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EUROPEAN AND MEDITERRANEAN MAJOR HAZARDS AGREEMENT (EUR-OPA)

NETWORK OF SPECIALISED EURO-MEDITERRANEAN CENTRES

Coordinated projects supported in 2017

Document prepared by the Secretariat of the Directorate of Democratic Governance

Contents

I.1 Technical and scientific information for decision-makers

A. Risk knowledge as basis for public policies

Developing Geomorphological mapping skills and datasets in anticipation of subsequent Susceptibility, Vulnerability, Hazard and Risk Mapping (Leader: ICOD; Partners: CERG, UNIMORE)

Target countries: all

Objective

Overall objective

Based on the 2014-2015 project on coupling terrestrial and marine datasets for coastal hazard assessment & risk reduction in changing environments' it has clearly emerged that it is of utmost importance to have not only geological but also (and possibly more importantly), geomorphologic base maps on which to initiate, first the susceptibility mapping and subsequently, the hazard, vulnerability and finally risk mapping. Based on the above and UNIMORE's excellent experience with geomorphologic mapping in the north-west of Malta, it is proposed that the 2016-17 proposal will be based on developing geomorphological mapping skills and datasets in the participating centres and country coastlines.

In this context, the global objective of this project is to address the need to provide national and regional administrations with a well-defined, scientifically sound but wherepossible, simplified methodology for geomorphological mapping, as a means to the end-goal of developing risk maps for national / regional coastlines. Such a goal would be of particular use to national authorities/ministries responsible for planning and civil protection.

Specific objectives

Development of geomorphological maps for selected coastlines in Normandy and Malta.

Expected results

Phase 2 field surveys and development of geomorphological maps for selected coastlines in Normandy and Malta.

Associated activities (split between partners)

Phase 2 field surveys in Normandy by CERG/UNICAEN and in Malta by UNIMORE and ICoD. Development of geomorphological maps for selected coastlines in Malta and Normandy.

In 2016, a short intensive training course was developed and delivered at the University of Malta. Phase 1 field surveys / mapping were carried out on the coasts of Malta (Gozo) and Normandy.

The heat waves' risk and adaptation strategies (Leader: CRSTRA)

Global objectives of the projects for 2016-2017

Contribute to a better management of heat waves' risk with its depressive effects on reducing populations and socio-economic activities.

Specific objectives

Translating knowledge into decision support tools.

Description of activities to be carried out in relation to the budget requested

1. Update of the climate data base (continuously):

An update of data already acquired for five years (2011-2015) will be carried out for 10 stations.
The database will be enriched with the acquisition of weather data from other meteorological stations, in order to improve the mesh of the Sahara region (Tindouf, Tamanrasset, Djanet, Illizi, El Golea) and to realize the maps of the distribution of the waves of heat in the Sahara.

- Data acquisition is scheduled during the first quarter of 2017.
- The update is scheduled during the second quarter of 2017.
- The exploitation of data (statistical analysis and mapping) is planned for the third quarter of 2017.

2. Study of forms of ancestral adaptations (local know-how):

The study will be carried out following two axes:
1. field survey in the Saoura region (south-western Algeria).

- The field survey will be conducted during the second quarter of 2017 (May-June).
- Data analysis and analysis during the 3rd quarter of 2017.

2. Study of the impact of plantations, architecture and building materials on the mitigation of risks related to heat waves. This study will be done by calculating the thermal amplitudes between the interior and exterior of the palm groves, and between the temperatures inside the modern and traditional constructions.

- Sensor acquisition (temperature, humidity, wind direction and wind speed) is scheduled during the first quarter of 2017 (February-March).
- Installation of sensors, calibration and testing during the 2nd quarter of 2017 (May 2017).
- Monitoring data during 04 months of high heat (June, July, August and September).
- Analysis of data during the 4th quarter of 2017.

3. Sensitization:

The popularization of the risk of heat waves will focus on:

a. Sensitization of the population: specifically the vulnerable population (children, the elderly, the chronically ill) through the dissemination of elaborate supports (leaflets).

• Production of leaflets during the 2nd quarter of 2017.

• Wide dissemination through various channels (Institution, schools, open houses, meetings with the socio-economic partner, etc.).

b. Institutional awareness-raising: Development of extension materials: in the form of booklets (guides), in order to popularize the heat wave risk nears the institutions.

• The heat wave guide will be elaborated and edited during the 4th quarter of 2017. It will be on-line on the website www.crstra.dz and on the other hand distributed to local and central institutions (Ministries and local authorities) in charge of the problem of natural hazards. Part of the booklet will be a synthesis of the results obtained from the data:

- on the heat waves in Algeria (map of the amplitude of the waves of heat, map of the frequencies of the waves of heat, map of the intensity of the waves of heat);
- the survey on local know-how in the prevention and mitigation of heat waves;
- study on the impact of plantations and new methods of construction on mitigation where the worsening of risks linked to heat waves.

Expected results

1- Update of the climate data base (continuously):
2- Study of forms of ancestral adaptations (local know-how):
3- Awareness-raising of institutions and population on the heat wave risk.

Deliverables

Decision support tools

- Map of the distribution of waves of heat in Algeria.
- Map of the amplitude of the waves of heat in Algeria.
- Map of the frequencies of the waves of heat in Algeria.
- Map of the dates of the beginning of the waves of heat.
- Map of dates of end of heat waves.

Awareness tools

- Awareness brochure.
- The best practice guide for risk mitigation.

Pre - Earthquake assessment of Monuments, Comparison of Empirical and Analytical Methodologies (Leader : EPCFE)

Objectives

The seismic behaviour of monuments is very important in earthquake prone areas because of the cultural need to maintain and preserve these monuments for future generations. Furthermore, the need to ensure seismic resistance to the monuments ensues from the legal obligation to protect human life (of the neighbours, curators, visitors or even inhabitants of the monument). Greece is the country with the highest seismicity in Europe. Half of the energy that comes from earthquakes throughout Europe is released in Greece. It is well known that earthquakes have always represented the main cause of damage and losses to cultural heritage and thus vulnerability assessments of monuments is of great importance. One methodology for vulnerability assessment of structures in general is the pre-earthquake assessment. In this activity ECPFE is carrying out a pre-earthquake assessment adapted to monuments.

The ECPFE has taken a lot of initiatives and has carried out a lot of work in this subject area with the contribution of the EC of Ravello, Portugal, Armenia, “the former Yougoslav Republic of Macedonia” concerning OPA, the ministry of Cultural Heritage of Greece and E.P.P.O. our host organisation.

Activities related to the budget requested

During 2016, a Scientific Committee, nominated for the elaboration of Pre-earthquake Assessment, has carried out two draft Pre-earthquake Assessment Questionnaires each for the two difference cases of monuments, and also composed the relevant algorithms for the calculation of the pathology index in each case. The algorithm derives when taking into account each one of the crucial factors that contribute to the pathology of the Structure according to the weight of each factor.

1. For 2017, the nominated Scientific Committee in 2016, will validate and ameliorate this empirical methodology with “push over” analyses. After comparing the two methodologies the final “pathology index” for each category of the monuments will be calculated. Therefore, the final calibration of the monuments will be available as well as the estimation of their vulnerability.

2. After finalising the questionnaires for the assessment of the two types AB & F a software company will develop an application to conduct the whole procedure electronically and connect it with the existing Information System of E.P.P.O.

The software application company will take advantage of the existing Greek Accelerometric Network Information System (GANIS) available in EPPO. GANIS is a new web-based tool, developed to provide scientists and engineers with the ability to search, use and download all the necessary information regarding the records of the Greek Accelerometric Network.

This Network Information System will be enriched with the establishment of a Spatial Data Infrastructure (S.D.I.) compatible with European Union regulations (INSPIRE Directive). Thus the software application company will adopt technologies derived from the free and open source community such as GeoServer and Geonetwork or other web services, indispensable for the application of the pre earthquake assessment of monuments.

