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Developing Skills in Dealing with
Emergencies:

Civil Protection for People Compendium





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“Developing Skills in Dealing with Emergencies: **Civil Protection for People CPP**”

Developing Skills in Dealing with Emergencies:
Civil Protection for People – compendium

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Introduction

“Developing Skills in Dealing with Emergencies: **Civil Protection for People**” is an ERASMUS+ project – Strategic Partnership – Exchange of Good practices Project.

The consortium for the project intends to train people in local communities and make them prepared to deal with emergencies, such as earthquakes, flooding, extreme weather conditions etc.

The partnership consists of five European organizations, dealing with education and training, cultural activities and initiatives and civil protection interventions.

Partner	Country	website	e-mail
OIKO.POLIS	Greece	http://www.oiko-polis.com/	oikopolis2007@gmail.com
TRAINING2000	Italy	www.training2000.it	training2000@training2000.it
Falchi della Rovere	Italy	http://www.falchidellarovere.it	falchidellarovere@pec.it
Georgian Technical University (GTU)	Georgia	http://www.gtu.edu.ge	info@gtu.ge
Akdeniz University	Turkey	http://www.akdeniz.edu.tr	gchetinkaya@akdeniz.edu.tr

The duration of the project is two years starting November 2017 and ending October 2019.

The project

The project intends to provide training support to civil protection associations in order to improve their knowledge and skills to immediate response to natural calamity or accidents produced by people, so that it could be possible to reduce the environmental impact and speed up the recovery of communities.

The target groups for the project are youth organizations, schools, teachers' associations, open care centers for adults, local authorities, hotspots for refugees, volunteer associations and relevant networks part / non part of the consortium, from European countries and not, mainly in the Mediterranean.

The final outcome will be a compendium of good practices, case studies and a survival guide from the partners' countries.

The website of the project is: <https://cpp2018.wordpress.com/> and the page in the facebook is <https://www.facebook.com/PPP->



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Methodology

Methodology of the project:

Team work, research via questionnaires, data analysis, presentations, creating videos, use of ICT, workshops, webinars, seminars, e-learning courses and networking activities. In detail:

- a) Our activities were addressed to various groups, e.g. citizens, pupils, field experts, and took place through organizing seminars and workshops.
- b) Evaluation of all five international meetings. The evaluation of international meetings was conducted via the same questionnaire by all the participants in the meeting. Technical University of Georgia was responsible for the questionnaire and small reporting.
- c) Periodically, the coordinator sent a form to be filled by each partner, concerning the evaluation of activities that have taken place by each organization in each country.
- d) In every international meeting each partner presented all the material they had created (best practice, case studies, survival guide) and there was discussion on them.
- e) After every activity of the work done a report was drawn according to the template of good practices and the report form was uploaded on the website.



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Reports of the surveys conducted during the project

1st CPP survey report

In December 2017, a questionnaire was distributed, via Google forms among citizens in and around the area of the partners' organization, in order to investigate the citizens' awareness on civil security issues.

The main objective of this survey was to sensitize citizens about civil protection, to create volunteer groups and train their members on preventive actions, in collaboration with other European organizations, as well as to inform them about basic response during a natural disaster and the immediate post-event actions.

The questions were mainly concerned about natural hazards and the level of citizens' awareness of potential risks, as well as about the role of individuals and of state organizations during these phenomena.

217 citizens, 120 men and 97 women, contributed to our survey as respondents: 53 from Georgia, 56 from Greece, 57 from Italy, and 51 from Turkey.

Participants came from a wide age range: 75 were 15-25 years old, 39 were 26-35 years old, 82 were 36-60 years old, and 21 were older than 60 years old.

Most of the participants (155) have university education, others (44) have high-school education and few (18) have primary education.

Conclusions

The conclusions from the answers to the surveys can be summarized as follows:

- ✓ Most of the respondents believe that their sense of safety is significantly affected by natural hazards.
- ✓ From the listed natural hazards, earthquakes and wildfires are considered most dangerous, as well as floods and extreme thunderstorms.
- ✓ Most of the respondents do not know where they can get information on potential hazards and preparation for them, as well as where they can get help and shelter after a natural disaster. A few more than half of the respondents replied that they know what to do in a case of a disaster warning.
- ✓ About half of the respondents replied that they are aware of disaster risks in their region. The rest of the people replied to the contrary.
- ✓ The respondents, based on their experience, considered the elderly and the disabled people as more vulnerable groups.



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- ✓ Most of the respondents deem that their countries alone cannot deal with natural disasters and they feel that concerted EU action, under a specific civil protection policy, is necessary.
- ✓ As main communication tools are considered by the participants the electronics (internet, social networks etc.), as well as broadcasting media and presentations-forums.
- ✓ About half of the respondents do not feel sufficiently informed about disaster risks when they are travelling in another EU country, while many of them replied that this depends on the country.
- ✓ We could dare to conclude that the respondents feel somehow informed about civil protection in their own countries, as almost equal numbers of them feel “fairly well informed” and “not very well informed”.
- ✓ Almost half of the respondents do not know if there are laws and policies concerning disaster management in their country, while less than half of them are aware of their existence.

2nd CPP survey report

In September and October 2018, the same questionnaire, enriched with four questions, was distributed, via Google forms among citizens in and around the area of partners' organization, in order to investigate the citizens' awareness on civil security issues.

The main objective of this survey was to sensitize citizens about civil protection, to create volunteer groups and train their members on preventive actions, in collaboration with other European organizations, as well as to inform them on basic response during a natural disaster and the immediate post-event actions. Additionally, the objective of the four new questions was to test the knowledge of the participants on how to react in case of an earthquake, a flood, an indoor fire or an evacuation during a technological hazard.

The questions were mainly concerned about natural hazards and the level of citizens' awareness of potential risks, as well as the role of individuals and of state organizations during these phenomena.

159 citizens, 74 men and 85 women, contributed to our survey as respondents: 30 from Georgia, 63 from Greece, 30 from Italy, and 36 from Turkey.

Participants came from a wide age range: 27 were 15-25 years old, 24 were 26-35 years old, 63 were 36-60 years old, and 45 were older than 60 years old.

Most of the participants (113) have university education, others (32) have high-school education and few (14) have primary education.



