

THE REPUBLIC OF ARMENIA

RESOLUTION

10 June, 1999 N 429

Yerevan

About the Complex Program of Seismic Risk Reduction in the Territory of Armenia

The Government of the Republic of Armenia r e s o l v e s to:

1. Approve the Complex Program of Seismic Risk Reduction in the Territory of Armenia. (SRRA).
2. In the time of the seismic risk reduction concerning problem's implementation, all the ministries, administrations, municipal bodies have to be guided by the complex program of SRRA.
3. The present resolution is valid from the moment of its proclamation.

**Prime-Minister of the
Republic of Armenia**

A. DARBINYAN

COMPLEX PROGRAM

ON SEISMIC RISK REDUCTION IN THE TERRITORY OF ARMENIA

I. GENERAL PROVISIONS

1. Introduction

The State Complex Program on Seismic Risk Reduction in the Territory of Armenia (SCPSRRRA) is elaborated on the base of the seismic risk reduction strategy and the following international and institutional programs approved and still acting in

Armenia:

- Program for Seismic Protection of population of Armenia, implementing by the National Survey for Seismic Protection under the Government of the Republic of Armenia (NSSP RA) since 1991;
- DMTP National Program, approved and still being financed by UN since 1999, and implementing by the Emergency Management Administration (EMA) under the Government of the RA with all the concerned ministries and institutions;
- Regional Program of Seismic Protection of population of Armenia, Georgia and Azerbaijan, approved and still financing by UN since 1999 based on the NSSP RA.

Program involves:

- elaboration and materials of NSSP RA, as well as of organizations of Town Planning Ministry of RA and the National Science Academy of RA:
- materials of International Scientific Conferences and Symposia related with the modern achievements in the field of Seismic Hazard Assessment and Seismic Risk Reduction:
- elaboration and materials of works on NSSP RA International Agreements.

The Program is developed by authors (under supervision of Prof. S. Balassanian, NSSP RA), presenting concerned ministries and institutions, and non-governmental organizations dealing with various aspects of seismic risk reduction complex problems..

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Arzoumanyanyan, A. Aloyan (Ministry of Townplanning of RA), G. Matevosyan, A. Tarverdyan, K. Sarafyan (EMA RA), S. Ohanyan, B. Voskanyan (Governmental Administration of RA), R. Nicoghosyan (Health Ministry of RA), A. Tadevosyan (Social Security Ministry of RA), A. Sargsyan (Ministry of Foreign Affairs, Trade and Industry), N. Mirzoyan (Yerevan State Medical University), A. Doloukhyan (Red Cross) have their own contribution in this program.

All the parts of the program have been successfully approved at the most important international scientific conferences on seismic risk reduction and the principal two ones were dedicated to the fifth and tenth anniversary of the Spitak 1988 devastating earthquake.

2.Problem Description

Nowadays, at the threshold of the XXI century, seismicity and seismic risk problems

are getting significantly important, so far as the population density of the globe increases so much, that number of people is sharply increased in the seismically active zones from the one side, and from the other side the population explores more and more new large territories.

Taking into account, that the new territories exploration for increase or distribution of population, is uncontrollable process, we can suppose, that the quantitative changes will result in seismic hazard and stipulated by the last seismic risk of new quality.

The statistics of the strong seismic events and human losses related with it, as well as economic and social shock statistics reveal that we are on the verge, when the seismic risk quantitative changes will result in its new quality. That new quality will be related with high probability of numerous victims, destruction of vast territory, life-line deterioration, difficulties with help to its nationals by the Government of the country, suffered by the strong earthquake, and by the world community. That kind of perspective is especially real for such country as Armenia situated in a seismically active zone and having economic problems. The special physical- geological conditions related with the Arabian and Euro-Asian plates collision and also the mountainous relief and sharp continental climate have stipulated in the territory of Armenia the kinds of natural hazards, such as strong earthquakes, landslides, rock avalanches, deluges, downpours.

Armenia, as one of the ancient centers of civilization with its ancient writing and culture, has developed in its historical period as an agricultural and then as an industrial country. The industry progressed mostly in 1960-1980, leaving as a legacy the Nuclear Power Station of Armenia, chemical and other industrial facilities considered as a center of technical hazard. The population extreme density of Armenia very unequally distributed by it's growing urbanization, social-economic difficulties related with passing from one political system to another in existence of natural and technical hazards in the republic are creating a particularly high danger of disaster origin. From the various kinds of disasters in the territory of Armenia the most detrimental of them considered earthquakes, known here since 18-15th centuries B.C.