Deliverables

1. The final form of the two different types of questionnaires will be produced, including the relevant mark “pathology index” suitable for the pre-earthquake assessment. A booklet with guidelines on how to fill in questionnaires will be also included in Greek and in English.

2. A software application will be developed by a relevant software company, compatible with the existing Information System of E.P.P.O.Developing Geomorphological mapping skills and datasets in anticipation of subsequent Susceptibility, Vulnerability, Hazard and Risk Mapping (Leader: ICOD; Partners: CERG, UNIMORE)

Target countries: all

TraRetro - Revisiting Traditional Building Techniques for Appropriate Maintenance and Earthquake Retrofitting of Vernacular Constructions (Leader: CUEBC; Partners: CERU)

Objectives

General objectives

The general objectives of the project are:

a) To define a scientific framework to identify and validate the existing earthquake resistant characteristics of historical Built-up Areas
b) To define guidelines for the appropriate seismic retrofit of vernacular buildings taking into account their original earthquake resistant features
c) To define guidelines for transferring to population criteria for the adequate maintenance of those constructions and techniques in order to ensure their adequate seismic behavior

Specific objectives for 2017

a) Compare the data collected in Italy, Greece, Portugal and Morocco
b) Identify similarities and differences between the data collected in the four countries
c) Develop guidelines for the adequate maintenance and retrofit of vernacular buildings taking into account the characteristics of the local communities and the materials available locally for the retrofit
d) Develop guidelines for the most effective involvement of population in adopting technical suggestions for maintenance and adequate retrofitting

Activities to be carried out

1. Analysing the data collected
2. Systematising the data
3. Editing the draft tutorial on appropriate retrofitting
4. Editing the Atlas of traditional seismic proof techniques in Italy, Greece, Portugal and Morocco
5. Editing guidelines to involve the population in avoiding dangerous modifications and using appropriate retrofitting
6. Realising a workshop to present Tutorial, Atlas and guidelines

Expected results

a) Critical documentation of traditional seismic proof techniques in Italy, Greece, Portugal and Morocco
b) Tutorial for adequate maintenance and appropriate retrofitting of historical built up areas
c) Guidelines for the involvement of local communities in recognising and critically re-use the traditional seismic proof techniques

Deliverables

a) Atlas of traditional seismic proof techniques in Italy, Greece, Portugal and Morocco
b) Tutorial for adequate maintenance and appropriate retrofitting of historical built up areas
c) Guidelines for involvement of local communities in recognising and critically re-use the traditional seismic proof techniques.

CUEBC

Specific objectives

- Define a scientific framework to identify and validate the existing earthquake resistant characteristics of vernacular and traditional constructions.
- Carry out local surveys and inventories of those constructions and techniques in the countries involved in the project.

Associated activities:

Unfortunately CERU cannot participate on this project during 2017.
If CERU has enough funds, we would like to participate in the final project meeting that will take place probably in October, in Ravello (Italy).CERU does not participate with new activities during this year (2017), but CERU had participated during 2016 and would like to participate in the final meeting in order to contribute to the project's achievements and conclusions.

B. Monitoring of risks as tool for public action

European Landslide Hazard Maps: Fostering European Harmonization of Slope Movement Hazard Assessment at various spatial scales (Leader: CERG; Partners: GHHD Tbilisi, CERU Lisbon, AFEM Ankara, CEPRIS Morocco)

Partners

Other partners include University of Strasbourg / LIVE, University of Lisbon / RISKAM, Joint Research Centre (JRC), German Geological Survey (BGR), National Research Council, Research Institute for Hydrogeological Protection (CNR-IRPI / Perugia), Georgian Geophysical Society.

Target countries include Georgia, France, Portugal, Morocco and other European countries.

Objectives

Overall objectives

Reliable estimates of expected location, timing and intensity of slope movements (slide, fall, flow, collapse, subsidence) are required for the design of risk reduction measures (hazard/risk mapping, emergency planning, defence works and insurance premiums). Furthermore, the relevance of slope movement zoning for environmental policy is set forth in the EU Thematic Strategy for Soil Protection. In practice, this information is obtained through the evaluation of slope movement occurrences based on the analysis of conditioning factors of observed events (inventories) to infer a probabilistic behaviour, which is then extrapolated at the scale of a territory. The challenge for slope hazard assessments (in various environments, e.g. mountain and coastal areas) is that, unlike other geohazards, these phenomena are rather localised and often not observed directly. Despite their distinct locations, they might occur widespread in a given region. This raises questions on the construction of reliable event inventories, and on the extrapolation of local information when no or inadequate inventory is available.

Commonly, slope hazard evaluations are prepared at large observation scales (<1:100.000), where well-adopted methodologies exist. At small observation scales (>1:100.000), some operational methodologies do exist and have been partially applied, but a common acceptance or even agreement on best practice does not exist. Furthermore, the lack of cross-boundary cooperation has led to the development of national procedures while the occurrence of slope movements is a shared problem across Europe. A harmonised approach has, however, been proposed in recent research initiatives (ESBN, EC project SafeLand, JRC's European Landslide Expert Group), which resulted in the release of the first version of a generic pan-European slope movement susceptibility map (ELSUS) in 2013. In parallel, great effort has been put in collecting slope movement information and in developing complex and robust statistical/process-based models for hazard prediction at small scales (EC projects ALARM, MONITORI-II, MOUNTAIN-RISKS, CHANGES, LAMPRE, ADAPTALP). At the same time, data products from Earth Observation (EO) systems (satellite and ground-based) are increasingly available and offer new opportunities for slope movement detection, mapping and monitoring.

However, despite all these efforts, no standardised European approach to slope movement inventorying and occurrence estimation (e.g. link with triggers such as rainfall and seismic activity) exists in practice.

Specific objectives

- Propose landslide triggering thresholds for several European regions
- Integrate triggering factors (rainfall, seismic activity) in the various landslide susceptibility assessment methods (geomorphological approach, statistical/process-based models) for hazard assessment at national/global scales
- Propose harmonised cross-boundary datasets (conditioning factors, inventories) for landslide hazard model benchmarking

The activity is setup as a constructive collaborative effort among several centres (CERG, GHHD, CERU, ICOD, CEPRIS) based in countries exposed to different types of landslide processes and affected by several conditioning/triggering factors.
- Production of the landslide national hazard maps for France and Georgia (CERG, GHHD).

Expected results CERG

The production of a landslide hazard map for France and Georgia using a statistical approach.

Associated Activities (split between partners)

GHHD
Work package 1. Construction of the landslide hazard map for Georgia including precipitation triggering (static version).
Work package 2. Integration of standard landslide hazard and stationary precipitation maps for Georgia using fuzzy logic method. Search for real-time approach.
Work package 3 . Selection of data on possible seismic triggering of landslides. Using fuzzy logic methodology for integration of seismic hazard assessments into landslide hazard maps.

CERU
Specific objectives:

- Calculation of statistical landslide triggering thresholds (e.g. rainfall amounts, rainfall intensity, other parameters) for selected European regions.
- Development of a methodology to integrate triggering thresholds in the global scale landslide hazard assessments (e.g. for scale > 1.100.000), and test in selected European regions.
- Development of a methodology to integrate seismic triggering thresholds in the global scale landslide hazard assessment, and test in several European regions.

Work package 1
Description: Analysis of existing methodologies for earthquake triggered landslide assessment using available seismic parameters, to enable the selection of methods which can be applied at regional scale.

Objectives: To test the suitability and feasibility of different approaches for mapping seismically triggered landslides susceptibility in selected urban areas on a regional (city) scale of analysis, in Portugal. It is expected to apply different methods in Lisbon county, and if possible, in another

urban area where there is adequate information for application of physically based landslide susceptibility assessment.

This work has the objective of producing guidelines on methods applicable on a broader scale, in other countries, taking into account the availability of basic information and databases which are required for the application of each of the different tested methods.

