

**NATIONAL REPORT  
ON DISASTER REDUCTION  
IN THE REPUBLIC OF ARMENIA**

**FOR WORLD CONFERENCE ON  
DISASTER REDUCTION  
(18-22 January 2005, Kobe, Japan).**

**Yerevan 2004**

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**INTRODUCTION.**

The Republic of Armenia is situated in the Southern Caucasus between the watersheds of middle streams of the rivers Araks and Kura. It occupies the northern-eastern part of a vast highland area known as the Armenian Upland, which is located within the Alpine-Himalayan mountain system. The ancient geographers called the Armenian Upland the "Mountain Island" or the "Roof of Asia Minor".

Armenia is a typical mountain country with a well-defined mountain relief and ramified river drainage. The average territorial elevation is 1.800 meters above sea level, the maximum height is 4.095 meters (Mount Aragats) and the minimum is 380 meters. The river drainage of Armenia belongs to two large aquatic arteries of the Southern Caucasus –the basin of the river Kura in the north and to the river Araks in the south which in turn run into the Caspian Sea.

Armenia is deemed one of the most disaster prone countries in the world. It is prone to all types of disasters except the sea ones. Severe earthquakes, frequently occurring landslides, hail storms, droughts, strong winds, floods threaten the safety of people and cause considerable damage impeding the sustainable development of the country.

The geographical position of Armenia in many respects predetermines its political, economical and ecological peculiarities. Evaluation of the emergency management system in Armenia requires viewing it within the context of a social-economical situation, established in the country. The Republic of Armenia as a developing, landlocked country, as a "Mountain Island" which might be most vulnerable if major disasters strike, as a "small island states" and there by responding to the principle of the "International Strategy on Disaster Reduction " announced by the United Nations Organization is subject to urgent aid.

Taking into consideration the stated above and viewing the disaster (risk) reduction as a priority policy, the Government of the Republic of Armenia has assigned political commitment in this area through creating and up-dating an adequate national legislative base and by signing bi- and multilateral interstate Agreements, joining corresponding international Conventions; has set up the structures on coordination and particular action, allocation of necessary resources and encourage of participation of civil communities.

Although, in many cases the prevention and response of emergencies of natural and technological types, primarily, the cross border situations, are not possible to carry out using only the resources of a single country. One needs to consolidate efforts and means of the countries sharing borders, in line with creating the relevant regional structures and bi- and multilateral programming targeted at undertaking of the particular actions to combat the disasters.

The importance of regional co-operation will especially grow for the regions like South-Caucasus where in a comparatively small territory, having a complex relief, there exists the likelihood of arisen of almost all types of natural, man-made and other disasters, including the likelihood of major earthquakes and floods, accidents at hazardous chemical and oil-containing plants, oil and gas pipes, burst of dams built on mountain rivers running along the territories of several neighboring states, off design- basis accidents in nuclear power plants. In many of the mentioned cases there can arise the emergency situations bearing a transborder nature.

Taking into consideration that principals for and directions in joint counteractions and disaster reduction should compile an important part of the obligations fixed in the "Plan for action adopted at the World Summit on sustainable development" (held in Johannesburg on 26 August-4 September 2002), as well as having in mind the economical, social and political processes taking place in the Southern Caucasian region at present, the position occupied by Armenia in the stated direction was presented at the Forum by the Prime Minister of the Republic of Armenia.

"The Government of the Republic of Armenia, recognizing that the integration of mutual efforts aimed at minimizing natural hazards and associated with them man-made and ecological disasters is one of the most effective mechanisms of ensuring a sustainable development, will attach special importance to the joint preparation and implementation of regional Programs on reduction of hazards and disasters bearing a cross border nature through highlighting their both: a significant applied meaning and a not less important political sounding in the direction of creating and strengthening of an atmosphere of trust between the nations."

## **COMPONENT 1: POLITICAL COMMITMENT AND INSTITUTIONAL ASPECTS.**

*Political commitment, strong institution and good governance are expected to elevate disaster risk reduction as a policy priority, allocate the necessary resources for it, enforce its implementation and assign accountability for failures as well as facilitate participation from civil society to private sector.*

*Due to its multi-disciplinary and multi-sectotral nature, disaster reduction falls into the agenda of many diverse institutions, which for effective implementation requires clear assignment of roles and assumption of responsibilities as well as coordination of activities.*

**1.1. Are there national policy, strategy and legislation addressing disaster reduction? If "Yes", please describe to what extent current national efforts and main priority areas of the policy and mechanisms to enforce the implementation of the policy and legislation are applied (and/or attach any relevant documentation).**

**YES.**

The well-defined principals for pursuing the national policy and strategic directions in the disaster reduction area have been elaborated in the Republic of Armenia. With regard to the national and regional aspects (concerning the Southern Caucasian region and neighboring countries) they have been briefly set out in the "Introduction" of the present paper.

- Viewing the disaster (risk) reduction as a priority policy, the Government of the Republic of Armenia has assigned political commitment in this area through creating and up-dating

an adequate national legislative base and by signing bi- and multilateral interstate Agreements, joining corresponding international Conventions; has set up the structures on coordination and particular actions, allocation of necessary resources and encourage of participation of civil communities.

- **The Government of the Republic of Armenia, recognizing that the integration of mutual efforts aimed at minimizing natural hazards and associated with them man-made and ecological disasters is one of the most effective mechanisms of ensuring sustainable development, will attach special importance to the joint preparation and implementation of regional programs on reduction of hazards and disasters bearing a cross border nature through highlighting their both: a significant applied meaning and a not less important political sounding in the direction of creating and strengthening of an atmosphere of trust between the nations.**

The policy and the strategy in the above-mentioned area have been enforced in a number of basic Laws and other normative acts as well as in the signed international Agreements and Treaties.

**The main directions of pursuing the national policy in the area of disaster reduction are: through close cooperation with international organizations, foreign states, including the states of the Southern Caucasian region and neighboring countries, involvement of national and local governance bodies, NGOs and the population in developing and implementing initiatives in the above area to minimize length possible the emergency risks.**

Following the World Summit on Environment and Development (Rio-de-Janeiro, 1992) the Republic of Armenia has signed and ratified about two tens of Conventions and associated Protocols.

The elected National Assembly of the Republic of Armenia has passed more than two tens of Laws in the area of disaster reduction, including the following basic Laws on establishing and regulating emergency management in the country:

- **“Law on the Protection of the Population in Emergency Situations”**, adopted by the elected National Assembly on 2 December 1998.
- **“Law on Civil Defense of the Republic of Armenia”**, adopted by the elected National Assembly on 5 March 2002.
- **“Law on Seismic Protection of the Republic of Armenia”**, adopted by the elected National Assembly on 12 June 2002.
- **“Law on Fire Security of the Republic of Armenia”**, adopted by the elected National Assembly on 18 April 2001.
- **“Law on Safe Utilization of Atomic Energy for Peaceful Purposes”**, adopted by the elected National Assembly on 1 February 1999.
- **“Law on Environmental Education and Public Awareness”**, adopted by the elected National Assembly on 20 November 2001.
- **“Law on Rescue Forces and Status of a Rescuer”**, adopted by the elected National Assembly on 19 June 2004.

- **“Principals of Environmental Legislation in the Republic of Armenia”**, adopted by the elected National Assembly on 29 July 1991.

Along side with enumerated and other Laws of the Republic of Armenia the Government of the Republic of Armenia has adopted about 40 Regulations, from those directed at developing and introducing the targeted complex Programs on risk reduction one can highlight Regulation N 429 of 10 June 1999 **“About the complex Program on seismic risk reduction in the territory of the Republic of Armenia”** and Regulation N 796 of 31 December 1999 **“ About the Program for 2000-2004 on the reduction of emergency situations and the liquidation of consequences thereof and the protection of the population”**.

Unfortunately since the country is clustered in capital, the problems of implementing the mentioned and other Programs still remain.

In this way, the process of substantial growth of the own legislative base due to the development of new normative-legal Acts in the area of disaster reduction has received a new impulse.

Although, a certain instability of the national legislation in the mentioned area caused by the acuteness of ongoing social-economical and political changes as well as by an increase in the number of bi-and multilateral Agreements with countries of the Southern Caucasian region, CIS countries (the Commonwealth of Independent States), countries of Eastern and Western Europe, stipulates a vital need for further developing and adjusting national legislations in disaster risk reduction area, harmonizing and bringing them into line with generally recognized principals and norms of the international Law.

The fulfillment of the set task in a most expedient manner will require the combined efforts of the states that have the interest in the mission, primarily, the states of the European Union possessing a developed system of the national legislation within the scope of the general Directives of the European Union (SEVESO Directives).

At present the Republic of Armenia is being involved in realization of the National Program on Partnership and Cooperation Agreement between the Republic of Armenia and the European Union and state-members of the Union. The program among other important directions incorporates also the problems of harmonization of legislation in the disaster risk reduction area.

**1.2. Is there a national body for multi-sectoral coordination and collaboration in disaster risk reduction, which includes ministries in charge of water resource management agriculture/land use and planning, health, environment, education, development, planning and financing? If “Yes”, please give detailed information (name, structure and functions). Attach any relevant documentation or indicate source of information.**

**YES.**

In the Republic of Armenia the structure on multi sectoral coordination and cooperation in the area of disaster reduction presented by the systems of the protection of the population in emergencies and civil defense has been created. These systems have been set up under the “Law on the protection of the population in emergencies” (Article 3) and the “Law on Civil Defense” (Article 3), where it is noticed that they incorporate the national and local governance bodies and establishments (irrespective of a organization-legal form they take). The above- mentioned Laws establish authorities of the bodies covered by these systems in the disaster reduction area.

In compliance with the Laws of the Republic of Armenia the governance of the mentioned structure is incumbent on the Government of the Republic of Armenia, and the coordination and control of sectoral activities of the system is a duty of the **Emergency Management Administration under the Government of the Republic of Armenia** as an empowered body.

According to Regulation N 36 of 23 January 2003 of the Government of the Republic of Armenia “About recognition of the Emergency Management Administration under the Government of the Republic of Armenia as an authorized body” as well as Regulation N 1140-H of 1 August 2002 “About Empowering the Emergency Management Administration under the Government of the RA” the **Emergency Management Administration has been recognized as an authorized body** under Article 13 of the “Law on The protection of the population in emergencies”, Article 11 of the “Law on Civil Defense”, Article 8 of the “Law on Seismic Protection” and the “Law on fire security”.

The National Primary Program of “The protection of the population in the emergencies for 2000-2004” was developed by the Emergency Management Administration (EMA) and adopted by the Government of the Republic of Armenia on 31 December 1999.

The Program defines the strategic activities aimed at the protection of the population, emergency mitigation and response, which have to be accomplished by the Emergency Management Administration and other state structures responsible for the fields of industry, health, environmental protection, agriculture, power engineering, communication, transport, urban engineering, as well as the National Academy of Sciences and Yerevan Mayoralty.

The Government of the Republic of Armenia (RA) has adopted a number of decisions, which regulate the activities of a national body on the multisectoral coordination in a disaster reduction area. Included here are:

- The Regulation of the Government of the RA N 794 of 31 December 1999 “**About Programs of emergency mitigation and response and the protection of the population for 2000-2004**”.

This Regulation covers the concrete Programs of disaster reduction in the fields concerning water resource management, agriculture, environment protection, health and setting up of the training bases. Provision N3 of the Regulation entrusts the Ministry of finances on the issues related to the Program budgetary financing.

- The Regulation of the Government of the RA N 134 of 30 January 2003 “**About training of the national and local governance bodies and setting a priority order for training of the population of the Republic of Armenia in the emergency situations and Civil Defense areas**”.

This Regulation sets a priority order for organizing and carrying out the training of all segments of the population of the Republic of Armenia (top management staff, clerk management staff, specialists, schoolchildren, students, the population being not engaged into working process and etc.)

