



**REPUBLIC OF ARMENIA**

**THE SECOND NATIONAL ENVIRONMENTAL  
ACTION PROGRAMME**

**YEREVAN - 2008**



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*Dear Reader,*

It is my pleasure to present the Second National Environmental Action Programme of the Republic of Armenia. The development of the Second National Environmental Action Programme (NEAP-2) has been initiated and launched by the

Ministry of Nature Protection of the Republic of Armenia with support of the UNDP Country Office in Armenia. The objective is to develop a new national strategic environmental programme for the five-year period of 2008-2012. NEAP-2 aimed at provision of an overall framework for integrated environmental management in the Republic of Armenia that optimizes utilization of the country's natural resources and identification of overall environmental conservation policy.

The Government of Armenia initiated preparation of NEAP-2 based on implementation assessment of NEAP-1 (1998) and taking into account the current economic and social development trends. During the last decade, the country registered two-digit annual economic growth (10-14%). Such growth creates a potential for positive socio-economic outcomes. It generates additional financial resources both at the government and at the household level. These resources may also be used to address the country's environmental concerns. The rate of environmental investment in the total share of environmental spending is continuously increasing. However, the economic growth in Armenia, similar to other countries with resource-intensive economies, is likely to pose an additional burden on the environment, especially when the country is not using modern resource-saving technologies yet. Although state budget revenues from environmental and nature use charges tend to increase with some variations, nowadays revenues from environmental charges in Armenia total merely to 0.25-0.27% of GDP. The volumes of budgetary allocation to the environment sector also tend to stable increase.

NEAP-2 is a second generation environmental strategic action programme. The programme covers both environmental media (land, bioresources, water, air, underground resources, hazardous waste and substances) and cross-media issues (environmental economics, environmental legislation, institutional issues, environmental monitoring, environmental compliance and enforcement, environmental impact assessment, international cooperation, environmental education, public awareness, environmental research and development). It also refers to inter-sectoral issues in the energy, industry, transport, agriculture, and health sectors. In drafting the action programme the main approaches are: to design practically applicable programmes, plans and projects to achieve the set in targets and to take into consideration the country's resources, as well as to pay attention to issues that are not yet reflected in the existing programmes and plans. NEAP-2 takes into consideration developments and certain changes in economic, social and environmental sectors of Armenia since 1998. It also aimed at focusing on integration of environmental aspects into sectoral policy development plans. NEAP-2 is also

designed to address certain challenges and to be in compliance with Multilateral Environmental Agreements ratified by the Republic of Armenia. Elaboration of NEAP-2 demonstrated new approaches in the development of environmental policy for meeting current and forthcoming challenges.

The Government of Armenia approved NEAP-2 on August 14<sup>th</sup>, 2008. NEAP-2 is also directed towards implementation of the Programme of Actions of the Government of the Republic of Armenia for the period of 2008-2012. The implementation of NEAP-2 mainly lies on the Government of the Republic of Armenia, and particularly on the Ministry of Nature Protection to work in close cooperation with other Ministries and agencies. Concurrently, the support from international organizations and donor countries is still very important for obtaining tangible effects from the implementation of the action programme. Consistent and integral implementation of NEAP-2 is crucially important to guarantee sustainable environmental management and protection in Armenia. NEAP-2 is to be dynamic document meaning that its implementation should be properly monitored and evaluated, and, if necessary, the NEAP should be updated.

The fundamental goals of NEAP-2 are to guarantee a healthier and better environment in Armenia and to convey to the environment a role of restricting yet stimulating factor for development. I expect that the new NEAP should give renewed impetus to mitigation of burden on the environment and natural resources in Armenia. I do also believe that implementation of the new strategic environmental action programme would make a significant input into the process of sustainable development of the country as a whole.

Aram Harutyunyan  
Minister of Nature Protection of the Republic of Armenia



**EXTRACT** from the **MINUTES**

of the Meeting of the Government  
*August 14, 2008, number 33*

**On Approving the Second National Environmental Action  
Programme of the Republic of Armenia**

1. To approve the Second National Environmental Action Programme of the Republic of Armenia as per the attached Annex.
2. To urge the heads of institutions responsible for implementation of the activities included in the Second National Environmental Action Programme of the Republic of Armenia to provide information on progress regarding the implementation of the Second National Environmental Action Programme of the Republic of Armenia to the Ministry of Nature Protection of the Republic of Armenia by March 1 of each year.
3. To urge the Minister of Nature Protection of the Republic of Armenia to provide a brief information on progress regarding the implementation of the Second National Environmental Action Programme of the Republic of Armenia to the Government of the Republic of Armenia by April 1 of each year.

Prime Minister of the  
Republic of Armenia

Tigran Sargsyan

Protocol Decision of the Government of the  
Republic of Armenia  
*number 33 from August 14, 2008,*

**THE SECOND  
NATIONAL ENVIRONMENTAL  
ACTION PROGRAMME OF  
THE REPUBLIC OF ARMENIA**

**CONTENT**

<b>ABBREVIATIONS</b> .....	<b>8</b>
<b>1. INTRODUCTION</b> .....	<b>10</b>
1.1. Socio-economic conditions in Armenia and its impact on the environment ....	10
1.2. Environmental safety and main threats .....	10
1.3. Enacted environmental Strategy Documents after the adoption of NEAP-1 ....	11
<b>2. NATIONAL ENVIRONMENTAL STRATEGY</b> .....	<b>13</b>
2.1. Implementation status of NEAP-1 .....	13
2.2. NEAP-1 and the conclusions made from the analysis of its implementation ....	13
2.3. The need for preparation of NEAP-2 .....	14
<b>3. ENVIRONMENTAL POLICY AND LEGAL REGULATION</b> .....	<b>16</b>
3.1. Armenia's environmental policy and legislation .....	16
3.2. The issues of environmental policy and legislation .....	16
3.3. Necessary measures addressed to the solution of issues in environmental policy and legislation .....	16
<b>4. INSTITUTIONAL MANAGEMENT</b> .....	<b>18</b>
4.1. Institutional structures of environment protection and their capacities .....	18
4.2. Institutional capacity building for comprehensive environmental management .....	18
<b>5. ECONOMIC AND FINANCIAL MECHANISMS OF ENVIRONMENT</b> .....	<b>19</b>
5.1. Current state and problems of the sphere .....	19
5.2. Measures addressed to the solution of problems .....	20
<b>6. SUSTAINABLE ENVIRONMENTAL MANAGEMENT</b> .....	<b>22</b>
6.1. Land Resources Management .....	22
6.2. Management of bio-diversity and bio-resources, including forest sector .....	23
6.3. Water Resources Management .....	27
6.4. Hazardous substances and waste management .....	29
6.5. Management of the underground resources .....	31
6.6. Atmosphere protection and climate change .....	34
6.7. Cross-sectoral problems .....	36
6.8. Environmental monitoring .....	36

<b>7. DEVELOPMENT OF INTERNATIONAL COOPERATION IN THE ENVIRONMENTAL SECTOR</b> .....	<b>38</b>
7.1. Current state of the sector .....	38
7.2. Issues of international cooperation .....	38
7.3. Measures addressed to the solution of problems .....	39
<b>8. PUBLIC AWARENESS AND ENVIRONMENTAL TRAINING, EDUCATION AND ACCESS TO INFORMATION</b> .....	<b>41</b>
<b>9. SCIENTIFIC RESEARCH AND DEVELOPMENT</b> .....	<b>43</b>
<b>10. ACTION PLAN</b> .....	<b>45</b>

## **ABBREVIATIONS**

BOD	Biological Oxygen Demand
COP	Chlororganic Pesticides
EIA	Environmental Impact Assessment
ENUC	Environmental and Nature Use Charges
ESMC	Environmental State Monitoring Concepts
EU	European Union
EUCCA	Eastern Europe, Caucasus, Central Asia
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GIS	Geographic Information System
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreements
NEHAP	National Environmental Health Action Programme
NATO	North Atlantic Treaty Organization
NEAP-1	First National Environmental Action Program, 1998
NEAP-2	Second National Environmental Action Programme
NGO	Non-governmental Organizations
OSCE	Organization for Security and Co-operation in Europe
PCA	Partnership and Cooperation Agreement
PCB	Polychlorinated Biphenyl
POP	Persistent Organic Pollutant
PRSP	Poverty Reduction Strategic Program
RA	Republic of Armenia



RA NAS	National Academy of Science of the Republic of Armenian
REC Caucasus	Regional Environmental Centre for the Caucasus
SNCO	State Non Commercial Organizations
SPA	Specially Protected Areas
SWC	State Water Cadastre
UN	United Nations
UNDP	United Nations Development Programme
UN ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNFAO	Food and Agriculture Organization of the United Nations
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USSR	Union of Soviet Socialistic Republics
WB	World Bank
WCU	World Conservation Union
WRMA	Water Resources Management Agency
WRMD	Watershed Regional Management Department
WRGM	Water Resources Global Management
WWF	World Wide Fund for Nature

## 1. INTRODUCTION

### **1.1. Socio-economic conditions in Armenia and its impact on the environment**

Over the recent years, Armenia has made an unprecedented advance in development. The GDP growth has doubled the 1996 projections of the World Bank and presently exceeds the 1993 level. Private consumption and exportation are and will continue to remain the main driving force of economic growth. There is an increase in real wages, crediting volumes and considerable influx of remittance, which has resulted in increase of investments. The internal savings, however, are not sufficient to provide funding for investments.

Foreign trade opportunities are limited due to unfavorable geographic conditions (transportation is expensive) and meager natural resources; besides, Armenian products encounter problems in competing in international markets. Relatively low level of integration is a weak stimulus for reducing production costs and introduction of innovative mechanisms. As it is in other countries with resource-intensive economies, the economic growth is likely to pose an additional burden on the environment, especially when the country is not yet using modern resource-saving technologies. According to international experts, in countries like Armenia economic growth causes environmental damage commensurate with 8-10% of the country's annual gross domestic product (GDP). At present, budget revenues from nature use and environmental charges total only 0.25-0.27% of GDP or in case of calculation enlarged option 0.5%. Therefore, it may be stated that this is over 20 times less than the damage caused.

Owing to the deficiency of institutional, administrative and regulatory mechanisms this country's natural resources, including nutritional, have not been used efficiently, air, water and soil are polluted, waste disposal problems are not solved. The pollution of the environment is among the factors affecting the future economic stability of the land-locked Armenia, a country poor in natural resources and blockaded by its neighbors. The use of nature resources is still regarded as an economic problem, while public involvement and participation in the identification of environmental procedures is still limited.

Along with the economic growth of the country, economic growth is also visible in agriculture. Thus, in 2007, compared with 1999, the gross agricultural product grew 1.95 times. In these years, the average annual growth amounted to 11%. Significant growth in agriculture also raises certain environmental problems.

Despite the dramatic progress in the energy sector, serious environmental problems still exist in this sector.

There are significant problems in the area of public utilities, no progress is recorded in the area of water resources usage and conservation – there are over 80% losses, the cleaning stations are either missing or do not operate.

However, parallel to the dramatic progress, due to disproportionate economic growth, the inequality between the regions of this county continues to deteriorate, and which results in the concentration of cars in large towns which causes serious environmental problems.

### **1.2. Environmental safety and main threats**

Environmental safety is a component of the national safety, characterizing the state/condition, where the environment, the individual and the society are being

protected from the impact of various hazardous phenomena and disasters. Main objective of the environmental safety is the assessment, forecast and prevention or minimizing the consequences of dangers associated with the hazardous influence on the environment aiming to ensure sustainable development of the country. The dangers threatening environmental safety of the Republic of Armenia can arise in the result of impact of both external, as well as internal factors.

Primary external threats include inter alia the hindrance of joint use of natural resources of trans-boundary significance, trans-boundary consequences of industrial, nuclear or emission accidents, trans-boundary volatile emissions and leakages, outburst of trans-boundary universal deadly epidemics and natural disasters, use of environmentally dangerous substances and waste for military purposes, illegal circulation of dangerous substances and waste and the trans-boundary transportation of radioactive substances, trans-boundary air pollution, global climate changes and depletion of ozone layer, importation of live modified organisms.

Primary internal threats include inter alia depletion of vital water-collecting basins and highly humid areas, inefficient management of natural resources, including Lake Sevan's water-collecting basin, its overuse and impoverishment, unequal availability of natural resources, forest and land degradation, desertification, reduction of biodiversity, exceeding marginal permissible proportions of emissions and leakages into environment, non-regulated utilization of hazardous substances and waste, epidemics, natural and technical disasters, lack of environmental education and insufficient awareness among society.

The prevention or elimination of the aforementioned threats is a strategic issue which implies identification of respective priorities, combination of inter-related and harmonized steps addressed to the provision of internal and external safety.

Active participation of the Republic of Armenia in the international integration processes is the critical guarantee for ensuring environmental safety.

### ***1.3. Enacted environmental Strategy Documents after the adoption of NEAP-1***

A number of environmental concept papers, program and actions have been developed after the adoption of NEAP-1, which have been approved or endorsed under respective governmental by-laws.

These have not been included in NEAP-2 to avoid duplications, but shall be deemed its indivisible part.

These by-laws are as follows:

- Program of Reconstruction of the Ecological Balance of Lake Sevan (1998),
- Biodiversity Strategy and Action Plan of the Republic of Armenia (1999),
- NAP on Combating Desertification in Armenia (2002),
- SPA Development Strategy and Action Plan (2002),
- National Forest Policy and Strategy of the Republic of Armenia (2004), National Forest Programme of the Republic of Armenia (2004), Action Plan of Supporting Measures for Illegal Forest Loggings (2004),
- National Profile on Chemicals and Waste Management (2004),
- Implementation Plan 2005-2010 for the National Action Plan on Implementation of the Stockholm Convention on Persistent Organic Pollutants in the Republic of Armenia (2004),
- Concept for Reduction of Harmful Emissions from the Motor Transport (2004),

Set of Measures on Reduction of Harmful Emissions from the Motor Transport (2005),

- List of Measures on Fulfilling Obligations Assumed by the Republic of Armenia Under a Number of Environmental Conventions (2004), List of Measures for Intersecting Issues on Three Conventions – “On Bio-Diversity”, “On Climate Change” and “On Desertification” (2005),
- State Environmental Monitoring Concept of the Republic of Armenia (2006), Implementation Program for 2007-2011 on Issues Derived from the State Environmental Monitoring Concept of the Republic of Armenia (2007),
- National Water Programme of the Republic of Armenia (2006),
- National Program 2006-2009 on Implementation of Agreement on Partnership and Cooperation among RA and European Community and its Member States Addressed to the Integration in European Union (2006),
- Concept for Introduction of new biotechnology of artificial reproduction of populations of endemic species of fish of Lake Sevan (trout, khramulya, barbel) (2006).