CERU is in close contact with CERG during the entire project.

Deliverable: Report on proposed methods for earthquake triggered landslide assessment suitable to apply at regional scale.

Development of cost-effective ground-based and remote monitoring and early warning system for detecting debris flow/landslide initiation (Leader: GHHD; Partners: CERG, ECMHT, ECNTRM, AFEM)

Others partners include the Georgian Geophysical Society, Institute of Geophysics Georgia, Laboratoire Géosciences - Montpellier, France; Laboratoire ISTerre - Grenoble, France; CNR-IRPI - Padova, Italy

Target countries include France, Georgia and Italy

Objectives

Overall Objectives

Each year landslides, debris-flows (mud-flows, earth-flows) cause a lot of disasters in mountainous areas all over the world. Periodically thousands of populated areas, dams, roads, oil and natural gas pipeline routes, high voltage electric lines and agricultural lands are heavily impacted, sometimes with catastrophic results of hazardous geological processes. Catastrophic mass-movements not only periodically damage the environment, but they also result in human losses. Thus it is of importance to create reliable and cost-effective early warning systems for monitoring mass-movements in potentially dangerous areas.There are a lot of methods in monitoring mass-movements: geodesy, extensometry, Global Navgation Satellite Systems (GNSS), laser and radar interferometry, optical fiber techniques (OFT), micro-seismic monitoring, etc (Malet , Maquaire and Calais, 2001, Savvaidis, 2003; Tonnellier and Malet, 2010). The cost of such systems is very high and it is practically impossible for developing countries to purchase them. Besides, the number of mass-movement dangerous sources is huge - for example, only in Georgia there are 40000 of potential sources.Thus, the multitude of dangerous sources, the growing number of exposed vulnerable objects and limited resources of developing countries, which are most prone to the above-mentioned hazards call for developing cost-effective and at the same time accurate monitoring/early warning telemetric systems. A fusion of these apparently conflicting concepts (cost-effectiveness and accuracy) is possible using the modern high-tech systems.
Thus the project aims to develop a cost-effective complex telemetric geophysical monitoring and with autonomous power source (solar batteries) for signalling debris flow/landslide initiation using radio signals or internet connection.

This method includes monitoring of two main categories of parameters leading to mass-movements: soil humidity and deformation (e.g. displacement/acceleration/micro-seismicity) caused by the hydro-mechanical loading of the slope. Two types of approaches will be pursued: the development and test of 1) ground-based modern sensors, and of 2) remote sensors (such as terrestrial cameras and very-high resolution satellite imagery).

The proposed activity associates four specialised centres (GHHD, CERG, ECNTRM). The expertise of contributing academic partners (see above) guarantees the success of the research activities as they are already working closely together within other national / European Projects. Co-funding for the research will be made available by each of the partners.

Specific objectives

1. **Work package 1**. Selection of modern cost-effective autonomous power sources and transmission systems (GHHD)
2. **Work package 2**. Assembling the sensors and multi-channel data acquisition systems with transmission line and power block (GHHD)
3. **Work package 3**. Field test of the prototype module for establishing optimal frequency/amplitude range of EWS (GHDD, CERG andISTerre)

Construction of working monitoring prototype module including sensors and data acquisition system as well as modern cost-effective autonomous power sources and transmission systems and field test of the prototype module for establishing optimal frequency/amplitude range of EWS. Operational deployment of the system on a natural test site. Benchmarking of the processing chains on other datasets. International Dissemination Workshop.

Specific objectives (CERG)

Benchmarking of the image time series analyis processing chain on other sites (CERG & CNR-IRPI)
Benchmarking of the image seismic/acoustic analyis processing chain on other sites (CERG & CNR-IRPI).
International Dissemination Workshop (GHHD & CERG)

Expected results

Construction of working monitoring prototype module including sensors and data acquisition system as well as modern cost-effective autonomous power sources and transmission systems and field test of the prototype module for establishing optimal frequency/amplitude range of EWS. Operational deployment of the system on a natural test site. Benchmarking of the processing chains on other datasets. International Dissemination Workshop.

Associated activities (split between partners)

1. **Work package 1**. Selection of modern cost-effective autonomous power sources and transmission systems (GHHD)
2. **Work package 2**. Assembling the sensors and multi-channel data acquisition systems with transmission line and power block (GHHD)
3. **Work package 3**. Field test of the prototype module for establishing optimal frequency/amplitude range of EWS (GHDD, CERG andISTerre).

GHHD: Selection of modern cost-effective autonomous power sources and transmission systems. Testing of sensors' system information telemetric transmission in field conditions.
CERG (and partners ISTerre and CNR-IRPI): Benchmark, validation and optimisation of the processing chain on other datasets. Participation in the deployment of the GHHD prototype on site and analysis of the dataset. Organisation of the International Dissemination Workshop.
ECGS: Participate in selection of modern cost-effective autonomous power sources and transmission systems
ECTRM: Participate in selection of modern cost-effective autonomous power sources and transmission systems.
All partners: Writing of the end user and science report (e.g. flyer style).

Expected results

The proposed activity will take into account thei previous results obtained within the activity of CERG and GHHD. as well as the initial results of the "Geophysical Monitoring of Landslides and Man-made Structures - Search of Forerunners" project (2014-2015) and will consolidate and end this activity. GHHD EUR-OPA project "Acoustic EWS of catastrophic debris flows in mountainous areas (GHHD, Tbilisi) - 2006 assembled the debris-generated AE monitoring equipment, consisting of acoustic sensors, special filters and low-noise amplifiers (LNA), radio transmitter and receiver for signal telemetry up to 15 km. The field test of the system shows that it is capable of registering acoustic pulses in the range 10-1000 Hz and transmit the signal on the distance of 10-15 km.

Contribution to the understanding of volcano-tectonic seismic activity on the example of the Virunga Volcanic Province, Democratic Republic of the Congo (Leader: ECGS)

Specific objectives

A better understanding of the volcano-tectonic seismicity and how it is related to the volcanic activity patterns through inter-disciplinary studies. Since 2013, ECGS has contributed in the framework of collaborative projects with several partner institutions, among others the National Museum of Natural History (Mnhn) in Luxembourg and the Royal Museum for Central Africa (RMCA), Belgium, to the development of the first broadband seismic network in the highly-threatened Kivu Rift region in Central Africa (Democratic Republic of the Congo). The region is home to two of Africa’s most active volcanoes, Nyiragongo and Nyamulagira, whose monitoring was until recently severely hampered by a lack of appropriate instrumentation.

Today, a seismic network of 15 stations with real-time data transmission is operating in the area. This network provides extraordinary insight into the volcano-tectonic seismic activity in the area and is a game changer for monitoring purposes. In the past year, we have ensured the real-time transmission of the data from all stations, with direct forwarding of these data to the Goma Volcano Observatory in real-time, such that these data can not only be used for purely scientific, but above all for day-to-day monitoring operations, indispensable for the protection of the local population.

The objective of this project is two-fold: firstly, to study the seismic activity pattern in the Kivu Rift region using the available infrastructure to get better insights into the dynamics of the magmatic system of the volcanoes in the area. Second, we will continue to develop the infrastructure for improved monitoring capacities of the Goma Volcano Observatory, benefiting the local population.

In 2016, we used the support of the EUR-OPA major hazards agreement contribution to acquire a new Nanometrics Centaur acquisition system to be deployed with station Bobandana. This station was until then equipped with an acquisition system that did not allow appropriate real-time data transmission. Due to the fact that Bobandana is a crucial station in the monitoring process, we needed to make sure that robust data transmission from this station could be achieved. This aim has been achieved, and a report was delivered for work package 1. The report contains a short description concerning the Bobandana station, with all the details on the KivuSNet seismic network provided in the attached published article.

