



National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development “URBAN-INCERC”, Bucharest, Romania

ECBR – EUROPEAN CENTER FOR BUILDINGS REHABILITATION

REPORT ON ECBR PROJECT ACTIVITIES IN 2018.

ECBR PROJECT IN 2019

Dr. Eng. Emil - Sever Georgescu
DIRECTOR OF ECBR,

November 2018

**ECBR – EUROPEAN CENTER FOR BUILDINGS REHABILITATION,
BUCHAREST, ROMANIA**

Within

**THE NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN
CONSTRUCTION, URBAN PLANNING AND SUSTAINABLE SPATIAL
DEVELOPMENT “URBAN-INCERC”, BUCHAREST, ROMANIA**

ECBR PROJECT 2018-2019

***SEISMIC RISK PREPAREDNESS AND DISASTER RISK REDUCTION – DRR
TRAINING FOR VULNERABLE GROUPS OF POPULATIONS, SCHOOL STUDENTS
AND VOLUNTEERS IN NEIGHBORHOODS IN ROMANIA***

Coordinator Centre: ECBR, Bucharest, Romania

Partner 1: ECRP Sofia, Bulgaria - providing expertise and educational materials for earthquake preparedness to ECBR

Partner 2: ECMNR – Chisinau, R. of Moldova - providing expertise and educational materials for earthquake preparedness to ECBR

Background

All Romania is an earthquake country where Vrancea deep seismic source caused transboundary disasters in R. Moldova, Ukraine and Bulgaria, as in earthquakes of 1802, 1838, 1940, 1977.

The November 10, 1940 Vrancea, $M_w = 7.7$ Romania earthquake had a focal depth of 150-160 km, $I_0 = 10$ MCS (Mercalli-Cancani-Sieberg Scale) and caused 593 killed and 1,271 injured in all the country. The damage was concentrated in the towns and villages of Carpathian Mountains curvature area with high damage in Moldova. In Bucharest the collapse of Carlton block, the tallest r.c. structure, made without seismic design, caused 140 killed from the 226 occupants and other 300 injured in the city.

After 1940, earthquake design codes initiated, with a compulsory seismic code in 1963, revised in 1970. But strengthening of no-code high-rise buildings in Bucharest was neglected.

The March, 4, 1977 Vrancea, $M_w = 7.5$, Romania earthquake had a focal depth of 109 km, $M_w = 7.5$, $I_{max} = 8$ MSK and caused 2 billion US Dollars loss, with Bucharest having 70% of the total loss. The casualties were as 1,578 deaths (90% in Bucharest), 11,300 injured (68% in Bucharest), mostly because of pre-1940 high-rise buildings (collapse of 25 buildings that were damaged in 1940 - without strengthening until 1977 and partial collapse of only 3 code-buildings).

Damage to buildings included:

- 32,900 destroyed housing units, 35,000 homeless families

- 763 collapsed or destroyed commercial/industrial units
- 47 collapsed or destroyed hospitals
- 257 destroyed educational buildings, 181 collapsed or destroyed cultural buildings

The Romanian Seismic Zoning Map of Code P100-1/2013 for Seismic Design – IMR 225 years indicates for Bucharest City a design acceleration of 0.3 g. Therefore, Bucharest city is exposed at high seismic hazard and risk.

Because after 1977 the seismic strengthening was limited, vulnerability exist and in Bucharest there are the red dot buildings – first class of risk - more than 350 high-rise pre-1940 buildings. All need seismic rehabilitation.

The legal framework of Romania includes:

- Law on seismic risk reduction of existing buildings – OG No. 20/1994
- Seismic Design Code P100-1/2013
- Seismic Assessment Code P100-3/2008

Government budget provides funds for rehabilitation and there is a MDRAP national strategy and plans for seismic risk reduction with incentives on 20 yrs.

However, some citizens do not cooperate and the seismic rehabilitation is slow. Citizens must receive training for earthquake safety and ECBR is in the frontline of EUR-OPA to promote ISDR UNO-DRR Sendai Framework.

For Romania and ECBR, the “building rehabilitation” against earthquakes impact is dependent not only on the technical and legal background but also on the participation of citizen-owners. They must be convinced about the vulnerability of some building categories and about their risks.

The general aim of the ECBR Project on 2018-2019

The ECBR task is to educate and provide training to citizens as they shall cooperate in buildings rehabilitation and earthquake safety. The target is people living in old and vulnerable buildings, such as low-rise and high-rise (apartment) buildings. Since 2003, ECBR disseminated knowledge on disaster prevention in support of the enforcement of the strategic Programs for building rehabilitation coordinated by the Romanian Government and concerned ministries. But the number of high-rise rehabilitated buildings is still reduced and people’s lives are at risk, especially in Bucharest.

