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MINISTRY OF EMERGENCY SITUATIONS OF RA
SURVEY FOR SEISMIC PROTECTION

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Report: Republic of Armenia

ADRC Visiting Researcher - 2017

Location of Armenia and neighboring countries:



Armenia is a **sovereign state** in the **South Caucasus** region of **Eurasia**. Located in West Asia on the **Armenian Highlands**, it is bordered by **Turkey** to the north, **Georgia** to the west, **Azerbaijan** to the east, and **Iran** to the south. The **Nakhchivan** region is an **exclave** of Azerbaijan.

GENERAL INFORMATION

Official Name:

Republic of Armenia (Armenia)
Hayastany Hanrapetoutyun (Hayastan)

Capital:

Yerevan



The Flag:

The law 'On the State Flag of the Republic of Armenia' was adopted on August 24, 1990, by the Supreme Soviet of the Republic of Armenia.

Following the constitutional reform of November 27, 2005, a new RA law on the National Flag of the Republic of Armenia was adopted on June 15, 2006. The national flag of the Republic of Armenia is a national emblem of the Republic of Armenia. The national flag of the Republic of Armenia is of three **red blue orange** respectively from top to bottom. The Red emblemizes the Armenian Highland, the Armenian people's continued struggle for survival, maintenance of the Christian faith, Armenia's independence and freedom. The Blue emblemizes the will of the people of Armenia to live beneath peaceful skies. The Orange emblemizes the creative talent and hard-working nature of the people of Armenia. The width-length ratio of the flag is 1/2. Smaller and larger pieces of cloth proportionate to the one described in this section may be used.



The Coat of Arms:

The law 'On the State Coat of Arms of the Republic of Armenia' was adopted on April 19, 1992, by the Supreme Soviet of the Republic of Armenia. It is a rendition of the Coat of Arms of the First Armenian Republic (1918-1920) designed by member of the Russian Academy of Fine Arts, Architect Alexander Tamanian and artist Hakob Kojoyan.

Following the constitutional reform of November 27, 2005, a new RA law on the State Coat of Arms of the Republic of Armenia was adopted on June 15, 2006. The Coat of Arms of the Republic of Armenia is a national emblem of the Republic of Armenia. The Coat of Arms of the Republic of Armenia is as follows: On a shield, positioned in the center, Mount Ararat is represented with Noah's Ark and the coats of arms of the four royal dynasties of the historical Armenia: from top to left - that of the Bargratunides, from top to right - that of the Arshakounides, from bottom to left - that of Artashesides, from bottom to right - that of the Rubenides. The shield is upheld by an eagle (on the left) and lion (on the right). There is a sword, as well as a branch of a tree, a bundle of spikes, a chain and a ribbon pictured below the shield. Golden is the main color of the Coat of Arms of the Republic of Armenia. The colors of the kingdoms of the historical Armenia are as follows: from top to left - red, from top to right - blue, from bottom to left - blue, from bottom to right - red, with orange-painted Mount Ararat positioned in the center on a shield. The foregoing colors emblemize the colors of the national flag of the Republic of Armenia.

REPUBLIC OF ARMENIA

Demographics:

Population:

2986.1 thousand (as of January 1, 2017)

Ethnic Breakdown:

Armenians - 98.1%

Minorities: Russians, Yezidis, Kurds, Assyrians, Greeks, Ukrainians,
Jews and others

Official Language:

Armenian

Religion:

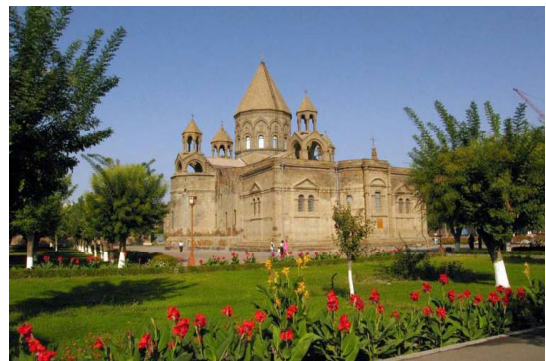
Christian

Church:

Armenian Apostolic

Religious Center:

St. Ejmiatsin (303 AD), the Cathedral of the Armenian Apostolic Church and the Residence of the Catholicos (Patriarch) of all Armenians



GEOGRAPHY

Territory:

29.74 thousand square kilometers

Average Altitude Above Sea Level:

1,800 meters

Highest Mountain Peak:

Aragats (4,090 meters)



Lake Kari (Lake Qari) is a volcanic lake in Armenia located in the **Aragats** mostly formed by ice and snow. It is located 3,190 m above the sea level and has a perimeter of 1,150 m.

