrusova	3182	1476	301	335	324	420	36	16	12
Sireti	2729	1175	2	754	121	305	13	44	4

Biodiversity. Forests fund of communes Hruşova and Sireti occupies 420.3 ha and 305.14 ha respectively. Due to poor management the state of these forests in these areas is seriously affected.

In commune Hruşova meet two types of forests: coniferous forest and the birch forest. The main coniferous species are Fir (*Abies alba*), Pine (*Pinus sylvestris*), Spruce (*Picea abies*). on the outskirts of the coniferous forest meets Poplar (*Populus alba*). In the second type of forest primary species that can be found is Common Birch (*Betula verrucosa*), as well as grassy plant species are Violet (*Viola odorata*), three species of Sedge (*Carex elongata*, *Carex spicata*, *Carex Elata*) and others [10-12].

In the forest can be found the following animal species: Squirrel (*Sciurus vulgaris*), Wild Boar (*Sus scropha*), Deer (*Capreolus capreolus*), Rabbit-of-Field (*Lepus europaeus*), Fox (*Vulpes vulpes*), Grass Snake (*Natrix natrix*) and others [13].

The main species of trees and shrubs in common Sireti are: Oak (*Quercus robur*), Maple (*Acer tataricum*), Camperdown Elm (*Ulmus glabra*), Poplar (*Populus alba*), Ash (*Fraxinus excelsior*), Hornbeam (*Carpinus betulus*), Black Locust - False Acacia (*Robinia pseudoacacia*), Horn (*Cornus mas*), Hazelnut (*Corylus avelana*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Dog-Rose (*Rosa canina*), medicinal plants: St. Johns Wort (*Hypericum perforatum*), Oregano (*Oryganum vulgares*), Horsetail (*Equisetum palustris*), Cold Peppermint (*Mentha piperita*), Motherwort (*Leonurus cardiaca*) and others; rare plants: Common Snowdrop (*Galanthus nivalis*), Lily of the Valley (*Convallaria majalis*),

Hollowroot (*Corydalis cava*), Variegated Tulip, (*Fritillaria meleagroides*), Forest Peony (*Paeonia peregrina*), Common Fern (*Dryopteris filix-mas*) and others.

On the commune's territory protected areas do not exist, but in commune Sireti there is a geological natural monument called "stoning of Cazacu.

In the recent years it has been afforested: in commune Hrusova 6 ha, but in common Sireti - 28 ha. It is expected for planting: in Hrusova 30 ha of land and in Siret - 15 ha. In order to improve the forestry sector in these communes it was proposed for planting of the most productive species of trees, such as poplar (*Populus sp.*) and oak (*Quercus sp.*). Productivity of these species are more than 310 m³/ha, while the productivity of acacia trees is about 130 m³/ha.

Health of population. Population health is the result of a complex of factors, among them quality of the environment is one of the most important.

Commune Hrusova. According to Centre of Health (CH) of Hrusova¹⁾ the most commonly reported diseases are those of cardiovascular, cancer and tuberculosis. Mortality indices of population during 2002-2004: 50-71% of deaths are caused by cardiovascular diseases, followed by digestive system (10-16%) and tumors (5-12%). *Commune Siret.* According to 2004 data, most commonly spread diseases in adults are: diseases of the circulatory system which reached 15% of the total, followed by those of the digestive system - 14.3% (including Hepatitis - 2.3% and cirrhosis - 0.9 %), respiratory system (12.2%), genital-urinary system (11.9%), tumors (4.7%), infectious and parasitic diseases (2.5%). Mortality population structure analysis (years 2002-2004), shows that about 42-50,6% of deaths caused by cardiovascular diseases, followed by tumors (14-17%). It has been established that the overall prevalence and incidence (for adults and adolescents) exceed 2 times the district average values.

2.4. Feature analysis and anthropogenic influence on the environment at the local

General considerations. Description of the environment and changing trends it is important to determine the reference situation, but does not allow defining the necessary actions within the LEAP. The decision making process involves analyzing the causes of negative environmental impacts.