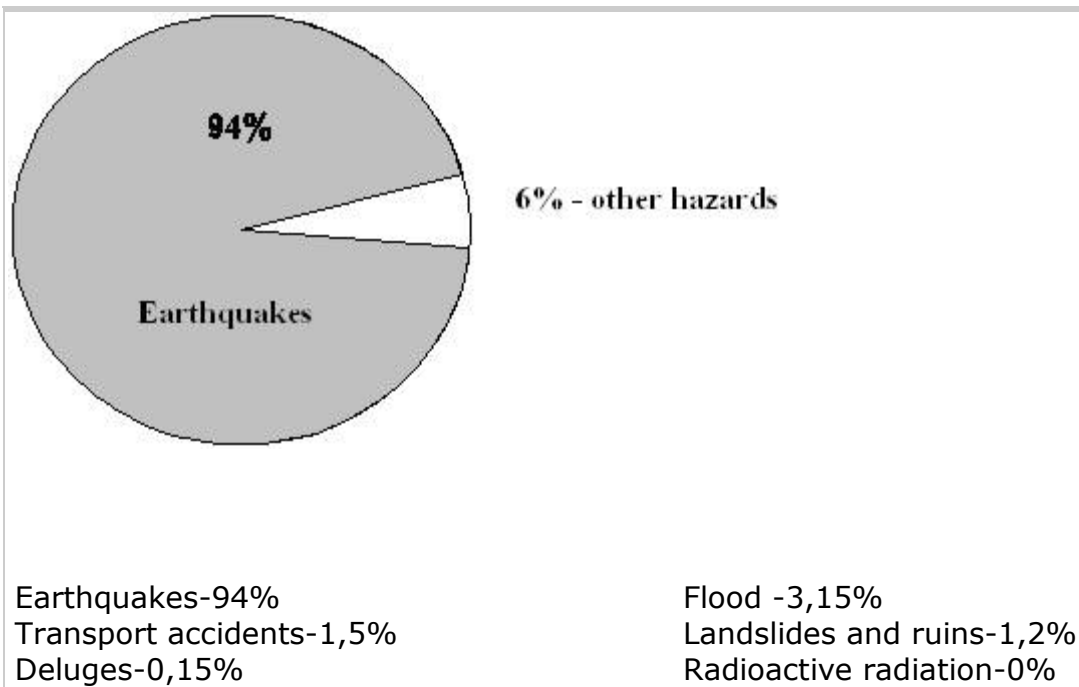


Fig. 1. The damage occurred from various kinds of hazards in the territory of Armenia during 1988-1998

II. PROGRAM JUSTIFICATION

3.3. The State of the Arts

The seismic risk determined by objective and subjective factors in the territory of Armenia has reached to its highest level during the whole the historical period.

Objective factors:

- territory of Armenia is practically entirely situated in a seismically active zone:
- earthquake power reaches $M=7.1$ (present time period) and $M=7.5$ (according to historical and paleoseismical assessment), the average depth of focuses is equal to 10km, all the focuses related to up to 1sm/year active faults of average drift, the duration of destructive earthquakes in a case of unfavorable ground conditions could reach to about 1 minute, average occurrence of earthquakes with the magnitude $M=5.5$ is 30-40 years.

Subjective factors:

- in an extremely unequal distributed conditions, more than 40% of the population of republic lives in Yerevan city (the higher density of population is 106 person/km)
- seismically not resistant residential and construction networks, that is, their seismic

resistance level is significantly lower than the seismic hazard level,

- plenty of hazardous objects, such as Nuclear Power Station, chemical plants, reservoirs etc. with a level of seismic resistance that needs to be improved,
- hazardous productions placing in densely populated settlements or very near to it,
- cities and big settlements built on bad grounds such as in Gyumri, the second largest city in Armenia,
- sharp default of real observations in the past (till 1991) which could allow to make a real assessment of long-term and current seismic hazard,
- insufficient preparedness to operative actions of the Government of Armenia before, during and after the earthquake,
- population ignorance of behavior before, during and after the earthquake,
- lack of material and technical resources for operative placement, rendering assistance to the suffered, earthquake consequences liquidation,
- hard economic problems according to a transition from one social system to another.

The most dangerous condition from above mentioned for the present time and future for Armenia, a strong earthquake in the territory of Yerevan is becoming probable. For seismic risk reduction in Armenia the united efforts of all the ministries and departments by coordination of NSSP RA is necessary.

4.The General Objective and the Main Problems to be Solved

The general objective of the program is the seismic risk reduction in the territory of Armenia by the level of the country sustainable development and population safety. The Program includes the solution of the three main problems:

- 1.Seismic hazard prediction,
- 2.Seismic risk assessment,
- 3.Seismic risk reduction.