From Byurakan village an asphalted automobile road stretches towards the source of Arkashen River, the lake Kari, located on a plateau below the peaks. On the eastern side of the lake there is a meteorological station.



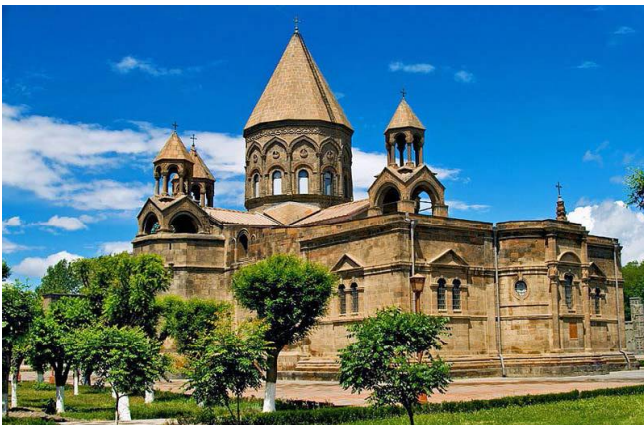
The terrain is mostly mountainous, with fast flowing rivers, and few forests. The climate is highland continental, which means that Armenia is subjected to hot summers and cold winters.

The Sights of ARMENIA

History:

Cathedral of Etchmiatsin:

The oldest Christian temple in Armenia is the Cathedral of Etchmiatsin. "Etchmiatsin" is the Armenian for "the descent of the holy begotten". The legend attributes this name to the miraculous apparition of St Gregory the Illuminator. According to it, on coming down to Earth Christ struck the earth with a gold hammer and an image of a church appeared. On that spot St Gregory built his cathedral, which he called Etchmiatsin. The Cathedral of Etchmiatsin was built in the form of Basilica. It was reconstructed in 483 AD and then it had a cross-like shape crowned with a wooden dome, which was replaced by stone in the 7th century. The Holy See of St Etchmiatsin is the centre of the Armenian Apostolic Church.



The Sights of A R M E N I A

History:

Lake Sevan:

Lake Sevan is the largest lake in Armenia and the Caucasus region. It is often called the emerald of Armenia and it constantly changes its colour - from sky blue to turquoise green. It is one of the largest high-altitude lakes in the world. Lake Sevan is situated in the central part of the Republic of Armenia, inside the Gegharkunik Province, at the altitude of 1,900 m above sea level. The total surface area of its basin is about 5,000 km². It is fed by 28 rivers and streams. Only 10% of the outgoing water is drained by the Hrazdan river.

Along with Lake Van and Lake Urmia, Lake Sevan was considered one of the three great lakes of the historical Armenian Kingdom, it is the only one within the boundaries of today's Republic of Armenia.



The Sights of A R M E N I A

History:

Temple of Garni:

Thirty-five kilometres to the south of Yerevan is the Temple of Garni. It is located at the edge of the deep gorge of the River Azat. The temple dates back to the 1st century AD. It was built by Trdat I and was dedicated to the god of sun Mihr. It is a pagan temple built in Hellenistic style. It is a rectangular construction surrounded by 2

The temple was destroyed during the earthquake of 1679. Now it has been reconstructed. It stands like a pearl above the canyon. Not far are the ruins of a huge palace and baths, built in the 3rd century AD in the Roman style. The baths were warmed by heated air which passed through the ceramic pipes laid under the floor. Some details of the mosaic floor of the palace baths have remained intact.