## 2. NATIONAL ENVIRONMENTAL STRATEGY

### 2.1. *Implementation status of NEAP-1*

The first National Environmental Action Plan (NEAP-1) was approved by the Government of the Republic of Armenia in 1998. NEAP-1 is the first environmental policy framework planning document, which addressed environmental issues and developed a complex action plan for solving these issues. The main environmental problems were identified and evaluated, and actions were developed for implementing in four phases.

A two-phase assessment (in 2003 and in 2006-2007) revealed, that the implementation of NEAP-1 in solving identified issues has been generally ensured. Nevertheless, the implementation rate varies from sector to sector. Tangible results were achieved in environmental legislative and regulatory framework, development and implementation of sectoral development plans and strategies. Currently almost the entire environmental legal field is covered in the Republic of Armenia: an Integrated Water Resources Management (IWRM) Programme, Biodiversity Strategy and Action plan, National Action Plan to Combat Desertification, National Forest Policy and Strategy, etc have been developed. Tangible progress is registered in the sector of introduction of new economic and financial instruments and an increase in their efficiency. The public awareness of environmental issues increased. A number of implemented strategic and pilot activities are consistent with strategic goals of the Government of Armenia, including the National Poverty Reduction Strategy Paper.

The issue of rehabilitation of Lake Sevan ecological balance was given special attention. In 2001 the RA Law “On Lake Sevan” and the RA Law “On Establishing Annual and Complex Program for Restoration, Protection, Reproduction and Use of Lake Sevan Ecosystems” were adopted.

Structural reforms were undertaken in the RoA Ministry of Nature Protection, which resulted in separating policy making and implementing functions and the responsible departments and organizations.

However, there were a number of issues relating to concrete activities and projects which were not implemented as planned in NEAP-1 and some which were incomplete, or only partially implemented or solved. Nevertheless, starting from 1998 the environmental programmes implemented in the country originally fit into the scope of the 1st NEAP.

Among the gaps of NEAP implementation are projects targeted at biodiversity management, in particular the biodiversity inventory and its monitoring which haven't been implemented and issues relating to waste management should be introduced now as part of a complex harmonized approach. If the NEAP-1 implementation relating to individual projects can be considered up-to-date, then the entire framework of environmental strategic activities requires considerable renewing.

### 2.2. *NEAP-1 and the conclusions made from the analysis of its implementation*

The decade that has elapsed since NEAP-1 can be described as a phase of eco-development when a number of environmental legal acts were adopted, an array of institutions was established while the capacity of others was enhanced. NEAP-1 also

made a major contribution to this process. There were drawbacks however, which hampered the desirable course of events.

One of the NEAP-1 drawbacks was the lack of a mechanism for a periodic review and update of it as a planning document. In view of/from the perspective of sustainable development, environmental planning has to be a permanent and participatory process. NEAP-1 implementation monitoring and evaluation and the newly acquired information could serve as a basis for its periodic review and upgrade.

To transform NEAP-1 from a declarative, planning document into a practical guideline stipulating priorities in the environmental sphere, attention must be paid to its implementation mechanisms; and in addition a monitoring and evaluation coordinating structure should be also established.

At the same time, the lack of relevant funds is the obvious reason for the failure to implement a number of actions planned under NEAP-1. The capacity of the country to implement the planned activities was not taken into account and no reference was made to the resources required to finance the implementation of activities. It seems from the analysis it was intended to be implemented mainly with international support.

Another shortcoming of NEAP-1 was the failure to identify the priorities of environmental issues and targets, as well as the development of analytical methodologies. However, NEAP-1 succeeded to identify a whole array of environmental problems in the Republic of Armenia; but, clearly, methodologies have not been elaborated to analyze these problems, which would enable Whereas, now this would enable coordinated and systematized solutions to be developed for the environmental problems.

NEAP-1 makes a poor reference to multilateral international environmental agreements. It merely lists some environmental conventions ratified by the Republic of Armenia after independence.

In the Republic of Armenia, after the adoption of NEAP-1, policies, programs, and concepts were adopted to develop certain environmental sectors and solve some environmental problems; and in this regard the environmental legislation of the Republic of Armenia has been radically improved. However, these processes did not always follow from NEAP-1 nor they were activities aimed necessarily at the implementation of NEAP-1.

### ***2.3. The need for preparation of NEAP-2***

The need to prepare the NEAP-2 is determined not only by the developments in the environmental sector, which have been underway since the adoption of NEAP-1, but also because of the economic and social developments in Armenia. There is a need to adopt NEAP-2 which will address current environmental problems, and define the timelines by which these problems will be solved.

In order to make environmental protection more efficient, the new strategic environmental action plan shall provide a systematized package of environmental policy instruments to minimize the pressure on the natural environment. NEAP-2 must make the current and forthcoming sectoral strategies and action plans in the environmental sphere more coordinated; it must refer to the solution of both known and newly identified environmental problems, as well as consider RA international commitments in the environmental sector.

Obviously, environmental management and conservation cannot be efficient if



restricted to the solution of exclusively environmental problems, and in the case of sectoral approaches, it cannot be effective as such approaches do not imply a comprehensive and comparative analysis is being undertaken.

In order to raise the efficiency, environmental problems must be taken into account and included into the development programs of the various sectors of the economy. At the same time, this relationship must be bilateral and environmental development programs must provide activities related to other branches of national economy, where its implementation will directly benefit the environment. Cross sectoral approaches must involve integrated solutions, where the benefits are related to both environmental and other sectors.

### 3. ENVIRONMENTAL POLICY AND LEGAL REGULATION

#### 3.1. Armenia's environmental policy and legislation

Courses of environmental policy in Armenia are allocated by the sectoral legal acts of the Republic of Armenia regulating the sphere of environment and implemented by relevant institutional capacities. The environmental policy implemented by the Republic of Armenia was mainly formulated based on the requirements of international treaties.

The legislation regulating the environmental sector of the Republic of Armenia originated in 1991. Over the past years 27 codes, laws and numerous normative acts ensuring the execution of the latter have been adopted. A number of environmental legal acts and certain environmental policy directions, which did not ensure sustainable management and conservation of the environment and natural resources as a result of economic processes, were also amended. In particular, since 2000, six codes and laws have been adopted in lieu of the ones adopted in the 1990s.

#### 3.2. The issues of environmental policy and legislation

Main problems of the environmental policy and legislation of Armenia are as follows:

1. Lack of legal act defining Armenia's national environmental policy, which would guarantee complex management of separate components of the environment and ensure uniform approaches addressed to the solution of issues of general nature as envisaged under international agreements, such as development of policies, programs, strategies and reports, sustainable development and management (use and preservation), exercise of standards, methods and norms, transfer, exchange and application of technologies, implementation of monitoring and studies, collection, presentation and exchange of information, involvement and awareness of the public in decisions made in the sphere of environment etc;
2. Incompliance of certain provisions defined under legal acts regulating the sphere of environment with Article 83.5 of the Republic of Armenia Constitution and Article 9 of the "Law on Legal Acts". For instance, according to the RA Law "On Expertise of Environmental Impact", Article 6, the entrepreneur, who is a legal or physical entity, is required to present documents necessary for expertise, which description and contained information is defined by the RA Government, whereas the Law should have envisaged the descriptions of the required documents and the criteria for the contained information, in the meanwhile the content breakdown of the documents can be defined by the RA Government. The RA Law "On Expertise of Environmental Impact" contains several similar problems;
3. Contradictions, imperfections or absence of enforcement mechanisms for certain provisions envisaged under legal acts regulating environmental sphere.

#### 3.3. Necessary measures addressed to the solution of issues in environmental policy and legislation

The measures aimed at the solution of issues in environmental policy and legislation, are as follows:

1. To adopt a legal act (law) defining environmental policy that will include the



basics of environmental policy and the complex approaches and mechanisms of the sphere. Environmental policy should be formed in line with regional environmental developments and through the integration of environmental priorities and issues into the planning processes targeting the development of various areas in public life. Environmental policy must be integrated into various other program documents. In the event of such legislative initiative, a need will arise to make all legal acts determining sectoral environmental policy consistent with the requirements of framework legal acts determining the environmental policy.

2. Restriction of rights and freedoms of legal and physical entities, responsibilities, obligations, means of enforcement etc for the purpose of stipulating by the law, to study existing legal acts regulating the environmental area and elaborate respective draft legal acts on introducing amendments to the existing legal acts;
3. To elaborate instruments ensuring legislation enforcement (norms, methodologies, technical regulations, standards, guide-books etc.) with the aim to establish enabling mechanisms for the enforcement of environmental legislation; and
4. To ensure the process of approximating environmental legislation of the Republic of Armenia with the European Union Legislation.

## **4. INSTITUTIONAL MANAGEMENT**

### ***4.1. Institutional structures of environment protection and their capacities***

The state policy for environmental protection and reasonable use of natural resources is developed and implemented by the Ministry of Nature Protection of the Republic of Armenia. The functions assigned to the Ministry of Nature Protection are implemented by the structural and detached units of the ministry personnel and state non-profit organizations and companies established within the ministry system.

Presently, the capacity building of nearly all the environmental institutions has become vital both in terms of professional skills development, meeting the financial needs, as well as revision of competences.

### ***4.2. Institutional capacity building for comprehensive environmental management***

Currently, in some sectors there is a lack of relevant institutions, particularly, in the Republic of Armenia where there is no comprehensive legal institutional regulation of the environmental impact assessment (EIA) institution. In terms of institutional capacity building, it is very important that the institutions enhance the leverages and mechanisms aimed at the execution of their authorities. The enhancement of ensuring compliance and enforcement mechanisms will become a prerequisite for the execution of the requirements of environmental legislation. Capacity building of competent agencies entitled to apply enforcement measures is one of the most vital issues.

In terms of institutional capacity building, particular attention is paid to the enhancement of the environmental information network and fast exchange of environmental information. In this respect, it is necessary to create an environmental information network in Armenia which will cooperate with external information networks. In terms of institutional capacity building, the involvement of the private sector is especially important in resolving environmental problems, and decision making. It is necessary to enhance the cooperation between the public and private sectors.

## 5. ECONOMIC AND FINANCIAL MECHANISMS OF ENVIRONMENT

### 5.1. Current state and problems of the sphere

#### 5.1.1. Environmental economic mechanisms

The state budget revenue potential for the environment is not significant. The current budget revenues from environmental and nature use charge (ENUC) collection do not exceed 0.25 -0.27% of GDP. According to latest analyses, more than half of the scarce resources collected for environmental protection purposes are used to finance other priorities.

The adoption of the RA Laws “On Environmental and Nature Use Charges” and “On the Tariffs for Environmental Charges” and enabling secondary legislation on the issue enabled the introduction of some economic mechanism system, which when enforced greatly increased revenues of the RA State Budget.

The programmed measures aimed at reducing the number of the air and water basin pollutants and the increase of the environmental fee rates have been implemented only partially. The rates may be increased only incrementally, parallel to the economic development of the country. Further improvement of environmental payments system is hindered due to the lack of implemented relevant researches, including demonstrative (pilot) projects. No funding is provided for appropriate researches yet. Further reforms require newer study of international experience, scope and causes of environmental pollution, implementing more specific researches and programmes on the consequences of such pollution.

All types of environmental charges, fees and compensations for environmental damage were accumulated in the state budget and used in a highly centralized manner. The main shortcoming of the existing system was that the charges collected for the purposes of funding environmental protection measures and programmes were only partially used for that purpose. Currently for more targeted use of ENUC, the RA Law “On the RA Budget System” stipulates the sum total of budget earmarked for environmental programmes shall be no less than the sum total of environmental and nature use charges actually collected in the preceding second budget year. That provision will enter into force in 2011.

Within the broadening of the scope of application of the law “On the efficient use of environmental charges collected from companies” the targeted programmes are implemented in a greater number of communities. It has to be noted, that the above-mentioned system of environmental charges’ targeted use is still in the formation stage and its main shortcoming is that the efficiency of environmental protection interventions at the community level is not very high.

#### 5.1.2. Financial Mechanisms of Environment

In 2005 the accumulation of payments under mining concession contracts into the Environmental Protection fund was commenced. The accumulated funds will be used exclusively for re-cultivating, leveling, greening, tree planting, and developing areas affected as a consequence of sub-surface resource use. In 2005 an extra budgetary account “Special Environmental Fund” was created and which is functioning on the account of funds from the voluntary payments, donations and contributions made by legal and physical entities.

In view of international experience, the issue of the establishment of environmental funds has become a priority.

In terms of reforms aimed at enhancing financial mechanisms for environmental protection, it is important to develop more favorable conditions for raising financial and banking capital to improve the environmental situation and to fund environmental services, including the development of proposals to shape the legal framework for the creation of an environmental insurance system. Presently, financial sector involvement in the environmental process is limited due to the absence of an appropriate legal framework, in particular, that of relating to the environmental insurance system.

The measures recommended within the framework of "National Capacities Self-Assessment for Global Environmental Management", 2004 included the establishment of environmental insurance funds to restore natural resources. This recommendation requires the implementation of additional studies or a pilot project to assess the feasibility of the above-mentioned recommendation (in particular in terms of the feasibility of introducing private insurance system) and plan further activities.

The first steps towards the introduction of environmental insurance system can serve as an example of a guarantee fund which starting in 2005 has been accrued in the Environmental Protection Account on the basis of licensed sub-surface resource use agreements.

## **5.2. Measures addressed to the solution of problems**

1. Economic and financial mechanisms developed in the environmental protection sector should be consistent with the proposed actions and recommendations on environmental policy in Eastern Europe, Caucasus and Central Asia (EECCA) countries and developed for adoption by the European Ministerial Conference held in Belgrade in 2007 within the framework of the Environment for Europe process. These include the following:
  - Make greater use of growing domestic state funding resources by ensuring environmental efficiency, increasing fiscal discipline and good governance
  - Expand the implementation of economic co-operation mechanisms under the Kyoto Protocol (especially the Clean Development Mechanism (CDM)) by increasing the number of environmental projects funded through such mechanisms.
  - Establish more favorable conditions for private sector involvement in improving the environmental situation
  - Establish favorable conditions for obtaining international support to improve the environmental situation
  - Increase the country's capacity to develop and implement environmental projects
1. To continue the improvement of the system of environmental economic mechanisms aiming to enhance their enhancing role for the environmental protection in the first place, as well as ensure increase in the RA State Budget revenues and targeted use thereof addressed to the solution of environmental problems.
2. In order to increase the efficiency of these environmental funds an assessment should be made of the legal, institutional and financial capacities and strengths;

the role of the private sector, and if this assessment is positive, then a proposal should be made for the establishment of a fund. In order to ensure private sector involvement for increasing the efficiency of environmental funds it is necessary to implement legal, institutional and financial-economic feasibility and capacity assessment, and if this assessment is positive, then a respective proposal package should be prepared on the establishment of a fund

3. For the purpose of introducing environmental insurance system in Armenia respective measures and actions should be taken towards establishment of appropriate legal framework.