- 1.3. **Are there sectoral plans or initiatives that incorporate risk reduction concepts into each respective development area (such as water resource management, poverty alleviation, adaptation to climate changes, education, and development planning? If “Yes”, please indicate some examples and challenges/limitations encountered. If “No”, does**

your Government have any plans for integrating disaster risk reduction into development sectors? If "No", please also specify the major difficulties.

**YES.**

**1.3.1.** First of all, it is necessary to point out that, apart from the basic universal Laws enumerated in Section 1.1, **there was adopted in the Republic of Armenia a number of sectoral Laws and Resolutions in disaster reduction area**, particularly:

- **"Law on protection of atmospheric air"**  
"Law on Hydro-meteorological Activities", adopted by the elected National Assembly of the RA on 7 February 2001.
- **"Law on Draught consequences"**, adopted by the elected National Assembly of the RA on 20 March 2001.
- **"Law on Annual and Complex Program for Lake Sevan ecosystem Restoration, Conservation, Reproduction and Use"**, adopted by the elected National Assembly of the RA on 12 December 2001.
- Resolution of the Government of the RA on including **"Civil Protection and Emergency Management Principals"** subject in the Education system of the Republic of Armenia, adopted by the President of the Republic of Armenia on 27 September 1996.

**1.3.2.** Below are cited some examples of sectoral plans and initiatives covering the disaster reduction Concept for each development area.

In the territory of Armenia in 1936-19991 there were built 71 reservoirs of 0,1- 525 million m<sup>3</sup> capacity and 12 reservoirs of 0,02-0,1 million m<sup>3</sup> capacity for diverse purposes: irrigation, power engineering and water supply. During an operational period, a part of hydro-technical constructions has practically become useless and cannot respond to technical and safety requirements.

To increase the safe operation of reservoirs and carrying capacity of water discharge constructions the **Committee of Water Economy** of the Republic of Armenia through the loan of the World Bank in 1991-2003 has developed and implemented the following Programs:

- "Reconstruction of irrigation systems, 7 reservoirs included"
- "Restoration and Reconstruction of 23 reservoirs"
- "Technical Study and Restoration of 60 reservoir dams"

At present there have been developed working Projects and is being carrying out work on reconstruction of 44 reservoirs (2/3 of which have already been completed).

To be able to prepare the project-estimate documentation and fulfill the work on restoration and reconstruction of remain 39 reservoirs the Committee of Water Economy has to resolve the issues related to further financing of the Project.

At the same time the Emergency Management Administration of the RA has set a control of safety of 52 hydro-constructions (reservoirs) and tailing ponds.

The Emergency Management Administration basing on Resolution N 702 of 11 November 1998 of the Government of the RA has developed the methodic, according to which hydro



technical constructions (reservoirs) and tail ponds have to fill in and possess the safety certificates. The safety certificates should include: site of installation, hydrological, hydro-geological and engineering-geological conditions of the territory, inundation areas in the case on hydro-dynamic accidents (number of people, cities and settlements), seismic characteristics of the construction, block-scheme analyses of probable scenarios and spreading of hydro-dynamic accidents, establishing of a plan for those territories that in the event of a major emergency situation may be exposed to inundation.

**1.3.3. The Emergency Management Administration has developed Plans for the protection of the population related to:**

- a) Civil Defense** (for the regions, communities, establishments and ministries)  
**b) Emergency situations:**

- Plan for the protection of the population against earthquakes (for each region separately, including the likelihood of neighboring regions to assist the affected region).
- Plan for the protection of the population against burst of reservoir dams (for more than 80 dams in the territory of Armenia), within the framework of the Programs financed by the World Bank in Armenia.
- Plan for the protection of the population against radiological contamination in the territory of a site of the Armenian Nuclear Power Plant (NPP).

**1.4. Is disaster risk reduction incorporated into your national Plan for the implementation of the UN Millennium Development Goals (MDGs), Poverty Reduction Strategy Paper (PRSP), National Adaptation Plans of Action, National Environmental Action Plans and WSSD (World Summit on Sustainable Development) Johannesburg Plan of Implementation? If “yes”, to any of these who are the main contacts for these initiatives?**

**YES.**

Disaster reduction is incorporated into the Plans of the Republic of Armenia for implementation, particularly, the “Resolutions ” of the below mentioned documents:

- “National Plans for environmental protection”
- “Johannesburg Plan of Implementation” adopted at the World Summit on Sustainable Development.

In this way the Ministry of Nature Protection has developed and the Government of the RA has approved (at financial support of the World Bank) the “**National Environmental Action Program (NEAP)**”. NEAP covers the policy pursued in the areas of the environmental protection, legislative issues, the environment and health, preservation of atmosphere, water and land resources, biological resources, including forests, protected areas, as well as management of household and industrial waste.

The Ministry of Nature Protection, supported by the UN Environmental Program (UNEP), Secretariat of UN Convention to combat Desertification (UN CCD) and UNDP Resident Mission in Armenia, has developed also a “**Plan for national action to combat desertification in Armenia**”. The proposed Program is a guiding document. The first part analyses the multilateral causes of desertification, the second - priorities of strategy actions to combat desertification. The third part represents a number of Projects of local significance and the forth - the maps of

desertified areas of Armenia. The second part of this Project has been approved by the Government of the RA (28.03.2002) under the following chapters- the "Strategy of actions to combat desertification", "Education and science to combat desertification" and "Public participation to combat desertification".

There has been developed a "**Program of hydro-meteorological activities in emergencies**" and a "**Hydro meteorological Development Program**".

Responsibility for the below mentioned programs lies on the **Ministry of Nature Protection** of the Republic of Armenia.

**1.5. Does your country have building codes of practice and standards in place, which take into account seismic risk? If "Yes", since when. Which are the main difficulties in keeping with the compliances of the codes.**

**YES.**

Since 1994 in Armenia seismic resistant construction was planned in keeping with the norms inherited from the former Soviet Union which didn't take into account the features being typical of Armenia: prevailing (typical) types of grounds, practiced building materials, traditions and etc. In 1994 the Government of the Republic of Armenia approved the new building norms and rules, responding to the requirements of the seismic resistant construction.

The accepted seismic engineering norms determine rules and standards of seismic zoning and classification of soils; seismic impact; construction, reconstruction and reinforcement of residential, public and industrial buildings and other buildings; transport and hydro-technical constructions.

In the Republic of Armenia the rules of seismic resistant building include and take into account the seismic risk factors, starting at the stage of projecting and planning urban and rural engineering until putting it into operation. Particularly, the basic principals for seismic vulnerability are set out in Article 16 of the Law on "Seismic Protection of the Republic of Armenia", passed by the elected National Assembly on 12 June 2002.

At present, in order to comply the standards accepted world wide, the **Ministry of Urban Development** of the Republic of Armenia in collaboration with other concerned establishments, particularly the National Survey for Seismic Protection, has developed the updated and amended Project of building norms and rules, which is currently subject to discussion and approval procedures.

The standards of the seismic resistant building, developed and approved in Armenia, are supposed to be accepted as the pilot ones for the use in the CIS countries (the Commonwealth of the Independent States).

**1.6. Do you have an annual budget for disaster risk reduction? If "Yes", is this commitment represented as a part of the national budget or project based? Through which institutions? If "No", what other financing mechanisms for risk reduction initiatives are available?**

**YES.**

The measures on disaster risk reduction are being carried out through the national budget (the Governmental Budget) and community budgets according to the Laws of the Republic of Armenia: the “Law about the Protection of the Population in Emergency Situations”, the “Law on Civil Defense of the Republic of Armenia” and the “Law” On Seismic Protection of the Republic of Armenia”.

The Governmental budget, inter alia, includes the **Reserve Fund**, by use of which the possible unforeseen expenditures are to be covered, including the emergency related ones.

The community budgets also have the **Reserve Funds**, which under the new legislation cannot exceed 20% and be less than 3% of the total budgetary value. This money can also be spent on disaster response activities.

The Government also takes responsibilities over ensuring the safety of private property. The prejudice caused by the disasters is compensated according to the “Law on the Protection of the Population against Emergency Situations”, although due to fairly limited funding one has to set up the priorities. First of all, damage of the installations of significant public use, such as bridges, roads, communication lines and etc. is to be compensated.

To allocate and distribute money from the Reserve Fund requires the Resolution of the Government. The deductions are made through the Ministry of Finances. With regard to the deductions from the Government Budget on disaster reduction purposes, than a part of these deductions have been allocated for functioning and developing of the system of the Emergency Management Administration under the Government of the RA.

One of the examples of accumulating funds aimed to reduce disasters at community level is setting up and operating of the Intercommunity rescue team of Yerevan city by using the budgets of 12 municipal communities, allocated by relevant local authorities.

**1.7. Are the private sector, civil society, NGOs, academy and media participating in disaster risk reduction efforts?** If “Yes”, than how. Indicate existing coordination on joint programming between government and civil society efforts in disaster risk reduction, or major difficulties or constraints for this to be effective.

**YES.**

**1.7.1.** According to the Laws regulating the relationships in the area under review, every citizen of the Republic of Armenia is liable to compulsory participation in the measures, aimed at the protection of the population against emergency situations, in the order established by the legislation. Simultaneously, every citizen of the Republic of Armenia and a person, who is not admitted to the citizenship, have the rights to compensation for the damage they have suffered, as well as the rights to reliable information concerning the emergency situations, the danger of their arisen and the extent they have been protected to.

In compliance with the Laws the media, scientific organizations and other establishments should participate in disaster risk reduction, protecting their employees, facilitate rescue- and urgent operations and create necessary forces to accomplish these goals.

**1.7.2.** From local NGOs, involved into these activities, the following can be mentioned:

- Armenian Red Cross Society-ARCS

- “Arame Sarafyan Club” Foundation
- The “Spitak” rescue centre, located in Yerevan city and the “Lore” rescue team, located in the northern part of the country in the town Stepanavan, Lory region.

The both rescue sub-divisions on the preliminary contractual basis have repeatedly been involved by the Emergency Management Administration under the Government of the RA into search-rescue operations, carried out in the events of diverse natural disasters.

It is necessary to notice here, that there are several NGOs actively participating into the environment related activities, such as

- “For sustainable human development”
- Environment Public Advocacy Center
- “Ging”
- “Greens Union” and others.

There are some scientific- research organizations (associations) in the Republic, involved into carrying out researches in the areas of geology, seismology, geo - engineering, mineral and water resources, natural disasters and impact on the environment. The most well known among them are:

- The Armenian Association of Seismology and Physics of the Earth’s Interior, NGO
- The Armenian Association of Seismic Protection, NGO
- “GEORISK” scientific-research Company, Ltd.
- The Armenian Research Institute of Earthquake Engineering and Protection of Constructions.
- “ARTSRUNIT” Gemological Center, (NGO).

1.7.3. The activities fulfilled by the Armenian Red Cross Society (ARCS) is a good example of joint Programs of disaster risk reduction, implemented by both: governmental and nongovernmental organizations.

The Armenian Red Cross Society is the only NGO in the country, involved into all directions of disaster preparedness and response activities, particularly:

- **Public Awareness**, through leaflets, posters booklets, TV and radio broadcasting Programs.
- **Training of ARCS staff and voluntaries** in the skills of carrying out search - and rescue operations, managing catastrophes, rapid assessment, life support, logistics, command and control and etc.
- **Carrying out of training exercises** in close collaboration with relevant GOs and NGOs, including local authorities, the Emergency Management Administration under the Government of the RA (EMA), gas, fire and utility Services, Health, Education and Interior Systems and etc.
- **Development and publication of training modules** prepared in close collaboration with the Crisis Management Institute under the EMA. The ARCS has published more than 22 training modules.
- **Disaster preparedness and Response Stock** consists of:
  - a) Emergency Stock assigned to ensure immediate response to the needs of 1500 victims

b) Rescue Stock, including rescue techniques and tools.