Capital of RA: **YEREVAN**

History:

Yerevan

Argishti I

782 BC (785-753

BC) and named Erebuni (Erbuni). It was built on top of hill called Arin Berd overlooking the Arax river valley to serve as military stronghold to protect the kingdom's northern borders:

Territory The Kingdom of Urartu, 9th-6th Centuries B.C



The Sights of YEREVAN

History:

Republic Square:

Republic Square is the heart of Yerevan. It is said to be one of the ten most beautiful squares in the world. The square is the hub of the following streets and avenues: Abovyan, Nalbandyan, Tigran the Great Avenues, Vazgen Sargsyan and Amiryan streets.

The oval shaped square has a stone pattern in the centre, meant to look like a traditional Armenian rug from above. The large dancing water fountains are located at the northern forehead of the square in front of the National Gallery.

Republic Square is the place where ceremonies and meetings are held.

The square was planned and built by the Armenian architect Alexander Tamanyan between 1924-1929. It was developed further until 1952.

The buildings are made of rose Armenian tufa founded on a basalt-made ground anchor.

The clock of the Government building was made in Moscow. In July 1941 it was transferred to Yerevan.



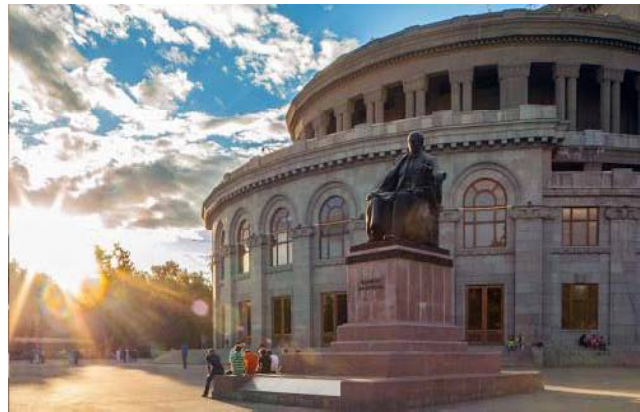
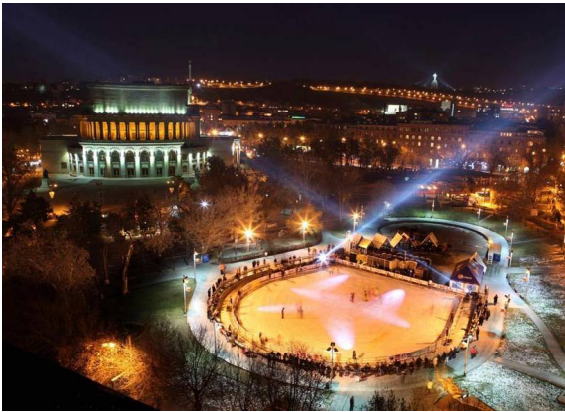
The Sights of YEREVAN

History:

Armenian National Academic Theatre of Opera and Ballet named after Alexander Spendiaryan:

One of the most famous buildings in Yerevan is the Opera House designed by Alexander Tamanyan. It is named after the great composer Alexander Spendiaryan - the founder of the Armenian opera. The Concert Hall is named after the great composer Aram Khachaturyan. The Opera House was officially opened in January 1933.

The opera "Almast" by Al. Spendiaryan was performed in 1933 as a first performance at the theatre. There are the monuments to the great Armenians in the square. One is the monument to the great Armenian writer and public figure Hovhannes Toumanyan, and the other is the monument of Al. Spendiaryan.



The Sights of YEREVAN

History:

The Mesrop Mashtots Institute of Ancient Manuscripts (MATENADARAM):

The Matenadaran is one of the unique repositories of the ancient manuscripts in the world. It possesses about 17 000 illuminated Armenian manuscripts, as well as a small unique collection of Greek, Latin, Arabic, Old Slavonic and Hebraic manuscripts.

The Matenadaran was designed by architect Mark Grigoryan. The construction of the Matenadaran began in 1945 and ended in 1957. In 1960, the statues of historical Armenian scholars, Toros Roslin, Grigor Tatevatsi, Anania Shirakatsi, Movses Khorenatsi, Mkhitar Gosh and Frik, were sculpted and placed on the left and right wings of the building's exterior. The statues of Mesrop Mashots and his pupil Koryun and the table with the Armenian letters are located in front of the building.