## 6. SUSTAINABLE ENVIRONMENTAL MANAGEMENT

### 6.1. Land Resources Management

#### *Current situation of land resources*

The Republic of Armenia, being a country with scarce land resources, is notable for its diverse land, which include semi desert (236 thousand ha), dry steppe (242 thousand ha), steppe (797 thousand ha), forest (712 thousand ha) and alpine (629 thousand ha) land zones. As per 2007 land balance, the agricultural land compose 2122.1 thousand ha, of which arable lands - 452,1 thousand ha, haylands are 127,5 thousand ha, pastures are 1118,3 thousand ha, the forest lands (without specially protected forest areas) – 370,6 thousand ha, water fund lands (without Lake Sevan) – 28,6 thousand ha, environmental lands from specially protected areas – 229,3 thousand ha. As compared to 1997 land balance, the agricultural lands reduced by 21,4 thousand ha, forest lands - by 2,8 thousand ha, consequently settlement lands increased by 21,4 thousand ha, which states that in case of the further development of this trend the land balance might be subject to serious re-allocation.

A significant change was done in the frame of subjects of ownership right towards land. If in 1997 the state had the right of ownership for more than 80% of all the lands of the republic, currently only 46% of lands (1369,8 thousand ha) are the state property. Instead, other large subjects of land ownership right were formed - communities, which own 36% (1060.4 thousand ha) of land fund.

The current developments drastically increase the role of the local self-government administrations not only in land resources management and protection, but also on the land market. This is proved by the recent years' alienation process of thousand hectares of land to community ownership, which is not accompanied by the necessary preparatory works and environmental impact assessment. However, the RA Land Code states that lands of the state and community property shall be alienated according to land planning, forest planning and urban planning project documents, and the latter are subject to environmental as well as urban planning complex expertise.

Thus, the decentralization processes of land management in the republic have reached a new condition, which requires an additional assessment of the existing mechanisms for sustainable land management under this situation.

The ideology of land protection results in the targeted significance of the land and protection of only the fruitful stratum of the land, which, in itself, is not sufficient for preserving the land as a component of natural eco-system.

The issues of land preservation require development of modern innovative approaches in line with international processes.

#### *Current problems of land resources*

Due to the scarcity of cultivated land areas in the Republic of Armenia, steep slopes, broken relieves, areas prone to landslides, floods, bogging are used thereby causing land degradation and intensification of landslides. Due to the overloaded pastures and lack of the roads as a result of taking the cattle to graze on high alpine pastures; in view of almost total lack of amelioration activities, such wrong grazing practice results in the reduction of vegetation on steep



slopes and causes gradual land degradation. The lands that degrade due to a variety of reasons easily lose their restorative capacity thereby, resulting in decreased biological productivity and increased economic loss. Combating land degradation is considered a top priority in Armenia. It is more efficient and easier to prevent degradation than to combat its consequences, which is more difficult and less efficient.

Apart from the above-mentioned issues, it is worthwhile noting the issue of fragmentation of agricultural land in the aftermath of land privatization, which considerably limits the utilization of this land as a means of production. According to survey findings, in some of the regions the land owned by a single household consists of as many as 5 fragmented plots. Besides, in some other regions, the size of per household land does not exceed 1 hectare, which also hinders efficient farming.

There is a need to regulate the protection of non-agricultural, in particular non-usable lands.

There has not been and there is no coordinated, integrated and comprehensive targeted monitoring of Armenia's lands. Land monitoring is spontaneous and sporadic, done by different organizations and consequently, there is no coordination of data collection and analysis.

#### *Measures addressed to the solution of land resource problems*

Based on the existing issues, the directions on the land resources management are as follows:

- In the legal sector – the revision of the classification principle of land resources, separating the notions of “land use categories” and “legal regime of land use”, thus improving the registration system of land fund and inputting new zoning system for land use and documentation for area planning.
- To enhance the supervision over the land use and preservation (community, marz, republic) by implementing republican, regional, community project targeting the land use and preservation.
- In the land protection sector – reduction and prevention of land degradation, aiming at organization of anti-erosion, anti-land-sliding and ameliorative activities, implementation of measures for restoration (re-cultivation) of degraded lands, definition of principles for privatized agricultural land consolidation.
- In the information sector – the creation of Geographic Information Systems (GIS) based on the modern technologies with the application of environmental monitoring criteria.
- To allocate the lands located outside the administrative boundaries of the communities, transfer of powers to the communities to ensure the prevention of land degradation and biodiversity conservation.

## **6.2. Management of bio-diversity and bio-resources, including forest sector**

### *Current Situation*

The geographical location of Armenia, the complicated geological structure, altitude zoning, location at the borderline of different states of flora and fauna have promoted the formation of high level of rich biodiversity, ecosystems and endemism. Despite its small territory there are seven landscape types with all variety of their assemblage, flora and fauna species. Here around 50 % of species of high-grade flowering plants

of Caucasian flora, many species of economic significance, a number of crop and domestic animal wild relatives are spread, due to which Armenia is regarded one of the important origin areas for economically valuable species of flora and fauna.

In Armenia the *ex-situ* and *in-situ* forms of biodiversity conservation are applied, where the specially protected areas (SPA) are particularly stressed. They constitute around 10% of the territory of the country and include 60% of the species composition of biodiversity.

At present, almost all ecosystems of Armenia are under the human-induced impact, which is resulting in endangering of hundreds of species of flora and fauna. The consequences of human-induced impact are most significantly felt on the forest, semi-arid, steppe ecosystems, as well as on the unique and specific water ecosystem of the Lake Sevan. For example, around 80-90% of semi-arid and alpine zones are areas of active agriculture (structures, roads, etc) as a result of which the integrity of habitats of certain species of flora and fauna was shifted. The degradation of landscapes is continuously increased as a result of industrial nature use and mining industry development.

There are many problems in the forest eco-systems related to the episodic use of the forests, degradation and destruction of forest varieties. There are increased cases of mass infection with pests and diseases, as well as forest fires, which are connected with the climate change.

Conservation and sustainable use of forest resources is considered to be one of the main priorities of the state. In order to regulate the above-mentioned sector, the Government of Armenia has adopted a number of legislative documents between 2003-2005, in particular the RA National Forest Policy and Strategy Paper, National Forest Programme of Armenia, Action Plan Supporting the Issues Related to Illegal Logging. All listed documents contain measures addressed to the restoration of forested areas and development of forms of sustainable forest use. The National Forest Programme of Armenia has determined a number of actions which address the conservation of forest ecosystem, promotion of reforestation/forest restoration activities envisaged within the framework of Clean Development Mechanisms, vulnerability assessment of the forest anticipated in the result of climate change, deciding on the optimal reforestation of the territory of Armenia, increase of forest adaptability etc.

The connection between bio-resources and social-economic situation is explicitly expressed in Armenia. Bio-resources are key factors that support the economy of the country, in particular in terms of agriculture and recreation, as well as in terms of provision of raw materials to the food industry and other industrial sectors. Economic changes taking place in recent decade have had their significant impact on the biodiversity. Despite the fact, that there has been a reduction in the levels of air, land and water pollution owing to the decrease in the industry scope, the degradation and species endangering is continuing first of all due to the decline in the living standards of population.

Being concerned with the current situation, the RA Government has included the issue of prevention of ecosystems and bio-diversity degradation among the priorities of the country. Throughout 2002-2007, sustainable legal framework was established for conservation of bio-resources and efficient use of bio-resources, steps have been taken to improve the manageability, the sized of financial resources allocated by the



state and addressed to the sector development have been added up a couple of times, the international cooperation has been expanded.

A number of strategic documents was developed and partially implemented, such as the Biodiversity Strategy and Action Plan, SPA Development Strategy and Action Plan, as well as projects directed to the fulfillment of commitments under international agreements. Inventory and mapping activities were held in SPAs, the management plans of “Sevan” and “Dilijan” national parks were developed and adopted by the Government, and the elaboration of the management plans of state reservations are underway. The activities on introducing monitoring system for SPAs and establishment of new SPAs are already launched.

#### *Current problems*

Main dangers threatening to the bio-diversity of are directly or indirectly linked to the human-induced factors, which usually cause irretrievable changes of ecosystems, reduction of species and populations. The direct use of biological resource (the use of pre-alpine and alpine meadows as natural pastures, collection of pabular and medicinal plants, poaching, etc) is widespread in Armenia, which in separate cases is transformed into over-usage (forest resources, fishing). The use of resources was mainly conducted spontaneously without taking into account the bio-resources natural reproduction capacities and necessary prerequisites for ensuring it.

Despite the fact, that during recent decades the legal framework for bio-diversity conservation and bio-resources use have been relatively improved, the issue of adopting a number of secondary legislation (setting quotes for the use of bio-resources and determination of portions, setting of criteria for SPAs establishment and determining the principles for establishment of eco-networks etc) and appropriate enforcement of the existing legislation.

The RA Forest Code adopted in 2005 regulates the relationships associated with the Armenian forests and forest land management, in particular, a new category of targeted forest use was defined – forests of industrial designation, as well as the principle of establishing community forests has been set forth.

There is a huge variety of genetical resources in Armenia, however, the issue of genetical resource availability and fair distribution of the benefits obtained is not yet regulated. The importance of the mentioned issue owes greatly to the need to protect the gene pool in the context of food security and agricultural development.

It is crucial to analyze the current system of SPAs in terms of representing bio-diversity-wise valuable areas and on that basis to develop new programs for the creation of eco-network in Armenia and joining the European eco-network.

The main necessary element of biodiversity effective management – accounting, inventory and monitoring system are not implemented in Armenia in its full scope. The lack of a complete informative system on biodiversity excludes the real impact assessment on biodiversity, valuation of caused damage and, the most important, making decisions based on accurate information.

Jointly with the aforementioned challenges of economic development, including high level of corruption risks, prevalence of shadow needs on biodiversity protection, low level of responsibility of public institutions, insufficiency of institutional system and human potential, lack of financial resources hinder the introduction of integrated management approaches of biological resources.

*Measures addressed to the solution of issues*

As early as in 1999, in accordance with RA Biodiversity Strategy and Action Plan 14 strategic directions were determined: However, the priority directions for Armenia are those related to conservation of more vulnerable ecosystems and conservation of species as well as effective use of natural resources. From that perspective, to solve these primary problems in operative manner, it is necessary:

1. To introduce biodiversity accounting, inventory and monitoring system: It is obvious, that to make the bio-diversity management effective, the decisions made should be based on accurate situation data. For that reason, the lack of state accounting, inventory and monitoring make any process of planning, use standardizing and action planning more vulnerable. The implementation of these measures will in the meantime support the rational conservation of bio-diversity and eco-systems and sustainable use of bio-resources.
2. Set quotes for bio-diversity use, assessment of human-induced and nature caused impact on the use of natural resources. For bio-resources management purposes it is vital to determine the quotes of resource use, the assessment of economic activity impact on biodiversity and valuation of caused damages, exposure of natural factors, in particular, the impact of climate change. This is required to control the efficiency of scope of activities affecting the bio-diversity.
3. Optimization of SPA system in line with modern approaches and principles. The implementation of the mentioned action conditioned by the necessity of introducing SPA integrated management system, establishment of SPA integrated national network and connection with European network, as well as with ensuring complete presentation of valuable species and ecosystems in SAP system. Currently, the European countries are placing particular attention on the establishment of Protected Bio-sphere Areas, which act as modern models of the mutually beneficial cooperation between humans and nature combining sustainable social-economic development of respective areas and efficient protection of nature. Establishment of Protected Bio-sphere Areas in Armenia will favor to the introduction of sustainable development principles in our country.
4. In view of the long-pending idea of the communities on establishing community forests, to envisage reforestation of no less than 3000 ha community territories by mean of attracting various financial sources and innovative financial mechanisms, which will at the same time specify active measures to fight fires and pests.
5. To carry out an appropriate research to clarify the time-frame for implementing the measures as stipulated under the RA National Forest Programme before 2012.
6. To develop and implement pilot project on availability of genetic resources in the community and fair distribution of the benefits obtained from its use aiming to create prerequisites for conservation of Armenian genetic variety and balanced use of genetic resources.

It's obvious that implementation of such kind of measures is impossible without availability and exchange of information, interagency cooperation, ensuring the strengthening of internal force of relevant institutions.

### **6.3. Water Resources Management**

#### *Current Situation*

Although Armenia is not viewed as water-short country, its water resources are less than our neighbors. Furthermore, there is a big disproportion in the territory and time aspect of water resources availability in Armenia. The average perennial annual quantity of precipitations makes up 18 bln m<sup>3</sup>, and evaporation is 12 bln m<sup>3</sup>.

The overall river flow of the Republic territory makes up 7 bln m<sup>3</sup>, out of which 6 bln m<sup>3</sup> are formed within the territory of Armenia. The average weight of water sources make up 1.6. bln m<sup>3</sup>, and the drainage underwaters – 1.4 bln m<sup>3</sup>. The water balance of the Republic is filled on the account of 2 trans-boundary water resources: 0.9 bln. m<sup>3</sup> river water-flow is carried out from Araks river, which is flowing from artesian water-pool through the under-waters of Turkey.

The only longstanding water body of Armenia is Lake Sevan, which has a central and important hydrological significance for the country. Starting from 1930 till early 1980s the level of Lake Sevan has reduced in 19 meters and the volume – to around 40%, which is conditioned on water overuse for irrigation and energy production purposes. Due to certain restoration activities of Lake Sevan ecosystem, starting from 1980s the level fluctuations started to stabilize, and commencing from 2001 an annual stable increase in the water level of Lake Sevan has been registered, presently the increase makes up 2,5 meters.

Centralized water supply in Armenia is carried out by 5 organizations. Nearly 560 rural communities are not included in the centralized water supply and removal network. The water supply in some of the mentioned communities is arranged by water-carrying machines, in another part – through water wells, where the water quality indicators (chemical, bacteriological) do not match the republican standards of potable water.

Main pollution sources of the water resources are the unpurified or not sufficiently purified sewerages. That issue is associated with the sewerages in that none of the 19 existing sewerage water purification stations function properly. According to economic-technical estimations, only 6-7 of the 19 can be rehabilitated and re-operated. The rest needs to be newly built in compliance with new technologies for water purification.

Until the reforms in the water sector there were significant legislative and structural shortcomings, which caused disorder in the water sector.

#### *Sector reforms*

The reforms in the water resource management sector of the Republic of Armenia were launched in 1999-2000 by implementation of “The Integrated Water Resources Management Programme” drafted with the support of the World Bank. Within the frame of the programme the water resources of the RA were assessed, the program on structural reforms of the management was proposed, as well as the outlines of water demand and supply management were formed. Together with the global water resources, the river basin management concept through introduction of planning mechanism of annual and perspective planning of water resources was also suggested.

Taking into account the recommendations of “The Integrated Water Resources Management Programme”, in 2001 the RA Government initiated the project directed

to the modernization of the water sector management of the country, reviewed current legal field and determined institutional basis. All this was stipulated by resolution N92 “On the Reforms Concept Paper for the Water Sector of Armenia” adopted by the RA Government in February 2001.