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Conclusions

The conclusions from the answers to the questionnaires can be summarized as follows:

- ✓ Most of the respondents believe that natural hazards influence their sense of safety.
- ✓ From the listed natural hazards, earthquakes and floods are considered most dangerous, as well as wildfires and extreme thunderstorms.
- ✓ The majority of them know what to do during an earthquake, an indoor fire, a flood and they are all willing to follow the instructions given by the authorities if there is a technological hazard and the evacuation is started by the authorities.
- ✓ Concerning issues such as potential hazard and the ways of preparing for them, existence of local warning of what to do in case of a disaster warning and where you can get help and shelter in case of a natural disaster in your settlement, the participants from Italy and Turkey were more aware than participants from Greece and Georgia.
- ✓ Only some of the participants are informed on what to do and who to call in case of a disaster in their settlement and feel fairly aware of the risks. However, the number of those who feel not adequately informed and aware plus those who do not know is too high.
- ✓ The respondents, based on their experience, considered the elderly and the disabled people as more vulnerable groups.
- ✓ Most of participants agreed with the idea of a EU civil protection policy, as well as with the need of sending the EU experts and equipment to affected areas. Most of the participants agreed on the need for the EU to coordinate actions dealing with disasters. More than half agree on the inadequacy of their country in dealing with disasters, and they think the EU should help other countries in case of disaster with a civil protection policy.
- ✓ Electronic messages (internet, Mobile SMS etc.) directly for individuals, Social networking services (e.g. Facebook, Twitter), Local broadcast media (TV / radio) and Forums / presentations at schools and workplaces are the favourite tools by which people prefer to be informed.
- ✓ About half of the respondents do not feel sufficiently informed about disaster risks when they are travelling in another EU country, while many of them replied that this depends on the country.
- ✓ The majority of the participants feel fairly well informed or not very well informed about civil protection activities in their country.
- ✓ Most of the participants are aware of the existence of laws and policies that deal with disaster management in their country.



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EMERGENCY SURVIVAL GUIDE

"Developing Skills in Dealing with Emergencies:

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What is civil protection?

CIVIL PROTECTION is the coordination of the actions of institutions, bodies, operational structures that intervene in case of disasters, emergency situations in general, at local, national and international level, in order to guarantee the safety of people, goods and the environment.

If you are aware of the possible risks present in the area where you live, if you know how and where to inform yourself, if you know how to organize to face any crisis, you live much more secure and the Civil Protection can work to the best of its ability.

Yes, because you are the first actor of this system: you are the one who must know how to watch, how to warn, how to collaborate with rescuers.

You and your family, when an emergency occurs, almost always unexpectedly and suddenly, you can find yourself alone facing difficult and dangerous situations, even only for the time necessary for rescuers to reach and help you, time that may be longer or shorter depending on the size of the emergency and the environmental conditions in which you are located. It is then essential to know what to do and how to behave in those moments.

This survival guide wants to help everyone to play their role of Civil Protection in the best possible way. **Remember: we are all Civil Protection.**

EU action in the area of civil protection is covered by **Article 196** of the Treaty on the Functioning of the European Union (TFEU)

1. The Union shall encourage cooperation between Member States in order to improve the effectiveness of systems for preventing and protecting against natural or man-made disasters.

Union action shall aim to:

(a) support and complement Member States' action at national, regional and local level in risk prevention, in preparing their civil-protection personnel and in responding to natural or man-made disasters within the Union;

(b) promote swift, effective operational cooperation within the Union between national civil-protection services;

(c) promote consistency in international civil-protection work.

2. The European Parliament and the Council, acting in accordance with the ordinary legislative procedure shall establish the measures necessary to help achieve the objectives referred to in paragraph 1, excluding any harmonisation of the laws and regulations of the Member States.

ABOUT TURKEY AND GEORGIA: The European Commission and the Emergency Management Service of Georgia signed an administrative arrangement in Tbilisi enhancing



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ties in civil protection and disaster risk management. Also, Turkey has joined the European framework for cooperation in disaster management and emergency response.

Precautions for disasters in general

Earthquakes, floods, landslides, droughts and other natural and anthropogenic hazards cause tens of thousands of deaths, hundreds of thousands injured and billions of dollars in economic losses every year worldwide.

Precautions and preventive actions before disaster strikes are essential to minimize the damage caused by disasters.

On a personal level it is good that you know some actions for the prevention of damage caused by disasters such as:

- ✓ Be informed about the risks of the territory in which you live
- ✓ if you have to build in areas prone to earthquake and / or flood risk, keep in mind the safety standards
- ✓ fix loose furniture to the walls so as not to fall over as a result of an earthquake and place heavy objects in lower places
- ✓ learn first aid
- ✓ learn (and teach your family members) how to turn off gas, water and light in case you have to leave the house
- ✓ learn (and teach your family members) the emergency numbers of your country
- ✓ learn the evacuation routes and find out how you should leave your area if necessary
- ✓ prepare a family emergency plan
- ✓ prepare an emergency kit taking into account your needs (medicines you must take every day, a photocopy of your documents, multi-purpose knife, torch, notes, pen and any other object that you think is useful for you and your family)

By planning and practising with your family about what you will do and where you will go in the case of a natural disaster or other emergency, you will increase your chances of safety.

Earthquakes

During the Earthquake

If you are indoors



- Stay calm and take cover under sturdy furniture (table, desk), kneel and hold its leg with your hands.
- Do not attempt to go out of the house.
- Do not go out on the balcony.
- Search for shelter in a doorway
- Do not rush to the stairs and do not use the lift

If you are in a tall building

- Move away from glass and exterior walls.

If you are in a recreation place, store or mall

- Stay calm.
- Stay indoors until the earthquake stops.
- Stay away from the panicked crowd moving disorderly toward the exits because of risk of being trampled on.

If you are outdoors

- Move away from buildings, electric or telephone cables.
- Cover your head with a briefcase or a purse available.

If you are in a moving vehicle

- Drive to an open space and stop the car carefully so as not to obstruct traffic.
- Avoid tunnels, bridges or pedestrian overpasses.

After the Earthquake

If you are inside

- Check if you or anyone around you is injured. Do not move seriously injured persons.
- Evacuate the building using the stairs (do not use the elevator), after switching off the electricity, gas and water.
- Go towards an open and safe space.
- Follow the instructions of the authorities and do not pay attention to rumors.
- Do not drive unless there is an emergency, so as not to block the work of the rescuers.
- Use your land line or mobile telephone only in an emergency to avoid network overload.
- Do not come home.

In case of a Tsunami

If you are close to a low altitude seaside

- Not all earthquakes cause a tsunami. However, when you feel an earthquake, stay alert.



- Observe if there is a significant rise or fall of the water level. This phenomenon is a physical warning for an oncoming tsunami.
- After a strong earthquake leave the seashore and go towards mainland areas of higher altitude. A relatively small-sized tsunami on the coastline could be transformed into an extremely dangerous one in a distance of several kilometers.
- Stay away from seaside areas until you are informed by the authorities that the danger is over. A tsunami is not a single wave but a series of waves with different times of arrival at the seashore.
- Do not approach the shore in order to watch a tsunami coming. When you see the tsunami coming, it will probably be too late to avoid it.