In 2017, it is proposed to use the EUR-OPA funding towards an extended analysis of the data obtained with the KivuSNet network (work package 2). The studies will focus on providing fundamental seismological models for the area (velocity model & calibrated local magnitude scale) as well on the better understanding of the interaction of the two volcanoes in their seismic characteristics. The latter is of great importance towards improved eruption forecasting. We intend to use the 2017 EUR-OPA funding as a participation (25%) to the salary costs for a post-doc researcher for a duration of six months to dedicate his time to these scientific challenges.

Associated activities:

Work package 1 (ECGS) [CLOSED in 2016]

Description: Further development of Virunga Seismic Network and scientific analysis of the seismicity in the region. We will analyse the incoming seismic data and investigate the volcano-tectonic seismicity in the Kivu Rift region. We will continue to support our local partners, in particular the Goma Volcano Observatory, through assistance with network management and monitoring tools, and we plan to provide them with real-time access to all seismic stations around the volcanoes as soon as the network infrastructure at the observatory in Goma allows for it.
Deliverable: Report on the data collected and their analysis. We have provided a short report with a detailed description of the work published in an article in Seismological Research Letters, which was attached to the 2016 report and acknowledges EUR-OPA funding.

Work package 2 (ECGS) for 2017

Description: Following the final deployment of the KivuSNet seismic network and the initial scientific results obtained in 2016, we propose to continue and extend the data analysis of the seismic recordings to achieve the following aims in 2017:

1. The derivation of a robust regional 1D seismic velocity model for the Kivu Rift region. Such a model does not yet exist (only simple preliminary models exist thus far) and would improve our constraints on earthquake locations in the region, indispensible to better understand how these events fit into the tectonic context of the area.

2. The calibration of a local magnitude scale for the region. Thus far, the standard relation derived from Californian data is used, which is not optimal considering the differences between the tectonic regimes of California and the Kivu Rift region. A calibrated local

magnitude scale is of importance to better understand the magnitude-frequency distribution of earthquakes in the region and will allow for improved seismic hazard assessment.

3. An improved characterisation of the seismicity patterns at the volcanoes Nyiragongo and Nyamulagira. Several regions prone to seismic swarms have been identified and we will study their importance relative to suggested models of magma chambers as well as their dynamic evolution with time.

The EUR-OPA funding will be used to support funding the salary of one post-doc scientist to work on these topics for the duration of six months (the EUR-OPA funding will cover 25% of the salary costs). The results of this work package can also be of interest to other volcanic settings in Europe and worldwide, and will be disseminated at international scientific conferences to our colleagues as well as through peer-reviewed journal publications in the scientific literature.
Deliverable: Report on the analysis.

I.2 Reinforced cooperation between decision-makers

A. Getting around international challenges

Enhancing the national interagency and international cross-boundary dialogue and inter-operability in fire management in Southeast Europe and Eastern Europe (Leader: GFMC)

Specific objectives for the second year of the biennium:

1. Recommendations for fostering the national inter-agency and civil society cooperation in fire management in Ukraine.This objective is in line with the results of: (i) Advanced Seminar "Wildfires and Human Security: Fire Management on Terrain Contaminated by Radioactivity, Unexploded Ordnance (UXO) and Land Mines", which addressed consequences of wildfires and fire management on contaminated terrain (Kiev, October 2009, organized by GFMC in the frame of the activities of the EUR-OPA Secretariat and the joint OSCE/ENVSEC project "Enhancing National Capacity on Fire Management and Risk Reduction in the South Caucasus") and the resulting Chernobyl Resolution on Wildfires and Human Security: Challenges and Priorities for Action to address Problems of Wildfires burning on Terrain Contaminated by Radioactivity, Unexploded Ordnance (UXO) and Land Mines; and (ii) National and Regional Inter-Agency Round Table on Fire Management in preparation of the wildfire season 2016, held at the National University of Life and Environmental Sciences of Ukraine (NULESU) / Regional Eastern European Fire Monitoring Center (REEFMC) (Kiev, April 2016).

2. Recommendations towards enhancing efficiency and effectiveness of cross-boundary cooperation in fire management in countries bordering Ukraine (focus: Belarus, Moldova, Poland; eventually also: Romania, Hungary and Slovakia; Russia at moment not feasible). This objective is in line with the recommendations of: (i) the UNECE/FAO Regional Forum on Cross-Boundary Fire Management (Geneva, 2013); and (ii) the International Wildfire Preparedness Mechanism (IWPM) in implementation of the recommendations of the Regional Forum.

Associated activities:

1. Entrust the REEFMC, Kiev, to support GFMC in the preparation, logistical / organization of the National Round Table and the Regional Consultation on Fire Management. REEFMC to hire and entrust temporary staff to prepare, organize and evaluate the events.

2. Preparation of the *National Round Table on Fire Management* (date t.b.d.): Establish a list of national stakeholders (agencies / institutions, academia, NGOs / civil society groups) currently mandated or envisaged to participate in coordinated action in fire management.

3. Preparation of an outline / concept for the Regional Consultation to be discussed at the National Round Table (Ukraine as host country of the Regional Consultation)

4. Follow-up of the National Round Table (t.b.d. i.a.w. recommendations).

5. Preparation of the *Regional Consultation on Cross-boundary Cooperation in Fire Management* (to be scheduled in tandem with the Round Table or independently, t.b.d. in 2017): (i) Determination of the co-host(s) of the consultation; (ii) development of a concept paper and structured discussion, sending invitations to the neighbour countries (t.b.d.)

6. Follow-up of the Regional Consultation (t.b.d. i.a.w. recommendations)

Work Package 1 (GFMC)

1. ***Description:*** National Round Table and Regional Consultation in Kiev
2. ***Deliverables:*** Conclusions of the Round Table and Regional Consultation

B. Overcoming national challenges

Basic Principles of Building Aseismic Code, Evacuation planning of critical infrastructures in case of an Earthquake or a Fire (Leader: ECPFE; Partners: ECFF)

ECPFE

Objectives

The purpose of this activity is the syntax, in Greek and in English, of the basic principles of the Building Aseismic Code. The Building Aseismic Code consists of Guidelines and Seismic performance characterisation of non-structural building components and equipment. Special care will be given in new building materials as well as in new building techniques.

Activities related to the budget requested

A first trial to create a Building Aseismic Code was carried out by E.P.P.O. in 1985 consisting of 700 pages. Since that time new aseismic codes have been composed, as well as the Eurocodes, the intervention code (KANEPE) and also new building materials.

It is obvious that this Code must be revised as well as harmonised. During an Earthquake non-structural elements play a crucial role that must be identified.

During 2016, the Scientific Committee composed the basic principles concerning the Building Aseismic Code in Greek and in English as well as the description of the chapters that has to be included in the Code.

For 2017, the nominated Scientific Committee in 2016 will compose and finalize the chapters of the Code in detail, taking into account the outline as described below.

Deliverables

The Building Aseismic Code will be produced in Greek and in English and printed.

ECFF

Objectives

Raising awareness: citizens need to play an active role in case of an emergency, including vulnerable groups of the population.
To focus on the evacuation of critical infrastructure in case of an earthquake or a fire, with a special interest in vulnerable groups of the population.

Activities

A Case Study focusing on the evacuation of a hospital in case of an earthquake or a fire, will take place. Special attention will be given to vulnerable groups, including infants, pregnant women and/or people with disabilities.

A workshop will also be organised in cooperation with the General Secretariat for Civil Protection, Greece, focusing on the "Evacuation of buildings in case of an Earthquake or a Fire for vulnerable groups of population". A number of organisations from the disability community will be invited, as well as many other national relevant entities and stakeholders. Invited speakers with expertise relevant to the topic of the workshop will be invited, including also speakers from EU Member States and representatives of the Council of Europe.