One of the most important steps towards the improvement of the water sector was the adoption of the new RA Water Code on July 4, 2002. Among its goals and objectives are the protection of national water stores, creating respective grounds for meeting the citizens’ and economy demands through efficient management of usable water resources and for the provision of ecological sustainability of the environment, prevention of harmful water impact etc. In order to ensure the enforcement of the new Water Code, since 2002 the Government has adopted around 120 normative acts which relate to the procedures on issuing water use authorizations, water basin management, the transparency of the decision making process and public participation, information access, water cadastre establishment, formation of water resources monitoring, trans-boundary water resources management, etc.

As a follow-up for the legislative reforms in 2005 the RA Law “On Basic Provisions on National Water Policy” was adopted, which embodies perspective development concept paper on water resources and water systems strategic use and protection. Since 2005 water basin management has been exercised in the water resources management sphere. The priority principles for water use are based on the law.

In 2006 the RA Law “On National Water Programme of the Republic of Armenia” was adopted. The aim of the law is to determine the measures addressed to satisfying the population and economy requirements, ensuring ecological sustainability of the environment, forming and using strategic water resources, protecting national water resources through efficient management of usable water resources.

In order to promote a more efficient, targeted and decentralized water resources management, in 2002, there was a Water Resources Management Agency (WRMA) established with thin the RA Ministry of Nature Protection. In 2003, 5 regional subdivisions were established within the structure of the Water Resources Management Agency: Northern, Akhuryan, Araratyan, Sevan-Hrazdan and Southern. These subdivisions have been furnished and technically enhanced through the resources allocated from the RA State Budget and international donor organizations, in particular through USAID.

#### *Current problems*

Due to the above mentioned legal and institutional reforms implemented for introduction of WRMA principles, Armenia is currently in the leading positions in the region. However, in order to ensure logical persistence of the reforms, there are a number of challenges which should be addressed by the RA Government. The logical end of the reforms is the decentralized management of the water resources and water basin management as a determinative reform.

The activities addressed to the establishment of State Water Cadastre of Armenia, creation of data base digitization and management mechanisms, coding of surface water resources etc are in the stage of finalization.

A number of agencies involved in the area of water resources management need to be technically and institutionally enhanced both.



*Measures addressed to the solution of problems*

One of the most important prerequisites of appropriate management of water resources is the assessment and classification of water reserves and resources of the republic, which will in its turn allow making decisions related to the expansion of the strategic water reserves and regulation of river flow. Among other important directions is the development of global water resource management, which will require elaboration of projects for surface and underground water resources monitoring based on the river basin approach.

It's necessary to set up republican and regional systems facilitating the decision-making in the water resources management sector to enhance clear management of water resources and state water cadastre.

Special attention should be paid to the implementation of the action plans on Lake Sevan, as well as to the hydro-geological survey of the underground water resources in Ararat Valley, as critical challenges related to water resources management in the republic.

Another direction relates to the water quality management, particularly, to the introduction of the internationally adopted methodology of norms limiting the impact on water resources and norms on ensuring water quality. And, finally one of the important directions of global water resources management is the definition and conservation of water ecosystems reservation zones (of sanitary conservation, flow formation, underwater conservation, water protection zones, ecotone, etc), as well as the development of methodology for determining the volumes of ecological outlets on the basis of hydro-geographical characteristics.

Another strategic approach of no less importance is related to the improvement of water systems management. In this regard one of the most urgent issues of the improvement of water supply and water removal services (reduction in water flow discharge, improvement of water supply service, rehabilitation of sewerage water purification stations and construction of new ones, irrigation network development etc). There is a need for measures to be initiated directed to the provision of security for hydro-technical structures.

The measures will result in logical end of water sector reforms through implementation of global management in terms of water basins.

**6.4. Hazardous substances and waste management***Current situation*

Harmonized waste management requires the establishment of legislative and institutional ground and further enhancement thereof. To that end, in 2004 the RA Law "On Waste" was adopted, which defines the state's state policy in the area of waste use aiming to present its harmful impact on the environment and human health, while maximizing its use as a secondary raw material.

In order to ensure the enforcement of the RA Law "On Waste" 29 sub-legislative acts were adopted (Resolutions of the RA Government, institutional decrees). To meet the requirements of the above-mentioned legal acts and ensure ecologically safe waste management, the following measures are being implemented in the Republic of Armenia:

- State registration of waste;

- Passportization of hazardous waste;
- Registration of waste generation, processing and objects with the purpose of creating and running the register thereof;
- Registration of waste removal locations with the purpose of creating and running the register thereof;
- The process of approving projects for waste generation norms and their installation quotas developed by legal entities and private entrepreneurs
- Activities for setting up a state waste cadastre.

Aiming to assist in the development and implementation of state policy and strategy in waste management sector, a “Waste research center” SNCO (State Non-Commercial Organization) within the structure of the RA Ministry of Nature Protection. Based on recommendations and principals set forth in the Agenda 21 and Bahia Declaration (2000) of Inter-governmental Forum on Chemical Safety, the RA Ministry of Nature Protection has developed “National Profile on Management of Chemicals and Waste” and the RA Government has approved it (RA Government Protocol Decision N26, dated 08.07.2004 “On Approving “National Profile on Management of Chemicals and Waste””), which is in fact one of the important stages of the sustainable development process of the country.

The profile contains analysis on the legislative and institutional mechanisms if the area of chemicals and waste management, as well as that of the functions of various related state structures, and the priority concerns of the sphere have been identified. The profile assisted in identifying current problems of the sphere, in the meanwhile determining the direction of further activities addressed to the elimination of those problems.

#### *Current problems of the sphere*

Waste management issues continue to remain a high priority for Armenia due to the fact that until now, the country has not resolved the issues of ensuring economic, social and legal conditions for maximum waste use and reduction in waste generation, expansion of secondary use of waste and its ecologically safe removal/disposal. All of the mentioned issues become more pressing as there are no specializes polygons for neutralization and burial of industrial waste. There is a lack of specially organized spots for domestic waste disposal, which will meet the sanitary-hygiene requirements. Industrial and domestic waste is not collected separately. Practically all types of waste are removed to the same urban and rural landfills without any sorting.

Another pressing issue is the ecologically safe disposal of expired medication and unusable chemicals, pesticides, medications, as well the waste containing persistent organic pollutions (oils polluted with polychlorinated biphenyls).

The issues of monitoring waste disposal spots is not solved yet from the perspective of researching residual quantities of such primary hazardous chemicals as heavy metals, chloral-organic pesticides, polychlorinated biphenyls (PCB).

#### *Measures addressed to the solution of sector problems*

Necessary steps directed to the solution of sector problems are as follows:

- Risk assessment of the hazardous chemicals’ impact of the human health and the environment;

- Development of methodological approaches for risk assessment and reduction of the hazardous chemicals' impact;
- Development of national strategy on minimizing the risk of the hazardous chemicals' impact on human health and the environment;
- Drafting of the RA Law "On Chemicals";
- Creation of a ecologically safe waste management system, including the improvement of appropriate legal framework;
- Creation of registers for the waste generation, processing and utilization objects and their disposal locations;
- Implement monitoring of waste disposal spots with the aim of assessing the impact of waste on the environment;
- Ensuring reduction in waste generation, maximum use, including the expansion of secondary use of waste;
- Elaboration and initiation of measures on ecologically safe disposal of generated wastes;
- Establishment of specialized waste disposal polygons and landfills.

### **6.5. Management of the underground resources**

#### *Overview of the field situation*

Management of underground resources, envisaging preservation and use of entrails, is also one of the components of sustainable environment and natural resource management.

Entrails representing an object of environment and mineral resources enclosed therein are characterized by a set of features. For example:

- In addition to prevention or reducing to a minimum of the direct hazardous impact on the entrails as a result of use of the entrails for the purposes of geological investigations, extraction of minerals and those not related to extraction of minerals, preservation of entrails should be also viewed in the range of preservation of other objects of environment, such as atmosphere, water resources and soil, since pollution of entrails is mainly attributable to the pollution of atmosphere, water resources and soil (indirect adverse impact);
- Mineral resources enclosed in entrails, except for mineral and fresh water, are non-recoverable resources, and frequently they do not have natural outlets to the ground surface, and to disclose those resources it is required to apply costly geological investigation methods (geo-physical, geo-chemical, aerospace mineral product, etc.);
- Complete application of various geological scientific directions is required for reproduction of mineral resources;
- For determination of the industrial significance of mines, substantiation of optimal contours of ore bodies of minerals and computation of balance supplies thereof, it is necessary to conduct geological-economic (industrial) assessment of the objects with technical – economic justification of quality requirement parameters;

- The need of complex and deep processing of the ore mineral in view of establishment of safeguards for environmental protection and effective use of natural recourses and getting valuable products.

Occupying a relatively small area, the Republic of Armenia is rich in mineral resources. The state balance of the mineral supplies as of 01.01.2007 records 579 mines with confirmed hard mineral supplies (including 26 metal mines, of which 13 are operating; 553 non-metal mines, of which 238 are operating), and of 43 fresh subsurface water and 23 mineral water mines 20 mines are registered, of which 8 are operating.

Additional sources for extraction of mineral resources are tailing dams, which are mainly located in Syunik (10), Lori (1) and Ararat (1) marzes and are not exploited, except for the tailing dams of Ararat Gold Mining Plant.

#### *Problems of the sector*

1. The problems of the management of entrails field are:
2. imperfection of the legislative basis governing the sphere of use and preservation of entrails, including the issues connected with treatment of subsurface water as mineral resources and water resources at the same time; considering entrails and exploitation thereof beyond the general ecosystem; the use of entrails without conformity with environmental impact assessment and nature protection programs, and failure to apply the principle of effective, economical and complex use of entrails, thus impeding sustainable management and development of an ore mineral basis for the field;
3. Failure to take measures addressed to the reduction of exhaustions and leakages in the mining industry and adjacent branches, representing the predominant part of the volumes of environmental pollution in the Republic of Armenia and lack of double use and reprocessing of the industrial waste, including human-induced ores, waste material generating in the course of exploration and exploitation of mines (open and enclosed rocks, as well as other stuffed heaps or tailing dams of enriching, metallurgy and other processing industry), as a result of which the mass of defective soil incrementally increases; the disturbance of the landscape and biodiversity balance and exogenous and slump processes soar, etc.;
4. The unsatisfactory level of complex extraction and processing of mineral resources, vast losses and exhaustion of ores, low extraction level of main and accompanying components during processing, resulting in ineffective use of natural resources - losses by 20-30 percent of the registered supplies of minerals in entrails and unsatisfactory level of production;
5. For the mining and smelting complex of Armenia, the compact substance represents the main finished product, which makes it impossible to use the economic potential of the mine in full.
6. Lack of regular and ongoing activities of regional geological investigations, searching and searching-estimation, as well as regional hydro-geological and engineering-geological investigations by using special geological investigation methods (geo-physical, geo-chemical, cartography and other activities) that in a few decades (after exhaustion of the investigated supplies of many of the mineral resources) will lead to a significant decline in the country's economy.



*Necessary steps aimed at solution of the problems of the sector*

See below the necessary steps aimed at solution of the problems impeding the complex management of the field of entrails.

1) Implementation of legislative reforms, which will incorporate improvements in current legal acts regulating entrails, among them the economic mechanisms, and elaboration and introduction of unified standards, methods and norms for preservation and use of entrails. As a principle, we must acknowledge the regulation of examination of a subsurface water mine in compliance with the requirements of the Code of Entrails of the Republic of Armenia, and the regulation of exploitation thereof in compliance with the requirements of the Water Code of the Republic of Armenia. To provide the field with legal acts in full, it is necessary to develop a program of legislative reforms for coming 3-5 years.

- 2) Ensuring an improvement of the management system for the field that provides for:
- a. State management of the field of entrails by the principle of “one stop shop”;
  - b. Regulation of the examination of subsurface water mines in accordance with the requirements of the Code of the Republic of Armenia “On Entrails” and exploitation thereof in compliance with the requirements of the Water Code of the Republic of Armenia;
  - c. Introducing and developing state unified expertise systems and the institution of independent expert for implementation of projects of monitoring the entrails, registration of mineral resources, geological investigations and exploitation of mines;
  - d. Providing entrails for use through simplified procedure by ensuring equal conditions and accessibility for the entrails users, as well as by improvement of mechanisms of providing entrails by terms of auction or tender;
  - e. Applying the model of investigation, assessment and target use of man-caused mines;
  - f. Ensuring deep technological processing of mineral wealth, envisaging complex processing of mineral raw materials with maximum extraction and development of processing industry on the basis of the local raw materials;
  - g. Establishing geological database and ensuring accessibility of that information;
  - h. Strengthening and developing the control system in regard to the qualitative analytical data of minerals;
  - i. Strengthening the state control over the move of the mineral supplies and complete and efficient use thereof (extraction, processing, extraction of tails, etc.);
  - j. Preparing and training the staff.

For improvement of the management system in the field of entrails, it is necessary to elaborate a management system reform program for a period of 3 years.

3) Ensure reproduction of the ore mineral basis that envisages:

- a. Performing regional examination of entrails, mine search and entrails monitoring activities with support of the State for the purpose of discovering anticipated mineral wealth, development of own ore mineral basis and examination of man-caused mines;
- b. development of ore mineral basis with state medium-term and long-term planning;
- c. Establishing a founding capital for reproduction of the ore mineral basis;

To ensure the reproduction of the ore mineral basis, it is necessary to elaborate a strategy and action plan for reproduction of the ore mineral basis.

4) Ensuring nature protection security and efficient use of natural resources when using entrails:

This provides for application of the model for possible prevention or minimization of the negative environmental impact, as well as elimination of consequences when using entrails, and among them:

- a. introduction of the environmental impact assessment system when using entrails;
- b. Preparing nature protection programs aimed at elimination of adverse environmental impacts resulting from the use of entrails and implementation of complex measures, including use, collection and storing (storage or forming heaps), transportation, processing, reprocessing, utilization, removal, rendering harmless, burial of waste materials, as well as restoration and improvement of defective land of processed mining areas;
- c. Applying stimulation mechanisms by the procedure as stipulated by the law to the users of entrails performing utilization and re-processing of various types of secondary resources, man-caused mines and waste materials;
- d. Introducing resource-saving and clean technologies;
- e. Introducing a system of stimulation and privileges, by the procedure established under the law, for users of entrails that are resource saving and introducing clean technologies;
- f. Improvement of the financial system of recultivation activities as envisaged by the environmental founding capital.

It is necessary to work out:

- Standards and a guide for environmental adverse impact assessment resulting from use of entrails;
- A complex 5-10 year program of ensuring nature protection security for the purpose of elimination of the environmental adverse impact resulting from the use of entrails.