Forest Fires

If you notice fire

- Call IMMEDIATELY the European emergency call number (112) and give clear information about:
 - ✓ the location and the exact point where you are,
 - ✓ the location, the exact point and the direction of fire,
 - ✓ the kind of vegetation that is burning.
 - ✓ Look for a safe path: a road or a stream, do not stand in places where the wind blows.
 - ✓ Lie down on the ground in a place where there is no inflammable vegetation.
 - ✓ If you have no other choice, try to cross the fire where it is less intense to pass from the already burnt.
-

Getting prepared

If fire is approaching your home

- Open the gate of the garden to facilitate the fire fighting vehicle access.
- Stay calm.
- Remove all the flammable materials from around the building to closed and protected places.
- Close all the passages (chimneys, windows, doors etc) to prevent sparks from entering the building.
- Shut off all the gas and liquid-fuel supplies inside and outside the building.
- Close the awnings on the balconies and the windows.
- Connect the water hoses with the taps outside the building and spread them so that the perimeter of the building is covered.



- If visibility is reduced, switch on the interior and exterior lights of the building in order to be more visible through smoke.

If fire has reached your home

- Do not abandon the building unless your escape route is completely secured.
- Do not take shelter in a car. The possibility of survival in a building constructed by non-flammable materials is greater than that inside a vehicle close to smoke and fire.
- If you stay indoors:
 - Close firmly all the doors and windows.
 - Block up all the cracks with wet clothes, in order to prevent smoke penetration.
 - Remove the curtains from the windows.
 - Move any furniture into the centre of the residence away from windows and exterior doors.
 - Close all interior doors to slow down the fire spreading in the building.
 - Fill up the bathtub, wash-basins and buckets so that you have spare water.
 - All people stay together in one room.
 - Keep a torch and spare batteries at hand in case of an electric power failure.
- If your home is made of wood, seek shelter in a fire-resistant building.
- If evacuation is ordered, strictly follow the instructions and the routes suggested by the Authorities.

After the fire is extinguished

- Get out of the house and at once put out the remaining hot spots.
- Inspect for at least 48 hours, at regular intervals, the perimeter and the exterior of the building for possible re-ignitions.

Floods

During the flood

If you are indoors

- If you have to leave the house, close the gas tap and disconnect the electricity supply.
- Remember to keep your personal documents and medicines you use with you.
- Wear waterproof clothes and shoes.
- If you cannot leave the house, go upstairs and wait for help.
- Do not use the telephone except for cases of actual need

If you are outdoors

- Do not cross torrents on foot or by car



- Stay away from electric wires.
- Abandon your car if it gets immobilized as it might be swept away or flooded.
- Avoid areas where landslides have occurred.

After the flood

If you are outdoors

- Stay away from flooded areas or areas dangerous to flood in the next hours
- The flood is likely to have changed the known area characteristics and water might have swept away parts of the streets, the pavements etc.
- Dangers are imminent from broken pavements, areas with dangerous slope, mudslides etc.
- The water is likely to be polluted from rubbish, dead animals or other materials.
- Be careful not to obstruct rescue crews.
- Don't approach areas where landslides and rock falls have occurred.
- Check if your house or place of work runs the risk of a possible fall of rocks.

If it's absolutely necessary to walk or to drive in flooded areas

- Try to find solid ground.
- Avoid moving waters.
- If you see a flooded street, stop and change direction.
- Avoid stagnant waters that could be electric-current conductors if there are underground power cables or leaks.
- Follow the authorities' instructions.

What to do during restoration of damages

- Remember: Even when flood waters recede danger still exists.
- Contact the Authorities to ensure that the location of your home or your place of employment is safe to return, particularly if there was prior evacuation.
- Switch off the electric supply even if the power company has switched off the whole area.
- Turn off the water supply in case of potential damage to the water supply.

To inspect a flooded building

- Wear protective shoes so as not to get injured from objects or irregularities of the ground hidden by water.
- Examine the walls, doors, stairs and windows.
- Check the networks of electric power, water and drainage systems.



Technological Hazards

If you reside or are often found in an area with technological hazards there are two choices: staying/ taking shelter in a closed space or evacuation. The competent authorities will decide as to the appropriate solution.

For this reason it is important to

- Follow the instructions given by the competent authorities.
- Study, become familiar and obey the following general instructions, until specific instructions are given in the case of an accident.

During the accident

Stay or take shelter in an enclosed area

- Your aim is to protect your health from dangerous chemicals that could enter your home and to protect yourself against possible explosions (primary and secondary fragments) and exposure to thermal radiation.

If in your car

- Close and keep the windows closed, turn off the air conditioning and the ventilators.
- Look for a building where you can take refuge and stop your car carefully. Otherwise stay in the car.
- Have the radio on, listen to the announcements and follow the instructions given by the authorities

If you are indoors and there's time available

- Stay calm.
- Keep the radio and/or the TV on, watch the announcements and follow the instructions of the Authorities.
- Close all the windows and the outside and inner doors of your home without locking them.
- Do not use the elevator.
- Turn off all the air conditioning devices whether they belong to the central system or not, and turn off ventilators and fans.
- Cover the cracks (all four sides) in doors and windows using adhesive duct tape. Damp towels or blankets can also be used.
- Cover the lock with the tape as well as the door handle.
- Cover tightly the entry of fireplace using adhesive duct tape and plastic sheets, all heating systems, ventilation systems intakes, the doors and the windows.
- Do not use bottles of liquid gas.
- Close the inner doors of your home.
- Go to the chosen room.



- Stay away from the windows.
- Do not use the phone (land line or mobile).
- If, despite all actions taken, dangerous gases get in the building, roll up a towel or a cloth several times, cover your mouth and nose and draw small breaths.

In case of an evacuation order by the Authorities

- Stay calm.
- Follow the advised escape routes.
- Have the radio on, listen to the announcements and follow the instructions given by the authorities.
- If you have enough time, close the doors, the windows and turn off the air conditioning devices of your home to limit its pollution.

If outdoors and close to the place of accident

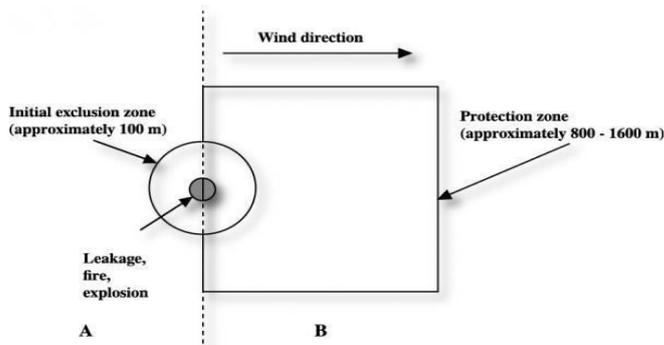
- Stay calm, try to protect primarily yourself.
- Offer your help to those in need only if you know how to act.
- Move away from the place of the accident as soon as possible.
- Do not walk on or touch unnecessarily places polluted with chemicals.
- Do not smoke.
- Try to cover your body as much as possible.
- “Filter” the air you breathe from dangerous gases, dust or droplets by rolling up a towel or a cloth and covering your mouth and nose and draw small breaths.