Expected results

Indicative Fire Escape Plans will be prepared for a hospital in the line of "Universal Design"; the new proposed egress signs especially designed for people with disabilities (based on first year's deliverable) will be integrated, in order to upgrade the existing escape plans of the hospital.
Dissemination of knowledge and know-how, based on the deliverable of the first year entitled "Evacuation planning of critical infrastructures in case of an earthquake or a fire for people with disabilities". Exchange of experiences among experts with regard to the evacuation of buildings for people with disabilities; interaction with representatives of disability community in order to address possible gaps and limitations. Proceedings of the workshop as "A catalogue of Ideas" will be prepared and disseminated through ECFF's web page.

Plan of actions for decision takers for <u>prevention</u> of emergency situations of natural and man-made character (Leader: ECNTRM; Partners: all interested sectors)

Following the Sendai Framework of Action 2015-2030 adopted at the 3rd United Nations World Conference on Disaster Risk Reduction and European and Mediterranean Major Hazards Agreement medium term plan 2016 – 2020 motto "From words to actions: towards a European and Mediterranean region more resilient to natural and technological risks" we propose the project aimed at the dissemination of good practices, sharing of experiences, fostering cooperation, promoting resilience measures and enhancing scientific and technical work.

The territorial authorities responsible for the emergencies prevention and response should have the plan of action for each type of emergency specific to the territory. They should have the list of preventive and response measures that are to be taken in order to manage the emergency situation.

The aim of the project is to get from the countries samples of their plans (if any), recommended guidelines for the creation of such plans (how the plans should be drawn up). Following this, to make a comparative study and on the basis of best practices propose recommended guidelines for the creation and structure of plans.

Expected results

The final product could be recommended by EUR-OPA Major Hazards Agreement to decision-making authorities responsible for emergency management.

Objectives

Specific objectives:

Make a comparative study of existing plans of action for decision makers for the response to emergency situations of natural and man-made character on the basis of best practices.

Associated activities:

Description: Diffusion of the questionnaire within the member countries
Deliverable: Analysis of the questionnaire.

Description: Collection of the member countries experience concerning the guidelines and plans.
Deliverable: Analysis report.

Description: Guidelines for creation of plans, structure of plans.
Deliverable: Final version of Guidelines and plans.

Plan of action for decision makers <u>for the response to</u> emergency situations of natural and man-made character (Coordinator: ECNTRM, Moscow, Partners: all the interested centers)

Following the Sendai Framework of Action 2015-2030 adopted at the 3rd United Nations World Conference on Disaster Risk Reduction and European and Mediterranean Major Hazards Agreement medium term plan 2016 – 2020 motto "From words to actions: towards a European and Mediterranean region more resilient to natural and technological risks" we propose the project aimed at the dissemination of good practices, sharing of experiences, fostering cooperation, promoting resilience measures and enhancing scientific and technical work.

The territorial authorities responsible for the emergencies prevention and response should have the plan of action for each type of emergency specific to the territory. They should have the list of preventive and response measures that are to be taken in order to manage the emergency situation.

The aim of the project is to get from the countries samples of their plans (if any), recommended guidelines for the creation of such plans (how the plans should be drawn up). Following this, to make a comparative study and on the basis of best practices propose recommended guidelines for the creation and structure of plans.

Expected results

The final product could be Recommendations by EUR-OPA Major Hazards Agreement to decision-making authorities responsible for emergency management.

Objectives

Specific objectives:
Make a comparative study of existing plans of action for decision makers for the prevention of emergency situations of natural and man-made character on the basis of best practices.

Associated activities:

Description: Diffusion of the questionnaire within the member countries.
Deliverable: Analysis of the questionnaire.

Description: Collection of the member countries' experience concerning the guidelines and plans.
Deliverable: Analysis report.

Description: Guidelines for creation of plans, structure of plans.
Deliverable: Final version of Guidelines and plans.

II.1Awareness-raising as a prerequisite

A. Addressing the present citizens

ImMigRanT (Immediate migrants resource and tool) (Leader : CEMEC)

Supporting Migrants for Better Health and Life

Objectives of the project

A. To design, project and implement both traditional (leaflet) and electronic (smartphone app, android) word-free tools aimed at improving migrants' quality of life by providing them with simple instructions in order to cope with medical emergencies:

1. What to do in case of a medical emergency

- Abdominal pain in adults
- Abdominal pain in children
- Viper bite
- Insect stings
- Burns
- Cuts and wounds
- Diarrhoea
- Fever in children
- Heatstroke
- Hypothermia
- Nosebleeds
- Chest pain
- Fainting
- Bleeding in pregnancy
- Broken bones
- Bruises
- Asthma attack
- Vomiting and nausea
- Alcohol Poisoning
- Carbon monoxide poisoning
- Cardiac arrest

2. What to do in case of disasters:

- Nuclear/radiological
- Building fire
- Earthquakes
- Floods
- Tsunamis
- Hurricanes and storms surges
- Landslides

B. To complete the web site www.migrantaid.eu including information in English

C. To disseminate information about the app and the web site by means of a dedicated online campaign and circulating leaflets in migrants' hospitality centres in countries participating in the Open Partial Agreement on the Prevention of, Protection against and Organisation of Relief in Major Natural and Technological Disasters in order to inform migrants about the ImMigRanT project, the digital tools provided and where to find them.

2017 Work flow and deliverables

Work package 1
Objective: Designing and validating all cartoons for all emergency situations.
Method: teamwork by emergency medicine experts of CEMEC
Timing: 2 months
Deliverable: cartoons for all emergency situations developed

Work package 2
Objective: Mobile app and web site development
Method: emergency medicine team leader and mobile app experts and webmasters.
Timing: 2 months
Deliverable: App and website maps and description of pages

Work package 3
Objective: Mobile app and web site testing
Method: beta users
Timing: 4 month
Deliverable: beta version of both Android App and website

Work package 4
Objective: Mobile app and web site on line and info dissemination
Method: online campaign
Timing: 3 months
Deliverable: mobile app for Smartphones available and website on line

B. Addressing the future citizens

Be Safe Net. Protect Yourself From Hazard (Leader: Besafenet; Partners: TESEC, ICOD, CERG)

Global objective for 2016-2017:

The Be Safe Net project was created under the umbrella of Europa Major Hazard Agreement of the Council of Europe (27 Euro-Mediterranean Countries).

The Be Safe Net initiative aims to achieve three main goals:

1. Promote a culture of safety among a new generation of people

- Raising awareness on the implications of their actions and their way of thinking about emergencies
- •Replacing fear with a culture of preparedness

2. Disseminate knowledge to multilingual societies

- •Create a common knowledge base of best experience
- •Disseminate it in several languages for the benefit of a wider society

3. Become an interactive tool

- •Open our website to other users and organisations for their benefit and comments
- •Enrich its content by contributions based on external experiences

The target is the general public, especially the school teachers and students.

Global objectives for 2017-2018:

The setting up of an 'on-line based Olympiad' which will test the knowledge gained from the BeSafeNet website. This will reflect the effectiveness of the website in terms of awareness raising, promoting a culture of safety, disseminating knowledge to a multi lingual society, and acting as an interactive tool.

Activities

1. Meeting in Cyprus
2. Visit Belugga (company responsible for the technical support of the website)

Expected results

In order to realise the aim of the website, which is to become an educational tool in the hands of teachers, focusing on risk prevention, preparedness, immediate reaction and rehabilitation, the following results are foreseen:

1) Promote the knowledge testing tool of the website through the permanent correspondents in their countries.

2) Update the design of the website in line with modern approaches in order to improve its attractiveness and visibility.

3) Develop a multilingual testing knowledge.

4) Continue hosting and maintenance of the Website.
5) Organise a meeting in Cyprus with the aim of finalising the website and making all the necessary arrangements for the 2018Olympiad. The Executive Secretary of the EUR-OPA Major Hazards Agreement is invited to participate in the meeting as one of the partners of the project. The expected results are to be prepared for the Olympiad. Possible date of the meeting: June 2017.