The general aim of the ECBR Project is:

- Promoting risk culture among the population (children, adults and groups with special vulnerability) according to the Fourth Priority for Action of the Sendai Framework: “Enhancing disaster preparedness”
- To foster resilience by investing in the preparedness of citizens, school students and neighborhood volunteers for personal, family and group protection, at community level, involving the most vulnerable groups of population from disasters
- Creating earthquake education, awareness raising and public participation guidelines

- To raise awareness and provide citizens and senior population with knowledge about the risks and inherent self-protection behavior.
- Promoting the advocacy of a risk culture within the population, to create stakeholders for earthquake preparedness by training volunteers to be trainers for other people.

ECBR PROJECT ACTIVITIES IN 2018

Specific objectives

1. Knowledge transfer by training seminars for citizens / volunteers/ students using courses, printed materials and didactic seismic simulators
2. Development of specific knowledge transfer / training materials for neighborhoods with traditional, old and vulnerable low-rise buildings, for citizens and volunteers - in Romanian language;

Activities

1. ORGANIZATION OF TRAINING SEMINAR FOR CITIZENS / VOLUNTEERS

- Date: June 2018
- Place: ECBR room in NIRD URBAN-INCERC
- Duration: 2 days
- Participants: 40 Romanian citizens / volunteers

Topics of presentations and training:

- Framework of EUR-OPA Major Hazards Agreement and ECBR. Role and place of NIRD URBAN-INCERC
- Earthquakes at global scale and in Romania. Hazard, vulnerability, risk. Impact on buildings
- Historical evolution of earthquake resistant constructions
- Types and vulnerability of structures
- Destructive earthquakes in history of Romania.
- Situation of buildings on the seismic risk classes
- Earthquake preparedness of buildings, equipments and furniture
- Demonstrations with seismic mini-simulators from Japan
- Vulnerability of occupants and human behavior during earthquakes, means of protection
- Preparedness for earthquake impact: what to do during earthquake
- Preparedness for situation after earthquake
- Session for questions and answers

Obtained results

- Provide practical knowledge and create positive DRR perception for seminar participants.
- Learning and understanding reason, means and ways of achieving earthquake preparedness knowledge, good practice and skills for persons, groups, family and community members
- Receive materials and have exchange of experience on earthquake disaster risk reduction in neighborhoods at risk from other EUR-OPA centers

Deliverables

ECBR:

- Reports of seminars and workshops to be distributed to the EUR-OPA Secretariat and partners of other centers.
- Transfer of knowledge on structures seismic response using didactic mini-simulators
- Publication of training and pedagogical materials on earthquake preparedness - course support text for seminar participants,

Partner 1: ECRP Sofia, Bulgaria – reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in Bulgaria

Partner 2: ECMNR – Chisinau, R. of Moldova - reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in R. of Moldova

The photos in Annex 1 documents the activities.

2. ORGANIZATION OF SHORT TIME FREE-FIELD SEMINARS DIRECTLY WITH CITIZENS IN TWO NEIGHBORHOODS - TRADITIONAL, OLD AND VULNERABLE LOW-RISE BUILDINGS

- Date: November 2018
- Places:
 - neighborhood Place Alba Iulia – Dristor, South-East of Bucharest
 - neighborhood Mircea Vulcanescu – Stefan Furtuna, Center-West of Bucharest
- Duration: 2 hours in each of two neighborhoods places
- Participants: about 20 citizens

The neighborhood Place Alba Iulia – Dristor is a mid-wealthy community, includes mostly low-rise masonry houses, many built in the 1940's as standard residences for bank employees. The layout was of duplex type, with a common back wall. Their initial vulnerability (in 1940) was moderate. However, cumulative vulnerability and decay caused some damage in 1977 earthquake. Currently, some houses look less maintained and show cracks. Streets are large and there are some small gardens near houses. In the last 30 years, some owners rehabilitated their homes and some of them added a second or third story. Thus, the situation of weight and seismic forces has changed to a higher stress.

The neighborhood Mircea Vulcanescu – Stefan Furtuna includes mostly low-rise and mid-rise masonry houses. The main street Mircea Vulcanescu has some decayed pre-1940 buildings with vulnerable gable walls. The tenants of many buildings along the main street prove low literacy and are poor or unemployed. The Stefan Furtuna Entrance is a narrow blind street of a former wealthy group of owners, with a Neo-Romanian architecture of the 1900's, 1-3 stories sturdy manors, made upon similar designs on some special partition lots. Some are partially decayed, the roofs have heavy tiles and some ornaments prone to falling. Few rehabilitation works are visible, mostly for buildings occupied by some offices. Fire in upper roof structure may be a threat, when the evacuation from these buildings will be difficult because of the street width occupied by cars.

Content of short time free-field seminars

The citizens of these neighborhoods have been advised how to avoid further damages and some behavior rules before, during and after earthquakes.