## **6.6. Atmosphere protection and climate change**

### *Current situation*

The atmosphere protection in the Republic of Armenia is implemented in accordance with the RA Law “On Protection of the Atmospheric Air” adopted in 1994 and two important Resolutions adopted by the RA Government in 1999 (N192, 30.03.99 and N259, 22.04.99). These Resolutions are normative ecological acts on limiting hazardous impacts on the atmosphere and registering those impacts. Around 1100 organizations with more than 2230 sources of atmosphere emission are involved in the sector of state registration and norm-fixing of emissions. Those include about 92% of emissions by stationary sources of the republic which are supervised by the state.

The emission indicators from motor transport for 2007 have amounted 74 percent of the overall emissions, and 96 percent in Yerevan. In 2007 the annual average dust concentration in Yerevan exceeded permitted norm 1.5 times, and sulfur dioxide – 1.2, nitrogen dioxide – 1.2, ground level ozone – 1.6 times.

“The Concept Paper on Reducing Hazardous Substances Emissions from Motor Transport“ was approved in 2004, October 14 under the Protocol Resolution N40, and the basic challenges stipulated in the Concept Paper served as basis for

developing “Action Plan on Reducing Hazardous Substances Emissions from Motor Transport”, which was adopted under the RA Government Resolution N1033, dated July 14, 2005.

The production, use and importation of ethylated petrol in the republic has been prohibited since 2001, which enabled to address the issue of applying neutralizers, and the importation of vehicles with no neutralizers of hazardous emissions into the Republic of Armenia was prohibited from January 1 2007 in accordance with the RA Government decision.

The proportion of natural gas operated motor vehicles in the Republic has increased from 3 percent to 25 percent within the last 10 years.

In 2006, March 2 was adopted the RA Government Resolution N160-N “On Approving the Standards for Maximum Permissible Concentration (MPC) of Atmospheric Air Pollutants in the Residential Areas, and for Maximum Permissible Emissions of the Hazardous Substances Contained in the Gases Utilized by the Motor Vehicles Being Exploited within the RA Territory“. Another RA Law adopted in 2006, November 16 “On Introducing Addendum in the RA Law On Protection of Atmospheric Air” regulates the prevention of emissions dispersed as a result of construction dust, as well as domestic and industrial waste, and burning the leaf-fall waste.

In 2004-2006 were implemented the activities on introducing territorial and technological standards for hazardous substances emissions. The principles for defining the proportion of motor transport emissions in the overall atmospheric air pollution have been elaborated, and the activities of developing mechanisms for introducing best technologies are now underway.

Within the framework of Clean Development Mechanisms (CDM) of Kyoto Convention on Climate Change, two Clean Development Mechanism Projects are in the process, which have tangible environmental result:

The Project on Nubarashen Landfill Biogas Capture, which will prevent the spread of smoke, dioxins and other hazardous substances and stink produced in the result of waste self-ignition; and

The Project on Lusakert Poultry Plant Biogas Capture and Power Production, which will exclude further dispersion of hazardous substances and stink from the biological lakes (lagoons) into the atmosphere .

#### *Problems of atmosphere protection*

The problems of the atmosphere protection are as follows:

- 1) In Yerevan – motor transport emissions of hazardous substances;
- 2) In Alaverdi – emissions of the Metallurgical Plant, in particular that of sulfur anhydride.

Main problems in the event of mobile sources are the type and quality of the fuel, the environmental standards of the automobiles, the maintenance and control systems thereof, automobile demand management, adequate organization of the traffic etc, all of these included in the aforementioned “Action Plan on Reducing Hazardous Substances Emissions from Motor Transport”.

Organizational challenges relate to the approaches, in particular, the improvement of atmosphere protection management system by means of developing administrative minimization and, at the same time, encouragement system.

*Ways of resolving the atmosphere protection challenges*

In the event of non-stationary sources it has long become an imperative to apply neutralizers, improvement of transport flow management, introduction of updated maintenance and control system for automobiles.

For stationary sources it is vital to introduce technological norm-fixing principle and high technologies. In order to plan and implement targeted and purposeful measures addressed to the atmosphere protection it is necessary to improve the emission registration system.

Main activities directed to the resolution of organizational challenges are as follows:

1. Introduction of simple and accessible electronic system for emissions state norm-fixing and registration;
2. Forming and developing mechanism for public-private partnership, in particular the introduction of “best accessible technologies” principle, more extensive application of Clean Development Mechanism of Kyoto Convention, introduction of the environmental rating and labeling practice and etc.

**6.7. Cross-sectoral problems**

Modern approaches to the environmental protection imply involvement of environmental issues into the development programs of other areas and fields of national economy, as well as the inclusion of developments of other national economy sectors in the environmental developmental program.

Energy, industry and transport, as well as the agriculture and communal sectors are the main branches of impact on the environment, e.g. in the past decade the proportion of transport in the atmospheric air pollution has been drastically increased in Yerevan.

Energy efficiency, energy saving and resource saving are those up-to-date requirements, which should be included as a component in the sustainable development ideology and strategy.

Cross sectoral cooperation and application of respective mechanisms are preconditions for the successes both in the economic development, as well as in the social and environmental sectors.

One of the necessary conditions for achieving real results in environmental protection area is the involvement of territorial administration and local government authorities.

Public-private partnership should be considered to be a more efficient mechanism of cross sectoral cooperation. The advantages and development perspectives are obvious on the examples of several succeeded projects.

Cross sectoral cooperation needs to be developed through the improvement and simplification of state administration, in the meanwhile developing incentive mechanisms. In that a positive role can have the environmental rating of economic activity, energy saving labeling and dissemination of culture of international environmental standards.

**6.8. Environmental monitoring***Current state of the environmental monitoring*

Without environmental monitoring it is impossible to have a clear picture of the current environmental status in the country and to ensure efficient management. Over the recent years within the framework of a number of projects implemented through

foreign financial assistance the development of capacities of the environmental monitoring system took place.

In 2006 the RA Government approved the concept of the state environmental monitoring in the Republic of Armenia (CSSEM). The concept aims to improve the condition of state environmental monitoring within the territory of the Republic of Armenia. The objectives of the CSSEM are the definition of legal, economic, administrative and methodological provisions for the implementation of state environmental monitoring activities in the context of state environmental policy of the Republic of Armenia.

The Government of Armenia has approved the 2007-2011 Plan of Actions, which pursuant the above-mentioned concept under the Resolution N191-N, dated February 15, 2007, and the implementation of the Plan of Actions has already commenced.

#### *Current problems of the environmental monitoring*

There are still numerous problems in the field of environmental monitoring, including:

- Lack of modern equipment for the stations, laboratories, observatories;
- Deficient process of creation and development of data bases (especially that of electronic);
- Deficient inter-institutional exchange of monitoring data and the coordination of the mentioned activities;

Insufficient provision of highly qualified human resources.

It is in the agenda to organize monitoring activities in line with international norms addressed to the fulfillment of liabilities assumed by Armenia under the international agreements in relations to the issues concerning the use and conservation of trans-boundary water flows, trans-boundary air pollution on long distances, climate change, combating against land degradation and desertification.

The following activities are not implemented in the Republic of Armenia:

Impact assessment of the environmental pollution on the surface waters, forests, pastures, agricultural crop vegetation, including the crop yield; on the buildings and historical monuments;

Global monitoring of ecosystems, including specially protected areas of the nature;

Modeling of consequences and risks of atmospheric air pollution (marginal overload assessment and dynamics' modeling).

#### *Measures addressed to the solution of environmental monitoring problems*

The Plan of Actions 2007-2011 on implementing the objectives of the state environmental monitoring concept envisages to develop paramount and prospective program addressed to the improvement of monitoring, to elaborate normative-legal and normative-technical documents regulating the mentioned activities, the full use of the information on the state environmental monitoring throughout the development process of environmental projects and strategy for reasonable use of natural resources, the establishment of efficient information exchange system for the monitoring being implemented by state management authorities.

It is vital to enhance the human resources for implementing the state environmental monitoring activities, as well as to ensure increased awareness of the state of environment, including through development and dissemination of public reports.

A uniform, comprehensive national monitoring system will support to the development of cross sectoral cooperation, in the meantime will improve the management and use of comprehensive information. Enhanced environmental monitoring, being implemented by adequately qualified and trained staff, which deploy internationally recognized monitoring and data collection standards will undoubtedly invest in the successful implementation of national policies, trans-boundary and international commitments.



## 7. DEVELOPMENT OF INTERNATIONAL COOPERATION IN THE ENVIRONMENTAL SECTOR

### 7.1. Current state of the sector

The expansion of international cooperation in the environmental sector is typical for the recent years, which is evidenced by the fulfillment of multi-lateral international agreements, participation in regional processes, as well as the interaction with a number of countries (USA, German Federation, Russian Federation, Georgia, Iran Islamic Republic, Japan, Sweden, Austria, United Arab Emirates, Egypt, Republic of Tajikistan, the Kingdom of Denmark, Kingdom of Norway, Federal Republic of Brazil, Republic of China) and organizations (GEF, WB, USAID, UNDP, UNEP, UNIDO, UNFAO, UN ECE, EU, OSCE, NATO, WWF, IUCN, etc).

The Republic of Armenia is a party to 14 global and 6 regional Multilateral International Environmental Agreements (MEA). Currently the participation in some other agreements is under discussion. It has to be noted, that in recent years the position of the country on the international environmental policy and strategy has been made distinct. In regard to the ratification of international environmental agreements, as well as to the development and implementation of international and regional processes, environmental program of international structures, the Republic of Armenia acts on the basis of its national interests, requirements and potentials.

In terms of developing the directions of international cooperation, a very important role plays the policy of large international environmental organizations, including the directions of European structures, priorities and attention towards Eastern Europe, Caucasus and Central Asian countries (EECCA) and complex regional approach for solving environmental problems.

Armenia is quite actively involved in the European regional environmental activities, expanding its participation in the largest environmental processes of Europe, such as “Environment for Europe”, “Environment and Health”, “Education for Sustainable Development”. Over the recent years Armenia has actively been involved in the preparatory processes of numerous conferences and in the development of key political documents, in particular in Belgrade Conference, therefore it has adopted the endorsed decisions as a guide for environmental activities to be evolved in coming years. Armenia is also very active in the implementation process of a number of regional initiatives, such as the EU Water Initiative, Environment and Security.

A special emphasis is put on the development of the regional cooperation, especially within the scope of activities of Caucasus Regional Environmentae Center.

A number of projects have been implemented and are still implemented in Armenia since 1994 with the support of international organizations and donor countries, which relate to various environmental issues and are considered as formidable assistance in solving the environmental issues in Armenia.

The Partnership and Cooperation Agreement between the European Union (EU) and Armenia is effective since 2000. In 2004 Armenia was involved in the process of the EU European New Neighborhood Policy (ENP). Within the scope of the ENP in November 2006 was adopted RA-EU Action Plan. The chapter on “Environment” of the Action Plan includes the main suggestions for cooperation in the environmental sector for 2007-2011.

### 7.2. Issues of international cooperation

Current problems in the international cooperation are as follows:

- Despite that the international structures make efforts to form comprehensive

and uniform mechanisms for stability, safety and ways of communication in the region of South Caucasus, which resulted in a number of environmental projects in the region, including the activity of Regional Environmental Centre for Caucasus, however, the existing conflicts still hamper considerably a more efficient environmental partnership development, as well as the establishment of regional safety system;

- To ensure active involvement and full and effective participation of Armenia in the environmental priority directions, it is necessary to move faster with the actions on launching and implementing projects to be implemented within the framework of European Neighborhood and Partnership Instrument /ENPI/;
- Lack of necessary financial resources limits the possibilities of bi-lateral and multi-lateral cooperation development, especially between the CIS countries. In view of the growth of the RA economy and respectively GNP /gross national product/ there is a consistent and clear tendency to minimize funding of RA participation at the international processes and in particular at events and discussions. This trend is justified by the respective policies exercised by a number of international and inter-governmental organizations. In this context it's urgent need to consider the funding forecasts for the RA participation in international events and discussions within the RA Government Activities for annual and mid-term projects;
- Certain grant projects and the actions to be implemented within its framework are being delayed caused by technical reasons, in particular related to the lack of clear operational mechanism for grants allocations management, as well as related to the drawbacks of the RA legislation (taxation field);
- Despite the fact that cooperation with the international organization is becoming more active year-by-year, nevertheless the decrease in necessary state allocated resources is slowing down the progress of environmental development actions, as currently the grants from the international and donor organizations are only provided where co-funding is available.

### ***7.3. Measures addressed to the solution of problems***

Efficient international cooperation is the guarantee in solving the environmental problems in Armenia. Membership to multi-lateral international environmental agreements and fulfillment of commitments assumed under those agreements raise the rating of Armenia in international framework. In this regard, the fulfillment of those agreements is a vital issue and requires significant investments.

The enlarging of cooperation with EU in the environmental sector is a priority for Armenia. In this regard, the effective implementation of the provisions of partnership and cooperation agreements between the Republic of Armenia and European Communities and their member countries is highly considered.

It's necessary to develop further cooperation at European regional and Caucasus sub-regional levels which will promote the solving of Armenian national as well as trans-boundary environmental issues. The Republic of Armenia is an advocate for active environmental cooperation in the Caucasus and this role should get a further development. Hereafter, the support of International Organizations and donor countries for solving environmental issues in Caucasus and Armenia is necessary.

In regard to intensification of international cooperation addressed to the solution of environmental issues in Armenia, it is necessary:

- Take steps in joining the Convention of UN ECE “On Protection and Use of Transboundary Watercourses and International Lakes”, as well as ensure ratification of a number of environmental agreements and the conformity of national legislation, which ensures further implementation of those agreements, to the requirements of international agreements;
- Expand the cooperation with the EU implementing the measures envisaged by the Action Plan within the framework of ENP, as well as the TAIEX, TWINNING, Cross-border Cooperation projects;
- Expand regional cooperation, in particular within the framework of the Caucasus REC activities and other projects;
- Expand cooperation with specific countries and international structures/organizations;
- Within the framework of general improvement of state funding for environmental program and expenditures it is crucial to considerably increase the funding for RA participation in international and inter-governmental events and meetings.



## 8. PUBLIC AWARENESS AND ENVIRONMENTAL TRAINING, EDUCATION AND ACCESS TO INFORMATION

Environmental information accessibility in Armenia is stipulated by the RA Constitution, Article 33.2, according to which the officials bear responsibility for hiding or refusing to provide environmental information.

In 2001, the country ratified the Aarhus Convention which stipulated the three major principles of information accessibility, public participation and public access to justice. Thus, the stipulation of every person's (regardless the citizenship) ecological right in the Republic of Armenia serves as a basis for their active role playing in the development and implementation of environmental protection policy. Based on this provision, the information on the protection of the environment of the Republic of Armenia should be open and accessible. The legal framework is satisfactory for that purpose; however, the mechanisms through which that information is conveyed to the public are not sufficiently efficient.