4.1 Seismic hazard prediction includes two main parts:

- primary seismic hazard prediction,
- secondary seismic hazard prediction.

The primary hazard is a ground shakings, cracks, and earth's crust faults, that is an earthquake. The secondary hazard is the natural and technogenic phenomena according to earthquakes.

In the number of natural phenomena are: landslides, faults, downpours, collapses, different sediments, ground dilution.

In the number of technogenic phenomena are: accidents, fires, deluges.

Prediction of the primary hazard includes the long-term and current seismic hazard assessment. The long-term hazard assessment means to predict the mostly possible temporary cracks location and strength in consequently raising scales in the territory of Armenia.

The General Seismic Zonation (GSZ) M=1:500000.

The densely populated settlements and responsible objects Detailed Seismic Zonation (DSZ) Scale=1:200000.

The densely populated settlements and essential facilities Seismic Micro Zonation (SMZ) Scale=1:10000.

The long-term seismic hazard assessment, in compliance with the international standards of NSSP RA and included in the seismic hazard world map in the frame of a Global Seismic Hazard Assessment Program of UNESCO, shows (fig.2), that in the territory of Armenia (Scale=1:500000) in the next 100 years, earthquakes with mostly intensive magnitude of 8-10 could be expected.

The new seismic zonation map of the territory of Armenia, compiled by NSSP RA, in October of 1998 has been handed to the Ministry of Town planning of Armenia as a normative document for planning of towns, buildings and structures, for their fastening till seismic hazard level accordance; solution of the global problem of population distribution with the proper seismic resistant buildings; implementation of seismic resistant building.

Current Seismic Hazard Assessment means prediction of possible strong event (intensity value 7 on MSK-64 scale) location, strength and time in the territory of Armenia.

4.2 Seismic Risk Assessment is a complex program, the solution of which makes us to take into account all the above- mentioned objective and subjective factors. The first approach to the solution of this problem is the first map of seismic risk for the territory of Armenia passed in the international examination and compiled by the Armenian NSSP where the three important factors influenced on the risk level , are used (fig.3)

-seismic hazard, compared with buildings and structures seismic resistance,

-survey of comparatively lower seismic resistant buildings and structures with more than 10sq.km survey in each settlement, compared with the general survey of the territory of Armenia,

-number of population living in a comparatively lower seismic resistant buildings and structures with more than 10sq.km survey in each settlement, compared with the

general number of population of the territory of Armenia.

According to the map on the 3rd picture, the maximum seismic risk is liable for Yerevan city in the territory of Armenia, where the most population resides. The seismic risk proper assessment would let us implement an effective program of its reduction.

4.3 Seismic risk reduction supposes the following problems solution:

- elaboration and acceptance of normative documents and proper rules, guaranteed theirs juridical base for seismic risk reduction,
- establishment of a center for seismic risk reduction management on the base of the Armenian NSSP,
- early warning,
- reduction of a territory vulnerability,
- preparedness and training of population,
- preparedness of institutions for risk reduction management,
- medical preparedness,
- task forces,
- rescue,
- insurance,
- liquidation of population migration.

5.Expected Results

Implementation of this program will give the following results:

- a new perspective long-term state policy will be formed; seismic risk reduction directed to a population security and development of a country,
- a seismic risk reduction planned system in the territory of Armenia by NSSP RA, which will be implemented by the ministries, departments, public organizations, otherwise, practically jointly with all the publicity proper to an international approach to the solution of this most difficult problem,
- the country general disaster sustainability will be increased,
- preconditions will be created for great financial investments in economics, and submitted to higher seismic risk in Armenia,
- the newest technologies for seismic risk reduction will be involved in all the directions: from seismic risk prediction till seismic resistant building and population preparedness, new technologies deposit, which could be possible to use in all the other fields of state activities,

-the technical and knowledge bases for insurance, science and engineering development will be improved. Above-mentioned expected results could be got by the implementation and realization of the programs, supplemented each other by three main directions:

1. In the field of Seismic Hazard Prediction:

- further development of national observations, also collecting data, national center of implementation and analyzing,
- future development of data and knowledge base, prediction of seismic hazard according to GIS and experimental systems and its mapping,
- implementation of special rules of prediction information transferring to the President of the Republic of Armenia, the Government of the RA, responsible ministries, departments and population.

2. In the field of Seismic Hazard Assessment:

- creation of databases and knowledge clearing house,
- multi-parameter analysis of risk,
- seismic risk mapping in GIS format.