Agriculture. Agricultural practices of the past, based on intensive technologies with excessive use of chemical fertilizers, pesticides and herbicides, have reduced the reproductive capacity of soil fertility and their quality [21]. In addition, there were many damaged irrigation systems, which contributed to the intensification process of soil depreciation. A review of agricultural practices in selected villages showed the following:

1. *Incorrect use of agricultural land* has been highlighted by the failure of agrotechnical and soil protection rules: the majority of agricultural land are

¹ CH Hrusova serves the population of 5 villages: Hrusova, Ciopleni, Chetroasa, Boscana and Zaicana. Evidence of morbidity is not performed separately for each commune part of these statistics medical considerations played no real health situation for common people in particular Hrușova. Evidence of morbidity is not performed separately for each common part, of these statistics medical considerations played no real health situation, in particular, for commune people in Hrușova.

located on slopes and in many cases are processed along the slopes, so washing a fertile soil layer. However, the land located on slopes with inclination greater than 10° are not excluded from the intensive processing circuit.

In most cases are missing the systems of thresholds in complex with forest protection strips. There are not respected scientifically recommended rotation of plants in cultures and on privatized land is grown mainly the maize in monoculture. Massive cultivation of grain and technical plants is determined by market demand and not to agro-technical requirements and scientific recommendations [6, 22.23].

2. *Incorrect pasture management.* Pasture area in the communes Hrușova and Sireti occupies respectively 324 hectares and 121 hectares. The impact of domestic animals upon pastures estimated according to the methodology in question [18], showed values of 1.9 conventional units (animals) per hectare for Hrusova and 3.2 conv.units/ha for Sireti, norme indicated being the maximum 2.2 conv. units/ha.

In commune Hrusova grazing pressure corresponds to the standard indicated, but the productivity and diversity of forage plants is reduced and they are replaced by ruderal species and inedible (danewort, nettle, lettuce, wormwood, etc.). Moreover, grazing conducted simultaneously on the entire of the meadows surface is to lose 60 percent of the mass of green production, which turn negatively on forage resources and livestock production. Pasture low of trophic capacity contributes to cattle grazing in forests, green spaces and other areas bordering localities.

3. *Managing irrational animal waste.* Livestock sector is one of the major sources of environmental pollution and, in particular, of the groundwater. The main causes of environmental pollution from animal husbandry are [14]: Storing livestock waste incorrect - unauthorized deposit on the surface of the land near the wells, recreation areas and others, and later transportation on waste deposits; lack of the composting process of waste which could serve for soil fertilization.

4. *Inadequate compliance to environmental legislation in the agricultural sector* is subject to the following circumstances:

- land privatization has been conducted without taking into account the environmental requirements, the land ownership requirements, the technical-material basis for new economic units (warehouse, technics and agricultural equipment) and of ownership relations upon agricultural lands;
- lack in the initial phase of an institution that would provide advice on farming techniques and technologies.

Lower degree of training of farmers and the need for specialized consulting services [7.8].

Forest Resources. It really highlighted the damage caused by excessive grazing of horned cattle in the forests, that destroying the shrubs in forested land, hamper or stops completely natural regeneration of herbaceous plant fashion species and a tree species, which forms forests, by destroying young plants of 1-3 years. Another injury is unlawful cutting of trees and shrubs in these areas. Generally forest management in sectors are unsatisfactory.

Industry. The main industrial enterprises with negative impact on the environment are:

In com. Hrușova - a) S.L.R. "Carne DK" - firm of meat processing and of sausages production. Is a company with 50 employees and foreign capital. Negative impacts on the environment is carried out by sewage, which are transmitted from the enterprise to the cleaning station nearby. But purifying water with high organic load and a high fat content does not meet the requirements. The main causes are lack of necessary and modern equipment for wastewater treatment referred.

Main causes are the lack of necessary equipment and modern wastewater treatment referred.

b) Individual Enterprise (I.E.) "Nani Orchid" - poultry enterprise with two production halls and with a staff of 10 employees. Negative impact on the environment is due, mainly, by the poultry waste, storage of which is made in unauthorized places.

In commune Sireti the industrial enterprises in operation are missing. In general, it is known that the industrial sector can not ensure respectively production without cause an environmental harm [24].

Human activities. For mentioned communes the basic problems in the field are listed as follows:

1. Managing water resources is one of the communes heavy problems which are manifested through:

Supply of the quality drinking water. In using water sources are not charged any fee, and rationalization of using and protection of water resources at the necessary level is not realized. Therefore, emissions of major pollutants are associated with the activities from individual households of the localities - livestock farming and vital activities of population, which contributes to water quality degradation.