It has to be noted, however, that the demand for the environmental information has not been formed so far, one of the reasons being the lack of adequate awareness, training and education. Historically people have formed the dominating psychology of conquering the nature and careless use of its resources. At best, the environmental protection is matched with the protection of surrounding environment and by that it implies the provision of healthy and comfortable (comfort) atmosphere.

Therefore it is necessary to observe the provision and accessibility of environmental information both within the context and all together the training and education and directly related to the education, the training of human resources.

Environmental information must cover a scope of issues, which enables the public, when required, to participate in the procedure of decision-making. The population must be maximum aware of environmental information limitations and the procedure of obtaining information to be able to evaluate the compliance of those limitation to his natural rights, in particular the RA Constitution and RA Laws' requirements. The legal framework providing environmental information accessibility is the prerequisite for sustainable human development.

The ratification of Aarhus Convention was followed by a process, which aims to ensure the accessibility of information and public education.

In the capital and Marzes seven Public environmental information centers (Aarhus centers) have been established in the capital and Marzes with assistance from the OSCE Armenia. These centers include official and non official informational materials, training and scientific publications, video-materials etc.

It is impossible to overestimate the role of mass media in the identification of environmental problems, in the formation of public opinion, and the dissemination of information and the raising of public awareness. Supported by the Caucasus regional environmental centre, programs promoting the dialogue with media have been implemented. OSCE Armenia office too is assisting in this issue. At the same time it has to be noted that there is a constant need to regularly carry out awareness and certain vocation and qualification trainings for the media and journalists.

The activities of NGOs in Armenia are regulated by the RA Law on "Non-Governmental Organizations" (2001). Following the ratification of the Aarhus Convention by Armenia in 2001, the cooperation between non-governmental organizations and public services sector is already an apparent fact with NGOs has broadened.

In 2002 the non-governmental and research sectors of Armenia elaborated the Concept of sustainable development of Armenia. NGOs play an important role in the dissemination of environmental information and improvement of public awareness among the public, in particular the youth.

In order to describe the activities of NGOs in Armenia, it's important to note that most environmental NGOs function within the framework of grant programs, cooperating with donor organizations. The activities of the NGO sector in Armenia demonstrate that their organizational efficiency, financial viability and cooperation with the public and private sectors have been growing but not sufficiently. It should be also noted that NGOs are most active in Yerevan which owes to the fact that there is a lack of information and awareness in the regions.

The RA Law "On Ecological Education of the Population (2001) regulates the principles of state policy in continuous ecological education, and the legal, organizational and financial foundations. But its practical efficiency remains low. It is crucial to study and analyze the reasons viewing the problem in light of the entire education system improvement, at the same time taking into consideration the specifics of the environmental sector.

The national and regional programs related to environmental education and implemented in Armenia by state and non-governmental organizations have made a positive contribution to the improvement of the situation in this sphere.

The whole issue is about the environmental education to serve not only for teaching and informing, but also which is very important in terms of preparing professional resources.

The worsening of international and regional environmental problems and the efforts targeting their solution require high professional capacities to ensure efficient participation in these processes. International environmental processes cannot be viewed separately as these are closely interwoven with the local (national) problems. Hence, a crucial direction of ecological education should be the preparation of human resources who meet contemporary requirements. The mentioned problem is growing constantly and requires urgent resolution, which is setting up an active and efficient human resource training system (mechanism).

The education addressed to the human resource training should be accompanied with the practical work both in the management (public utilities) sector, as well as in the business environment.

## 9. SCIENTIFIC RESEARCH AND DEVELOPMENT

In Armenia environmental scientific research and development is performed by the RA National Academy of Sciences (RA NAS), scientific-research institutes of the RA ministries, university research divisions, research and design institutions, and technological branches of industrial enterprises. In 2005, the research institutes of the natural sciences sector of the Academy conducted research of 112 topics related to environmental protection and healthcare, however, only some environmental research works were in compliance with the priorities defined by the RA Ministry of Nature Protection. The number of works performed by government contractual work was rather limited.

International organizations have supported the development of environmental research in Armenia. Main shortcomings of scientific-research activities in the environmental sector are that it does not sufficiently derive from and match environmental challenges and priorities. It's basically of fundamental nature and ensues from the preferences of the researchers and financial resources.

Applied scientific researches meeting the management needs are very limited. In that sense the cooperation between the RA Ministries of Nature Protection, Education and Culture and Economy is extremely vital as this will allow organizing and coordinating multi-faceted researches targeting the solution of the environmental issues.

The mechanisms promoting innovative products on the basis of scientific developments are almost totally missing, whereas the practical application of scientific thought in the environmental sector is the prerequisite for sustainable and safe development of this country. In order to raise the efficiency of environmental programs, it is necessary to upgrade the technological level of the national economy and to ensure the competitiveness of innovative outputs on both the domestic and external markets of the country, which is the core of Armenia's innovation policy.

The program for the creation and development of an innovation system in Armenia in 2005-2010 defines the priorities for innovative development including the introduction and development of environmentally friendly technologies. The development and application of clean technologies contributing to the improvement of the environment is urgent for ecology.

In the Action Plan it is necessary to envisage the localization of introducing "best accessible technologies" mechanism practiced in developed countries in the meanwhile using and developing "public-private partnership" principle.

Every field of the economy is directly or indirectly related to the issues of environmental or natural resource use, resulting in the emergence of environmental problems. Therefore, the guarantee of success in the environmental sector is the enhancement of cross-sectoral cooperation and the application of the scientific potential for the solution of existing problems.

The participation of the republican scientists as experts and consultants in various international development processes in the environmental sector (within the professional and experts' teams formed in the framework of environmental conventions, agreements and other processes) can serve as an important drive in development of environmental sciences.

Accessibility of information on the environment and on the scientific results is also critical in this sphere: To this end, it is necessary to ensure the following actions:

1. State institutions forming information should mandatory and in respective form

provide that information under the specified order and accessible format post on respective information web-sites. The official and non-official information should be separated.

2. To negotiate with international organizations to provide the outcome of scientific research implemented in Armenia to the authorized environmental management bodies for its further application in the management field, as well for making it maximum accessible for the public while ensuring the copyright.

3. To establish demand for information in cooperation with the NGOs and mass media and scientific circles.

## 10. ACTION PLAN

Activity Description	Purpose	Implementing Agency	Time-lines	Funding Source
1	2	3	4	5
<i>Environmental Policy, Legislation and Institutional Capacities</i>				
1. Drafting of the RA Law "On Environmental Expertise" and sub-legislative acts to ensure the enforcement of the Law	Regulation of processes of environmental expertise, impact of environment and strategic ecological assessments in compliance with the requirements of international agreements  Target indicator – developed law and respective sub-legislative acts	RA Ministry of Nature Protection	2008-2010	RA State Budget: maintenance cost, international funding**
2. Drafting of the RA Law "On Self-Control over Meeting the Requirements of Environmental Legislation"	Establishment of legal framework for complex prevention of harmful impact on environment  Target indicator – developed law	RA Ministry of Nature Protection	2008	RA State Budget: maintenance cost, international funding**
3. Drafting of the RA "Law on Environment Protection" and development of project package for draft sub-legislative acts to ensure the enforcement of the Law	Existence of framework legal act defining the policy for the sphere of environment, which will ensure complex management of the sphere – complex prevention of environment pollution and efficient use of natural resources. In the event of such legislative initiative a need will rise to match existing legal acts on environmental policy with the requirements of framework legal acts defining the policy of the sphere of environment.  Target indicator – developed law and respective sub-legislative acts	RA Ministry of Nature Protection, stakeholder ministries and institutions	2010-2012	RA State Budget: maintenance cost, program funding* , international funding**
4. Implementation of measures not encompassed by this present Action Plan and those envisaged under the Chapter "Environment" in the National Program adopted by the Government of the Republic of Armenia within the	Ensure consistency of the RA Environmental Legislation with the requirements of the European Union Legislation	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, program funding* , international funding**

framework of partnership and cooperation agreements signed between the Republic of Armenia and European Communities and their member states - development of relevant draft legal acts				
5. Elaboration of environment strategy and action plan for Yerevan city	Setting principles and measures addressed to the improvement of the condition of environment of Yerevan city  Target indicator – developed program	Yerevan Municipality,	2009-2010	RA State Budget: maintenance cost, program funding* , international funding**
6. Determination of format and principles for developing environmental action plans for the Marzes and communities of the Republic of Armenia	Setting measures by marzes and communities addressed to the protection of their environment and efficient and economized use of natural resources, establishing legal and methodological grounds for the implementation of the above-mentioned measures. Target indicator – existence of legal act	RA Ministry of Nature Protection, RA territorial administration bodies, communities	2009-2010	RA State Budget: maintenance cost, program funding* , international funding**
7. Elaboration of project package for enhancement of environmental inspectional system capacities	Enhancement and development of environmental inspection system targeting the re-equipment of the environmental inspector with technical and methodological tools necessary for the fulfillment of his duties. Target indicator – developed project package.	RA Ministry of Nature Protection	2008-2009	RA State Budget: maintenance cost, international funding**
8. Development of project package on strengthening capacities and development of state environmental expertise, environmental impact assessment and strategic ecological assessment system	State environmental expertise, assessment of environmental impact, and specifying measures addressed to the enhancement of the capacities of structures implementing strategic ecological assessment Target indicator –developed project package	RA Ministry of Nature Protection, stakeholder ministries and agencies	2008 -2009	RA State Budget: maintenance cost, and international funding**
9. Development of a project package on establishment of modern mechanisms for collection and exchange of environmental information	Specifying the measures addressed to the accessibility, awareness on environmental information, as well as to the ensuring of the participation of the public in the decision-making Target indicator –developed package	RA Ministry of Nature Protection	2008 -2009	RA State Budget: maintenance cost, international funding**
10. Development of programme package on establishment of mechanisms for comprehensive and integrated prevention of harmful	Specifying and implementation of measures necessary for comprehensive and integrated prevention of harmful impacts on the environment, in particular, for introduction of	RA Ministry of Nature Protection, stakeholder ministries and agencies	2008-2012	RA State Budget: maintenance cost, program funding* and international funding**



impacts on the environment	complex permits and self-control systems			
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<i>Economic and Financial Mechanisms</i>				
1. Development of strategy on funding environmental programmes including development of a program package for introduction of state environmental expenses management (SEEM) system and its further improvement, and development of recommendations on establishment of legal frame promoting more favorable conditions for the participation of private sector in improvement of environmental conditions, and on increase of the number of environmental programs funded within the framework of Clean Development Mechanism of the Kyoto Protocol	Increase in efficiency of solving environmental problems Increase in efficiency of state environmental expenses management Involving additional financial resources (including those of the private sector) for solving environmental problems Ensuring effective collaboration of the state, the public and the private sector  Target indicator – Increase in environmental expenses up to at least 0.1 percent of the GDP	RA Ministry of Nature Protection	2009-2012	RA State Budget: maintenance cost, international funding**, RA State Budget - program funding*
2. Development of a package of recommendations on improvement of procedures for development and implementation of environmental programs	Development of a legal base in terms of procedures for development and implementation of environmental programs Target indicator – Increase in environmental expenses funded from the state budget up to at least 0.5 percent of GDP	RA Ministry of Nature Protection, RA Ministry of Finance, RA Ministry of Agriculture	2010	RA State Budget: maintenance cost
3. Development of a package of recommendations for introduction of economic stimulation mechanisms set by environmental legislation	Development of a legal base for introduction of economic stimulation mechanisms set by environmental legislation Target indicator – Increase in the volume of legal use of bio-resources by 25-30 percent	RA Ministry of Nature Protection, RA Ministry of Finance,	2009-2011	International funding**, RA State Budget: maintenance cost
4. Development of recommendation on introduction of environmental insurance and audit institutions	Development of a legal base for introduction of environmental insurance and audit institutions Target indicator – Adopted legal acts (laws)	RA Ministry of Nature Protection, RA Ministry of Finance,	2011-2012	International funding**, RA State Budget program funding*

5. Development of recommendations on improvement of the system of implementation and funding of reclamation activities aimed at rehabilitation of lands damaged due to entrails use funded from the Environmental Protection Capital, defined in Article 65 of the RA Law "On Provision (Concession) of for Study and Mining for the Purpose of the Use of Minerals"	Increase in efficiency of solving environmental problems Target indicator – Adopted legal acts (laws) Target indicator – lands restored in the result of reclamation activities aimed at rehabilitation of lands damaged due to entrails use	RA Ministry of Nature Protection, RA Ministry of Finance, RA Ministry of Energy and Natural Resources	2009-2010	RA State Budget: maintenance cost
6. Development of recommendations for the improvement of the funding systems provided for by the RA Law "On Targeted Use of Environmental Fees Paid by Companies", environmental fees and environmental nature use charges	Improvement of the system of economic mechanisms operating in the field aimed at strengthening their regulating and fiscal roles Ensuring targeted use of environmental fees and environmental nature use charges Target indicator – the ratio of state expenditures in terms of environmental measures/programs and the total environmental fees and environmental nature use charges – 80-90 %	RA Ministry of Nature Protection, RA Ministry of Finance, RA Ministry of Economy, RA State Tax Service	2009-2011	International funding**, RA State Budget: maintenance cost
7. Development of programme package on establishment of Environmental Protection Funds	Efficiency increase in solving the environmental problems Target indicator – <ul style="list-style-type: none"> <li>• Adopted legal acts (law),</li> <li>• Functioning funds</li> <li>• Projects financed from those funds</li> </ul>	RA Ministry of Nature Protection	2010-2011	International funding**, RA State Budget – program funding*
8. Introduction of periodical information collection system for calculation and classification of environmental expenditures	Efficiency increase in solving the environmental problems  Target indicator – Functioning system or approved classification	RA Ministry of Nature Protection, RA Ministry of Finance,	2009-2010	RA State Budget: maintenance cost
9. Development of proposals on economic assessment of bio-resources	Improvement in the assessment of damage caused by the pollution of natural resources and environment Target indicator – <ul style="list-style-type: none"> <li>• Adopted legal acts (methodologies)</li> </ul>	RA Ministry of Nature Protection, RA Ministry of Finance, RA Ministry of Agriculture	2010-2012	International funding**, RA State Budget – program funding*