The new construction was finished in 2011 by Arthur Meschyan, a well-known architect, who started working on the design of the new building at the end of the 1980s.



The Sights of YEREVAN

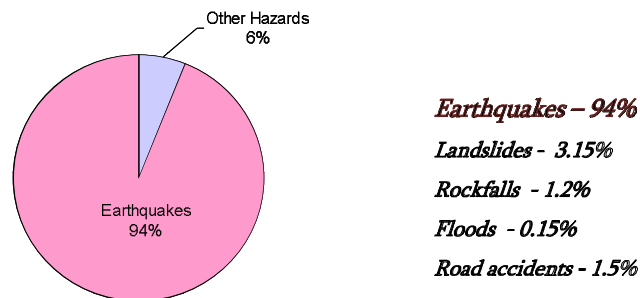
History:

Memorial To The Victims Of The Armenian *GENOCIDE* In Tsitsernakaberd Park:

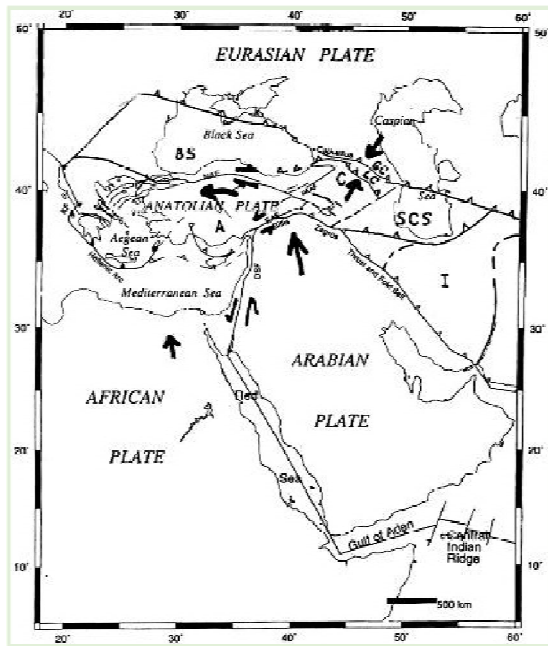
A very important sight to visit in Yerevan is the Memorial to the Victims of the Armenian Genocide in Tsitsernakaberd Park. On April 24 every year Armenians put flowers round the Eternal Flame of the memorial to commemorate the dead of the Genocide of 1915. Foreign guests also visit the memorial to put flowers and wreaths here. The memorial was built in 1965-1967, on the 50th anniversary of the Genocide. It consists of two parts - massive basalt columns leaning over the Eternal Flame and a pointed mast symbolizing the revival of the Armenian people. In 1997 the Museum of Genocide was built nearby. It has four halls where you can see large-size photos representing daily life of Armenians in Armenian States in Turkey before 1915, and pictures, documents and other proofs that testify the awful events of 1915.



Major risks of natural disasters in Armenia:

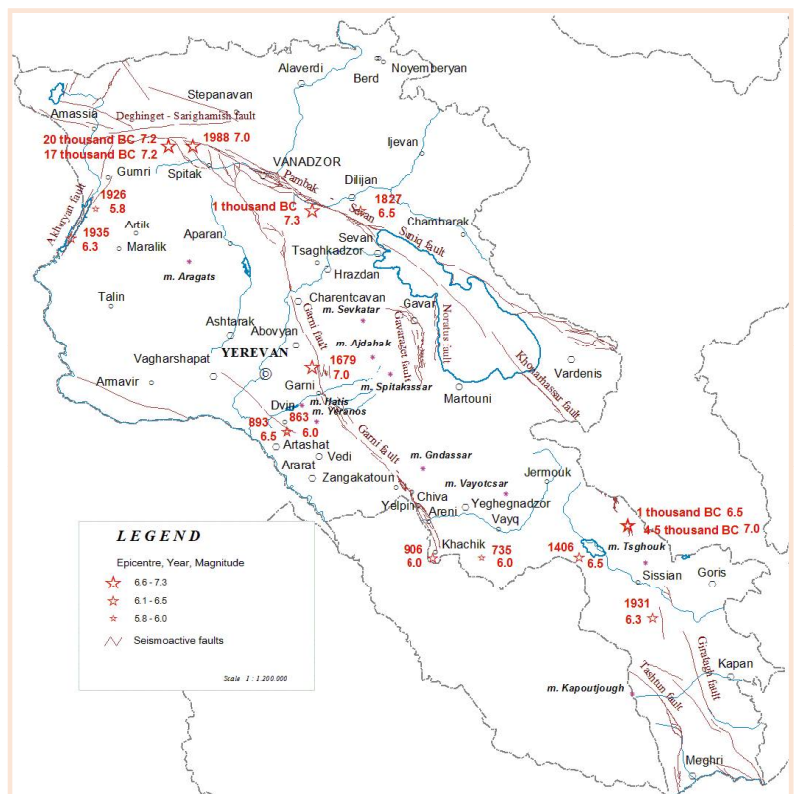


The most devastating impact is caused by the earthquakes.



Seismic events in the territory of Armenia are determined by its position in the collision zone of the Arabian and Eurasian plates.

Assessment of seismic hazard based on the historical, paleoseismological and archaeoseismological evidences:



DEVASTATING SPITAK EARTHQUAKE OF DECEMBER 7, 1988, M=6.9

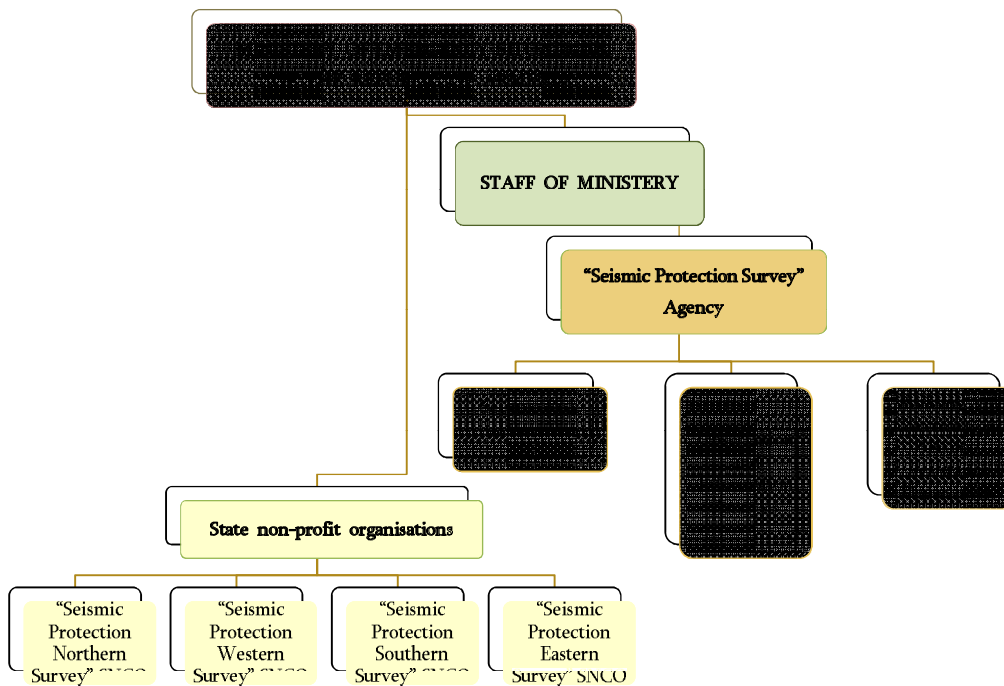
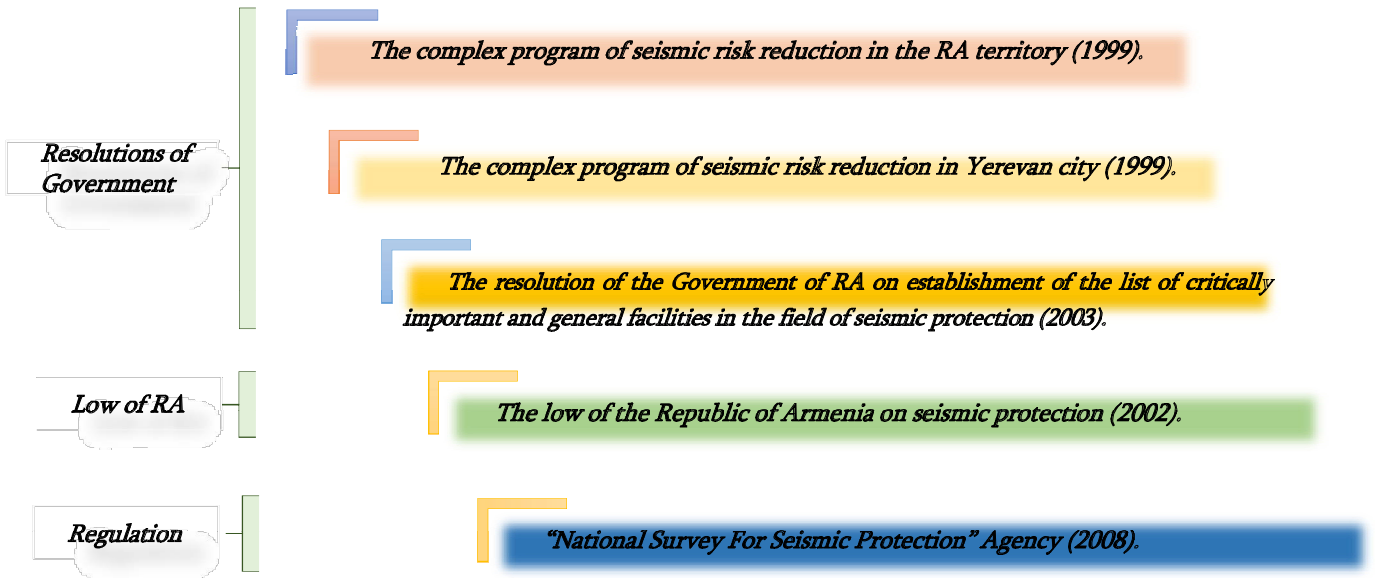
It took place on December 7
Force in the epicenter is 10 points
The death toll was 25,000
Various injuries were reported 20,000 people
514 thousand people were homeless
Earthquake hit 40% of Armenia's territory
There were 21 towns and 342 villages in the region