If in another building

- Stay calm.
- Contribute to the implementation of the building emergency plan.

If you are

- Downwind the place of the accident (place B, below) move away vertically to the direction of the wind.
- Upwind the place of accident (place A, below) move away against the direction of the wind or the flow of waters.





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- In general, move to higher areas of the region since many toxic substances are heavier than the air.

The safety distance from the place of the accident depends on many factors (quantity and type of the chemical substance, day or night, weather conditions, etc). During the initial stages of an accident the following distances could be considered safe:

- 800 meters (in case of leakage)
- 1600 meters (in case of fire or explosion)

In special cases (great quantity, extremely dangerous chemical substance, adverse weather conditions) safe distances may be much greater.

If you notice an accident first move to a safe distance and then call the European Emergency Call Number 112

If exposed to a chemical substance

Call for medical assistance immediately to the European Emergency Call Number 112

General instructions for every case of exposure to a dangerous chemical substance (poisoning, chemical burn) cannot be given. Nevertheless if you take some appropriate steps you can reduce the possibility of pollution and its consequences.

- If a dangerous substance comes in contact with your eyes it is important that you act IMMEDIATELY. Any delay increases the possibility of serious harm. Unless informed that water can not be used for the particular chemical substance, you should:
 - Rinse out your hands quickly
 - Remove contact lenses
 - Rinse out each eye without much pressure using warm water moving from the nose to the exterior part of the eye for at least 15 minutes. Continue until you feel relief from the discomfort.
 - Ask for medical treatment
- If you have sound suspicions that you have been exposed to a dangerous substance:
 - Take off any clothing you think may be contaminated immediately
 - Take them off in a way not to come in contact with your face. If this is not possible tear them or cut them off with scissors
 - Put the clothing in plastic bags or in a bin and close it firmly
 - Wash yourself using water
 - Wait for medical assistance



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Links for Civil protection in partner's country

Greece: <https://www.civilprotection.gr>

Italy: <http://www.protezionecivile.gov.it/>

Georgia: <http://ema.mia.gov.ge/>

Turkey: <https://www.afad.gov.tr/>

References

<http://www.consilium.europa.eu/en/policies/civil-protection/>

<https://www.civilprotection.gr/en/>

<https://www.afad.gov.tr/upload/Node/3449/xfiles/ilk72saatyetiskin.pdf>

<http://www.protezionecivile.gov.it/jcms/en/home.wp>



Case studies

Case study I- Georgian Technical University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

Nightmare in the centre of the city

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Tbilisi Flood 2015

The rainfall and associated landslide events that caused the damaging floods of 13th/14th June 2015 took place in Tbilisi, Georgia.

As the flash flood was passing under the Vere River system, a large landslide was triggered on the steep right bank slopes as a result of the intense storm falling on an already saturated catchment. This occurred near to Akhaldaba village (about 20 km from Tbilisi). In addition to destroying part of the Akhaldaba - Tbilisi road, it created a surge of "mudflow" that entered the already swollen Vere River and exacerbated the extreme hydrological events adding considerable amounts of mudflow, timber, trees and other debris and created a second peak to the unusually high flood flows.

A total of 25 people lost their lives and over 108 families were displaced. In addition, around 40 roads, urban infrastructure and communication systems were badly damaged and the Tbilisi zoo was completely destroyed.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

After the flood Tbilisi government along with the Georgian Red Cross organization followed this strategy: Water, sanitation and hygiene promotion; Food security, nutrition and livelihoods; Distribution of emergency shelter and household items; Improvement of the hygiene situation of families; Food parcels were given to disaster stricken families; Distribution of household items; Local NGOs and the municipalities provided support in water & sanitation and health & care; Detailed needs assessment and finalization of the beneficiary list were agreed with the local authorities.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

The survey was conducted by the World Bank to identify the causes of the flood event on the 13th/14 June 2015. Issues that were covered include (i) why it happened - possible sequence of events, (ii) could the consequences have been prevented? - contributing factors and main conclusions (iii) what needs to be done to reduce the impact of such events in the immediate, plus short and long term as well as to prevent the reoccurrence of similar catastrophic events in the future (iv) necessary interventions to complement the investments already identified to bring services and infrastructure back to relatively normal



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and already described in the earlier submitted World Bank report, (v) the costs of the proposed flood protection and impact mitigation measures, and (vi) complementary essential measures to be introduced relating to early warning, building control, designation of flood control area, enforcement of actions taken and an estimated time scale for implementation.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

In this respect, these are the main identified activities of prevention plans, needed to reduce the impact of similar extreme natural events:

- Improvements that the government needs to introduce to improve the safety of people living in Tbilisi and the surrounding areas, such as early warning systems related to real-time weather monitoring;

- Control measures, such as planning and building control and standards that need to be effected to ensure that people cannot build wherever they like, especially in or near designated flood areas, nor carry out certain activities within the same areas, including parking of vehicles, camping, dumping materials;

- Measures to reduce the occurrence of landslides in an area that is already relatively unstable;

- General catchment interventions to reduce the impact of large floods and associated mudflows, especially in tributaries adjacent to the capital and finally;

- Studies and longer term planning to quantify the levels of risk and causes and put in place and maintain measures and interventions essential to not only reduce and mitigate flood flows in the catchment both short and long term but also reduce the possibility of similar catastrophic events occurring in the future.

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible.

Several scientific documents were published about the Tbilisi flood. Here are the lists of these documents:

Georgia/Tbilisi Flood Assessment Mission, 2015;

2015 Tbilisi Disaster Recovery and Vulnerability Reduction Plan;

Emergency Plan of Action (EPoA) Georgia: Floods - IFRC

Tbilisi Flood: Post Disaster Needs and Recovery | UNDP in Georgia

Sustainable Energy Action Plan City of Tbilisi.

Conclusion

The preceding examination of the events leading up to the catastrophic floods that were experienced on 14 June 2015 has indicated that firstly, there was a combination of extreme natural events, the occurrence of which could not have been predicted in advance, and that



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there were a number of contributing factors that added to the extent of the subsequent damage. The necessary financial resources to respond to a rare combination of extreme events may be better used in addressing the natural occurring mechanisms that are present in the catchment and that are being accelerated by human intervention whether it be housing developments, road construction or to a lesser extent, deforestation and farming. In spite of earlier indications of the instability of some of the catchment near Tbilisi, no practical and effective early warning system had been put in place to guide the population in case of extreme events. There was technical advice and knowledge within the city that could have and should have been consulted when the unusual precipitation persisted, but this was not done and thus many who are in charge were slow to appreciate the importance of the events. However, the response to the catastrophe was quick and effective which is encouraging for the future. What is important now is that much is learnt from these events, including the need for better coordination and cooperation with technical departments and the establishment of an effective, practical, early warning system. There are many other associated areas where much greater efforts and regulations are required and these are described in the next sections of the report.