- **Search and Rescue team**, operating on a basis of the “Lore” rescue team.
- **Through realization of the special Projects**, such as:  
 “Young Rescuer Competition” (jointly with UNDP), “Evacuation in schools”, “Children against disasters” (a quizzing game) and “National Competition of drawings”, “Social researches of public awareness” and etc.
- **Regional Cooperation Project** for Armenia, Georgia and Azerbaijan has been launched on the initiatives of the International Red Cross and Red Crescent Societies. The Project is being realized into four directions, one of which is the disaster preparedness and response. The Armenian Red Cross Society is a regional coordinator of the above Project, targeted at ensuring identical approaches in the region to the problems dealing with the disaster preparedness and response.

**1.7.4. With involvement of the media** the training Programs, recommendations, and analyses related to disaster reduction issues are being implemented.

The establishments and institutions within the Academy of Sciences framework are fulfilling the work aimed at disaster risk reduction (particularly, the development of flood disaster reduction Program for Taush region centre Idgevan town).

**1.7.5. Although, insufficient financial resources impede the organization of a vast network of NGOs, as well as in a sufficient manner put barriers to systematized training and organizing the frequent joint training exercises with involvement of GOs and NGOs structures and the civilians. And this in turn cannot ensure high levels of effective participation of private sector and citizens, NGOs, scientific establishments and the media in disaster risk reduction activities.**

## COMPONENT 2. RISK IDENTIFICATION.

*Identification of risks is a relatively well-defined area with a significant knowledge base on methods for disaster impact and hazard and vulnerability assessment. Systematic assessment of losses social and economic impact of disasters and particularly mapping of risks are fundamental to understand where to take action. Consideration of disaster risks in environmental impact assessment is still to become routine practice. Early warning is increasingly defined as a means to inform public and authorities on impending risks, hence essential for timely actions to reduce their impact.*

**2.1. Has your country carried out hazard mapping/assessment?** If “yes”, please describe for which hazards, when they were updated and for what geographic scale they exist. Do they include characteristics, impacts, historical data, multi-hazards approach? Which institutions are using the results of the hazard assessment? To whom are they available? (attach any relevant documentation).

**YES.**

**2.1.1.** Throughout the past decades the specialists from the Emergency Management Administration under the Government of the Republic of Armenia jointly with their partners have created and have been up-dating the “GIS” **Geo Informational Systems** for evaluation of natural and man-made hazards and modeling their possible effects, in line with estimation of the probable damage and losses. **These systems are based on using digit maps of the territory of the Republic of Armenia** of scale 1: 200000, and for separate disaster prone territories and mega cities- of larger scale (1:10000 and even larger).

**The digit maps of spreading landslides, mudflows, floods, fire forests** as well as of vital installations exposed to natural disasters: hydro-technical, transport joints, magisterial pipelines, hazardous installations and installations of special importance have been developed.

The digit model of a territory of Armenia, covering the layers of borders, roads, residential areas and relief, is used **for earthquake forecast** under the set scenario. To forecast the earthquake effects for big cities like Yerevan, the digit maps of dwellings, ground and hydrological conditions of scale 1:10000 are used.

**2.1.2. The National Survey for Seismic Protection (NSSP)** as an Agency, functioning within the structure of the Emergency Management Administration under the Government of the Republic of Armenia, continues its work on creating **new electronic hazard maps**, particular with a focus on the following activities:

- Assessment analyses of the reliability of **parameters of historical earthquakes** occurred in the territory of Armenia and neighboring countries
- Filling in the **National Earthquakes Catalogue** (the Catalogue has already been filled in as at 01.07.2004)
- Compiling of data base and electronic maps on life support lines established in the territory of Armenia continues
- Based on GIS technologies, developing of a **Seismic Hazard Microzoning Map for Yerevan city**; an electronic map containing data on housing and a river network of **Vanadzor town** (scale 1:10 000), as well as a seismic microregioning map of a town; a digit map of **Gumri town**, amended by more than 20 well-defined new layers, particular health and education installations, architectural monuments, newly constructed buildings, lines and life support installations etc.

**2.1.3.** In this way, **an approach of the Emergency Management Administration under the Government of the Republic of Armenia to evaluate hazard levels** is based on modeling of possible disaster effects with the use of well-defined digit maps and data base representing a multifactoral description of housing installations and infrastructure.

The mentioned information assets and electronic maps are placed at disposal of the Emergency Management Administration and are used by its subdivisions and lay foundations for evaluation of hazards and possible emergency situations, reported to the Government of the Republic of Armenia. At the same time, they are at disposal of the concerned territorial management bodies and local authorities.

**To use “GIS” effectively requires the raising of awareness of the citizens of all categories.** Particular, the training of the managers, responsible for decision making related to risk management issues, is especially effective. The thematic of the training courses covers:

- Factors, generating, as well as reducing the natural hazards and evaluation of the degree, to which these types of hazards pose a threat.
-

- Playing out the simulation scenarios of natural disasters and proper reaction of the authorities and the population in the event these hazards are imminent.

**The exchange of a variety of expertise, particular discussion of the experience accumulated by the Republic of Armenia and countries of the Southern Caucasian region in the above directions to accept the integrated methodology and information basis to manage the probable disasters, the considerable part of which may have trans boundary nature, will promote the coordination of activities, targeted for disaster reduction for all the countries in the Southern Caucasian region.**

**At availability of the sufficient funds and tangible resources, the activities carried out in the above directions, could be deepened directed at multirisk approaches, as well as broaden at covering the larger areas of the territory of the Republic and a greater number of residential areas, lines and infrastructure installations sited in highly risk zones.**

**2.2. Has your country carried out vulnerability and capacity assessments? If “yes”, please describe the methods used and major social, economic, physical, environmental, political and cultural factors, considered in the assessment. Who are the main contacts for these assessments (or attach any relevant documentation or contact information).**

**YES.**

**2.2.1. The vulnerability and capacity assessments of the concrete hazards, particular in the seismic risk area are being carried out.**

To assess the earthquake vulnerability the electronic map of Yerevan city and database of dwellings and infrastructure have been developed. Basing on physical parameters the real seismic resistance for each building and construction have been determined as a measure of earthquake vulnerability of the set intensity. The seismic methods, using the results of geological examination of the territory, have been applied. A city vulnerability in general is to be determined integrally according to its forming point and line targets. Here the human tolls and property losses are to be estimated.

To calculate vulnerability from hazards of local impact requires the well-defined maps of scale 1:1000 (to calculate vulnerability from landslides, caused by mudflows and flooding disasters).

**2.2.2. The National Survey of Seismic Protection, continues to carry out operations on seismic risk assessment and vulnerability of a separate seismic hazardous highly dense population areas and vital installations, in particular:**

- Visual and instrumental inspection of the Post Office building in Ehegnadzor town and Dramatic Theatre and Musical School premises in Goris town have been carried out resulting in granting the inference on technical conditions and the extent they respond to seismic vulnerability norms, together with the suggestions on their further safe operating.
- The work on probable evaluation of a seismic hazard close to a site of Armenia Nuclear Power Plant (ANPP) has been completed
- Seismic vulnerability assessments of “Spandaryan” and Shamb” hydro electric power stations in Sunic region have been carried out

- Basing on real earthquake accelerograms, the analyses and calculations of a pilot model developed for a new “Zvartnots” airport terminal in Yerevan city have been carried out.
- At present, an application form for financing the researches on the theme “Assessment of the vulnerability extent of public school buildings in Yerevan city “ has been prepared and submitted for consideration to the CRDF American Foundation.

**2.2.3.** In order to assess risks and reduce vulnerability the Government of the Republic of Armenia through Regulation N 702 of 11 November 1998 has bound all the Heads of highest risk installations located in the Republic to develop and confirm in the established order the **Safety Certificates** (on risk reduction) **at installations.**

The certificates for the installations, presenting or storing strong poisonous substances, should keep records of the data concerning their quantities, storage facilities, depth and location area and spreading velocity of poisonous substances in the event of an accident.

The certificates assigned for hydro technical installations (reservoirs, tailing ponds and etc.) should keep records of hydrological, hydrogeological and engineering geological conditions of the territory and inundation borders in the event of hydrodynamic accident and etc.)

**2.2.4.** The specialists from the **Emergency Management Administration under the Government of the RA (EMA) and the National Survey for Seismic Protection (NSSP) have the full responsibility for vulnerability assessment.**

**2.2.5.** At present, on behalf of the specialists from EMA there has been prepared and submitted to relevant international structures an application form to provide the funds, aimed at the development of the “**Conception on vulnerability reduction from disasters in the Republic of Armenia**”, that will tend to highlight the main social, economic, physical, environmental, political and cultural factors.

**2.3. Does your country have any mechanisms for risk monitoring and risk assessment? If “Yes”, who is responsible?**

**YES.**

**2.3.1.** Responsibility for risk monitoring and risk assessment rests with the **Emergency Management Administration under the Government of the Republic of Armenia (EMA).**

The risk monitoring mechanism consist of two components:

- Natural observation;
- Risk dynamics modeling having in mind the natural data.

The components are fulfilled by the relevant subdivisions of EMA. The data acquisition on nature observation is also provided through other organizations of the Republic, for instance, from the Hydrometeorology and Environment Monitoring Agency under the Ministry of Nature Protection. As a result, basing on the processed data the maps of probable evolvement of the disaster effects have been drawn up.

**2.3.2.** In particular, the **National Survey of Seismic Protection, (NSSR) an Agency, functioning under the Emergency Management Administration. (EMA), is in charge of the**



**seismic protection and seismic monitoring system.** NSSR has the following international and local monitoring systems:

- GPS-Global Position Stations
- NSSP- IRIS-USGS Project
- CTBT Comprehensive nuclear Test-Ban Treaty International Monitoring System
- NSSP-IAEA Local Seismic Network
- Observation Network.

**2.3.3. The Hydrometeorology and Environment Monitoring Agency** within the Ministry of Nature Protection system is **responsible for water resource monitoring activities.** The Agency has its observation posts located through out the country to control water quantity and quality. There is the Desertification Monitoring Center functioning as Hydrometeorology and Environment Monitoring Agency.

**2.4. Is there a systematic social-economic and environmental impact and loss analyses in your country after each major disaster? If “Yes”, are the results available?**

**YES.**

**After a devastating Spitak earthquake that hit Armenia in 1988 there was accumulated a rich experience in carrying out observations and comprehensive and deep social-economic and environmental impact and loss analyses. The results were published in a state of books, articles and reports.** By using the results a number of theses have been defended.

Basing on the experience of Spitak earthquake there have been reviewed the norms of seismic resistant building, drawn up plans on responding in the major earthquakes.

The researches have not been stopped even now, after elapse of 16 years since the devastating earthquake that severely damaged all the northern-western part of the Republic and took lives of more than 25 000 people. For instance, in the first half of 2004 the National Survey of Seismic Protection, basing on the GIS technologies, has developed the maps of engineering-geological conditions and micro seismic field of Spitak earthquake of 1988 for Vanadzor town.

Along side in the Republic **the social-economic and environmental impact analyses of periodically occurring diverse natural disasters** (floods, hail storms, droughts, landslides and etc.) **and damage due to them are being carried out. The analyses outcomes are available for both: the management authorities and the population.** For the use of the management bodies they are provided in the form of corresponding Acts and other types of documentation. The data at the governmental level are published in the Statistic Directory. The public has an access to information through the media, particular via weekly “Emergency newspaper”, published under the aegis of the Emergency Management Administration.

**2.5. Are there early warning systems in place? If “Yes”, for what hazards and for what geographic scope. Do you have any example when the system was activated lately? Which are the main institutions involved? Please indicate any relevant lesson learnt from the use and public reaction to early warning used.**

**YES AND NO**

The Republic early warning system can be conditionally subdivided into two ingredients:

- An early warning system for the use of the top managers, equipped by telephone communication and around o'clock awareness service of the Emergency Management Administration under the Government of the Republic of Armenia (EMA), and
- An early warning system for the population, equipped by alarm and telephone systems.