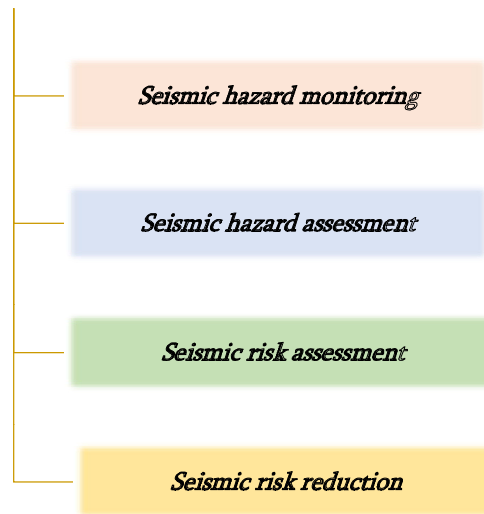
*The main reasons of
the losses :*

- 1. Underestimated seismic hazard*
- 2. Structures design and construction errors*
- 3. Wrong behavior of the population*
- 4. Governmental bodies weren't able to organize the rescue works in time.*

an **national programs** of the Republic of Armenia after Spitak 1988 Earthquake



Seismic risk reduction steps:

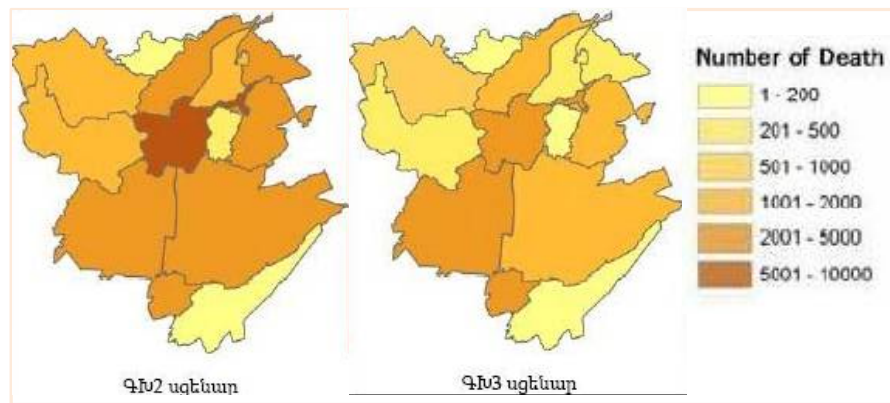


The basic goal of SSP is Seismic Risk Reduction in Armenia:

Armenian SSP has developed two Strategic National Programs on:

1. *“Seismic Risk Reduction in Armenia”*
2. *“Seismic Risk Reduction in the city of Yerevan”*

The Programs, adopted by the Government of the Republic of Armenia on the 10th and 7th of July in 1999 are designed for 30 years. All the Ministries and other Governmental, non-Governmental and private organizations will implement these National Programs under the general co-ordination of Armenian SSP assigned by the Government as a responsible body for the Seismic Risk Reduction Strategy development and implementation.



During the years of the Soviet Union many multi-storey residential buildings constructed in accordance with the norms of the SNIP II-7.81 seismic constructions are obsolete and have become vulnerable according to their structure.

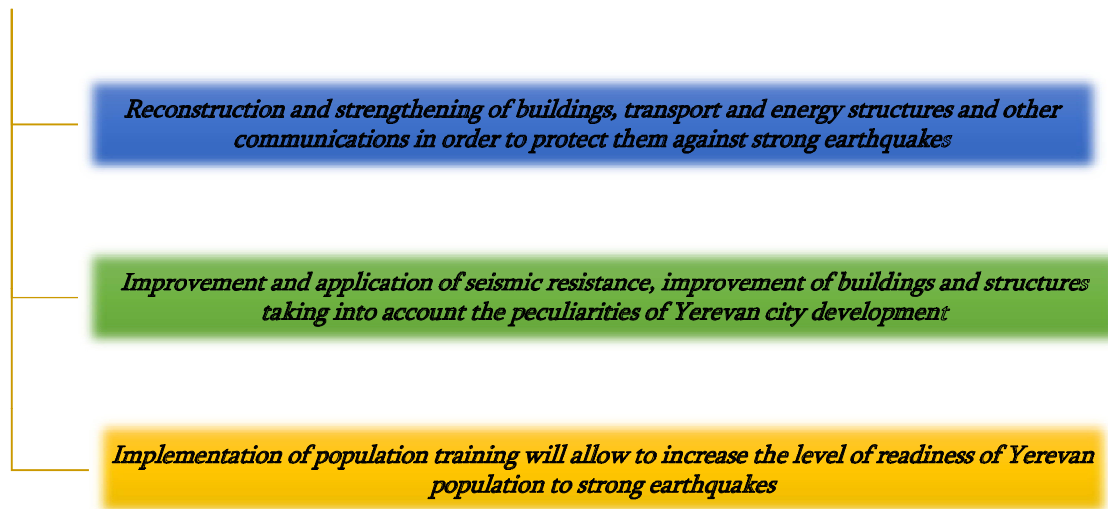
Thus, if an earthquake like Spitak earthquake of 1988 occurs in Yerevan, the roads will be blocked because of small distances between buildings and the situation would be terrible.