Case study II- Georgian Technical University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.
Forest fire in Georgia

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.
Forest and wild fires in Georgia, 2017

A forest fire in Borjomi area, Georgia broke out for the second time in 2017. The first incident occurred on 20 August when a major fire started near Daba village in the Borjomi district and spread towards the inhabited area. Then on 22 September, at 16.00 local time, a forest fire occurred in the district of Tsaghveri, Borjomi Municipality, Samtskhe-Javakheti Region, which is located in the south-central part of Georgia. 865 ha of land had been affected by the fire.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

More than 1500 Georgian firefighters, forest workers and volunteers, employees of Georgian ministries as well as aid of neighboring countries worked in the burning forest. Residents of the nearby Daba village posted photos on Facebook asking for help during the early stages of the fire, but help came too late and the fire raged out of control for the next four days, the inaccessibility of the area making it difficult for fire crews to reach the burning areas, allowing the fire to spread quickly due to windy conditions. The first area of fire to be extinguished was that near Daba village, but even as helicopters were brought in to dump water from the Tsagveri-Daba section of the Gujarula River, the blaze could be seen breaking out in ever increasing pockets on the ridge opposite the Upper Sadgeri



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village. Help came from many neighbouring countries: two Georgian helicopters fought the blaze alongside one Azeri, one Belorussian, two Turkish and one Turkish airplane. The helicopters were unable to work by night due to lack of visibility. Each could carry five tons of water at a time to drop on the forest. Diggers excavated one area of the Gujarula River near Daba village to allow the helicopters to lower their water bags before flying up around the smoke to dump the contents on the burning mountains above.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

According to the latest reports, more than 10 hectares of land are said to have been damaged by the fire, although some say that the official estimate is lower than reality.

The Borjomi fire was not the only blaze to be reported this week, as on Wednesday some 2ha was burned in Ateni Gorge forest, Central Georgia. Global Forest Watch (GFW) reported a total of 366 fire alerts in the country this past week. The organization specifies that from August 16 to August 23, fire alerts from Georgian regions were as follows: Samtskhe-Javakheti – 279, Kakheti – 51, Shida Kartli – 16, Kvemo Kartli – 7, Mtskheta-Mtianeti – 6, Imereti – 5, and Abkhazia – 2.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

- Clean forests of easily flammable materials, including dry trees and grass, because these materials are easily ignited in high temperatures.
- Invest in the recruitment and training of an adequate number of individuals in charge of fighting and preventing wildfires, as well as in providing them with the necessary equipment, and in building proper infrastructure, including forest roads.
- Improve the country's readiness to fight natural disasters. This means funding of more sophisticated monitoring, prevention and communication systems. For example, the government can develop and use probabilistic models, allowing them to make predictions about the risk of wildfires weeks and sometimes even months ahead. In this way, available resources may be more effectively deployed and concentrated where fire risks are higher. This, in turn, would require building more sophisticated real-time information collection systems monitoring the evolution of landscape, local climate and weather conditions.
- Take steps to reduce CO₂ emissions (recognized as one of the main reasons for global warming). In fact, many world governments – including the Georgian one – have signed the Paris agreement, which focuses mainly on global warming, and have pledged to adopt initiatives aimed at containing greenhouse gases. Among other things, governments can encourage people to increase their share of renewable energy sources in their total energy consumption; set limits, beyond which producers are not allowed to pollute; raise carbon-taxes based on carbon emission (with fuels leading to more emissions being taxed more heavily); and, fight deforestation (because cutting and burning trees not only reduces the absorption capacity of the environment, but also releases more carbon dioxide into the atmosphere). The last is a particularly relevant issue in Georgia – illegal cutting (and



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burning) of trees is not rare. Limiting global warming could also help stop a vicious cycle in which more fires cause more carbon emission (and less carbon absorption), which in turn leads to more global warming and so on.

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. In the summer of 2017, Georgia experienced an unusually high number of forest fires across the entire country. 35 forest fires were recorded just in August (official data reporting the size of area burned by these fires is not yet available). In almost all regions of the country, several fires were reported. Among them, the conflagration in the Borjomi gorge had the most dramatic consequences: it lasted for seven days (20-27 August), and more than 100 hectares of forest were destroyed. Many people claim that these cannot be all accidental events.

Conclusion

Recent extreme climate events worldwide demonstrate again that natural disasters know no borders. In August 2017 forest fires broke in Georgia – Abastumani and Borjomi regions were the most affected. The intensity of forest fires requires the engagement of international rescue teams to assist the national forces.

Case study III- Georgian Technical University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

Tkibuli – a city in Georgia that has become used to death

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Safety problems in Mines in Georgia

Sixteen miners have died at Mindeli mine in different accidents since 2011. The last similar accidents occurred in this year (2018), when miners were killed and injured.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

According to the Prime Minister of Georgia, the Mindeli mine shaft of Tkibuli will be closed.

"The Georgian government will no longer put its citizens lives at risk!"

"The investigation has already started and all responsible people will be punished to the full extent of the law";

"The mine shaft will not resume work until the criminal investigation and technical expertise is completed."

6 miners died in the same Tkibuli shaft in April due to a ceiling collapsing.



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The investigation began under Article 240 concerning violation of safety rules in mining, construction or other works.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

The mines located in Georgia's Imereti Region, namely in the cities of Tkibuli and Chiatura, have already claimed a number of workers' lives.

The statistics are quite alarming. More than 500 people have perished in the Chiatura mine over the last 85 years. Despite these terrible statistics of deaths during the excavations, open discussion of working conditions in Chiatura's mining facilities is hampered by many factors, the first of them being the lack of alternatives when it comes to job seeking. As locals themselves explain, the mines provide the vast majority of the region's very limited number of workplaces and are pretty much the only way for most locals to sustain themselves.

5 Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

- Compulsory Training Programmes for Miners;
- Prevention Through Simulation;
- Blasting License;
- Safety Legislation;
- Technological Standards;
- Personal Protective Equipment;
- Exploitation Infrastructure;
- Explosives;
- Freedom of the Press and Public Concern.

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. Georgia's Interior Ministry said that the last accident occurred early on July 16, 2018 at the Mindeli mine in Tkibuli, about 200 kilometers west of the capital, Tbilisi.

According to the ministry, a methane explosion apparently caused the collapse in the tunnel.

An investigation was launched to determine whether safety standards had been breached, the ministry said. In April, an accident in the same mine killed six and injured three miners.

Mining accidents are common in the former Soviet Union, where mines are often poorly financed and use old equipment.