2.5.2. The activity of the first ingredient of the early warning system has been adjusted and is currently at sound level. As for a state of the second ingredient, than, first of all, it is necessary to note, that **an early warning system for the population in place does not cover all the territory of Armenia. The centralized awareness system covers only about 30% of the entire territory of the Republic.** This is caused by some technical reasons dealing, first of all, with transition of the Republic telephone communication system to digit communication. The existing technical assets have become obsolete and do not respond any more to the technical characteristics required by the digit networks.

**There is a need to inculcate and improve the early warning systems for the public use in ten specific geographical regions of Armenia.**

### COMPONENT 3. KNOWLEDGE MANAGEMENT.

*Information management and communication, education and training public awareness and research are parts of improving and managing knowledge on disaster risks and their reduction. Inclusion of disaster reduction at all levels of education, effective public awareness and information campaign, media involvement in advocacy and dissemination, availability of training for communities at risk and professional staff and targeted researches are the ingredients to support the knowledge base for effective disaster reduction.*

**3.1. Does your country have disaster risk information management systems (governmental and/or non-governmental)?** If "Yes", what kind of information on disaster reduction is available, how it is collected, how if the information disseminated and who are the main users? (Indicate relevant sources of information, if applicable).

**YES.**

**3.1.1.** The **Crisis Management Center (CMC)** functions under the Emergency Management Administration under the Government of the Republic of Armenia, (EMA), where on a daily basis the information from organizations and services within the Ministry of Nature Protection, Ministry of Health, Ministry of Agriculture, Water Economy Committee and others, incorporated into the Survey and laboratory control system of the Republic of Armenia, is being collected. At the same time every day the captured formation data concerning a general situation is forwarded by the EMA regional structures to the CMC. Besides, the CMC maintaining the regular communication links with the potentially hazardous installations, collects on a regularly basis the information on their general conditions and current technological processes.

**3.1.2.** The information, collected in the CMC, is being processed and systematized in the Reconnaissance-Analytical Department and Monitoring Center of the Emergency Management Administration. The systematized information in line with the recommendations on how to respond in identical situations, depending on their nature and responsibility levels, taken over by the management bodies is conveyed to the relevant national and local governance bodies.

**3.1.3.** Simultaneously, there is an Operative Duty System functioning within the Emergency Management Administration (EMA) structure. Daily, one of the Deputies of the Head of EMA accomplishes the duty of a Duty Manager, who receives urgent information from a Duty Officer, who in turn receives emergency calls about established emergency situations. A Duty Manager is responsible for decision making in emergencies. If needed he may refer to the Head of EMA to be able to make a more authorized decision.

**3.1.4.** Within the structure of EMA there is an **Informational Center** that also cooperates with all the media including NGOs. On receiving the information from CMC of EMA the Informational Center forwards the information to the media and information centers of the state management bodies.

**3.1.5. The main information users are** the state management and local bodies, organizations and the population.

**3.2. Are the academic and research communities in the country linked to national or local institutions dealing with disaster reduction?** If “Yes”, describe the mechanisms for information sharing and indicate any example of usefulness and effectiveness. Which are the main research and academic institutions dealing with disaster reduction related issues (please list if available and indicate how their research work is related the country’s disaster risk reduction needs).

**YES.**

**3.2.1.** There are several major GOs and NGOs scientific – research, project based and other types of organizations and agencies in the country, which activities are related to disaster risk reduction issues. A part of them is functioning within the Academy of Sciences or Branch Ministries and Departments of the Republic systems and carry out their research oriented activities either within the framework of a state order or on contractual basis in collaboration with the interested national and local governance bodies, or within the framework of grants issued by the relevant international organizations and governments of the foreign countries.

Particular, within the Academy of Sciences structure there function the **Institute of Geology** and the **Institute of Mapgraphing**. The research outcomes of the first one are applied in the activities aimed to disaster risk reduction, and the maps developed by the second one are used while developing maps and drawings.

Several strong organizations are involved into research activities dealing with earthquake disaster reduction issues. Primarily, this is the **National Survey of Seismic Protection (NSSP)**, a multi target Agency, functioning under the Emergency Management Administration (EMA). The NSSP is dealing with the whole complex of earthquake disaster reduction problems, starting from forecasting, monitoring, seismic resistant building to informing the population and management authorities. Some directions in the NSSP activities have been set forth in more depth in sections 2.1. -2.4. of the present paper.

Other organizations studying the earthquake disaster reduction are:

- **“Armenian Association of Seismology and Physics of the Earth’s Interior”, NGO.** Is involved into research activities aimed, at particular, seismic risk and hazard assessment in the Caucasian region;

- **“Armenian Foundation for Seismic Protection”, NGO.**

Participates in different international workshops on seismic protection issues, elaborates materials on public information and seismic engineering testing.

- **“Armenian Research Institute of Earthquake Engineering and Protection of Constructions”, functioning under the Ministry of Urban Development.**

Provides with seismic engineering, monitoring and assessment; development of experimental methods of studying seismic engineering, examines and certificates buildings, constructions and architectural monuments; elaborates the methods used for reconstruction, reinforcement of buildings and constructions, certificates construction materials.

The outcomes of the **Engineering Project Based Institute under the Ministry of Urban Development** are applied in the landslide and mudflow disaster reduction programs.

The researches carried out by the **Institute of Water Problems under the Ministry of Agriculture** are addressed to hazardous flood risk disaster reduction, linked to probable burst of dams.

**The Hydrometeorology and Environment Monitoring Agency, functioning under the Ministry of Nature Protection**, is involved into resolving the problems related to flooding risk disaster reduction.

Among the NGOs it is expedient to mention also **“Georisk” Seismic Research Company, Ltd.** It is involved into professional research activities and provides with consultations in the fields of geology, geo engineering, mineral and water resources, natural disaster and environmental impact assessments.

**3.2.2.** Exchange of information is possible through the Emergency Management Administration under the Government of the RA (EMA), as the coordination for all management body and organization activities in the Republic in the emergency management area falls within its province.

One of the coordination mechanisms is the **Scientific-Technical Council of the Emergency Management Administration**, whose members are the leading scientists within the Academy of Sciences and Branch Institute systems, as well as the heads of Ministry and Department sections of the Republic linked to disaster risk reduction.

At the Scientific-Technical Council Meetings the relevant scientists and leading specialists submit for discussion the first priority issues in the disaster risk reduction area in Armenia requiring an urgent solution. Basing on the Council's decision the appropriate recommendations and suggestions authorized by the Head of the EMA are developed and submitted by the Republic management bodies for relevant programs and decision-making.

Particular, here are mentioned two Scientific-technical meetings dedicated to the below mentioned problems:

1. Assessment and seismic risk reduction problems in the Republic of Armenia

- Seismic situation in the RA, basic goals of assessing and reducing seismic risks and practical measures to resolve the related problems.
- Seismic engineering. Designing of standards. Improving of building standards.

The seismic engineering standards developed and improved in Armenia have been accepted as the pilot ones for the use of the CIS countries (The Commonwealth of the Independent States).

2. The problems of monitoring and impact on atmosphere phenomena in the Republic of Armenia.

**3.2.3.** Another direction in information exchange is the **joint researches carried out through cooperation efforts of the relevant international organizations** with engagement of research workers and specialists of the interested establishments in Armenia.

The example of such researches is currently implemented in the Republic the development of the suggestions for the Project on “Strengthening risk management capacity for industrial, military and agricultural waste”. Within the project framework, among their number, are supposed to be implemented:

- “Analyses of problems related to managing industrial, military and agricultural waste in the Republic of Armenia”
- “Analyses of existing national management toxic waste system in terms of conformity to the European Council’s policies”.

The Project is being developed at a coordination support of the European Center for Training Rescuers, functioning within the Emergency Management Administration structure in collaboration with other European centers of the Council of Europe EUR-OPA Major Hazards Agreement, welcoming the participation of relevant scientists and specialists from organizational system covering the Ministry of Nature Protection, Ministry of Agriculture, Ministry of Health and other Ministries and Branches in the Republic, that have capacity and the interest including the Emergency Management Administration under the Government of the RA.

**3.3. Are there educational programs related to disaster risk reduction in your public school system?** If “Yes”, for what age-range? Do you have any educational material developed to support the teaches in this area? (Please attach any relevant documentation).

**YES.**

**3.3.1.** Since 1997 the educational programs aimed at disaster risk reduction in Armenian public school system have been implemented. The programs are oriented at teaching children at 7,8,9, 10,11,14,15 and 16 ages. For all mentioned age-ranges there have been developed the corresponding educational programs. For 14, 15, and 16 years old children there have been developed text books and for the teachers –the methodological teaching aids. For the use of the rest age-grade children there have been developed brochures per each risk type. The organization, coordination of the mentioned activities as well as providing the teachers with teaching aids and their retraining have been implemented by the **Institute of Crisis Management under Emergency Management Administration** under the Government of the RA (EMA).

**3.3.2.** At the same time since 2000 the **European Center for Training Rescuers** in Yerevan city, functioning within the Emergency Management Administration structure, has been involved into experimental teaching of “Safety and Survival” subject in Armenian National after Anania Shirakatzi college in Yerevan city and in school N 2 of the Agartzavan village of the Aragatzotn region, as well as in a number of other municipal and rural schools in Armenia.

The teaching process has been based on using of more than 30 developed thematic brochures, addressing the basis of safe life activity and elements of disaster risk reduction covering almost all types of risks, which children may come across in their everyday activities.. The children are

taught to recognize risks and prevent them, react properly, muster the skills in administering self and mutual aid in emergencies as well as elements of the science about risks. This will assist them to create an atmosphere of kindness in their environment and lend confidence in themselves.

Armenian National after "Anania Shirakatzi" college in Yerevan city has been included into the "Initiative Pilot Group of schools" within framework of which the European pilot school network involved into risk prevention training has been set up. The experimental Program is targeted for widespread teaching of "Safety and Survival" subject in other Armenia schools with taking into consideration the expertise gained by the state-members of the Council of Europe EUR-OPA Major Hazards Agreement. At current stage children of 10-11 and 15-16 years old are being involved. About 300 children have participated in experimental teaching.

**3.4. Are there any training programs available?** If "Yes", please list them (if available indicate scope and target audiences of the courses). Do you have any indication on how these courses have been useful to change any practices at local or national scale?

**YES.**

**3.4.1.** The Emergency Management Administration under the Government of the RA yet in 1996 developed a training strategy in the disaster risk reduction area. As a result of this strategy on 17 September 1996 the Government of the Republic of Armenia approved the **Regulation on the implementing of disaster risk management training through the Republic education system at all levels.**

At present, in all public schools, colleges and higher education institutions of the Republic the corresponding training programs in disaster risk reduction area are realized, that constitutes a logical continuation of each other.

Under conditions of sufficient funding, technical and methodological provision to this education area, further improving of the training programs, having in mind the advanced world experience we could in 10-15 years spread the culture of prevention over all spheres of public life activity in the Republic and had, as in authority capacity for decision making, the people who possess basic knowledge and muster skills in crisis planning and management. The Programs targeted for further training could incorporate the concrete knowledge and skills linked to specifics and installation managing and as well as to the results of scientific-technical progress achieved in crisis planning and management areas.

**3.4.2.** The training programs being realized currently are diverse audience (trainee) targeted ones. The audiences (and training programs, respectively) are subdivided into two categories:

- for trainers involved into labor sphere,
- for the non involved ones.

The trainees involved into labor sphere are subdivided into 4 levels:

- top managers
- medium level managers
- specialists
- servicing staff

The noninvolved into labor sphere trainees are subdivided into 5 levels:

- pre-school institution children

- public school pupils
- college students
- students of high education institutions
- housekeepers, pensioners, invalids and etc.

The relevant training programs for each trainee category have been developed and implemented into training practice by the Institute of Crisis Management within the Emergency Management Administration under the Government of the RA structure.