Deliverables

1. Promotion of the Olympiad to students via schools
2. Redesign the website
3. Develop a multilingual knowledge testing tool

ICOD

Specific objectives:

- Improve BeSafeNet website material.
- Improve awareness and use of BeSafeNet initiative.

Activities to be carried out in relation to the budget:

- Improve text and presentation and complete website material regarding storm surges, sea-level rise and Tsunamis.
- Preparation for organisation of BeSafeNet Olympiad competition on major natural and technological hazards.
- Communicate with secondary schools in Malta and educational authorities regarding the organisation of the Olympiad.
- Preparation of multiple choice questions for use in Olympiad.

Expected results and deliverables:

- Completed website modules on storm surges, sea level rise and Tsunamis.
- Completed multiple choice questions.
- Improved readiness for organisation of Olympiad competition in 2018.

Preventive information and education for fighting against the effects of natural disasters (Leader: ECMNR; Partners: ECRP, ECBR)

Specific objectives: **pilot experiment in educational institutions based on the results obtained in 2016.**

Aim of the Pilot experiment in educational institutions is to develop values and attitudes focused on caring for ones own life and of others, as well as the concern for environmental safety.

Other specific values for such educational process are as follows:

- motivation for responsible application of knowledge by any individual;
- application of appropriate behaviour ;
- develop a critical mind, positive vision and tolerance;
- interest in new achievements of science and civilization.

The Pilot Experiment proposes the following objectives:

1. Identify the main types of disasters, their forms of development and the specific terminology;
2. Training and retraining in the development of responsible attitudes and behaviours in risk situations;
3. Application of knowledge in fighting the effects of natural disasters, regulating and influencing own and team's behaviour, and development of the sense of solidarity.

In this respect, the teaching will be done based on training curricula goals.

Work Package 1 (prepared by ECMNR)

Description: Pilot experiment in schools based on the results obtained in 2016.
In the 2017 academic year, the ECMNR in collaboration with two centres (Sofia and Kiev), based on the results obtained in 2016, will initiate a project which aims to involve students in various activities to get as much information about disasters in general. A pilot experiment will be conducted in three educational institutions in Moldova: Preschool Institution of Education no. 119, Chişinău, Preschool Institution of Education ABC, Chişinău, school with classes I-VIII of Hînceşti district and Pedagogical School of Chișinău.

Pilot Experiment provides:

1. To organise and conduct a pilot experiment in school, based on the results obtained in 2016.
2. The implementation in educational institutions, subject to the pilot experiment, of materials and advanced existing practices about identifying and raising awareness of the risk referring to students protection in case of natural disasters.
3. Ensuring continuity in planning activities (training sessions led by experts from the Civil Protection Service and the Emergency Situations and coordinated by teachers and high school volunteer students, studies, seminars, projects, training hours, publications, etc.) coordinated by ECMNR, in agreement with educational institutions and the responsible Moldovan authorities as well as centres in Bulgaria and Ukraine.
4. Encourage students to simplify language so that their contribution to pupils involved in the pilot experiment is in the form of text and drawings. These will constitute the basic source of drafting a Guide for students or even a support course for teachers' schools wishing to address these issues by organising geography or civics classes or as an optional course, the preventive information and education to fight against the effects of natural disasters.
5. Inclusive pedagogy, given the vulnerability of children and the inclusion of children with disabilities along with other students in the pilot experiment is one of the priorities and a good way to both inform, educate and prepare them to react correctly in the event of disasters. It also ensures the participation of children, who most often, are left in the background or even ignored during such events.
6. Raise awareness about natural disasters and methodically provide support to teachers and development of training skills to students on appropriate behaviour in risk situations.
7. Undertake public awareness-raising and educational promotional initiatives as well as provide material for education in schools.
8. Investigate to what extent a pilot experiment can contribute to preparing children as an important resource in the proper management of such situations and that their good training means saving lives?

Result: Presentation of the report on the results of pilot experiments.

1. Based on the results of pilot experiments we will observe which are the positive experiences and best practices of preventive information and education in schools in the event of natural disasters. Thus, the students in the participating countries through the Centers will receive more information about the risks in the event of natural disasters and will be better protected.
2. Drafting content of the materials collected from schools involved in the pilot experiment and report preparation for holding the seminar organised by ECMNR in Chișinău. The purpose is to inform students, teachers, public authorities responsible for increasing awareness and improving information and preparedness of the population in general and students especially for risk situations of preventive information and education in schools to fight against the effects of natural disasters.

Deliverables:

1. Distribution of the work package. ECRP will analyse the results of the pilot experiment conducted by ECMNR (Moldova) and a pilot experiment conducted by ECRP and will prepare recommendations. The report will be sent to the coordinator.

2. Distribution of the work package. TESEC will present the latest materials for additional studies in Ukraine on students' actions in case of preventive information and education in schools to respond to natural disasters.

Work Package 2 (ECMNR)

Description: International Seminar on project results: Preventive information and education for fighting against the effects of natural disasters.

In the context of global climate changes that sometimes led to the emergence of natural disasters, Moldova experienced in recent years dangerous natural phenomena, especially floods, which caused considerable material damage and also loss of life.

Given the experience of other countries where such phenomena occur for longer and with greater frequency, it was found that, in general the most effective response is prevention and the best prevention is through education and information.

In this regard, it an international seminar will be held in Chișinău in October 2017, with the participation of TESEC and ECRP in order to directly inform the students, teachers and public authorities responsible for increasing awareness and improving information and training of students and the population in the fight against the effects of natural disasters.

Related activities: A working group to analyse relationships and develop conclusions and recommendations presented will be created.

Result*:* Editing the booklet/book "Let's Learn Together How to Protect Our Life**"**

Drafting recommendations and developing a guide for publication in English and other official languages of the participating countries on students' actions such as preventive information and education. Partners shall offer support for carrying out the pilot project, offering in communication with children from the member countries.

The book will be a summary of the works developed by students from three above-mentioned educational institutions. It will be characterised by the fact that it will be fully implemented by

students, all the texts belonging to them. In addition to the information it will provide, the work will include applications, course support, and drawings done by students.
The book "*Let's Learn How to Protect Our Life"* will be distributed to participating countries, and in electronic format to the main centres of the Agreement.

Work package 1 (ECRP, Sofia)
Description: The presentation of additional study materials, reports, initiatives for raising public awareness, other additional material that the partners dispose of for education in schools, etc.
Deliverable: Report sent by the coordinator.

"Building a Culture of prevention: the important role of the Exercises in school establishments together with the annual National campaigns". (Leader: ECRP; Partners: ECBR, ECFF, ECMNR, TESEC, ECTR, ECNTRM, CEMEC, CRSTRA)

ECRP

Specific objectives:

Supplementing the questionnaire:
Sending the questionnaire by the Ministry of Interior to all member states of the EUR-OPA Major Hazards Agreement.
Analysis of responses and elaboration of the final version of the report.
Edition of a Brochure.

Associated activities:

Work package 1 (ECRP)
Description: Revise the questionnaire and send it to all member states of the EUR-OPA Major Hazards Agreement .
Deliverable: Analysis of responses, summarising of experiences and good practices.

Work package 2 (ECRP)
Description: Development of the final version of the report.
Deliverable: Edition of a Brochure and sending it to the member states of the EUR-OPA Major Hazards Agreement.

ECMNR

Specific objectives: Training of 20 students; volunteers from 2 communities with seismic risk in specialised seminars

Related activities: Set up a working to consider international experience and develop recommendations.

Work Package (ECMNR, Moldova)

Description: training of 20 students; volunteers from 2 communities with seismic risk.

Deliverables: Report on response to questionnaires. The report is sent to the coordinator.