The topics of discussions and training were as follows:

- earthquakes in Romania and their impact in that neighborhood, free interviews with citizens
- seismic vulnerability with questions and comments from local experience of owners in 1977, 1986 and 1990 earthquakes
- identification of threats to earthquake evacuation, as chimneys, gable walls, attics
- recommended actions for preparedness before earthquakes at home
- advices about their houses rehabilitation prior to earthquakes
- recommended actions for behavior during earthquakes
- recommended actions for repair and rehabilitation after earthquakes

Obtained results

- Provide practical knowledge and create positive DRR perception for citizens of low-rise houses.
- Direct transfer of earthquake preparedness knowledge to the community using verbal explanations and leaflets for citizens in neighborhoods with traditional, old and vulnerable low-rise buildings
- Learning and understanding reason, means and ways of achieving earthquake preparedness knowledge, good practice and skills for persons, groups, family and community members
- Receive materials and have exchange of experience on earthquake disaster risk reduction in neighborhoods at risk from other EUR-OPA centers

Deliverables

ECBR - Coordinator Centre:

- Reports of seminars to be distributed to the EUR-OPA Secretariat and partners of other centers.
- Publication of training and pedagogical materials for citizens (leaflets), targeted at neighborhoods with traditional, old and vulnerable low-rise buildings

Partner 1: ECRP Sofia, Bulgaria – reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in Bulgaria

Partner 2: ECMNR – Chisinau, R. of Moldova - reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in R. of Moldova

The photos in Annex 2 documents the activities.

3. OTHER ECBR ACTIVITIES IN 2018

- ECBR Lecture and demo with seismic simulators for students of General School No. 62, Bucharest, March 29, 2018
- E. S. Georgescu: Earthquakes and seismic risk in Romania. Presentation for students of University of Architecture and Urbanism, Bucharest, 11.05.2018

- E. S. Georgescu: Bucharest – “The Seismic Capital” of the European Union and the Gears of Nat-Cat Insurance. Presentation to The International Insurance-Reinsurance Forum, FIAR 2018, REINSURING NATCAT RISKS CONFERENCE, May 15, 2018, Sheraton Hotel, Bucharest

4. CONCLUSIONS

The activities of ECBR Project in 2018 have been done according to the plan and results achieved, with some additional dissemination activities.

The Project is worth to be continued in 2019 with the next phase.

ECBR PROJECT PLAN FOR 2019

Activities (depending on the available budget)

Organization of short time free-field seminars directly with citizens in two neighborhoods – places with old and vulnerable high-rise buildings erected before 1940 and/or 1977 earthquake disasters

- Date: May-June 2019
- Duration: 2 hours
- Venue: near buildings, in each of two neighborhoods in Bucharest
- Participants: about 20-30 citizens in each vulnerable group

Organization of training seminar for citizens / volunteers to become trainers for other citizens

- Date: May-June 2019
- Duration: 2 days
- Venue: ECBR Room in URBAN-INCERC
- Participants: 20 Romanian students / citizens / volunteers

Organization of a Project Workshop with associated centers

- Date: October 2019
- Duration: 2 days
- Venue: ECBR Room in URBAN-INCERC
- Participants: 2 Directors of EUR-OPA associated centers of Bulgaria and Republic of Moldova

-

Specific objectives

- Development of specific knowledge transfer / training materials for neighborhoods with old and vulnerable high-rise buildings erected before 1940 and/or 1977 earthquake disasters, for citizens and volunteers - in Romanian language,
- Knowledge transfer by training seminars for citizens / volunteers/students using courses, printed materials and didactic seismic simulators;
- Confirming good practices during a Final Workshop with associated centers

Results in 2019

- Direct transfer of earthquake preparedness knowledge to the community using verbal explanations, didactic mini-simulators and leaflets for citizens in neighborhoods with old and vulnerable high-rise buildings erected before 1940 and/or 1977 earthquake disasters
- Learning and understanding reasons, means and ways of achieving earthquake preparedness knowledge, good practice and skills for persons, groups, family and community members
- Increase resilience and pro-active behaviour of citizens in risky neighborhoods, with assistance of volunteers.
- Confirmation of good practices on earthquake disaster risk reduction in neighborhoods at risk within EUR-OPA centers by an ECBR Workshop in Romania
- Fostering official duties of Civil Protection (IGSU) and attracting some NGO's to be partners of IGSU and ECBR in multiplying the risk reduction effect in neighborhoods

Deliverables in 2019

ECBR - Coordinator Centre:

- Reports of seminars and workshops to be distributed to the EUR-OPA Secretariat and partners of four countries.
- Publication of training and pedagogical materials for citizens (leaflets) and course support text for seminar participants, with target on neighborhoods with old and vulnerable high-rise buildings.

Partner 1: ECRP Sofia, Bulgaria – reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in Bulgaria

Partner 2: ECMNR – Chisinau, R. of Moldova - reports, recommendations, brochures, leaflets including expertise and educational materials for earthquake preparedness in R. of Moldova