10. Development and introduction of economic stimulation mechanisms with the aim to reduce the quantities of generated waste and to involve those in the economic circulation	Maximum use of the waste and reduction in waste generation  Target indicator – <ul style="list-style-type: none"> <li>• Reduction in the industrial waste generation rate</li> <li>• Reduction trends of the industrial waste growth rate</li> </ul>	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, international funding**
<i>Water resources management</i>				
1. Inventory of actual water use	Inclusion of more accurate water use data, 100 percent registration of water users in the Republic into the state water cadastre	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2012	RA State Budget – program funding* international funding**
2. Setting up a system separated by republican and regional divisions which will assist the decision making in the water resources management field	Establish and introduce modern mechanisms in the management field, maximum use of ecologically permissible potential of water resources and decrease of risks in decision-making to 80 percent	RA Ministry of Nature Protection, RA Ministry of Healthcare	2008-2012	RA State Budget – program funding* international funding**
3. Drawing up water and water-industry balances in five watersheds, comparison of water supply and water demand in terms of time-periods and territory	Development of water use scenarios for 5 watersheds management areas by basic river basins (14 water resources)	RA Ministry of Nature Protection, RA Ministry of Healthcare, RA Ministry of Territorial Administration, State Committee on Water Industry	2010-2012	RA State Budget – program funding* international funding**
4. Adoption of a regulation on transferring the licensing functions of local importance water use to Regional Watershed Management Units (RWMU)	Adoption of a regulation on ensuring the decentralization of water resources management and its localization for 5 RWMUs. Target indicator – elaborated and adopted regulation	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2010	RA State Budget: maintenance cost
5. RWMU capacity building for issuing licenses for local importance water use and development of watershed management plans	Development of watershed management plans by 5 watershed management territories	RA Ministry of Nature Protection, RA Ministry of Healthcare	2011-2012	RA State Budget – program funding* international funding**
6. Review of the action plan for the restoration of Lake Sevan eco-systems	Update of the measures addressed to the restoration, conservation and reproduction of	RA Ministry of Nature Protection,	2010-2012	RA State Budget – program funding*

	Lake Sevan ecosystems	RA Ministry of Territorial Administration		international funding**
7. Definition of minimum ecological flows for rivers of Armenia	Provision of a prerequisite for water resource ecosystem conservation, clarification of usable water resource by 14 basic water resources Target indicator – developed respective legal acts	RA Ministry of Nature Protection, RA Ministry of Healthcare	2010-2012	RA State Budget – program funding* international funding**
8. Analysis of current conditions of flood control structures, renovation and construction of new ones	Maximum prevention of flooding and reduction in undesirable consequences by 50-60 percent	RA Ministry of Agriculture, RA Ministry of Healthcare, RA Ministry of Territorial Administration, State Committee on Water Industry	2009-2012	RA State Budget – program funding* international funding**
9. Elaboration of an action plan addressed to the prevention of harmful impact of water resources	Endorsement of a clear program on prevention actions against the harmful impact of water resources in some 50-60 percent	RA Ministry of Agriculture, RA Ministry of Nature Protection, RA Ministry of Healthcare, RA Ministry of Territorial Administration, State Committee on Water Industry	2009-2012	RA State Budget – program funding* international funding**
10. Development and implementation of strategy for improving the water-supply and water sanitation services in communities not serviced by water-supply organizations	Improvement in water supply in around 600 communities not serviced by the water-supply organizations	RA Ministry of Territorial Administration, State Committee on Water Industry, RA Ministry of Healthcare	2009-2012	RA State Budget – program funding* international funding**
11. Development and implementation of priority measures addressed to the improvement of services rendered by water supply (irrigation, potable, hydro-energy) and water disposal organizations	Increasing reduction in the losses, gradual purification of generated sewerages in the proportions expressed in the business plans of the companies	RA Ministry of Territorial Administration, State Committee on Water Industry, RA Ministry of Agriculture, RA Ministry of Energy	2009-2012	RA State Budget: maintenance cost, program funding* , international funding**

		and Natural Resources, RA Ministry of Healthcare, RA Ministry of Nature Protection		
12. Assessment of water resource storages of Ararat valley	80-90 percent understanding of quantitative and qualitative components of Ararat valley underwater resources, as well as establishing strategy for their conservation and use	RA Ministry of Nature Protection, RA Ministry of Healthcare	2010-2012	RA State Budget – program funding* , international funding**

<i>Earth's entrails management unit</i>				
1. Drawing up and implementation of a program on development of other legal acts regulating the area of the new RA draft Code "On Entrails"	One legal act for regulating the requirements of the RA Code "On Entrails" and "Providing (concession) the entrails for research and mining with the purpose of exploiting ore mineral resources " with the aim to exclude any contradictions or duplications between them and to legally regulate other forms of entrails' use, as well as provision of enforcement of the new RA Code "On Entrails" and integrated legal acts for the sector and creation of necessary mechanisms, including preparation of a guide-book and criteria for the assessment of harmful impact on the environment in the result of entrails use, introducing respective changes aiming to improve the RA Law "On Environmental and Nature Resources Use" and by-laws regulating the mentioned area	RA Ministry of Energy and Natural Resources, RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, program funding* , international funding**
2. Development of a programme package for capacity building of entrails sector management system	Stipulation of improvement measures for the entrails sector management system (for three years time-period) which is addressed to the optimization of the system management as well as equipping that system with technical and methodological means	RA Ministry of Energy and Natural Resources, RA Ministry of Nature Protection	2008-2009	RA State Budget: maintenance cost, program funding* , international funding**

3. Elaboration of action plan and strategy for reproduction of the ore mineral basis	Stipulation of principles and measures, and the reproduction direction for ore mineral basis Target indicator – developed strategy and action plan	RA Ministry of Energy and Natural Resources, RA Ministry of Nature Protection	2009-2010	RA State Budget: maintenance cost, program funding* , international funding**
4. Elaboration of environmental safety complex program aimed at elimination of adverse environmental impacts resulting from the use of entrails	Stipulation of measures addresses at the elimination of adverse environmental impact resulting from the use of entrails for the coming 5-10 years	RA Ministry of Energy and Natural Resources, RA Ministry of Territorial Administration, RA Ministry of Nature Protection, RA Ministry of Emergency Situations, RA State Committee on Real Estate Cadastre	2009-2010	RA State Budget: maintenance cost, program funding* , international funding**

### Atmosphere protection and climate change

1. Prepare a cadastre on emissions of harmful substances, which is regulated by the protocols of UN ECE "Convention on Long-Range Trans-boundary Air Pollution", namely the protocol "On Heavy Metals", "On Persistent Organic Pollutants" and "On Combating Acidification, Eutrophication and Ground-level	Improvement of emissions registration process (in particular approximation to the European standards), creation of grounds for ratification of protocols Target indicator – existence of emissions cadastre and a procedure of regular cadastre-running	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding*
2. Organization of activities targeting the introduction of development and transfer of best technologies favoring the reduction in emissions of hazardous substances, especially sulfur compounds	Development of average emission criteria for main industrial sectors on the basis of "best accessible technologies" and creation of favorable conditions for introducing environmentally preferable technologies through application of principles for public-private partnership. Target indicator – regulation of economic encouragement	RA Ministry of Nature Protection, RA Ministry of Economy	2009-2012	RA State Budget - program funding*



3. Development and introduction of electronic governance mechanism, respective web-site and computer software aiming to favor the simplification of atmosphere protection management, implementation of emissions reduction process by applying regional principle and introduction of new technologies	Decrease in administration and corruption risks. Target indicator – 50% risk decrease (on the basis of survey results)	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding*
4. Elaboration of methodology for registering hazardous emissions from motor transport	Improvement of emission registration process, which is important in terms of justifying delivery of various measures, as well as adequate fulfillment of international commitments Target indicator – approved methodology for hazardous emissions registration of motor transport.	RA Ministry of Nature Protection, RA Ministry of Transport and Communication	2009-2010	RA State Budget - program funding*
5. Elaboration of measures favoring to the development of road traffic and safety in Yerevan city	Elaboration of measures supporting the development and safety of pedestrian and bicycle traffic. Introduce automated road traffic regulation systems.	Yerevan Municipality,  RA Police	2009-2012	RA State Budget - program funding*
6. Encouragement of neutralizer use	Study and submit a respective draft decision to the RA Government on installing neutralizers on the passenger mini buses and small passenger taxis as well as all luggage automobiles used in Yerevan	RA Ministry of Transport and Communication, RA Ministry of Nature Protection, Yerevan Municipality	2009-2010	RA State Budget - program funding*
7. Development of respective legal framework and instruments for the implementation of Kyoto Convention, Clean Development Mechanism projects	National capacity building for implementation of Kyoto Convention.	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding*
8. Review the RA Government Decisions N1840-N "On Approving Set of Measures for Fulfilling the Commitments of the Republic of	Ensure implementation of international commitments by Armenia Target indicator – development and adoption of draft decision.	RA Ministry of Nature Protection, Other agencies	2008-2009	RA State Budget: maintenance cost

Armenia Assumed under a Number of International Environmental Conventions ", dated December 2, 2004 and the RA Government Resolution N1840-N, December 2, 2004" and "On Establishing the Implementation Measures List based on the crosscutting issues stemming from the three Conventions "On Bio-diversity," "On Climate Change" and ""On Combating Desertification", N880-N, and development of new inter-agency program stemming from the international commitments				
9. Development of public-private partnership principles	Improvement of administration, introduction of "best accessible technologies" principle, broader application of Kyoto Convention's Clean Development Mechanism, introduction of environmental rating and labeling practice etc. Target indicator- developed guide-book, methodologies, encouragement mechanism	RA Ministry of Nature Protection,  RA Ministry of Economy	2009-2012	RA State Budget - program funding*
10. Development of amendments of the RA Law "On the Protection of Atmospheric Air"	Improvement of the legislation on the atmospheric air protection and consistency with the requirements of international agreements and program Target indicator- developed new law	RA Ministry of Nature Protection	2009-2010	RA State Budget, program funding* , international funding**

*ENVIRONMENTAL MONITORING*

1. Organization and implementation of monitoring of hard particles PM2.5, PM10 in the atmospheric air for the purpose of impact assessment on the human health	Environmental impact assessment Target indicator - implementation of monitoring of hard particles PM2.5, PM10 in the atmospheric air	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2012	RA State Budget, program funding* , international funding**
2. Preparation of program package for the development of state environmental monitoring system and capacity building and project implementation	Stipulation of measures addressed to the development of state environmental monitoring system and capacity building	RA Ministry of Nature Protection, stakeholder ministries and agencies	2008 -2010	RA State Budget: maintenance cost, international funding** , program funding* and international funding**

3. Implementation of waste monitoring	Forming and enhancement of waste management system	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding* and international funding**
4. Improvement of land monitoring system	Strengthening of fight against desertification Target indicator – determined criteria for monitoring	RA Ministry of Nature Protection and stakeholder bodies	2009-2010	RA State Budget – program funding*

***Management of biodiversity and bioresources, including the forest sector***

1. Inventory of more valuable areas of Armenia from the biodiversity perspective, determination of biodiversity protection mechanisms for those areas	Ensure protection of more valuable areas from the biodiversity perspective Target indicator- the surface /ha/ of valuable areas from the biodiversity perspective, its percentage vs. the overall area of the republic	RA Ministry of Nature Protection, RA territorial administration bodies	2009-2012	RA State Budget - program funding* and international funding**
2. Implementation of state accounting of biodiversity and creation of state cadastre according to the marzes of Armenia, including preparation of the annotated lists of flora and fauna species and basic ecosystems	Provision of biodiversity information accessibility, improvement of bio-resource management Target indicator- number of the species accounted and registered in the state cadastre, annotated lists	RA Ministry of Nature Protection, RA Ministry of Agriculture, RA territorial administration bodies	2009-2012	RA State Budget - program funding* and international funding**
3. Establishment of biodiversity monitoring system and database	Creation of pre-requisites for protection of ecosystems and flora-fauna species and the sustainable use thereof Target indicator- Number of flora and fauna species, over which monitoring is being implemented, the number of records in the database	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding* and international funding**
4. Analysis of the RA SPAs, elaboration of proposals on the system improvement from the prospective of biodiversity and valuable ecosystems representation, creation of new	Improvement in preservation of rare endangered flora and fauna species, creating pre-requisites for joining the European Ecological Network Target indicator- SPA surface by categories,	RA Ministry of Nature Protection	2009-2010	RA State Budget - program funding* and international funding**

protected areas, including protected biosphere areas and ecological corridors	their percentage vs. the overall territory of the country, quantity of flora and fauna species in the SPAs (by one square meters of the area)			
5. Inventory and situation assessment for rare and endangered species of flora and fauna, amendment and publication of the Red Book of Armenia	Provision of preservation and reproduction of rare and endangered species and populations through the implementation of scientifically substantiated special activities Target indicator- the number of rare and endangered flora and fauna species (per one square meters of the area), Constitution of plants and animals species registered in the Red Book	RA Ministry of Nature Protection	2009	RA State Budget - program funding* and international funding**
6. Identification of the most used and useful species of plants and species of hunted animals in the regions of the Republic, assessment of the resources of the most significant flora and fauna species, development of norms/quotas for collection/hunting of the most important plants and animals species	Creation of sustainable grounds for setting norms for biodiversity use Target indicator- Number of flora and fauna species of economic significance, the volume of their resources and allowed usage quotas	RA Ministry of Nature Protection	2009-2011	RA State Budget - program funding* and international funding**
7. Examination and analysis of international experience in the assessment of impact of various branches and natural factors of the economy on the natural ecosystems, localization and piloting of impact assessment methodologies, development of methodological guide-lines applicable for Armenia	Identification of the impact of human-induced and natural factors, especially those of the climate change on the biodiversity of Armenia. Target indicator – localized methodologies, methodological guide-lines for impact assessment on the natural ecosystems	RA Ministry of Nature Protection	2009-2012	RA State Budget - program funding* and international funding**
8. Development and introduction of mechanisms for fair distribution of the benefits obtained from the use of genetic resources and their availability	Creation of prerequisites for the preservation of genetic diversity of Armenia and sustainable use of the genetic resources Target indicator- elaborated and introduces pilot projects on the distribution of the benefits obtained from the use of genetic resources and their availability	RA Ministry of Nature Protection, RA Ministry of Agriculture	2009-2012	RA State Budget - program funding* and international funding**

9.Improvement of industrial fishing mechanisms and restoration of valuable populations of fish species	Ensuring the reproduction of endemic and of industrial significance fish species Target indicator – formed sustainable system for restoration of fish species	RA Ministry of Nature Protection	2009-2010	RA State Budget: maintenance cost and program funding* , international funding**
10. Clarification of 2009-2012 implementation time-scales designed for the measures stemming from and included in the RA National Forest Programme	Developed clear time-scale	RA Ministry of Agriculture, Yerevan Municipality	2009	RA State Budget: maintenance cost
11. To implement the development and introduction of pilot project on the fight against pests and fire prevention in the most vulnerable forests as a result of climate change	Implementation of pilot project	RA Ministry of Nature Protection, RA Ministry of Agriculture	2008-2012	RA State Budget: maintenance cost and program funding* , international funding**
<i>Management of chemical substances and wastes</i>				
1.Impact assessment of risks for the hazardous chemical substances on human health and environment	Prevention of harmful impact of the chemical substances on human health and environment	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2012	RA State Budget-program funding* , international funding**
2. Development of risk assessment and reduction methodological approaches on for the impact of hazardous chemical substances	Prevention of harmful impact of the chemical substances on human health and environment	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2012	RA State Budget-program funding* , international funding**
3.Development of national policy on the reduction of impact of hazardous chemical substances on human health and environment	Prevention of harmful impact of the chemical substances on human health and environment	RA Ministry of Nature Protection, RA Ministry of Healthcare	2008-2012	RA State Budget-program funding* , international funding**
4. Elaboration of the draft RA Law “On Chemical Substances”	Prevention of harmful impact of the chemical substances on human health and environment	RA Ministry of Nature Protection, RA Ministry of Healthcare, RA Ministry of Agriculture, RA Ministry of Economy	2009-2012	RA State Budget-program funding* , international funding**
5. Implementation of action plan for the “Strategic Approaches for International Chemicals Management” (SAICM)	Ecologically safe management of chemical substances and waste	RA Ministry of Nature Protection, RA Ministry of Healthcare,	2009-2012	RA State Budget-program funding* , international funding**