Collecting and treating wastewater. In both communes, Hrusova where functioning the wastewater treatment plant and the Siret, waters are not the subject to the general collection for to be cleaning. In com. Hrușova are collected and sent to sewage treatment plant just waste waters from the enterprise S.L.R. "Carne DK", school and kindergarten.

Collecting and purifying of the meteors water are missing. According to data of the National Center for Preventive Medicine, the pollution level of meteors waters in some cases is much higher than of domestic sewage.

2. Domestic waste management are also difficult problems which are manifested through:

Lack of separate waste collection with purpose of usinf of those reusable.

Arranging the waste deposits does not meet the requirements for an authorized deposit.

Population do not realize the seriousness of the waste problem, and throwing them many times on the rape bank or on the other prohibited places, which lead to spontaneous waste formation with negative impact on the environment [14].

3. Managing forest sector does not meet the requirements.

4. Consumption habits of the population. Currently most of the water, electrical and thermal energy is spent by the population. Some of these resources are lost because of incorrect habits of consumption in view the environmentally and economically.

Hot spots points of anthropogenic impact on the environment. According to studies, the hot spots for both locations are: waste, landslides, soil erosion, biodiversity, pastures and wells, and specific for com. Hrusova - Ichel River valley, public transport, industrial units and station of wastewater cleaning.

2.5. Develop of the LEAP's for communes Hrusova and Sireti

Research conducted in the years 2001-2005 have allowed development of Local Environmental Actions Plans for the localities Hrusova (district Criuleni) and Siret (district Straseni). In accordance with existing recommendations [3-5], development of the LEAP endorsed more environmental measures and complex actions for the most important areas of impact upon the environment (agriculture, industry, urban and other). Each program consists of: program elements (actions planned), terms and tools of the implementation. General feature of the measures and programs developed are summarized in presented Tables 3-5.

Table 3. Complex environmental measures for agricultural sector.

<i>Programs and objectives</i>		Number of actions
<i>Program for sustainable management of land. Objective - to reduce the negative influence of technologies applied in phytotechnique upon the environment.</i>		
Sub-program	➤ <i>To respect the rotation of crops</i>	4
	➤ <i>To respect the agrotechnique's rules in soil processing</i>	10
	➤ <i>Crops irrigation</i>	4
Program to promote organic farming. Objective - to create conditions for introduction best practices of the organic farming in the process of land reform.		
Sub-program	<i>Ensure compliance of environmental requirements in the process of privatization</i>	2
	<i>To create conditions for the promotion of organic agriculture</i>	11
Program of pasture management. <i>The objective - improving the state of the pasture productivity</i>		6
Program of rational use of natural resources. <i>The objective - reducing consumption of natural resources</i>		
Sub-program	<i>Improving financial status of units of service</i>	4
	<i>Public awareness in field of environmental protection and rational use of natural resources</i>	7

Table 4. Complex environmental measures for industrial sector.

<i>Programs and objectives</i>		Number of actions
Program of the use of resources in industry. <i>Objective</i> - increasing the efficiency of industrial processes and reduce losses of raw materials, water, heat and power		
Subprograme	<i>Loss reduction of raw materials, water, heat and electricity during the technological processes</i>	10
	<i>Introducing environmental management principles to the industrial units</i>	3
Program of decline of industrial emissions. <i>Objective</i> - to reduce the negative impacts of emissions and waste		
Sub-program	<i>Ensuring the effective industrial waste water discharge and treatment</i>	5
	<i>Reduction of boiler stations emissions in air</i>	2
	<i>Improving of non-toxic industrial waste management</i>	4
	<i>Proper storage and toxic waste neutralization</i>	3

Table 5. Complex environmental measures for communes Hrușova and Sireti.

<i>Programs and objectives</i>		Number of actions
Program of the management of domestic waste. <i>Objective</i> - reducing environmental pollution as a result of irrational management of domestic waste		
Sub-program	<i>Arrangement under ecologically and sanitary rules the places of domestic waste storage</i>	2
	<i>Improving methods of household waste transportation</i>	3
	<i>recycling household waste Reciclarea deșeurilor menajere</i>	3
Program of the arrangement of the communes. <i>Objective</i> - to improve arrangement of the locality		
Sub-program	<i>Improving maintenance and expanding of green spaces</i>	3
	<i>Arrangement of recreation zone</i>	3
	<i>Improvement of road exploitation</i>	2
Program management of water resources. <i>Objective</i> - satisfying the requirement of water to individual consumers and reducing the impact of sewage		
Subprograme	<i>Engineering networks improving</i>	3
	<i>Increasing the efficiency of wastewater treatment plant</i>	3
	<i>Improving drinking water quality in the commune</i>	4
Program of ecological awareness of population. <i>Objective</i> - attracting people to solve environmental problems		
Subprograme	<i>Providing access of population to the environmental information</i>	4
	<i>Environmental education of the public</i>	3
	<i>Encouragement of public participation in decision making and ecological control</i>	3
	<i>Attracting people to the achievement of environmental protection measures</i>	3