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Conclusion

Mining companies spend millions on safety equipment and safety training. Despite all the training some accidents are unavoidable. It is however the occurrence of repeated accidents that remains a nightmare to safety and health officials.

Case study I- Akdeniz University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

Rain turned into disaster in Antalya

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Akdamlar-Antalya Flood 2003

Heavy rain (423 kg/m²) caused the flooding of Boğazçayı River in Antalya-Turkey. This occurred near Akdamlar village, 15km from Antalya city centre. The flood damaged the Boğazçayı Bridge, the road connection to the village was destroyed and the rescue team couldn't reach the village by the road for help. The residents of the village were stuck in their houses. Therefore some of the people panicked and tried to escape from their residence falling into flood water.

A total of 7 people lost their lives and over 300 houses were damaged. In addition, over 500 ha of farmland were damaged by the flood and 120 farm animals were lost. The total cost of the disaster was over 33 trillion Turkish Liras.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

After the flood, Antalya government extended the stream bed all around Antalya to deal with future river flooding. In addition, Akdamlar Bridge was reinforced. The government of Turkey appropriated funds for further recovering.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

There is no specific survey on the flood event of 2003. But the local residents discussed probable neglect of duty of the Civil Defense Organization and Fire Department of Antalya province. This is on the local agenda and a lot of local newspapers report this in their news.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

The strategic disaster management plan has to be prepared at country level. In addition, the plan has to be implemented at local levels. At this point, prevention activities are more important, to reduce the impact of similar disasters, than during and after disaster plans. In this frame, some identified prevention activities are as follows;



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- Improvement of safety of people living in Antalya, such as early warning systems related to real-time weather conditions.
- Monitor and control of the city structures for natural disasters. Not allowing unsuitable city structures especially near the stream bed.
- Theoretical and practical activities to expand people's awareness of the common disasters in a residential area.

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. There is no specific document publishing of the Antalya flood disasters. There are, however, a lot of general documents published on natural disasters in Turkey. In addition, a lot of electronic resources have free access. In this way, people can access a lot of electronic resources such as e-books, scientific documents, presentations and laws and legislations about natural disasters etc. for raising awareness in case of an emergency. Some of the organization web sites are listed below:

<https://afadem.afad.gov.tr/>

<https://www.afad.gov.tr/>

<https://www.antalya.bel.tr/birimler/itfaiye-dairesi-baskanligi#brosurler>

<http://www.icisleriafad.gov.tr/dogal-afet-nedir-ve-afetlerin-zellikleri>

Case study II- Akdeniz University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

Double Earthquakes in Van

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Van Earthquake 2011

Van is a city situated in the east of Turkey. It borders Iran. Van is the 6th largest province in terms of area (19.069 sq km). 1.106.891 people live in the city and it is the most crowded city in the Eastern Anatolia Region.

A destructive earthquake struck Van on 23 of October in 2011. The earthquake was 7 magnitude (Richter scale). A second earthquake followed (5.7 M.) on 9 of December 2011. According to the "National Seismological Observation Network", it is understood that the amount of energy released due to the earthquake was enormous. The energy released was equal to 37 atom bombs, aftershocks included. 604 peoples lost their lives in the first earthquake and 40 people in the second. 1966 people were injured. 77% of all structures were damaged.



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3. According to the event describe if there are intervention plans related to it and describe them briefly.

SAR teams intervened in 96 earthquake rubbles on the first hours. 11 meal centres were organized and 150.000 meals were given out daily. 6 temporary hospitals were established, 14 mobile healthcare clinics and 2 mobile pharmacy units were sent to the area. More than 200 personnel were sent to the area for psycho-social support services.



4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

There is some survey conducted on the current socio-economic and psychological state after the disaster. The government has also organized a comparative study of the two major earthquakes in Turkey (Marmara-1999 and Van-2011). They reported some differences in SAR Actions, Psycho-social services, Housing services, Economic structure, Communication and Infrastructure services.

Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

After the Van earthquake a lot of specific reports and documents were prepared and published. These reports focused on the disaster in Van. The aim of these studies is to help take precautions for future similar disasters.

5. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible.

There are some specific reports prepared and published after the earthquake listed below:

<https://www.afad.gov.tr/tr/25300/Van-Raporlari>

Case study III- Akdeniz University

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

Forest fire in Antalya

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

The Forest fire in Antalya-Tasagil 2008

Antalya is the most popular city of Turkey. More than 10 million tourists visit the city every year. More than 2 million residents live in this city. Tasagil, where the forest fire occurred, is 49 km northeast of Antalya. This village is known for the Koprulu Canyon National Park. This continues for 14 km along the Koprucay River, reaching a maximum height of 400 m. The ancient city Selge and Bozburun Mountain are located within the limits of the national park. Koprulu Canyon National Park has a rich flora including red pine, black pine, cedar, fir,



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oak varieties and wild olives. The national park also hosts the largest cypress forest of Asia minor.

A destructive forest fire broke out in Tasagil on 31 of July in 2008. The fire was the largest and most destructive forest fire in Antalya and it also is the second largest forest fire in the history of Turkey.

The forest fire started on 31th of July in 2008 and lasted for a week. The fire spread over an area of 20 kilometers wide and 15 kilometers long during the first 2 hours. And it was kept under control for 6 days. In this period more than 16.000 hectares forest land burned. Four villages were evacuated and 2 neighbourhoods burned down completely. More than 25.000 people were affected by the fire. There was no electricity or drinking water in the region for 2 days.



3. According to the event describe if there are intervention plans related to it and describe them briefly.

The first fire fighter team responded to the fire in 16 minutes. More than 500 forest workers and 2000 volunteers fought the fire. 6 helicopters, 5 firefighting aircrafts, 100 water-tenders and 250 fire-fighting vehicles struggled to keep the fire under control.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

The forest fire affected the residents' lives, some farms completely burned down. But the major impact of the fire was environmental. The habitat changed.

Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

After the forest fire a lot of specific and scientific reports and documents were prepared and published. These reports focused on the fire in Tasagil. The aim of these studies is to help take precautions for future similar disasters.

5. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. There are some specific reports prepared and published after the Tasagil forest fire listed below:

http://eski.ormuh.org.tr/arsiv/files/31082008_AntalyaSerikTasagilYanginiRaporu.pdf

[http://karok3.artvin.edu.tr/III.Cilt/\(1270-1279\).pdf](http://karok3.artvin.edu.tr/III.Cilt/(1270-1279).pdf)

<http://www.dogankantarci.com/tasagil-serik-antalya-orman-yangini-31-7-2008-4-8-2008-ve-yangin-sonrasi-ongorulen-islemler-uzerine-ekolojik-degerlendirmeler/>



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Case study 1 – Falchi della Rovere

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

TITLE: A dancing Earth

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Between August 24th, October 30th (2016) and January 18th (2017) a series of exceptional seismic events took place in the Italian peninsula affecting a territory of almost 8000 sq km related to 4 Regions (Abruzzo, Lazio, Marche and Umbria), 10 Provinces and 140 Municipalities. About 600,000 people were affected, of whom 2/3 are from the Marche region. There was a total of 299 deaths and several injuries.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

The intervention was directed according to the plan of DI.COMA.C (Command and Control Department), the national coordination body of the Civil Protection structures in the affected area. Within the Di.Coma.C. they have contacted the civil protection structures of the Lazio, Marche, Umbria and Abruzzo Regions, representing their respective regional administrations, to guarantee participation in the definition of the activities to be implemented and the homogenization of the operational response on the territories affected by the emergency.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

A few hours after the earthquake, the entire National Civil Protection Service was activated. The survey activities, in over 100 sites, concerned the landslides and the avalanche phenomena. The inspections made it possible to take the necessary measures to combat dangerous situations and proceed with the activities related to the emergency response on the territory: from preventive evacuation of the population to urgent interventions for the restoration of traffic. The Civil Protection Department has also implemented a monitoring activity of the territory that has also used the acquisition and the study of satellite images. The Regions have been entrusted with the task of building stables, barns and temporary facilities for food storage. The Regions, moreover, have arranged, in agreement with the mayors, to recognize the needs for the construction of rural temporary housing to allow farmers not to leave their business.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

For this catastrophic event the O.P.C.M. (Ordinance of the President of the Council of Ministers) n. 3843 of 19 January 2010, a Commission of seismic risk experts was set up which defined the general objectives and criteria of an effective prevention action to be



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implemented with the funds made available by Article 11. The objectives identified by the Commission concern, in particular, the mitigation of seismic risk through actions and interventions only marginally developed in the past years, such as: seismic microzonation studies for the choice of suitable places to build and interventions on private construction, through economic contributions direct for the strengthening or seismic improvement of the structures. The seismic monitoring is carried out in collaboration with the National Institute of Geophysics and Volcanology (INGV).

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. The Civil Protection Department is constantly working to inform the population (through leaflets not only for adults, but also for students of all levels) on their behaviour before, during and after an earthquake, in order to limit the damage; visit the sites:

http://www.protezionecivile.gov.it/jcms/it/cosa_fare_sismico.wp

http://www.protezionecivile.gov.it/resources/cms/documents/SCH_IoNonRischioDPC2012.pdf

<http://iononrischio.protezionecivile.it/>

Case study 2 – Falchi della Rovere

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

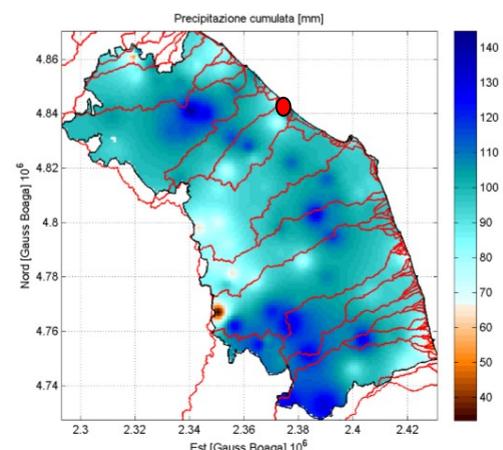
A little river with big problems/ Senigallia Flood 2014



2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

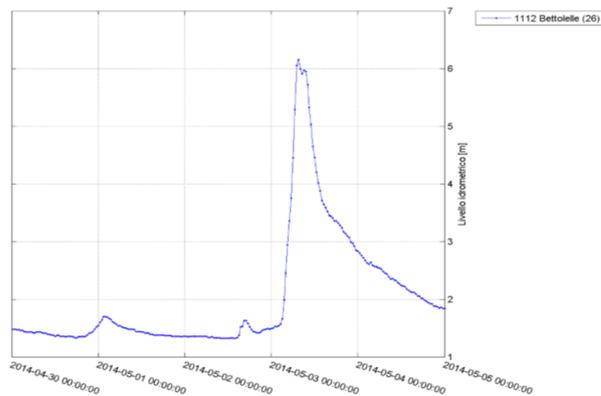
This case study is about a flood which involved the city of Senigallia and its suburb in May 2014. Between 2-4 of May 2014, there was heavy rainfall in the Marche region, which on several occasions assumed a strong storm character. The rains led to a significant increase in the hydrometric levels, especially in the smaller basins of the region, with consequent flooding phenomena. The main effects were in Senigallia, where the waters of Misa river flooded much of the municipal territory, particularly striking part of the centre and the fractions upstream along.

The rainfall on May 2 was preceded by a very rainy period which determined the saturation of the soil and therefore reduced the ability of the ground to absorb water. On the first





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thirty days that preceded the event there was abundant rainfall on the entire regional territory, with higher rainfall on the southern inner areas. The monthly regional average was about 99 mm. The figure below shows the precipitation levels on the regional territory for the period from 2 April 2014 to 1 May inclusive.

In a few hours the hydrometric level increased and, as shown in the figure, the level changed from 1.5 metres to over 6

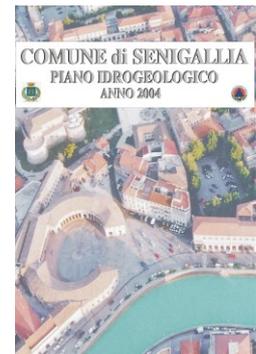
metres.

Misa river basin is also characterized by impenetrable rocks which favours flash flood.

3. According to the event describe if there are intervention plans related to it and describe them briefly.

According to the Italian Civil Protection, each municipality draws up an emergency plan for each risk present in its territory, following a standard method named Augustus Method. Senigallia, just as the other Italian municipalities, has a plan for risk, especially for hydrological risk. The plan is divided into three sections:

- General part (knowledge of territory, and their structures to manage interventions)
- Planning features (actions to deal with the emergency)
- Intervention model (responsibilities, exchange of information).



4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

Three dead, over 15.000 flood victims, fifty industries involved, many buildings for basic services were severely affected (such as schools, banks, supermarkets, churches, health centres), 180 million euros in damages, more than 5000 flooded homes, 1500 people lost everything, 5000 tons of waste including cars, home appliances, furniture, and personal belongings.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

Even though Civil Protection has a complete monitoring system to determine pluviometric and hydrometric data, the event was really extreme; in fact the river broke the bank in many places. In some parts the bank was weakened by dens of foxes and nutria which represented a critical issue. The problem could be solved in two ways: structural measures (reinforcing embankments) and non-structural measures (informing people).



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6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. According to the Italian Civil Protection, the stages concerning the hydrogeological emergency are:

- Alert
- Pre-alarm
- Alarm
- Rescuing people
- Restoration of normal conditions.