Development of the Methodology for teaching the course: "Basic knowledge on safe life activities basis" for public school teachers (Leader: ECRM)

Objectives of the project

In 2016, the ECRM developed a preliminary version of the Methodology for teaching the course: "Basic knowledge on safe life activities basis" for public school teachers. The brief description of the objectives together with the paper's context and its key elements, principles, methods and tools of teaching the course, were given in the "Brief presentation of 2016 activities" (Activity 1.), submitted to the EUR-OPA Major Hazards Agreement's Secretariat on 15 December 2016.

In 2017 a final version of the Methodology will be developed. Apart from further strengthening and upgrading the project, drawing from the new materials, viewing relevant comments and suggestions to the preliminary version, we have in 2017, to identify a way and design the tools for resolving issues revealed in the course of the development of the preliminary version of the Methodology in 2016 .
The contest of principles determining the general venues in a teaching process will be made more detailed, the most productive teaching tools employed in running this course will be made broader and enriched. In particular, the methods of group teaching are to be made more detailed and updated.

In 2017 the Methodology for teaching the course: "Basic knowledge on extreme psychology basis" will be developed and included as a separate section into the Methodology for teaching the course: "Basic knowledge on safe life activities basis" for public school teachers".

Specific objectives

Development of the final version of the Methodology for teaching the course: "Basic knowledge in safe life activities basis" for public school teachers in English and Russian languages, sending it to the partner-centers for following translation in national languages and organisation of national training courses.

Expected Results

Final version of the Methodology for teaching the course: "Basic knowledge in safe life activities basis" for public school teachers in English and Russian.

II.2People's involvement as a duty

A. Individual action for own resilience

Training for Syrian refugees living in the Temporary Protection Centres (TPCs) on Basic Disaster Awareness and fire protection (Leader: AFEM)

Objectives of the project

Turkey is currently hosting about 2.7 million Syrians out of which 265 thousand are living in 25 Temporary Protection Centres (TPCs) that have been established and managed in 10 provinces. Some important issues for this vulnerable population who fled from their home include being safe, being able to meet their basic needs as well as being aware of risks in the TPCs. They are particularly vulnerable in case of disasters and emergency situations. So, it is necessary to inform them about related risks, prevention measures and how to react in case of a disaster.

Global objectives:

- Raising awareness about natural and technological disasters among Syrians living in the protection centres.
- Training them on how to react in case of disasters.

Specific objectives for 2017:

- Ensuring that a significant number of Syrians are trained
- Raising awareness of Syrians in TPCs and active participation to DRR activities
- Developing Syrians' capacities in TPCs to cope with disasters

Expected results

- The training materials were translated in 2016 and will be disseminated in TPCs.
- Diffusion of the prepared material among Syrians in some protection centres.
- Creating disaster awareness and building disaster culture in TPCs

Associated activities (split by partner)

The project will be implemented in the province of Şanlıurfa as a pilot project. There are almost 110 thousand Syrians in 5 protection centers in Şanlıurfa. There are almost 250 teachers and 100 committee members (Committee of children, youth, women, wise men and neighborhood representatives) in each protection center. It is planned to train the 50-60 volunteer teachers and committee members as trainer and then diffuse the training to adults and children in TPCs.

It is planned to train the volunteer trainers in TPCs in two days. The training is comprised of basic knowledge about natural and technological disasters especially fire protection. It is aimed that the volunteer trainers would train the children (from kindergarten until college age) and adults in TPCs. The training materials are prepared by taking into account the age range and their response

capabilities in an emergency situation and will be handed out to volunteer trainers to train the children and adults in TPCs.

Activities:

- Training of volunteer trainers (teachers and committee members) in Harran Container City.
- Evaluating the training and revising the training programme and the context.
- Training of volunteer trainers (teachers and committee members) in Akçakale, Viranşehir, Ceylanpınar and Suruç Tent Cities.

Deliverables:

1) A Report for each training provided (number of participants, etc).
2) An evaluation report for each training provided.
3) Final version of the training programme.

B. Collective action for social resilience

Greater involvement of citizens in the decision-making process to protect against disasters – joint emergency planning (Leader: TESEC; Partners: ECRM, ECRP, ECNTRM, CEMEC)

General objectives

Democracy is a requisite if we have to build safer, more resilient societies. People have the right to be made aware of the risks surrounding them and public authorities have the duty to involve them in deciding measures and procedures aimed to protect them from risks. One fundamental aspect of safety is access to relevant information concerning the hazards that disasters may pose to the population.

The awareness and knowledge of people about the nature of hazards will help you to save your life.
The emergency preparedness plan is a key tool of emergency preparedness. It has to be developed and clearly define all measures for effective emergency response. It also has to identify the roles and responsibilities of all the parties concerned, including the general public. It should clearly indicate the co-ordination among the parties, as well as the lines of communication and the means of obtaining the necessary technical, medical information and knowledge.

Public Emergency Plan (PEPL) has to be open to the general public, all stakeholders involved in better protection of people from disaster. It shows to people – What the government is doing for better protection of people and what people should also do.
.
In 2015-2016, a first draft of structure of such a plan was developed and confirmed with National Authorities. It defined the main subjects of effective emergency management in the country. The public has to be better informed about the main hazards in the regions, what authority is doing for better prevention, response and relief in case of disaster. The existence of such a public emergency plan for the population will contribute to the effective protection of people from an emergency and better mutual understanding between the people and the responsible services.

Specific objectives for 2017

1. Developing together with national authorities a Public Emergency Plan (PEPL), following the agreed structure.
2. Organising national workshops for the presentation of public emergency plan. Using PEPL as a basis for national platform, collaboration of authority, public, business, NGOs and others for better safety.

Description of activities to be carried out in relation to the budget requested

1. Coordination of activities of the centers involved in project.
2. Organising a Workgroup for the development of PEPL.
3. Coordination of stakeholder's contribution.

Expected results

Greater involvement of the public in emergency management. Using comprehensive information in the content of public emergency plans for different activities of all the partners in emergency prevention, preparedness, response and relief.

Work package 1 (ECRP, Sofia)

Description:

- Developing together with national authorities a public emergency plan following an agreed structure;
- Organizing National workshops (work meetings, meetings with specialists) for presentation of a public emergency plan;
- Using the public emergency plan as the basis for a National platform – collaboration between the authorities, the public, businesses, NGOs and others for better safety. It is a task that is not only for the government, but for businesses and the public;
- Greater involvement of the public in emergency management using comprehensive information in the context of public emergency planning of different activities of all partners in emergency prevention, preparedness, response and relief.

Deliverable: Report sent by the coordinator

ECRM

Specific objectives

1. Development of proposals for communicating with migrants and involving them, including migrant youth, in disaster preparedness and response in civil communities being in fully or partially composed of migrants.

2. Development of concrete recommendations and detailed proposals on how to create an Individual Plan, enabling people with disabilities to be prepared for disasters, a Family Plan, a Neighborhood Plan, a Plan for institutions where people with disabilities work or study. A Plan for specialised institutions where people with disabilities, especially children, are provided with care. Integration of these Plans into Municipal Plans on disaster risk reduction and emergency management.

3. Filling in with the corresponding information the final version of the "Structure of the Emergency Plan" document's relevant sections and paragraphs adapted for Armenia with reference to corresponding plans, laws and other normative documents, being in force in Armenia, to obtain the possible useful tools for analyses and perfection of the likely plans. This in many respects encourages the revealing of a state of a matter, dealing with the availability of relevant plans, the level of their effectiveness, as well as the existence for "narrow places".

Expected Results

1. Proposals on communicating with migrants and involving them, including migrant youth, in disaster preparedness and response in civil communities being fully or partially composed of migrants.

Proposals/request for organisational, financial, tangible advisory and other support mechanisms from the authorities to allow for the assembling of voluntary teams in order to prepare civil communities for disasters. These proposals will include training managers and leaders from migrants (including migrant youth) to deal with disaster risk management, to have necessary information and create teaching materials, as well as to bring together to the discussion table municipal managers, rescuers and migrants (in English and Russian).