2.6. Implementation of measures and environmental activities

In order to implement environmental measures and activities, mechanisms for implementation, funding, monitoring and reviewing LEAP for each locality have been proposed and materialized.

Mechanisms for implementation. Implementation represents activities which is proposed by the parties involved in achieving this LEAP for achieving the targets. PLAM's implementation will be based on:

- *Exercise statutory functions by the responsible environmentalists;*
- *Compliance and more rigorous enforcement of environmental law;*
- *Dissemination of environmental information;*
- *Attracting large public;*
- *Develop and implement administrative and economic leverage for promotion of environmental legislation.*

A principal element of the life transposition of local plans and planning in general is to develop and implement the projects. *The project* can be defined as a detailed description of all necessary actions to achieve a specific purpose. The project must clearly provide all aspects of the proposed goals and tasks for to complete, and the structure of the project may be next: *Project justification; Objectives and results of the project; Stages and activities description; The duration of the project; Parties involved; Human resources, equipment, materials; Project budget, Project risks.*

LEAP financing. LEAP's funding is based on funds allocating for specific projects, which is the main funding mechanism adopted by the international financing institutions. In the same time, funding of projects is applicable in case of using local sources. For example, this methodology was approved by the environmental funds of the Republic of Moldova.

Financing needs of the LEAP is divided into three categories: *1. Funds for technical activities which include: studies, demonstration and pilot activities, strengthening and training of institutions; monitoring and data collection; identifying investments, preparation of feasibility studies; 2. Funds for capital investment; 3. Funds to support the functioning of the infrastructure, created after investments.*

Monitoring and reviewing LEAP. To achieve the objectives of LEAP is necessary to monitor a number of indices, which were presented in each sectoral program. Means of verification is currently monitoring data, performed by the local environmental authorities - Environmental Section, Center for Preventive Medicine, Department Hidrometeo and other state institutions. Data obtained by public monitoring of the environmental quality, for example, during expeditions of the environmental NGOs, also will be used to evaluate the success of LEAP. Frequency of indices evaluation will correspond to that adopted by the environmental authorities. If the monitoring results are not satisfactory, it will analyze the LEAP to review or even recast the achieving objectives and instruments.

Environmental, economic and social state may be change in time, therefore it will need to follow the running of plan implementation and, if needed, the LEAP will be revised.

It is desirable to assess the LEAP 's every four years, in line with the work of the commune Local Council. The success or failure of the LEAP will be brought to the attention of voters. After new elections, the Local Council will come up with an action plan reviewed.

LEAPs designed for communes Hrusova and Sireti were subsequently proposed and approved by the Scientific Council of the National Institute of Ecology²⁾, the Mayors and Local Councils of the respective communes, which have taken they to conduct and implementation [27, 28].

3. Conclusions and recommendations

1. Based on study international and national practice it have been described the procedures for elaboration of LEAP for 2 selected villages in Moldova - Hrusova (district Criuleni) and Siret (district Straseni).

2. In accordance with the LEAP methodology there were outlined presented: A general feature and the state of the environment; Analysis of the anthropogenic influence on the environment, Action plan; Implementation of environmental activities at local level.

3. In making LEAP for both selected locations there were highlighted more common problems, and some of their specific.

4. LEAP of developments have shown that experience in matters of environmental management is very weak, and the process of a LEAP developing needs time, human potential with competence, complex methodological applications, much of analytical information from site, synthesis and development of actions etc.

5. LEAP developments were rated positively by the civil society of communes concerned, were approved and taken to the implementation by the local Mayors and Councils of the municipalities concerned.

6. Implementation activities that are following in present too represents a vital contribution to environmental management and environmental protection at local and regional level in Moldova.

7. Based on accumulated experience to recommend the continuation of such practice in other localities of the Republic of Moldova.

² - In present, Institute of Ecology and Geography of the Academy of Sciences of Moldova.

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