3. In the field of Seismic Risk Reduction:

- elaboration of a rule of seismic protection of population,
- elaboration of normative documents of establishing a juridical base for implementation of seismic risk reduction long-term program,
- development of the management center of seismic risk reduction on the base of the NSSP RA with center and ministries, departments, public and other responsible organizations as operative network,
- early warning system creation in the case of possible strong earthquake in the territory of Armenia,
- regional deficiency reduction by seismic resistance heightening of existing buildings and structures, creation of effective landslide resistant engineering structures and landslide locations, new seismic resistant building on the base of new national norms, confirmed by the Ministry of Urbanization of RA and other activities of engineering protective direction of the territory of the republic,
- raising of population preparedness level by organizing special radio-TV programs according to published and distributed literature and papers, elaborating and using of training programs about the actions before, during and after the earthquake, psychological preparing of different groups of people, teaching to an individual and collective methods of help, creating a net of teaching prepared informers for

protection of population in all the districts of Armenia from earthquakes and other disasters connected with it. All the mentioned programs are realized by applying a special approach to each kind of layers of society for the different layers of people,

- preparedness of institutions to the risk management by elaboration of methodological sources about the state institution actions in a case of strong earthquakes or of its hazard, - - elaboration of practical course material about making decisions in a case of strong earthquakes or of its hazard, elaboration of juridical acts and rules projects of the RA in the field of population seismic protection, preparedness and training of the teaching base improvement of the senior workers of state institutions,
- medical preparedness raising through elaboration and implementation of automatic program of disaster medical information-management, elaboration and deposition of disaster medical survey development program on a national level, discussion of damage peculiarities in the aim of risk prediction of possible hygienic loss(victims and injured),elaboration of medical-geographic maps expressing the necessary conditions and forces for earthquakes results stopping, elaboration of teaching programs about medical help offering at before-hospital and hospital periods, elaboration of medical papers, information, methodic observations, preparedness of medical specialists(doctors and middle medical survey) for medical help at before-hospital and hospital period, preparedness of not medical specialists for giving medical help, getting a teaching modern of moving hospitals by transport, necessary instruments for improvement of staff preparing process,
- further development of material-technical base of special rescue brigade of NSSP RA and special rescue brigades of EMA RA, preparedness and training of rescues by getting international certificates, including other rescue brigades of Armenia having 2-3 training courses each year,
- establishment of a base of insurance system in a case of earthquakes by improvement of current constitutional acts and elaboration of new law, constitutional and normative acts, organizing of information base and insurance control, creation of favorable conditions for the actions of joint-stock companies,
- liquidation of migration of population by elaboration of constitutional base of emigration act stabilization in a case of earthquakes, elaboration of stable activity guaranteeing program of primary necessity infrastructure, technical supporting of information net of emigration, improvement of information and connection systems, actions of populations before, during and after earthquakes and also elaboration and deposition of teaching programs of social-psychological vulnerability reduction,
- psychological vulnerability reduction of a person by elaboration of collecting

information from the proper international organizations, elaboration of stress overcoming methods in conditions of the Republic of Armenia, elaboration of teaching programs of existing center base.

The implementation of this Program will give an opportunity to increase the preparedness level of population and the country during strong earthquakes, which will result to the most social-economic stability of a country by reduction of finances for earthquakes liquidation results.

6.The Main Users

The most vulnerable sections of population.

The specialists working in the field of disaster management.

The school and pre- school teachers.

The major employees of the governmental institutions.

The major employees of local self-governed institutions.

7. The Strategy and Implementation of the Program

The strategy:

The program is carried out by the NSSP RA jointly with all the concerned ministries and departments. The NSSP RA, considered as a customer and responsible executor, carries responsibility for the implementation of the program. The basic principles of seismic risk reduction strategy in the territory of Armenia as follows:

- preparedness priority over the recovery,
- priority of all the elements of seismic risk reduction in the field of preparedness,
- unity of efforts of ministries, departments, public organizations and generally specially completed efforts of society,
- simultaneous realization of sub-programs in all the directions of seismic risk reduction sub-problems,
- internationalization of the program by involving the best national and international centres in it's implementation,
- involving of foreign donors and investors for financing the various sub-programs of the program,
- multistage nature of the program formed from short-term (up to 1 year), medium-term (up to 5 years) and long-term (up to 20 years) sub-programs, which are implemented by the various ministries and departments.

Implementation

The program will be implemented by the various ministries, departments and public organizations (see the appendix).