### **3.5. What kind of traditional indigenous knowledge and wisdom is used in disaster-related practices or training programs on disaster risk reduction in your country?**

The Republic of Armenia is a mountain country and as being such it is characterized by typical of such regions heavy indented relief, high steep slopes, accumulation on them of considerable erosion materials and climatic conditions (protracted downpours).

The listed peculiar features facilitate the creation of water-sick ground slopes and other phenomena. The impact produced by these factors will deteriorate in the event of geo dynamic activation of the territory and as a result of human activity, bringing about the breach of slope equilibrium and as a rule the manifestation of hazardous geological processes, including landslides.

More than 3.000 landslides have been revealed in the territory of the Republic of Armenia, 200 of them are at active creation stage. In the Republic recently has been developed a number of programs on landslide disaster reduction, including the “Program of urgent counter landslide measures undertaken in the territory of the RA”, approved by the Government of the RA and is being partially implemented through cooperation efforts of foreign partners, particular with the Government of Japan (see more detailed information in Clause 4.3. of the present “National Report”).

At the same time, in Armenia in order to **reduce landslide related risks** there have been used both: the **local traditions and skills** and **developed new nontraditional methods that are currently applied only in Armenia** and present the undoubted interest.

Below is given one example per each type, illustrating both these and those methods used.

**3.5.1.** The majority of landslides in Armenia have a small allocation depth of a shift plane (8-10 m) and insignificant geometry in plan (L-150m, B-up to 350 m), a territory of 3,5 -4,0 hectares.

To **combat landslides and stabilize the slopes of these sectors** the Emergency Management Administration under the Government of the Republic of Armenia jointly with the Academy of Agricultural has developed a **Program for stabilization of landslide processes with the use of agro forest melioration in the form of special forestation of the landslide area with mulberry trees.**

The mulberry tree root system while developing by rapid spaces as in terms of horizontal direction as well in depth will encourage the reinforcement of ground slopes. This method is the time tested, local tradition based one, which has been applied throughout many centuries.

**3.5.2.** After settlements, transport communication is the second sector to suffer the heaviest losses from landslide phenomena. Here into the number of natural factors promoting landslide activation are also integrated the anthropogenic causes such as: non justified by the norms slope cutting, forming of water – sick ground slopes due to the leakage from parallel sited water running systems and non regulated watering of agricultural crops.

Apart from traditionally accepted world practices on using drainage methods for surface and ground waters, the Emergency Management Administration under the Government of the Republic of Armenia jointly with the Institute of Geological Sciences of the Academy of Sciences of the RA has suggested a **“Program on using of “UISIT” composite polyamine-synthetic powdery indissoluble”**. “UISIT” is well-known for its stable property to swell at steeping (up to 50% increase in volume) and to give water proof screen property at antifiltration protection of natural and artificial ground slopes as well as engineering constructions and mountain rock massives.

While creating such screens “UISIT” consumption can reach from 0,5 to 5 kg for 1 m<sup>3</sup> of the reinforced material. **“UISIT” has been put to testing on a number of slopes (Jervege, Dilijan) and has proved high effectiveness of the antifiltration measures undertaken on landslide slopes.** It is planned to organize the “UISIT” manufacture in Armenia basing on “Interselhozpolimer” enterprise.

One should also notice that the utilization of “UISIT” for soil-grounds will ensure essential increase in moisture capacity, sharp decline in losses of irrigation water and losses due to vapour (to 30%), prevent water-wind erosion of ground slopes, unproductive losses of chemical fertilizers, raise of effective water consumption by agriculture crops and raise their yield capacity. “UISIT” consumption here will be from 0,5 to 5 tons for 1 hectar at effectiveness period lasting 6-7 years at one time use of “UISIT” polyamine.

Apart from the mentioned above application “UISIT” polyamine in terms of effective impact on the stabilization of landslide phenomena on slopes can be useful for other branches of the economical activity.

**Below set out are the examples of possible use of “UISIT” polyamine in diverse branches of the economy and its targeted application in the technology of the economy.**



### “UISIT” POLYMINE.

NN	Possible use area	Application areas and effectiveness of the impact
1	Melioration	Growth of soil-ground moisture capacity
2	Hydro technical construction	Creating of antifiltration devices and screens
3	Environmental protection	Screening of chemical and industrial waste burial grounds. Protection of reservoirs from filtration.
4	Industrial-civil building	Creating of water proof butt seams in constructions, assembling of sewage and water running systems in bottom
5	Building materials	Creating of new filtration resistant brands of light concrete and gypsum
6	Reconnaissance drilling (prevailing in depth)	Creating of new drilling solutions for tamponage of absorption zones and inter plastic isolation
7	Oil extraction	Growth of stratum oil return
8	Mining business	Building of air-and water proof curtains in underground mines and workings.

### 3.6. Do you have any national public awareness programs or campaigns on disaster risk reduction?

YES.

**3.6.1.** In Armenia the Emergency Management Administration under the Government of the Republic of Armenia is the authority responsible for raising public awareness in the disaster risk reduction area.

The principle players in raising public awareness in the above area are **the Information Center of the Emergency Management Administration** and the **Crisis Management Institute**.

In the Republic there has been developed and are being realized the **National Programs on raising public awareness** in disaster risk reduction area. **The media are involved** into the process through the Information Center (see also Clause 3.1. of sub Clause 3.1.4. of the present “National Report”). **Teaching in schools** is introduced through approved Programs. (More details on education programs on disaster risk reduction within the public school system of the Republic see Clauses 3.3. and 3.4 of the present “National Report”).

The Programs on raising public awareness are addressed to vast majority of the population (schoolchildren included), national and local governance bodies (through their corresponding information services), mass media and finally to establishing the communities, having the citizens who are well-informed, capable and ready to cope with calamities.

### 3.6.2. The Crisis Management Institute fulfils activities on awareness and training of the public in the following directions:

- training courses and lectures for the top managers of the state management and local bodies (ministers, deputy ministers, governors, vice-governors mayors and etc.) as well as for the managers and specialists of highest risk enterprises,
- training courses for “Instructors in Crisis Management” (in close cooperation with the Armenian Red Cross Society (ARCS) for ARCS staff and volunteers,
- elaboration of special training modules, education brochures, posters, booklets for the public use,
- TV broadcasting and programs,
- radio Programs,
- special arrangements, such as: National Drawing competition “Children against disasters” (jointly with ARSC), “Yong Rescuer Competition”, jointly with ARSC and **UN Development Program (UNDP)**, special guest lectures in the country’s outback areas (for local heads, schools and other auditory, who have the interest),
- participation as analysts in simulation exercises carried out by the Emergency Management Administration, especially in those with involvement of the relevant state agencies and structures,
- coordination of teaching “Issues of crisis management” subject within the framework of the National Education System in the Republic of Armenia,
- advanced training on raising the qualification and retraining for teachers and lectures, teaching “Issues of Crisis Management” subject.

3.6.3. The Program of ensuring public awareness entitled “**Communities resistant to disasters**” has currently been developed in the Republic and as far as possible is gradually being implemented. **The Program is targeted for** “establishing communities (regions) that have the citizens who are we-informed, capable and ready to cope with disasters of natural, ecological and social natures and for communities (regions) where the sustainable systems for vulnerability reduction are available”.

#### **The Program’s tasks among the others will include:**

- increasing awareness of national and local governance bodies, acquisition of knowledge and mustering skills in the area of the protection of the population and territories from emergencies,
- ensuring public awareness and training,
- development of national information policy in disaster risk reduction area,
- formulation, regulation and management of information flows,
- providing the population, mass media and national and local governance bodies with information that they deem complete, timely distributed and reliable,
- creating of the culture of safety in a person.

**The setting up of the Information Center “Emergency Channel”** (TV broadcasting) under the aegis of the Emergency Management Administration is the best proof of main backgrounds and significant steps, that have been undertaken till now in the direction of the Program’s

implementation. The Program of setting up of the Information Center has envisaged the integration of awareness targeted programs and an entire information network within the framework of the specialized structure, all links of which could mutually amend each other, could act coordinated and could pursue common policy in the disaster risk reduction area aimed at even most varying audiences.

The **“Emergency Channel” Information Center** includes the next forming structures:

1. **“Emergency Channel” Information Agency**
2. **“Emergency Channel” INTERNET site**
3. **“Emergency Channel” TV and Radio broadcasting Company**
4. **“Emergency Newspaper”**.

1. **Information Agency** today ensures the reliable and latest information related to emergency situations occurring in Armenia and world-wide.

2. Information and teaching materials are placed on The **“Emergency Channel” INTERNET site**. From here all: the mass media, governance bodies and public establishment have an access to the trustful and useful information. INTERNET site was set up and functions through the supporting efforts from the Institute of Open Society whose Program is approaching its completion date on 30 November 2004. Although, INTERNET site needs to be kept and further developed.

3. **“The Emergency Channel” TV Company** has been functioning since 1997. Its prepared TV reporting and films are demonstrated by all Republican TV channels. The **UN Armenian Branch** has promotes greatly in the matter of setting up of the TV Company. Although, to our much regret the filming and arrangement equipment provided yet in 1999 has become physically and morally obsolete and can not any more ensure full-blooded work of the Company.

4. Weekly **“Emergency Newspaper”** has been published since May 2003. Almost all the Republic structures, such as: the Prime-Minister, ministries, regional and community bodies, education institutions, establishments and installations have been subscribed to this newspaper. This newspaper has proven to be an extremely trustful information channel in the matter of acknowledging and training people.

The Program of setting up of the Information Center has passed an international expertise. At present basing on the trilateral Agreement between the Emergency Management Administration under the Government of the Republic of Armenia, US Development Agency and UN Armenian Branch there has been carried out repairing- construction work and equipping of the new premises of the **“Emergency Channel” Information Center**, which undoubtedly will attach more effectiveness to the Program’s implementation.

**All together, one will have to resolve an array of most pressing issues in the direction of implementing the “Communities resistant to disasters” Program targeted for ensuring public awareness.**

Particular, one has to notice the following tasks:

- placing on the **“Emergency Channel” INTERNET site** the information related to disaster risk reduction issues, concerning concrete Armenian communities enabling every citizen to find the publications regards ensuring community safety and his personnel safety;
-

- placing on the INTERNET site the operative concrete answers to the questions worrying the INTERNET users on the problems dealing with disaster risk reduction, especially those concerning the community safety and the safety of its citizens;
- involvement of workers from ministries, branches, territorial and local governance bodies in public informing sphere;
- organization of the training of representatives from mass media, journalist faculty students of the higher institutions in special features of informing in emergency situations through workshops and training courses;
- training and providing them with relevant information kits;
- organization of exchange of information, video films, expertise of operating in emergency situations in cooperation with other relevant foreign structures.

**3.6.4.** Besides the National Public Awareness Programs carried out in the Republic there is the **Campaigns on disaster risk reduction**. This arrangement is carried out either at national, or at regional levels, but in both cases always with a wide scale involvement of the concerned ministries, branches, territorial and local governance bodies, mass media, schools, other education establishments and NGO's.

Specifically, on 1 March, 2004, there have been **"Safety Day on transport"** displays of Civil Protection services in observance of International Day of Civil Protection, carried out country-wide at national level (with engagement of all territorial and local governance bodies, mass media, schools and other establishments)" and **coordinated by the Emergency Management Administration** under the Government of the Republic of Armenia.

Within the framework of this Campaign the **European Center for Training Rescuers** jointly with the **Ministry of Transport and Communication of the RA** has organized the **"Open Lesson of safety on the roads"**. The lesson has been conducted in the Ministry of Transport and Communication with an involvement of pupils, their parents and teachers from Armenian National after "Anania Shirakatsi" college in Yerevan city and specialists from the European Center. **The Minister of Transport and Communication of the RA has conducted the lesson**. Mass media has presented a wide coverage of the "Open Lesson" in line with the whole Campaign.