2. Recommendations and detailed proposals on how to develop an Individual Plan, enabling people with disabilities to be prepared for disasters, a Family Plan, a Neighborhood Plan, a Plan for institutions where people with disabilities work or study. A Plan for specialised institutions where people with disabilities, especially children, are provided care. Integration of these Plans into Municipal Plans on disaster risk reduction and emergency management (in English and Russian).

3. Filling in with the corresponding information the final version of the "Structure of the Emergency Plan" document's relevant sections and paragraphs adapted to Armenia with reference to corresponding plans, laws and other normative documents, being in force in Armenia (in English and Russian).

Involving sales and tourism agents on earthquake and tsunami mitigation measures (Leader: CERU)

Objective

Specific objectives:

1. Involving the municipalities on the design of evacuation routes and in the implementation of evacuation signalling on the historical centres and coastal areas.
2. Raise awareness of the population as well as tourism and sales agents concerning earthquake and tsunami risks.
3. Testing the questionnaire devoted to the responsible hotel in order to check their knowledge on earthquake and tsunami risk and their availability to undertake mitigation measures.
4. Testing the tsunami signalling placed on a pilot beach in Lagos (Portugal).

Associated activities:

Work package 1 (CERU)

Description: Workshop to raise awareness among tourism and sales agents on earthquake and tsunami risks, in Portugal.

The workshop will be held in Lagos, Algarve (south of Portugal). An expert from Dominican Republic, will present her outstanding experience on hotels and tourism agents' awareness concerning tsunami risk and the implementation of mitigation measures (mainly information and evacuation paths and instructions).

This workshop will be held during 2 and 3 April 2017 and 2 colleagues from the CEPRIS (partner of this project) will be invited as well as other Portuguese partners. The workshop will be open to national and international participants, mainly civil protection agents and other interested people. Besides civil protection agents, the workshop is aimed at hotel managers and tourism agents.

Deliverable: The workshop report.

Work package 2 (CERU)

Description: Tsunami friendly hotel: Questionnaire devoted to hotel managers to assess their sensitivity and support for tsunami risk awareness actions.

A questionnaire exercise devoted to hotel managers will be carried out. We have a preliminary questionnaire and the CEPRIS one also. We intend to arrive at a common (or very similar) questionnaire that will be implemented in both countries. We will discuss this issue also during Lagos workshop.

We anticipate 3 days for its implementation with 2 or 3 teams in the field. This will probably be done in June or September, according to the teams' availability.

Deliverable: Analysis of the questionnaire.

Work package 3 (CERU)

Description: A Modulus on tsunami hazard and risk to be included in lifeguards training courses.
A script with a modulus content will be prepared. This will be done probably in September.

Deliverable: Modulus proposal.

Work package 4 (CERU)

Description: Study/Implementation of evacuation routes on Historical Centres (Cascais and Lagos). Awareness action, proposed paths and evacuation signalling.
This work package will summarise all awareness sessions performed during 2017 in several Portuguese municipalities. It will also take into account the evolution of the study and implementation of evacuation routes of the Cascais and Lagos historical centres. Preliminary studies have already been developed, in previous projects, and we will describe the progress of these studies and actions.

Deliverable: Report on the developed activities.

Collective action for social resilience: earthquake training and preparedness of citizens, school students and volunteers from communities (ECBR)

General objectives

- To foster the resilience of societies as a whole by investing in the preparedness of citizens, school students and community volunteers for personal, family and groups of protection.
- To create stakeholders for earthquake preparedness.

Specific objectives

- Organise short time free-field seminars directly with citizens in two communities.
- Organise two-day seminar with the Directors of EUR-OPA associated centers of Bulgaria, Greece, Republic of Moldova and Turkey in the ECBR in Bucharest.
- Train 20 students, citizens and volunteers from two communities on seismic risk in a specialised seminar.

Description of activities

- Development of knowledge transfer / training materials for students, citizens and volunteers in Romanian language;
    - Deadline: April-May 2017

- Organisation of short time free-field seminars directly with citizens in two communities.
    - Date: May-June 2017
    - Duration: 2 hours in each of the two community places
    - Participants: about 20-30 citizens in each place
    - Aim: direct transfer of earthquake preparedness knowledge to the community using verbal explanations, didactic mini-simulators and leaflets

- Organisation of training seminar
    - Date: May-June 2017
    - Duration: 2 days
    - Participants: 20 Romanian students / citizens / volunteers
    - Aim: Learning and understanding reason, means and ways of achieving earthquake preparedness knowledge and skills for persons, groups, family and community members

- Organisation of a Workshop
    - Date: May-June 2017 (in case 3 of 4 invited directors will not be available in May/June, the Workshop will be held in October)
    - Duration: 2 days
    - Participants: 4 Directors of EUR-OPA associated centers of Bulgaria, Greece, Republic of Moldova, Turkey
    - Aim: exchange of experience on earthquake disaster prevention in communities at risk

- o A one-day Workshop may include some interaction of visiting centers directors with participants in the training seminar

Expected Results

- Provide practical knowledge and create positive risk reduction perception for citizens.
- Increase resilience and pro-active behaviour of citizens in risky communities, with assitance of volunteers.
- Fostering official duties of Civil Protection (IGSU) and attracting some NGO's to be partners of IGSU and ECBR in multiplicating the risk reduction effect in communities.

Deliverables

- 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.

Annex I. List of Accronyms – Specialized Centers of EUR-OPA Agreement

- CRSTRA - Scientific and Technical Research Centre on Arid Regions
  Biskra, Algeria
- ECRM - European Interregional Scientific and Educational Centre on majo risks management
  Yerevan, Armenia
- ECMHT - European Centre on Training and Information of Local and Regional Authorities and Population in the Field of Natural and Technological Disasters
  Baku, Azerbaijan
- ISPU - Higher Institute of Emergency Planning
  Brussels, Belgium
- ECRP - European Centre for Risk Prevention
  Sofia, Bulgaria
- BNTC - Bulgarian National Training Centre
  Sofia, Bulgaria
- BE-SAFE-NET - European Centre for Disaster awareness with the use of the Internet
  Nicosia, Cyprus
- EMSC - European Mediterranean Seismological Centre
  Bruyères-le-Châtel, France
- CerCo - Specialised European Centre on Coastal Risks
  Biarritz, France
- CERG - European Centre for Seismic and Geomorphological Hazards
  Strasbourg, France
- GHHD - European Centre on Geodynamical Risks of High Dams
  Tbilisi, Georgia
- GFMC - The Global Fire Monitoring Center
  Freiburg, Germany
- ECFF- European Centre on Forest Fires
  Athens, Greece
- ECPFE- European Centre on Prevention and Forecasting of Earthquakes
  Athens, Greece
- CUEBC - European University for the Cultural Heritage
  Ravello, Italy
- ECGS - European Centre for Geodynamics and Seismology
  Walferdange, Luxemburg
- ICoD - Euro-Mediterranean Centre on Insular Coastal Dynamics
  La Valletta, Malta
- ECMNR - European Centre for Mitigation of Natural Risks
  Chisinau, Moldova
- CEPRIS - Euro-Mediterranean Centre for Evaluation and Prevention of Seismic Risk
  Rabat, Morocco
- CERU- European Centre on Urban Risk
  Lisbon, Portugal
- ECBR - European Centre for Rehabilitation of Buildings
  Bucharest, Romania

- ECNTRM- European Centre of New Technologies for the Management of Natural and Technological Major Hazards
  Moscow, Russian Federation
- CEMEC - European Centre for Disaster Medicine
  San Marino
- CEISE- European Centre on Social Research in Emergency Situations
  Madrid, Spain
- ECILS - European Centre on the Vulnerability of Industrial and Lifeline Systems
  Skopje, "The former Yugoslav Republic of Macedonia"
- AFEM- European Natural Disasters Training Centre
  Ankara, Turkey
- TESEC - European Centre of Technological Safety
  Kyiv, Ukraine