The NSSP RA is responsible for the implementation of the program in case of necessity the NSSP RA is able to involve different foreign experts for implementation of the various parts of the program by means of sponsors. The implementation of the program will increase the preparedness level of population at the time of strong earthquakes. Thus, it will result to the next seismic hazard significant reduction, which, generally, will support the population stable social-economic development.

8.Special Concepts

During the program implementation the big progress will be gained in various directions:

- improvement of the surroundings condition and it's preservation,
- activation of public organizations and their involve to the general management system,
- organization of teaching children to the skills of vital necessity,
- rehabilitation of social-medical condition of the invalids and their involving into the general management system,
- activation of national minority ion the RA and their involving into the field of social collaboration.

III. THE OBJECTIVE OF PROGRAM DEVELOPMENT

- creation of seismic risk reduction modern system and development of the State system of Armenia for protection of society stable development and reduction of population and their property vulnerability at the time of earthquakes,
- creation of conditions for preparedness of population and their stable development,
- creation of population training effective system for existence in the seismoactive conditions of Armenia.

IV. THE IMMEDIATE OBJECTIVES, RESULTS AND ACTIVITIES

9.Immediate Objectives

1.Immediate objective 1:

Population vulnerability reduction due to earthquakes and other disasters connected with them.

1.1. Output 1.

Progressed prediction of seismic hazard and other secondary related hazardous phenomena..

1.1.1. Activity 1.

Development of seismic hazard and other secondary hazards existed monitoring based on the national multiparameter observation of the NSSP RA.

1.1.2. Activity 2.

Development and approval of the existed information and analytical system.

1.1.3. Activity 3.

Expansion and improvement of national observation network in various hierarchical levels.

1.1.4. Activity 4.

Expansion of the informational base on seismic precursors.

1.1.5. Activity 5.

Confirmation of the standards between seismic precursors and strong earthquakes.

1.1.6. Activity 6.

Implementation of proper experimental systems for prediction of seismic hazards and other related hazards.

1.1.7. Activity 7.

Seismic hazard short-term, medium-term and long-term mapping.

1.1.8. Activity 8.

Implementation and supplement of seismic zonation methods.

2. Immediate Objective 2.

Seismic risk assessment.

2.1. Output 1.

Seismic risk maps.

2.1.1 Activity 1

Creation of data base.

2.1.2 Activity 2

Development of GIS software.

2.1.3 Activity 3

Risk computation and mapping.

2.1.4. Activity 4

Production of maps.

3. Immediate objective 3

Seismic risks reduction in the territory of Armenia.

3.1 Output 1

Center for seismic risk management was established on a base of the Armenian NSSP and operational communication network

3.1.1 Activity 1

Development of an efficient channel between responsible national organizations and regions

3.1.2 Activity 2

Application of the new technology to assess the scale and character of disasters to support decision making in the allocation of resources for rescue and emergency assistance in Armenia.

3.1.3 Activity 3

Creation of database on the components of seismic risk reduction

3.1.4 Activity 4

Installation of the Armenian NSSP local network..

3.1.5 Activity 5

Installation of the communication network between Armenian NSSP and all other responsible ministries and departments.

3.2 Output 2

Creation of an early warning system for strong earthquakes on the whole territory of Armenia.

3.2.1 Activity 1

Development of the project of the early warning system for strong earthquakes.

3.2.2 Activity 2

Upgrading of the national observation network of the Armenian NSSP for use in the early warning system.

3.2.3 Activity 3

Creation of software for the early warning system.

3.2.4. Activity 4

Development of an alarm system network for early warning.

3.3 Output 3

To decrease the vulnerability of buildings and structures, lifeline services and infrastructure of settlements.

3.3.1 Activity 1

Development of programs to decrease the vulnerability of territories in a case of strong earthquakes

3.3.2 Activity 2

Development of the codes of RA in «Engineering Research in Building» in accordance with the new method of seismic resistance codes

3.3.3 Activity 3

Seismic microzonation of the cities and other settlements of RA according to the new methods.

3.3.4 Activity 4

Detailed mapping of buildings of the cities and settlements of RA and decision making of design seismic resistance of every structure

3.3.5 Activity 5

Creation of ground strong motions database and obtaining of synthesized accelerograms for different ground types of Armenia

3.3.6 Activity 6

Implementation of research to reveal existing technical condition and damage extent of buildings and structures in the cities and settlements of RA, in accordance with the requirements of the new method.