**3.6.5.** For the Republic of Armenia being a landlocked country in which small territory there exists the probability of arisen of almost all types of natural disaster and technological accidents (including devastating earthquakes and radiological accidents) **the setting up of the awareness and informing system on possible risks oriented for all the segments of the population and its training in the skills of behavior in emergencies has become a vital necessity**.

One of the most effective steps in the above avenue, bearing in mind the conditions typical of both: Armenia and the Southern Caucasian region as a whole (See in detailed "Introduction", Clauses 1.1 and 7.1 of the present "National Report") is the further development and improvement of the **"National Campaign on public awareness and informing in the Republic of Armenia at central and municipal levels"** (as a basis for setting up of a regional warning and informing system for the population of the countries of the Southern Caucasian region in the event of threats of transborder emergency situations), in line with preparation and a regular holding of the "National Campaigns "on minimizing of risks of a concrete disaster".

(See in detailed COMPONENT 7, Clause 7.2.3. (2) of the present "National Report").

## COMPONENT 4. RISK MANAGEMENT APPLICATIONS/INSTRUMENTS.

*For effective risk disaster reduction synergies are needed between sustainable development and disaster risk management practices. Moving from analyzing of and knowing about risks to taking concrete actions to reduce their impacts is demanding step. Ideas and practices coming from different disciplinary areas will complement what is already practiced in disaster risk management. For example, instruments for disaster risk management have proliferated especially with the recognition of environmental management, poverty reduction and financial management.*

*Environmental and natural resource management is among the best-known applications to reduce flood risks, control landslides (through reforestation) and control droughts (through ecosystem conservation). Physical and technical measures, such as flood control techniques, soil conservation practices, retrofitting of buildings and land use planning are effective in hazard controls. Financial instruments in the form of insurance, calamity funds, catastrophe bonds are useful to lessen the impact of disasters.*

**4.1. Is there good example of linking environmental management and risk reduction practices in your country ?** (key areas of environmental management can include, among others, coastal zones, wetland, watershed management, forestation and agricultural practices ). If "Yes", indicate in what areas. (Attach any relevant documentation or reference).

YES.

**Hailstorms are deemed to be one of the most spread phenomena severely affecting the economy of Armenia.**

The Ararat Valley being the principle agricultural region of the Republic, where the exported fruits and vegetable of significant value are being cultivated, proves to be the most hailstorm prone area among the rural regions in the Southern Caucasus. Average losses from hailstorms in the Republic make approximately 30-40 million dollars annually.

**Naturally that in these circumstances one of the priorities in the disaster risk reduction direction in Armenia is hailstorm disaster reduction activity through active impact on atmosphere phenomena.**

The similar projects were realized in Armenia before 1990 with the use of appropriate technical assets and were not only useful but also rather profitable. More over, the counterhail operations were carried out in parallel with operations aimed to increase supplementary precipitation quantity. The latter is especially important for the dry conditions typical of Armenia. Irrespectively of the obvious effectiveness demonstrated by those projects their realization under established economic situation seemed rather dubious, as it required serious capital investments.

Nevertheless, the actuality to restore the counter hail work has made it to be the priority area addressed by the Government of the Republic. Represented by the **Emergency Management Administration** there has been set up a coordination and management action body on the **restoration of a Service of Active Impact on Atmosphere Phenomena (SAIAP)** on new grounds with the involvement of update technical means. **The Ministry of Agriculture** initiated the practical work on counter hail operations. The work in the mentioned direction has been intensively developed. And what is most significant, that a decision is sought through close synergetic approaches of GOs, NGOs and the civilians.

The matter is, that though from 1990 until 2004 the work in the said area has been suspended due to some economic and other reasons, yet the limited financing of the research activities has kept to continue. All these long years the scientists, practitioners and specialists in related branches have cooperated unpaid with the specialists from SAIAP. As a result we have now the completed Projects on stimulation of fallout and the new developed approaches to hail disaster risk reduction that may be introduced into practice.

The said scientists and specialists have set up an initiative group which has developed on a commercially basis the Project "An optimal variant of active impact on atmosphere phenomena". This organization will function under the aegis and with promotion of SAIAP. Unlike other commercial establishments it will be a coordinated one, and at a setting up stage it will be partially financed by the Government.

**At present, SAIAP conducts the work aimed at establishing awareness systems on catastrophic processes and phenomena in the rural residential areas. A very big work has been carried out on systemization and evaluation of the existing and globally accepted practices in using the methods for impact on atmosphere phenomena, targeted for selecting the most suitable methods to be applied in Armenia conditions and for the Southern Caucasus region in general.**

The Service of Active Impact on Atmosphere Phenomena (SAIAP) within the Emergency Management Administration under the Government of the RA (EMA) and the Science and Hi tech Center of the EMERCOM of Russia have made a preliminary Agreement on mutual activities on improving the new perspective technologies of impact on hail processes with the use of ionic generators.

In compliance with the reached Agreement, on 8-18 April 2004 in Armenia the workers of the Emergency Monitoring and Forecast Agency of the Russian Federation and the SAIAP under EMA of the RA carried out an experiment on putting the above systems to testing and determining their effectiveness in mountain conditions of Armenia and of the Southern Caucasus region.

According to the specialists' opinion at current stage the best actual method to combat hail related disasters is a French method, enabling with the use of iodine silver ground generators to ensure the 42-45 % effectiveness. This method is used in many European countries.

The ground generators are cost-effective, well adjusted to the mountain terrain and what is the most important – one can produce them in Armenia himself. Apart from traditional iodine silver the Armenia specialists suggest to use ecologically clean, safe reagents and technical means that will successfully raise the protection against hailstorms and increase precipitation quantity.

At present, the Ministry of Agriculture of Armenia actively participates into the development of the activities aimed at concluding agreements on purchase and practical use of the first counter hail generators.

Regards the realization of the above commercial Project, proposed by the initiative group, than it will make it possible to adapt new methods and approaches to impact on atmosphere phenomena as well as to launch new projects, particular:

- Elaborate combined precipitation stimulation technologies
- Elaborate technologies for combating hailstorms with the use of ionic generators.

The Project seeks the support from the international organizations and relevant financial structures that are active in the area and have the interest.

Due to actuality of the problem and positive results, which have already been achieved, the Project could become the pilot one for the countries of the Southern Caucasus and neighboring states.

**4.2. Are financial instruments utilized as a measure to reduce the impact of disasters (Insurance/reinsurance, calamity funds, catastrophe bonds, micro-credit financing, community funds etc? (If "Yes", describe what these instruments are when they were established, who managers them and who are eligible to them.**

**YES AND NO.**

**4.2.1. YES.** As it was mentioned in Clause 1.6. (COMPONENT 1) of the present "National Report", measures to reduce the disaster risk reduction are fulfilled through the state budget and community budgets. The state budget, inter alia, possesses the Reserve Fund through which all possible unforeseen expenditures, including emergency related ones, are to be covered. The community budget also has its Reserve Funds, which can be spent on mitigation disaster response activities. (The more detailed information concerning who manage these funds, who are eligible to them and who run them has been provided in Clause 1.6. of the present "National Report").

**4.2.2. NO.** Unfortunately, at present the country neither has any established insurance/reinsurance system against disasters, nor there exists other financial tools, except for the budgetary ones, for the reduction of the impact caused by the disaster risk, including a lack of micro-credit financing, catastrophe bonds and etc.

**4.3. Please, identify specific examples of technical measures of programs on disaster risk reduction, that have been carried out in your country (see below case studies).**

As a measure to use technical means and programs on disaster risk reduction that have been carried out or are being carried out in Armenia, it is expedient to identify the following examples:

**4.3.1. The "Program of Active Impact on Atmosphere Phenomena"** incorporates, inter alia: Activities targeted for improving the new perspective know-how of the impact on hail phenomena while utilizing ionic generators (the Program performances have been described in depth in Clause 4.1. (COMPONENT 4) of the present "National Report".

**"4.3.2. The Programs on increase the reliability at putting into operation reservoirs and other hydro technical constructions, including the raise in safety provision for dams of reservoirs"**, implementing by the Water Economy Committee of the Republic of Armenia under financial support of the World Bank. The details concerning the Program implementation have been given in Clause 1.3. / Sub clause 1.3.2. of COMPONENT 1 in the present "National Report".

**4.3.3. "The Program of urgent counter landslide measures undertaken in the territory of the Republic of Armenia"**. The Program has been prepared by the Ministry of Urban Development and approved through Regulation N 1074 of 07.11.2001 issued by the Government

of the Republic of Armenia. More than 3 000 landslides of diverse dimension and activity level have been revealed in the territory of the Republic of Armenia. They include about 700 km<sup>2</sup>, covering more than 100 settlements, inhabited by more than 400. 000 people and separate transport or other communication sections of the total extension of 1500 km. The average annual losses inflicted by landslides to social-economic constructions of the Republic, according to the official figures of the Emergency Management Administration are about 10 million US dollars.

In order to reduce the landslide related disasters the above "Program of urgent counter landslide measures undertaken in the territory of the Republic of Armenia" has been envisaged for realization during 2002-2004. Unfortunately, due to budgetary constraints the full realization of the Program does not seem to be possible.

**Currently within the framework of the above Program by financial support of the Government of Japan on behalf of a research group from Japan assisted by the Ministry of Urban Development of Armenia and through participation efforts of the Armenian specialists the researches in landslide prone hazardous zones in the territory of residential settlements in Tavush region of Armenia are being carried out.**

**The listed Programs are mainly targeted for:**

setting up of a landslide disaster management system which main goals are:

- carrying out of landslide phenomena monitoring,
- centralization of research materials,
- creation of a database,
- setting up and development of geo information systems (GIS),
- setting up of disaster warning systems,
- improving of research methods,
- forecasts,
- elaboration and undertaking of protective measures,
- converting of a priorities principle for preventive measures into reality.

**The developed Programs will enable to address the corresponding international organizations and state-donors for receiving grants or local loans promoting the Programs' realization.**

## **COMPONENT 5. PREPAREDNESS AND CONTINGENCY PLANNING.**

*Preparedness and emergency management has been used as a means for reducing life losses from direct and indirect effects of disasters. A well-prepared system is expected to be effectively informed by early warning, endowed with regularly rehearsed national and local contingency and evacuation plans fitted with communications and coordination systems as well as adequate logistical infrastructures and emergency funds. Local-level preparedness, particularly at community level including training deserves special attention as the most effective way of reducing life and livelihood losses.*

**5.1. Do you have disaster contingency plans in place? Are they prepared for both national and community levels? If "Yes", describe their main components, who is responsible for activating the plan(s)? Are the plan (s) updated on annual basis? Have you ever used the contingency plan (s) that was or were developed? If "Yes" what was the result?**



**YES.**

**5.1.1.** The Emergency Management Administration under the Government of the Republic of Armenia has developed the **Plans of the protection of the population** referring to:

1. Civil Defense (for regions, communities, organizations and ministries);
2. Emergency situations of different natures:
  - Plans of the protection of the population in earthquakes (separately for each of the ten regions, as well as for Yerevan city, the capital of Armenia )
  - Plans of the protection of the population if reservoirs' dams were burst
  - Plan of the protection of the population in the event of radiological contamination around the site of the Armenia Nuclear Power Plant (NPP)
  - Plans of the protection of the personnel of the special targeted installations.

**5.1.2.** Responsibility for carrying out the plans at national level rests with the Emergency Management Administration under the Government of the Republic of Armenia. At regional and community levels these are the territorial national and local governance bodies, that have the full responsibility.

Territorially the Republic of Armenia has been divided into 10 regions (marzes) plus Yerevan city, the capital, that has a regional status. The role and responsibility level of Emergency Management Administration under the Government of the Republic of Armenia and other Republican executive authorities (ministries and branches), as well as territorial national and local governance bodies in the contingency planning and management area, particular for carrying out the plans are regulated by:

- “Law of the RA on the protection of the population in emergencies”
- “Ordinance by the President of the Republic of Armenia about national governance in the regions (marzes)”
- “Ordinance by the President of the Republic of Armenia about national governance in Yerevan city”
- “Law of the RA on local governance”.