SEISMIC RISK MANAGEMENT PLANNING

To implement the complex seismic risk reduction measures provided by the Comprehensive Program for Seismic Risk Reduction in Yerevan, developed and approved by the normative acts regulating seismic risk reduction activities in the territory of Yerevan

- Decree N 136-N of February 9, 2012 "On Making Changes to Government Decision No. 392 of 7 June 1999 of the Government of the Republic of Armenia"
- Decree N ° 129-N of February 9, 2013 of the Government of the Republic of Armenia "On Approval of the Seismic Vulnerability Assessment of Special and Important Facilities in Seismic Protection in the Territory of Yerevan"
- Government Resolution N 140 of 16 February 2012 on "Approving Pilot Program on Training of Impacts and Behavioral Impacts in Strong Earthquakes in Public Schools, Hospitals and Other Medical Institutions in Yerevan City"

Seismic risk reduction envisages the following basic measures:



Department of seismic Risk Reduction

The department activities are mainly targeted at disaster risk reduction and management, as well as develops laws and juridical acts of seismic protections field and which activities includes population too.












The department implements public education for disaster risk reduction, social-psychological research and education programs for development of knowledge about the correct behavior before, during and after the earthquake.

The Department carries out social-psychological research, as well as processing and psychological analysis of data. It also **foreign**

countries **international companies**, as well as in the process of development, implementation and introduction of the results of projects and sound scientific methods in the sphere of seismic protection.

International experience on inclusive seismic protection behavior rules of Japan, **USA Germany Greece Uzbekistan China** etc. has been studied and acquired, and familiarized in Armenia. The specialists involved in the Project are permanently participating at the Workshops and Seminars organized by the various international organizations, Survey for Seismic Protection and Ministry of Emergency Situations of the Republic of Armenia

INTERNATIONAL COORPORATION

-  US Geological Survey
-  European-Mediterranean Seismological Centre, France
-  International Institute of Seismology & Earthquake Engineering, Iran
-  Geoforscungs Zentrum-Postdam, Germany
-  Geophysical Survey of the Russian Academy of Sciences
-  Japan Meteorological Agency
-  Institute for the Physics of the Earth RAS
-  Uzbekistan
-  Seismic Monitoring Center of Georgia
-  University of Athens, Greece
-  China



As the main specialist of the Department of seismic Risk Reduction, social-psychological investigations are implemented by me, the goals of which are to reveal the level of cognitive and psychological preparedness on earthquakes among different segments of population.



ADRC-Armenia Cooperative Project

Training at the orphanages and nursing homes

There are 380 children and 175 staff, including guardians, mentors, nurses and technical workers, at the target Yerevan Mari Izmirlian and Kharberd (Ararat district) state orphanages.

There are 540 seniors and 275 staff, including psychologists, nurses and technical workers at Yerevan # 1 and Nork nursing homes.

Out of Plan training including lecturing and Q&A module has been provided to the staff (109 persons) and residents (up to 6 year old 61 children) of Kid's Home which located in the Nork borough of the Yerevan-city. Thus, the Project has included all the orphanages of the city of Yerevan.

Training at the Yerevan Mari Izmirlian state orphanage



Presentation by Hasmik Kirakosyan



Meeting at the principal's

On activities in the frame of the ADRC-Armenia Cooperative Project: Reaching the Most Vulnerable-Orphans and Seniors Inclusive Earthquake Safety in the Capital City of Yerevan and District of Ararat, Armenia.

- Earthquake protection behavior rules for people with special needs including orphans and seniors and their guardians, mentors and nurses have been developed at the SSP of MES RA. The guidance "Earthquake Protection Behavior Rules" for children with special needs developed by the Save the Children have been mastered and used in practice "
- 1500 copies of "Earthquake Behavior Rules: Paint Yourself. 5+" color book have been published and distributed amongst stakeholders "
- Training on Earthquake Protection Behavior Rules and Seismic Resistance of Buildings and Structures have been provided to the staff of three orphanages and two nursing homes, located in Yerevan city and Ararat district
- The SSP specialists have summarized the frequently asked questions during meetings and trainings and our relevant answers. The preliminary outcomes have been viewed and evaluated"

As a Visiting Researcher at Asian Disaster Reduction Center my research topic will be:

Disaster education and social and psychological vulnerability to earthquake:

The main goal of my research during my stay in Japan will be, to investigate and compare the International and Japanese experience in „Disaster education and social and psychological vulnerability to earthquake,, field.



THANK YOU