3.3.7 Activity 7

Development and application of complex approach assessment of influence of strong earthquakes

3.3.8 Activity 8

Development and publication of guideline on calculation and construction of buildings and structures in accordance with the Building Codes of RA II-2.02-94

3.3.9 Activity 9

Improvement and application of technologies for increase of seismic resistance of buildings and structures with temporary suspension and without suspension of their functional activity

3.3.10 Activity 10

Development and application of methods of engineer protection of cities, settlements, residential, urban and industrial facilities, transportation networks (roads and railroads) as well as lifeline services from strong local geological and hydro-geological processes conditioned by strong earthquake

3.4 Output 4

Developed complex program for population acquaintance with necessary activities for seismic hazard and risk reduction for prevention of possible disasters.

3.4.1 Activity 1

Development and introduction of training curricula for different layers of population, using experience of leading countries and adjusting it to the conditions of Armenia

3.4.2 Activity 2

Training of teachers and educational professionals on strong earthquake preparedness

3.4.3 Activity 3

Creation of training videos and clips to be broadcast on the central and regional TV channel

3.4.4 Activity 4

Creation of radio programs for the population on the national and regional radio channels.

3.5 Output 5

Development of comprehensive management training program for ministries and departments leading officials in the conditions of strong earthquakes or its real hazard.

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3.5.1 Activity 1

Organization of training courses, special TV/radio programs for the education of the leading officials of mid/high level state governmental bodies in the area of risk management.

3.5.2 Activity 2

Creation of videos and preparation of normative documents on disaster management and their using in the training program.

3.5.3 Activity 3

Organization of practical training in the form of exercises, analyzing of specific emergency situations and development of decision making process in disaster management.

3.6 Output 6

Increased medical preparedness.

3.6.1 Activity 1

Development of informational management system for disaster medical services using experience of leading countries.

3.6.2 Activity 2

Elaboration of the main legislative and normative-legal documents for state warning system and elimination of medical consequences of disasters.

3.6.3 Activity 3

Training of medical and non-medical experts on extending medical assistance.

3.6.4 Activity 4

Forecasting of the risk of possible medical losses rising during strong earthquakes.

3.6.5 Activity 5

Creation of mobile autonomous units for extending specialized medical assistance within the areas of impact.

3.7 Output 7

Capacitated Rapid Task Force on the basis of governmental and non-governmental organizations, increase of the level of their preparedness in a case of strong earthquakes.

3.7.1 Activity 1

Creation of normative documents on formation of Rapid Task Force.

3.7.2 Activity 2

The development of guidelines on the coordination of Rapid Task Force in a case of disasters.

3.7.3 Activity 3

Physical renovation of the training facilities of Rapid Task Force and their requirement with modern communication hardware.

3.7.4 Activity 4

Creation of complex training program on prepare of the staff of Rapid Task Force.

3.8 Output 8

Network of mobile search and rescue teams.

3.8.1 Activity 1

Development of a program on creation of coordination center for search and rescue teams actions.

3.8.2 Activity 2

Elaboration of laws and instructions regulating search and rescue teams work.

3.8.3 Activity 3

The modernization of the technical base and the equipment for search and rescue teams.

3.8.4 Activity 4

Development and promotion of training program for rescuers preparedness.

3.9 Output 9

Disaster insurance structure.

3.9.1 Activity 1

Elaboration of concept on disaster insurance.

3.9.2 Activity 2

Elaboration of the financial base for development and activation of insurance program.

3.9.3 Activity 3

Elaboration of insurance structure for development and activation of insurance program.

3.10 Output 10

Developed package of measures to encourage people against migrating from disaster affected areas.

3.10.1 Activity 1

The development of programs to reduce the vulnerability of the territories and settlements (activity on engineering protection of territories, forest protected zones, etc.) in disaster prone areas.

3.10.2 Activity 2

Development of a program to protect lifeline services in disaster prone areas.

3.10.3 Activity 3

Development of mechanisms of subsidies and tax preferences for temporarily displaced persons to attract them to return to their settlements.

3.10.4 Activity 4

The establishment of an information network for the monitoring of population migration.

3.10.5 Activity 5

Population settlement as well as zoning by admitted levels of urbanization, creation

of interconnected system, approval of emergency base of settlement system.

3.10.6 Activity 6

Specification of planning structures of the cities and other settlements of RA and their conformity with the acting seismic norms and different seismic risk zones.

3.10.7 Activity 7

Subdivision of financial sub-constructive elements and approval of specific conditions and regimes (industry, agriculture, building base, etc.).

3.10.8 Activity 8

Distribution of transport, engineering, power supply substructures as well as education and health service, complex planning organizations.

3.10.9 Activity 9

Planning and territorial organization of material objects (buildings, structures)

3.11 Output 11

Reduction of social-psychological vulnerability of both the affected population and persons extending aid to the population (rescuers, etc).