Below cited are some of the powers granted to territorial national and local governance bodies in the contingency planning and management, established under the “Law on the protection of the population in emergencies”.

Article 15. “Competence of territorial national governance bodies”.

Territorial national governance bodies are to:

- Organize the protection of the population in the region affected by the emergency situation.
- Organize the preparation of the plans for prevention, likelihood emergency mitigation and response in the region area and the coordination of the activities envisaged by these plans.
- Involve local governance bodies and the population into activities related to emergency prevention, mitigation and response.
- Entrust territorial services of the Republican executive bodies on prevention and likelihood emergency mitigation and response.

Article 16. Competence of local governance bodies.

The local governance bodies are to:

- Organize the protection of the community population in emergencies
- Organize rescue operations in the community area
- Organize activities aimed at prevention and possible emergency mitigation and response
- Implement early public warning in emergencies.

**5.1.3. A significant mechanism for specifying and up-dating Plans of action at emergencies is the carrying out of regular command-headquarter exercises grounded on these Plans.**

- Specifically, during 2003 in the Republic coordinated by the Emergency Management Administration there were carried out the command headquarter exercises on scenarios, presenting the evolution of an emergency situation caused by devastating earthquakes through Provisions laid down in the Plans.

The exercises were carried out in Shirak, Ararat and Sunik regions (marzes) of Armenia with involvement of the relevant subdivisions from ministries and departments of the Republic, forces and assets of local governance bodies in towns and other settlements of the listed regions.

The exercises were carried out under the guidance and with direct involvement of the Heads of the regions (marzes) and with coordination efforts of the representatives from the Emergency Management Administration and its territorial subdivisions. Basing on the exercises' outcomes the regional Plans were adequately amended and specified.

- In order to adopt on practice the extent to which the National Contingency Response Plan of a probable off design-basis radiological accident at the Armenia Nuclear Power Plant (ANPP) proves to be effective, every 2-3- years in the Republic the stimulation exercises in which participate both the ANPP staff and those national governance bodies (including the territorial governance bodies) and local governance bodies, that complying with the National Plan are assigned to functional duties in the event of a likelihood off design-basis accident at ANPP.

**5.1.4.** Despite of all the importance of the command head-quarter exercises, carried out regularly, the principle examiner of all the actuality and correctness demonstrated by the Contingency Plan of action will be a life itself - a chaos full of surprises and also the regular negative manifestations.

Sharp climatic changes taking place in the Republic produce, mainly, the negative impact on atmosphere phenomena, such as prolonged protracted floods, accompanied by thunderstorms and hailstorms resulting in inundation and submerging of an area, activation of landslide phenomena, significant losses of agricultural crops and losses in economy in general. Particular, losses only from floods caused by spring-autumn freshets in 2003 incurred damage to separate territories of the Republic amounting 1 billion 718 million Drams (1\$ equals to 510 Drams). During spring freshets in 2004 the damage from inundation of the area made 1 billion 187 million Drams, not counting the losses inflicted by that natural disaster to Yerevan city that made somewhere of 470 million Drams.

Within a process of responding to these or those natural disasters the Emergency Management Administration in collaboration with other interested ministries and branches, territorial and local governance bodies of the Republic has fulfilled a big analytical work, basing on which the Preventive and Operative Measure Plans at identical situations have been specified and developed.

There has been drawn up an inventory and carried out assessments of a state of water flow routes, reservoir capacities to receive floods, has been determined clog locations and etc.

Basing on the specified and improved Plans the Emergency Management Administration of the RA in 2004 carried out the command headquarter exercises that took into consideration the specified flood scenarios . The exercises were carried out in the regions of the Republic with the involvement of forces and means of local governance bodies.

**5.1.5. The main obstacle to apply the Response Plans for disasters of even moderate scale at municipal level is a serious lack of material and financial resources.**

**5.2. Has your government established emergency funds for disaster response and are there national or community storage facilities for emergency relief items-mainly food, medicine, tents/shelters? If «yes» please, provide some details.**

**YES and NO.**

The “Law of the RA on the protection of the population in emergencies” reflects the order for accumulation and renewing the emergency reserves, as well as their issuing for emergency response activities. The Republic has adequate ware - houses to store the first necessity products. Specifically, the state reserve system covers a certain number of fuel and food products. The Ministry of Health has set up the reserves for storing certain medical preparations. Particular, the reserve of potassium iodine to protect the population if the area of the Armenian Nuclear Power Plant were radiological contaminated. If required the first necessity item reserves can be engaged on the part of the Armenian Red Cross Society.

Although, as a whole, due to existed some economic problems, **the Republic at present has failed to create the first necessity item reserves in sufficient number in the event of an emergency situation in order to respond properly to the disaster.**

**5.3. Who is responsible for the coordination of disaster response preparedness and is the coordination body equipped with enough human and financial resources for the job? Please, comment on the effectiveness of the coordination work done so far.**

**The Emergency Management Administration under the Government of the Republic of Armenia is responsible for the coordination of preparedness to respond to the disasters.**

The structure has enough human resources to fulfill a coordination job. Along side, while taking into account, that Armenia, due to its location, is one of the most disaster prone countries in the world, as well as financial capacity of the Republic of Armenia at a current transit stage of its development, one has to ascertain that Emergency Management Administration being fairly limited in funds experiencing certain difficulties to fulfill the coordination job.

About an effective performed coordination job by the Emergency Management Administration under the Government of the Republic of Armenia can currently speak the elaboration of the urgent legislative and normative field, coordinated actions undertaken by the Republican national authorities, territorial and local governance bodies in preparedness area to respond to the disasters, beforehand developed mutual actions at disasters by state and voluntary rescue teams, preparation of contingency response Plans for emergency situations bearing different natures at

national, regional and community levels through organization and methodological guidance of the Emergency Management Administration, as well as the command head quarter exercises in the regions of the Republic on scenarios, presenting the development of emergency situations with the use of the Provision laid down in these Plans.  
(more detailed information see in Clauses 1.2, 1.7, 3.2 and 5.1. of the present "National Report").

## **COMPONENT 6. CALL FOR GOOD PRACTICES IN DISASTER RISK MANAGEMENT.**

*Basing on the above analyses and information provided, please provide at least two examples of any successful implementation of disaster reduction activities in your country (could be of local or national or regional scale); any project-base or community experience, national policy interaction between sectors, etc. would be welcome. Provide maximum one page on each example, indicating area of work, institutions and actors involved, duration, impact of the activities, lessons-learnt and if the example have been replicated. You may also kindly direct us to relevant web-based information/organization.*

**6.1. Bearing in mind all the significance of prevention and man-made disaster mitigation and on the initiative of the Emergency Management Administration, the Government of the Republic of Armenia issued Resolution N 702 of 11 November 1998 "About approval of the Provision on a certificate of safety at industrial installations in the Republic of Armenia".**

According to this Resolution the Government entrusted the heads of chemical hazardous installations (installation involved into producing and using potent poisonous substances) and also the heads of hydro technical installations (reservoirs and tailing ponds) to developed in the established order and to approve certificates of safety at an installation.

The aim of this arrangement is to determine a safety level at installations, develop and implement measures to reduce the risks related to theses installations, to prevent accidents at theses installations and to mitigate their consequences.

**6.1.1.** The certificates of safety for 26 **chemically hazardous installations** have already been developed and approved (including "Nairy" enterprise, "Vanadzor chemical combinatory", "Grand Son", Ltd, "Clean iron", Ltd and others). Simultaneously, in compliance with the certificates of safety the measures envisaging considerable risk reduction, in general, have already been carried out at these installations.

**6.1.2.** The process related to developing and approving the certificates of safety for **hydro technical constructions** and the measures aimed to increase their safety is deemed to be also in a satisfactory state.

The Emergency Management Administration has developed the methodic of drawing up the certificates of safety for hydro technical constructions. The certificates of safety should include: installation site, hydrological, hydro-geological and engineering-geological conditions of the territory, inundation areas in the case on hydro-dynamic accidents (number of people, cities and settlements), seismic characteristics of the construction, analyses block-scheme of probable scenarios on arising and spreading of hydro-dynamic accidents; establishing of a plan for those territories that in the event of a emergency situation may be exposed to inundation.

According to the methodic the certificates of safety for 46 major and middle-sized reservoirs have been developed and approved. Besides, one need to notice that the Committee of Water Economy of the Republic of Armenia through the loan of the World Bank has carried out the special researches on 52 reservoirs, developed and realized the measures aimed to increase the reliability of their operation and safety.

Four from five tailing ponds of mining plans have been certified and one enterprise is in a certification process.

**6.1.3.** Below given are the good practices of activating a certificate of safety in order to minimize the disaster risk at a concrete installation. On 16 October, 2003 in refrigerator economy of Yerevan Brandy Factory an accidental release of ammonium was registered. Owing to the timely carried out measures, envisaged by the certificate of safety it became possible to avoid poisoning of both: the factory personnel and the people living in the buildings sited close to the Brandy Factory.

**6.2. The Republic of Armenia has already acquired a certain experience in using information technologies (IT) targeted for natural risk reduction and managing of emergencies.**

**Basing on this experience, the “Civil-military emergency preparing” (CMEP) Program within the framework of “Partnership for Peace” (PFP) Program has suggested Armenia to conduct exercises with the use of scenarios for natural and technological disasters, oriented for geo information technologies (GIS).**

In order to prepare and conduct the exercises on 17-19 November 2003 there was organized in Yerevan the Initial Meeting at which it was planned to carry out the three staged measures:

- 1.CMEP/ GIS orientation and CMEP planning Meeting
- 2.CMEP Main planning Conference
- 3.CMEP Workshop – Exercise.

- **The first stage** took place on February 3-5 2004 in Wiesbaden in the European Center of Engineering Corps of the USA Army. The Armenian participation was represented by the specialists in emergency management and geo information technology areas. As a result of the Meeting there was reached an understanding on principles for developing the synergy between the Republic of Armenia and other states of the Caucasian region.

The Armenian participants were aquatinted with the experience gained by the USA Army in the hydrological disaster management are with the use of geo information technologies.

- **The second stage** took part in Yerevan on 15-17 June 2004. There has been held a CMEP Main Planning Conference, in the work of which the representatives from the USA, Romania, Bulgaria, Georgia, Ukraine and Armenia were involved.

At plenary sessions the issued dealing with synergetic approaches of the participants in the case of major earthquake in Armenia and technological disasters as its result were discussed.

The working groups were perfecting the scenarios on disaster response and interactions to assist the affected country.

- **The final third** stage is planned to take place on 20-23 September 2004. The representatives from Georgia, Romania, Bulgaria, Turkey, Azerbaijan, Ukraine, Russia, Estonia, Greece and the USA have been invited to participate in the event. The CMEP Workshop-Exercise will take part, during which the representatives from the National Emergency Operations Centers will participate in interaction efforts to respond to the scenario based disasters.

The Emergency Management Administration under the Government of the Republic of Armenia is supposing to place the results of the event on INTERNET site: **www.ema.am**. After that the International INTERNET Conference is planned to be held with an aim to further developing cooperation efforts in the area of planning and managing disaster risk reduction.

**6.3. On 18-19 October 2001 on the occasion of the “International Day of Risk Prevention” announced by the United Nations Organization, the Emergency Management Administration under the Government of the Republic of Armenia jointly with national governance bodies of Ararat region, local governance bodies in cities and settlements of the region with participation of the interested ministries, branches and establishments in the Republic was engaged into organizing and carrying out the large-scale measures aimed at the protection of the population in the event of possible burst of dike of Azat reservoir.**

The reservoir has a water volume of 10 billion m<sup>3</sup> and the dike's height is 78 meters. If the dam were to burst, 33 settlements would be inundated due to the flood predicted to have a burst wave height of 40 meters and a velocity of 67 kilometers/hour.