		RA Ministry of Agriculture, RA Ministry of Emergency Situations, RA Ministry of Agriculture		
6. Review and update of the “National Profile on Chemical Substances and Waste Management	Ecologically safe management of chemical substances and waste	RA Ministry of Nature Protection	2009-2012	RA State Budget-program funding*, international funding**
7. Development of Concept of “Clean Production”	Ecologically safe management of chemical substances and waste	RA Ministry of Nature Protection	2008-2012	RA State Budget-program funding*, international funding**
8. Establishment of scientific-research laboratory for persistent organic pollutants (POP)	POP researches in the environmental objects and bio-substance	RA Ministry of Nature Protection	2008-2010	RA State Budget-program funding*, international funding**
9. Improvement of waste reporting, norm-setting and inventory system	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, international funding**
10. Strengthening of the control over waste importation, exportation and transit transportation, capacity enhancement for the Customs and environmental inspectorate officers	Prevention of illegal circulation of hazardous waste	RA Ministry of Nature Protection, RA State Customs Committee	2008-2012	International funding**
11. Categorization/passportisation of waste	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost
12. Creation and running of state waste cadastre	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost
13. Creation and running of registers for waste generation, processing and extracting objects and disposal locations	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost
14. Implementation of environmental monitoring over the waste disposal locations	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget-program funding*, international funding**
15. Establishment of the “Clean”/ Waste-less and Low-waste Technologies Center	Creation and strengthening of waste management system	RA Ministry of Nature Protection	2008-2012	RA State Budget-program funding*, international funding**



16. Development and introduction of separate waste collection system	Broadening of waste secondary use	RA territorial administration bodies	2008-2012	RA State Budget: maintenance cost, international funding**
17. Establishment of manufacturing capacities for the secondary use of waste and complex processing of its raw material resources	Broadening of waste secondary use	RA Ministry of Economy	2009-2012	RA State Budget-program funding*, international funding**
18. Public awareness and education on economized use of resources	Broadening of waste secondary use	RA Ministry of Nature Protection, RA territorial administration bodies	2008-2012	RA State Budget: maintenance cost, international funding**
19. Involvement of population in the waste sorting and separated collection process	Broadening of waste secondary use	RA Ministry of Nature Protection, RA territorial administration bodies	2008-2012	RA State Budget: maintenance cost, international funding**
20. Introduction of secondary use technologies for recycling of secondary raw materials (paper waste, polyethylene containers, etc) and organic wastes (bird dung, wastes of cattle-breeding complexes, wastes of wood-processing enterprises)	Broadening of waste secondary use	RA Ministry of Economy, RA Ministry of Agriculture	2009-201	RA State Budget: maintenance cost, international funding**
21. Elaboration of ecologically safe usage rules for the nonferrous and ferrous metals scrap and waste	Broadening of waste secondary use, prevention of potential harmful impact of the waste on human health and environment	RA Ministry of Nature Protection	2009-2012	RA State Budget-program funding*, international funding**
22. Establishment and management of database on waste liquidation and disposal technologies	Ecologically safe disposal of waste	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, international funding**
23. Development of manuals on safe disposal of hazardous wastes (chlorine-organic, mercury, lead containing, etc)	Ecologically safe disposal of waste	RA Ministry of Nature Protection	2008-2012	RA State Budget: maintenance cost, international funding**
24. Development of methodological instructions, rules and regulations for the liquidation of medical wastes, expired and unusable medicines,	Ecologically safe disposal of waste	RA Ministry of Nature Protection, RA Ministry of Healthcare	2009-2012	RA State Budget-program funding*, international funding**

pesticides, oils and equipment containing polychlorinated biphenyl (PCB)				
25. Definition of safe tailing dams management principles	Raise in tailing dams' safety, reduction in risks for human health and environment	RA Ministry of Nature Protection, RA Ministry of Emergency Situations	2009-2012	RA State Budget-program funding*, international funding**
26. Establishment of organized waste disposal areas and specialized landfills for hazardous wastes	Ecologically safe disposal of waste	RA Ministry of Urban Development, RA territorial administration bodies	2010-2012	RA State Budget-program funding*, international funding**, other funding sources
27. Purification and remediation of polluted areas and landfills	Ecologically safe disposal of waste	RA territorial administration bodies	2010-2012	RA State Budget-program funding*, international funding**, other funding sources

<i>Sustainable use/management of lands</i>				
1. Preparation of respective program addressed to the restoration of degraded lands	Land restoration, reduction and prevention of land degradation	RA Ministry of Agriculture, RA Ministry of Nature Protection, RA Ministry of Urban Development, RA territorial administration bodies	2009-2012	RA State Budget-program funding*, international funding**
2. Development of respective program against land-slides	Minimization and prevention of land-sliding	RA Ministry of Urban Development, RA Ministry of Emergency Situations, RA Ministry of Nature Protection RA territorial administration bodies	2009-2012	RA State Budget-program funding*, international funding**

3. Development and introduction of program related to the distribution of lands located between adjacent communities outside their administrative boundaries:	Prevention of grazing lands degradation and conservation of bio-diversity	RA Ministry of Agriculture, RA Ministry of Nature Protection, RA territorial administration bodies RA State Committee on Real Estate Cadastre	2009-2015	RA State Budget-program funding*
4. Development and approval of lands (land covers) protection concept and enabling set of measures thereof	Creation of grounds for restoration and protection of land covers as natural ecosystem component Target indicator- developed concept and respective program	RA Ministry of Nature Protection, RA Ministry of Urban Development	2009-2012	RA State Budget-program funding*, international funding**
5. Elaboration of criteria and respective monitoring methodologies for the protection, restoration, sustainable use and assessment of the land cover condition	Restoration and protection of land covers as natural ecosystem component Target indicator- developed methodology for land monitoring	RA Ministry of Nature Protection	2009-2012	RA State Budget-program funding*
6. For the purpose of expertise and examination of land use and zoning charts, master plans for residential areas, and other plans, development of a proposal on their clarification based on the analysis of land use environmental criteria and indicators, and on adoption of relevant norms	Target indicator- formed proposal of criteria and indicators	RA Ministry of Agriculture, RA Ministry of Urban Development, RA Ministry of Emergency Situations, RA Ministry of Nature Protection, RA territorial administration bodies	2009-2012	RA State Budget-program funding*, international funding**
<i>Environment and health</i>				
1.Implementation of measures envisaged by the list of 2008-2012 measures ensuring implementation of Republic of Armenia Government Program, and not included in this plan of action	Target indicator – implementation of respective measures	RA Ministry of Healthcare, RA Ministry of Nature Protection	2009-2012	RA State Budget-program funding*, international funding**

<i>Nature protection: energy, industry, agriculture and municipal sector</i>				
1. Assistance in the processing and utilization of agricultural waste. Objective – energy and fertilizer production	Target indicator a) implementation of 2-3 pilot project b) development of a plan	RA Ministry of Agriculture, RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
2. Assistance in the growth of the solar water-heaters usage volume Objective – increase of renewable energy proportions in the energy production	Target indicator – implementation of 2-3 pilot project	RA Ministry of Energy and Natural Resources, RA Ministry of Nature Protection	2009-2012	Private financial resources, international funding**
3. Assessment of potential forest sector vulnerability in view of the projections related to the natural gas price increase and development of short-term and long-term prevention program	Target indicator- developed respective program	RA Ministry of Nature Protection RA Ministry of Energy and Natural Resources, RA Ministry of Agriculture	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
4. Study of the energy sources' harmful impact on the natural environment based on the renewable resources. Elaborate and approve respective environmental restrictions under the specifies procedure	Target indicator- developed and approved restriction quotas	RA Ministry of Nature Protection RA Ministry of Energy and Natural Resources, RA Ministry of Agriculture	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
5. Study and assessment of technical and economic potential of environmentally optimal use of bio-mass (timber and bio-fuel)	Target indicator- elaborated encouragement mechanism based on the assessed potential	RA Ministry of Nature Protection, RA Ministry of Energy and Natural Resources, RA Ministry of Agriculture	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
6. Development of sustainable development criteria, including for the assessment of projects on Clean Development Mechanism	Target indicator- developed and approved sustainable development criteria (social, economic, environmental balanced)	RA Ministry of Nature Protection, RA Ministry of Energy and Natural Resources, RA Ministry of Agriculture, RA Ministry of Economy	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
7. Development of innovative pilot projects for irrigation systems	Target indicator- developed respective program, which is realistic	RA Ministry of Agriculture RA Ministry of Nature	2009-2012	RA State Budget- program funding*,

Examination of best local and international experience in the reduction and/or prevention of secondary salination of irrigated lands	and prospective and applicable in Armenia	Protection, RA territorial administration bodies		international funding**
<i>Public awareness and environmental education, information accessibility and education</i>				
1. Elaboration of a regulation and an awareness program on provision of demand-based information and its accessibility	Target indicator- developed regulation and program	RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, international funding**
2. Elaboration of a program aimed at efficiency raise in the environmental education system	Target indicator- agreed educational program	RA Ministry of Education and Science, RA Ministry of Nature Protection, RA Ministry of Economy, RA Ministry of Energy and Natural Resources RA Ministry of Agriculture	2009-2012	RA State Budget- program funding*, international funding**
3. Development and introduction of efficient resource training program in the environmental sector	Target indicator- Developed program	RA Ministry of Education and Science, RA Ministry of Labor and Social Issues, RA Ministry of Economy, RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, international funding**
4. Development of activities in Aarhus centers, provision of financial sustainability	Target indicator- 1.ensure the functioning of at least one center in every marz 2.Set up one center in each of these cities - Meghri, Artik, Martuni and Akhtala 2. Increase in the visitors (both center and web-site) in 100 percent	RA Ministry of Nature Protection, RA Ministry of Territorial Administration	2009-2012	RA State Budget- program funding*, international funding**

<i>International Cooperation in the Environmental Sphere</i>				
1. Development, amendment and implementation of action plans on fulfillment of commitments assumed under the ratified international environmental agreements	Efficiency increase of international cooperation in the environmental sector and fulfillment of international commitments	RA Ministry of Nature Protection, stakeholder ministries and agencies	2009-2012	RA State Budget: maintenance cost, international funding**
2. Dissemination of available information on the provisions and objectives of the international environmental agreements ratified by the RA	Efficiency increase of international cooperation in the environmental sector and fulfillment of international commitments	RA Ministry of Nature Protection, stakeholder ministries and agencies	2009-2010	International funding**, RA State Budget: maintenance cost,
3. Study the issue of expediency for Armenia to join UN ECE The Convention of the Protection and Use of Trans-boundary Watercourses and International Lakes.	Implementation of the environmental provisions of the RA – EU action plan within the framework of "European Neighborhood Policy", expansion within the scope of UN ECE	RA Ministry of Nature Protection, RA Ministry of Foreign Affairs	2009	RA State Budget- program funding*, international funding**
4. Negotiations with international organizations, including donor organizations and negotiations with donor countries on obtaining financial assistance to implement environmental projects	Efficiency increase of international cooperation in the environmental sector and fulfillment of international commitments	RA Ministry of Nature Protection, RA Ministry of Finance, RA Ministry of Economy	2009-2012	RA State Budget: maintenance cost
5. Implementation of environmental provisions of the Partnership and Cooperation agreement signed between the Republic of Armenia and the European communities and their member states	Expansion of cooperation with the European Union and developing partnerships with the European Union institutes	RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, international funding**
6. Ensuring the participation of the Republic of Armenia in the international events and meeting	Efficiency increase of international cooperation in the environmental sector and broadening of international cooperation on a respective financial basis	RA Ministry of Nature Protection, RA Ministry of Finance	2009-2012	RA State Budget: maintenance cost

<i>Scientific Research and Development</i>				
1. Provision of mechanisms for promoting the introduction of environmentally preferable innovative products based on scientific elaborations, and competitiveness of those products	Target indicator- package of elaborated legal acts ensuring the process	RA Ministry of Economy, RA Ministry of Nature Protection	2009-2012	RA State Budget: maintenance cost
2. Localization of the international experience in introducing "best accessible technologies"	Target indicator- developed mechanism for introducing "best accessible technologies"	RA Ministry of Economy, RA Ministry of Nature Protection	2009-2012	RA State Budget: maintenance cost, international funding**
3. More active participation of Armenian scientists and scientific institutions in the international environmental processes	Target indicator- participation rate increase 50 %	RA Ministry of Nature Protection, RA Ministry of Education and Science	2009-2012	RA State Budget- program funding*, international funding**
4. Elaboration of a regulation ensuring availability and accessibility of the outcomes of environmental scientific elaborations	Target indicator- elaborated respective regulation	RA Ministry of Education and Science, RA National Academy of Sciences, RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, international funding**
5. Improvement of system for protecting copyrights	Target indicator- improved system	RA Ministry of Economy RA Ministry of Education and Science	2009-2012	RA State Budget: maintenance cost
6. Elaboration of mechanism for the development of environmental sciences as well as environmental component development in various scientific fields, which is based on the realistic and objective demand	Target indicator- agreed mechanism and action plan	RA Ministry of Education and Science, RA Ministry of Nature Protection RA Ministry of Economy RA Ministry of Energy and Natural Resources	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
7. Development of a concept and financial mechanism for introducing environmentally preferable innovative technologies	Target indicator- developed concept and financial mechanism	RA Ministry of Economy, RA Ministry of Education and Science, RA Ministry of Nature Protection	2009-2012	RA State Budget- program funding*, private financial resources, international funding**



8. Development and implementation of a project targeting the determination of limitations (norm-fixing) of nature use and environmental impact based on scientific researches	Target indicator- Developed project and priority (urgent) criteria	RA Ministry of Nature Protection RA Ministry of Education and Science RA Ministry of Economy RA Ministry of Labor and Social Issues	2009-2012	RA State Budget- program funding*, private financial resources, international funding**
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**\*/ The issue of funding opportunities for projects requiring program funding will be additionally discussed during the annual budgeting processes and within the framework of development and endorsement of the RA MTE program 2010-2012 and beyond.**

**\*\*/ The issue of funding the projects to be implemented through the assistance of international organizations will be additionally discussed within the scope of those projects.**