3.11.1 Activity 1

Analysis of international experience in the field of social-psychological vulnerability of population in a case of disaster.

3.11.2 Activity 2

Systematization of data collection and development of a training manual on the theme of «Social-psychological vulnerability of population».

3.11.3 Activity 3

The development of the program for overcoming stress and the adaptation to local conditions.

3.11.4 Activity 4

Implementation of a training program on the population vulnerability reduction in a case of disasters.

3.12 Output 12

Created legal base to reduce seismic risk on the territory of Armenia.

3.12.1 Activity 1

Development and adoption a law for seismic protection of population.

3.12.2 Activity 2

Development and approval of normative acts (documents) regulating the actions on seismic risk reduction on the territory of Armenia.

V. PROGRAM INPUTS

Objectives	Inputs by the Governmental Organizations of the Republic of Armenia	Donors Input
1. Seismic hazard prediction	Office space, relevant specialists and their knowledge and experience, technical means, operational and maintenance expenses of buildings and equipment, monitoring equipment and gadgetry, maintenance expenses, software.	Financial support, methodological and technical assistance; consultative assistance, expert assessments, business trip expenses
2 Seismic risk assessment	Office space, relevant specialists and their knowledge and experience, operational and maintenance expenses of buildings and equipment, maintenance expenses, software	Financial support, methodological and technical assistance; consultative assistance, expert assessments, business trip expenses
3. Seismic risk reduction	Office space, relevant specialists and their knowledge and experience, operational expenses of communication system, expenses for using of fund materials, business trip expenses on the territory of Armenia, a part of training expenses, database on disaster medicine, consultations, monitoring systems operational expenses, design, software, laboratory and natural condition testing, gadgetry and equipment.	Financial support, methodological and technical assistance; consultative assistance, expert assessments, business trip

		expenses
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VI. PROGRAM RISK

The change in the policies of the Government of the Republic of Armenia towards priority of the program of the seismic risk reduction on the territory of Armenia.
The absence of donors for the implementation of the program.
A change in the donors policy and suspension of financial support from the side of donors.

VII. MAIN OBLIGATION

Any activity within the framework of the National Project should not contradict to the requirements of the legislation of the Republic of Armenia.

VIII. REPORTING

For the program implementation reporting should be realized for two stages:

first stage is reporting of organization-executors to responsible executor (coordinator) of the program;

second stage is reporting of responsible executor (coordinator) to the Government.

First-stage reporting will be realized on specific bilateral agreements concluded between responsible executor and organization-executor.

Second-stage reporting will be realized in accordance with the reporting plan of the responsible executor to the Government. Reporting plan of the responsible executor to the Government should include reporting of the responsible executor at least once every six month during the whole duration of the program implementation. The Government may request additional reporting by special order, giving at least three month notice for the responsible executor before report consideration.

IX. LEGAL CONDITIONS

Any changes or additions in the program can be made only on agreement between

the Government and responsible executor.

All activities under the Program should correspond to the legislative requirements of RA.

X. PROGRAM STRUCTURE

The program structure is presented on Figure 2 in the scheme form.

Program executors by the activities (see. section II) are:

1. National Survey for Seismic Protection of the RA

1.1.1- 1.1.7, 2.1.1-2.1.4, 3.1.2-3.1.5; 3.2.1- 3.2.4, 3.3.1 - 3.3.3, 3.4.1-3.4.4, 3.5.1-3.5.3, 3.7.1-3.7.4, 3.10.1

2. Emergency Management Administration (EMA) under the Government of the RA

3.1.2- 3.1.3; 3.4.1 - 3.4.4; 3.5.1 - 3.5.3; 3.7.1 - 3.7.4; 3.8.1 - 3.8.4; 3.10.1 - 3.10.4