The preparation for conducting such large-scale exercises on October 18-19 had started on good time several months before with coordination of the Emergency Management Administration and involvement of all governance bodies and organization that had the interest in the mission.

Among other establishments the active participation demonstrated the European Center for Training Rescuers, (ECTR), Yerevan city. Bearing in mind that many communities in Armenia, are as well as communities of the Southern Caucasian region, are vulnerable to floods from overflowing mountain rivers or reservoir dams bursts, the ECTR has developed the training Program for school age children living in settlements, that are frequently inundated during typical flood times.

The ECTR has developed three text book manuals (on “Floods”, “Safety on Water” and “Safety on Ice”), which provide theoretical and practical knowledge on the water-related risks for children of school age. The material is interactive and students can color in the silhouette drawings, which portray appropriate actions in the face of various hazards and cover topics ranging from survival in water to first aid basis.

On October 2001 during seven days before the start of the large-scale exercises the ECTR carried out the training in Landjazat secondary school, providing the children theoretical knowledge and practical skills in proper behavior to water related risks, basing on the developed brochures.

knowledge and practical skills in proper behavior to water related risks, basing on the developed brochures.

(The Landjazat village of the Ararat region of Armenia is situated in direct proximity and under the dike of the Ararat reservoir. If the dam were to burst it would take the water one minute to reach the village. It means that the Landjazat village is the most vulnerable one among 33 settlements situated in the reservoir inundation area.)

More than 200 school children from 5-10<sup>th</sup> forms were involved in 20 hour training module targeted for getting acquainted with preliminary measures and safety rules if the reservoir dam were to burst, as well as safety on water. At the end of training course 60 copies of textbook manual were distributed to rural school.

The knowledge and skills acquired by school children and school staff were demonstrated in a fairly successful manner during practical simulation training on the theme: "School evacuation in the event of burst of a reservoir dam". The whole school within minimum length of time on a planned basis carrying out the evacuation to the safe place. The arrangement was performed with coordination of the Emergency Management Administration and involvement of local governance bodies of the Landjazat village within the large-scale exercises carried out in the Ararat region on 18-19 October 2001.

The training could not liquidate or completely remove the risk of a possible flood but it increased the chances that the children of Landjazat can find their way to safety if disaster strikes. It will help to mitigate the impact of future disasters.

**The material cited in the present section of the "National Report" (Clause 6.3) was included into 2003 World Disaster Reduction Campaign Information Kit.**  
**<http://www.unisdr.org/unisdr/campaign2003/campaign2003.htm>**

As it was mentioned in Subclause 5.1.4. of the present National Report, basing on the specified and improved Plans (as a result of analysis of real floods caused by spring-autumn freshets in 2003) the Emergency Management Administration in 2004 carried out the command headquarter exercises that took into consideration the specified flood scenarios. The exercises were carried out in the regions of the Republic with the involvement of forces and means of local governance bodies.





The Government of the Republic of Armenia recognizing that the integration of mutual efforts aimed at minimizing natural hazards and associated with them man-made and ecological disasters is one of the most effective mechanisms of ensuring sustainable development will attach special importance to the joint preparation and implementation of regional Programs on reduction of hazards and disasters bearing a cross border nature through highlighting their both: a significant applied meaning and a not less important political sounding in the direction of creating and strengthening of an atmosphere of trust between the nations.

**7.1.3.** Basing on the mentioned above, there has been developed and approved a main direction in pursuing the national policy in a disaster risk reduction area: through close cooperation with international organizations, foreign states, including the states of the Southern Caucasian region and neighboring countries, involvement of national and local governance bodies, NGOs and the population in developing and implementing initiatives in the above area, to minimize the risks of emergencies.

**7.2.** With taking into consideration of Clause 7.1, **below sited are priority topics to discuss and to agreed upon at the World Conference on Disaster Reduction** to enhance and strengthen the national policy and a practice of the Republic of Armenia, the regional (for Southern Caucasus) policy and a practice on reduction risk and vulnerability from natural and man-made disasters, as well as other specific topics to discuss, which we consider of importance in order to increase the effectiveness of disaster risk reduction in Armenia.

#### **7.2.1. Priority topics.**

- 1. Development and improvement of Geoinformation systems to manage natural disaster risks (earthquakes, spring freshets in mountain river basins thresholds, floods due to a burst of reservoir's dams, landslides processes).**

(more detailed information see in Clauses 7.2.3.(1), 2.1.3.and 6.2. of the present "National Report")

- 2. Development of the Project and carrying out of the "National Campaign on Public Awareness and Informing in the Republic of Armenia at national and municipal levels" (as a basis for setting up of a regional public awareness and informing system for the countries of the Southern Caucasus region in the event of cross border emergencies).**

(more detailed information see in Clause 7.2.3.(2) of the present "National Report")

- 3. Development and realization of the "Program of active impact on atmosphere phenomena" including:**

- ñ use of iodine silver ground generators to protect against hailstorms, transmission to use ecologically clean, safe reagents and technical means.
- ñ improvement of new perspective know-how of impact on hail processes and increase in the number of precipitation with the use of new ionic generators.

(more detailed information see in Clauses 4.1 and 4.3.1 of the present "National Report")

**4. Further forming and up-dating of the National Legislation in a disaster risk reduction area, harmonization and bringing it in line with internationally accepted principals and norms in the mentioned area.**

(more detailed information see in Clause 1.1 of the present "National Report").

**7.2.2. Other specific topics.**

1. Development of the Conception on reduction of vulnerability in the Republic of Armenia from natural and man-made disasters, bearing in mind main social, economical, physical, environmental, political and cultural factors.
2. Reduction of vulnerability of life support infrastructures running along side mountainous territories from hazardous geological phenomena.
3. Implementation of the Program on stabilization and reduction of vulnerability of landslide areas in Armenia through the use of traditional local agroforestmilioration methods (special forestation of the territory with mulberry trees planted on landslide prone areas).  
(more detailed information see in Clause 3.5.1 of the present "National Report")
4. Increase of environmental safety of existing tail ponds of mining plants in Armenia and the safety of environment.

**7.2.3. In this section is given a brief substantiation of an urgency and priority of the priority topics 1 and 2, cited in Subclauses 7.2.1, to be discussed and agreed upon at the World Conference on Disaster Reduction from a point of enhancing and strengthening the**

national policy and a practice of the Republic of Armenia, as well as the regional (for Southern Caucasus) policy and a practice on reduction risk and vulnerability from natural and man-made disasters, bearing a transborder nature.

1. **As it was stated above in the given National Report, one of the priority directions in the national policy, protection of the population and life support infrastructures from natural and technological disasters is the development and introduction of up-date effective methods of risk assessment, modeling of dynamics of possible development of disasters and their catastrophic consequences, estimation of the forces and means required to disaster response.**

As such a tool the Emergency Management Administration of the RA throughout the last years has been elaborating and developing the **Geoinformation systems (GIS) to manage natural disaster risks (earthquakes, spring freshets in mountain river basis thresholds, floods due to a burst of reservoir's dams, landslides).**

**The experience acquired in using such systems to protect the risk prone national infrastructures and to handle emergencies in Armenia is supposed to be exhibited and or/ to be reported at the Conference.**

**The preliminary Conception and the experience in applying information technologies together with information means themselves will be placed on WEB site: [www.ema.am](http://www.ema.am).**

Not less important is meeting, based on the experience under discussion, the agreements to use the agreed methods for submitting (describing) and assessing natural disaster risks, software assets and data formats.

It is also expedient to develop and approve the agreed methodics to evaluate a state and a forecast for dynamics of disaster risks development and to plan interactive actions in emergencies.

Such Agreements are crucial for the countries of the regions like Southern Caucasus, where natural disaster risks trend to have common genetic and geological features and the activation effects for many of them might acquire a cross border nature, threatening the population and the environment of several neighboring states. Sharing of experience, particular the discussion of the experience gained by the Republic of Armenia, with countries of Southern Caucasus to use the common methodological and information basis to handle the risks of probable disasters, will promote the coordination work on disaster risk reduction for all the countries of the region.

If enough financial and tangible resources are available the works in the stated avenues could be deepened in the direction of multirisk approaches, as well as broaden for a larger territorial area of the Republic and a greater number of settlements, lines and infrastructure installations sited in the highest active areas.

**2. For the Republic of Armenia** being a landlocked country in which small territory there exists the probability of arisen of almost all types of natural disaster and technological accidents (including devastating earthquakes and radiological accidents) **the setting up of the**

**awareness and informing system on possible risks oriented for all the segments of the population and its training in the skills of behavior in emergencies has become a vital necessity.**

(see Clause 3.6.5. of the present "National Report".)

One of the most effective steps in the above avenue, bearing in mind the conditions typical of both: Armenia and the Southern Caucasian region as a whole (See in detailed "Introduction"; Clauses 1.1. and 7.1. of the present "National Report") is the further development and improvement of the **"National Campaign on public awareness and informing in the Republic of Armenia at central and municipal levels"** (as a basis for setting up of a regional warning and informing system for the population of the countries of the Southern Caucasian region in the event of threats of transborder emergencies), in line with preparation and a regular holding of the "National Campaigns" on minimizing of risks of a concrete disaster.

Valuable enough in the stated avenue is deemed **the Dutch experience** acquired in developing and regular holding of the "National Campaign on public warning and informing in emergencies", as well as **the experience of the Czech Republic** where the similar "National Campaign have been held with involvement of the Dutch specialists who provided the methodological aid and by financial support of the relevant structures.

The setting up of a public awareness and informing system in the Republic of Armenia" could serve a basis for setting up of a similar regional system for the countries of Southern Caucasus, whose goals are warning and informing of the population in the region if it were threatened by emergencies bearing a transborder nature, coming from territories of the countries of the region and from other neighboring states.

The experience gained in training of the population in the skills of reacting to the disasters, being typical of the countries of the region, could be successfully utilized whilst carrying out the adequate campaigns in the neighboring countries, bearing in mind specifics of their geographical and nature - climatic conditions.

In this way, a goal to create a system of warning and informing of the population in the Republic of Armenia on possible risks and its training in the skills of behavior in times of emergencies come out of the pure national framework, **attaining an important regional nature.**

**It is expedient as an initial step within the framework of the "International Strategy for Disaster Reduction" to envisage to hold in autumn 2005 (or in 2006) in the Republic of Armenia a Regional Conference on the "Problems of disaster risk managing, warning and informing of the population regards threats posed by emergencies bearing a transborder nature" in the context of the use of the Dutch and Czech experience in the Southern Caucasian states and neighboring countries.**

**As an outcome of the Conference** it is supposed that a relevant mutual document concerning the establishment of cooperation links in a disaster risk reduction area, particular in a public warning and informing area, regards emergency threats bearing a transborder nature should be developed and approved.

If a decision on the part of the "International Strategy for Disaster Reduction" Secretariat is positive, than in 2005 there could be conducted preparation work on "Regional Conference"

and simultaneously could be further developed and improved a Project and carried out necessary preliminary procedures to initiate the "National Campaign" in the Republic of Armenia in 2005-2006 (2006-2007).

**Here the Campaign should be viewed as a basis to set up a regional public warning and informing system in the Southern Caucasian region if there is a threat of emergencies bearing a transborder nature.**

**Synergetic and interactive efforts in areas of the public protection, disaster risk reduction and emergency response will (primarily, the emergencies of transborder nature) result in growing of the confidence between the nations and can promote the mitigation of a political tension in the region and remove barriers in the cooperation and other interstate activity areas.**

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**The provided information was consulted with the following.**

- 1. Emergency Management Administration under the Government of the Republic of Armenia.  
(Coordinator of the National Report)**
- 2. National Survey for Seismic Protection, an Agency under the Emergency Management Administration.**
- 3. Ministry of Nature Protection of the Republic of Armenia.**
- 4. Ministry of Urban Development of the Republic of Armenia.**
- 5. Ministry of Agriculture of the Republic of Armenia.**
- 6. Committee of Water Economy under the Government of the Republic of Armenia.**