3. Ministry of Urban Development of the RA

1.1.2 - 1.1.6; 2.1.1, 3.3.1 - 3.3.2, 3.3.3, 3.3.4

4. Ministry of Internal Affairs and National Security of the RA

1.1.6; 2.1.1, 3.1.3

5. Ministry of Science and Education of RA

2.1.1; 3.1.3

6. National Academy of Science (Institute of Geophysics and Engineering Seismology, Institute of Geological Sciences)

1.1.2 - 1.1.6; 2.1.1, 3.1.3

7. Ministry of Industry

1.1.2 - 1.1.6; 2.1.1, 3.1.3

8. Ministry of Post and Telecommunications

3.1.1; 3.1.4; 3.1.5; 3.2.1; 3.2.4

9. Ministry of Transport

1.1.2 - 1.1.6;2.1.1:3.1.3

10. Ministry of Energy

1.1.2 - 1.1.6; 2.1.1, 3.1.3

11. Ministry of Environment of the RA

1.1.2 - 1.1.6; 2.1.1, 3.1.3, 3.3.2

12. Ministry of Agriculture

3.1.3; 3.3.1

13. Ministry of Economy and Finance

3.9.1 - 3.9.3; 3.10.3

14. Central Bank of the RA

3.9.1 - 3.9.3; 3.10.3

15. Nuclear Regulatory Authority of the RA

1.1.2 - 1.1.6; 2.1.1

16. Hydro-meteorological Service

1.1.2 - 1.1.6; 2.1.1

17. Armenian NPP

1.1.2 - 1.1.6; 2.1.1

18. Institute of preparation and retraining of specialists of Emergency Management Administration under the RA Government

3.4.1 - 3.5.1; 3.8.2, 3.8.4

19. National Disaster Medical Center of Ministry of Health of the RA

3.6.1 - 3.6.5

20. Stress Center of the Ministry of Social Welfare of the RA

3.11.1 - 3.11.4

21. Local Authorities

3.1.3; 3.3.1

22. Armenian Red Cross Society

	structures, lifeline services and infrastructure of settlements to earthquakes								
3.3.1.	Development of programs to decrease the vulnerability of territories in a case of strong earthquakes								
3.3.2.	Development of the codes of RA in "Engineering Research in Building" in accordance with the new method of seismic resistance codes								
3.3.3.	Seismic micro-zoning of the cities and other settlements of RA according to the new methods: a) Yerevan city b) Other cities c) Other settlements								
3.3.4.	Detailed mapping of buildings of the cities and settlements of RA and decision making of design seismic resistance of every structure: a) Yerevan city b) Other cities c) Other settlements								
3.3.5.	Creation of ground strong motions database and obtaining of synthesized of accelerograms for different ground types of Armenia								
3.3.6.	Implementation of research to reveal existing technical condition and damage extent of buildings and structures in the cities and settlements of RA, in accordance with the requirements of the new method: a) Yerevan city b) Other cities c) Other settlements								
3.3.7.	Development and application of complex approach assessment of influence of strong earthquakes								
3.3.8.	Development and publication of guideline on calculation and construction of buildings and structures in accordance with the Building Codes of								

	RA II-2.02-94								
3.3.9.	Improvement and application of technologies of increase of seismic resistance of buildings and structures with temporary suspension and without suspension of their functional activity								
3.3.10.	Development and application of methods of engineer protection of cities, settlements, residential, urban and industrial facilities, transportation networks (roads and railroads) as well as lifeline services from strong local geological and hydrogeological processes conditioned by strong earthquake								
3.4.	Developed complex program for population acquaintance with the necessary activities for seismic hazard and risk reduction for prevention of possible disasters								
3.4.1.	Development and introduction of training curricula for different layers of population, using experience of leading countries and adjusting it to the conditions of Armenia								
3.4.2.	Training of teachers and educational professionals on strong earthquake preparedness								
3.4.3.	Creation of training videos and clips to be broadcast on the central and regional TV channel								
3.4.4.	Creation of radio and TV programs on the local radio and television for population								
3.5.	Implementation of training program in the case of strong earthquake or in the condition of its hazard for the ministries and governmental other administrative workers								
3.5.1.	Organizations of training courses and special TV-radio programs in the field of the risk management for administration workers of middle and high level								
3.5.2.	Creation of video-films about disaster management and preparedness of normative documents and their								

3.10.7.	Distribution of economic substructure elements and confirmation of special conditions and regimes (base of industry, agricultural building and others)									
3.10.8.	Distribution of transport, engineering, energetic supply subconstructions and also educational and medical organizations, and complex organization of projects									
3.10.9.	Projective and volume-territorial organization of material areas (buildings, structures)									
3.11.	Social-psychological reduced vulnerability of population and the persons helping the population (rescuers and others)									
3.11.1.	Elaboration of international experience in the field of population social-psychological vulnerability in case of disaster									
3.11.2.	Implementation of teaching paper titled "Population social-psychological insurance" and information collecting system									
3.11.3.	Implementation of program of stress overcoming and adaptation to the local conditions									
3.11.4.	Input of training program of population social-psychological vulnerability in case of disaster									
3.12.	Created juridical base of seismic risk reduction in the territory of Armenia									
3.12.1.	Implementation and confirmation of the law about population seismic risk protection									
3.12.2.	Implementation and confirmation of the normative acts ruling the actions of seismic risk reduction in the territory of Armenia									
		Total duration of the program is								
		32 years								

Scheme of Seismic Risk Reduction Management