Case study 3 – Falchi della Rovere

1. Let's recall a recent incident in the vicinity of our area, which will be the case study.

The Rigopiano avalanche was an event which occurred on the 18 January 2017, in Rigopiano, Farindola municipality, in Abruzzo. The avalanche, detached from a peak above, hit the Rigopiano – Gran Sasso Resort hotel, causing twenty-nine deaths. It is the most serious tragedy caused by an avalanche in Italy since 1916 and since 1999 in Europe.

2. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

“THE DEADLY TRAP”

3. According to the event describe if there are intervention plans related to it and describe them briefly.

The Abruzzo Region, by the Regional Law n. 47, 18 June 1992, has defined the procedures for the avalanche risks verification. Article 2 establishes the elaboration of an avalanche dangers detection plan, to be updated regularly. In the areas subject to that danger, every kind of human intervention is suspended.

4. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

Since the beginning of January 2017, central Italy has been affected by heavy snowfalls, especially on the Apennine mountains, where the accumulation of snow reached five feet off the ground, isolating many residential areas because of a scarce road network accessibility and electricity supply failure. On the 17th and 18th January 2017, the national service for snow and avalanches detection dispatch indicated a 4th danger level on a scale of 1:5, in the area of Maiella and Gran Sasso. On the morning of the 18th January, three seismic shocks over 5.0 in magnitude, attributed to Amatrice earthquake aftershocks, affected central Italy; meanwhile the strong snowfall blocked the only way which



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connected the hotel to the valley, and, despite reminders and appeals, no snowplows were found to clean the road and to allow people to evacuate the building.

In the afternoon, at 2.33 pm, new tectonic movements occurred, creating a big snow and rubble avalanche which started from the slopes above the Gran Sasso eastern range and reached the hotel Rigopiano, which seems to have been founded on a rubble plain, created by previous avalanches, and which represents an old Mouse Lodge extension.

The avalanche hit the hotel, destroying its walls and moving it ten meters downhill, compared to the previous location. After the tragedy, the first call indicated the avalanche arrived at 5.40 pm: it was a call by a hotel employee to his employer, who alerted the rescuing supervisors, making them overcome their initial disbelief. Because of this skepticism, the emergency services left just between 7.30 pm and 8.00 pm, facing difficulties in reaching the devastated area. At the moment of the tragedy, there were 40 people in the hotel, 28 guests, among which 4 children and 12 staff, stuck inside because of the heavy snowfall. They raised the alarm again, using cell-phones. The emergency was ready to operate after 7.30 pm, since the first calls were considered unreliable by the Pescara prefecture (because of the unclear information received by the hotel manager, who, based on the last conversation he had, was unaware of what had happened, and was elsewhere). Rescuers only managed to reach the hotel around 4 am, as the communication routes were blocked due to the incessant snowfall. The search started, the first victim was found. Just around 12.00 am the emergency vehicles managed to reach the hotel. On 20th of January, around 12.00 am and after 30 hours of search, 6 survivors were found in the kitchen area, still alive in an attic, thanks to a survivor's help. Nine alive people were rescued, five adults and four children; the last survivors were pulled out 58 hours after the avalanche. The search was completed on 26 January, on a base of 40 people who were inside the building, the final outcome counted 29 victims and 11 survivors. Besides victims, the disaster left eight thousand tons of ruins to be taken away, plus more than two thousand trees.

5. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

In 1999, a survey noted that the hotel was built on a danger zone, however this did not affect restoration works and perhaps the building was built on previous avalanche rubbles, dating back to 1936.

6. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible.

Although since 2012 the danger related to avalanches in Abruzzo territories was well known, and it had been decided the issue would be faced, nothing had been done. There is a similar incident that happened in 1959: therefore, this cannot be considered a fact which will not happen again, the past should teach! In view of the future the avalanches



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Commission should give precise information in order to guarantee the safety of hotels, roads and parking lots in the area of Rigopiano.

Case study I -OIKO.POLI.S

1. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Fire in the area of a Recyclable Materials Selection Centre (RMSC), Nea Zoi, Aspropyrgos, 6th of June 2015.

Beyond the consequences of the fire itself, a black polluting cloud was spread by the winds in a large area around the event.

According to the Fire Brigade, the fire broke out on dry grassland next to the RMSC, while local residents spoke about arson.

2. According to the event describe if there are intervention plans related to it and describe them briefly.

There is a strong fire brigade service in the area. There was information that 25 vehicles with

50 firefighters were fighting the fire, while bulldozers created firebreaks to prevent the fire spreading.

3. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

According to the existing legislation, particularly solid waste should be collected and emergency plans should exist and be tested regularly.

However, according to the State Environmental Inspectors who investigated the incident ex post, RMSC worked as an uncontrolled waste disposal site that caused extensive and severe pollution and environmental degradation on the one hand, while it increased the chances of catastrophic consequences from fires on the other.

4. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

There must be systematic monitoring by the authorities for the implementation of the existing legislation and the factory production regulations, as well as regular implementation, under the control of the authorities, of the contingency plans.

It seems that the efforts after the incident of rescue teams and volunteers, no matter how efficiently take place, are not sufficient for the tackling of the catastrophe and its consequences.



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5. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible.

Despite the fact that OIKO.POLI.S. and NATUREFRIENDSGREECE were not involved in civil protection actions at the time of the incident, they published information, articles, links, etc. on their blogspots, trying to sensitize citizens and authorities in order to reduce the cost of the natural disasters.

(<http://xpolis.blogspot.gr/2015/07/5.html> -
<http://naturefriends-gr.blogspot.gr/2015/06/130.html>)

Case study II-OIKO.POLI.S

1. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Flash floods in the West Attica area, on November 15th 2017.

The floods had catastrophic effects in the towns of Mandra and Nea Peramos and a tragic loss of 24 people, making it the deadliest flood in Greece in the last 40 years.

The development of urban settlements as well as the construction of roads, motorways and train rails almost perpendicular to the streams could describe the environment of the flooded area.

2. According to the event describe if there are intervention plans related to it and describe them briefly.

The General Secretariat for Civil protection of the Ministry of the Interior, based on the existing legislation, has produced and distributed, since 2008, a document which includes instructions and plans for risk and hazard management, as well as the responsibilities of the competent bodies. Possibly, the implementation of instructions and legislation was defective.

3. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

According to Andreadakis et al. (2018)*, a high intensity convective storm with orographic effects, reaching up to 300 mm in 8 hours (200 mm in 3 hours only) in a small area (18 km x 4 km zone) of a slope on Pateras mountain led to a flash flood (with large amounts of sludge) on the surrounding basins.

In particular, the streams flowing down to Nea Peramos valley and to the lowland area of Mandra town, which has been developed almost perpendicularly to the stream flow, overflowed with catastrophic results.

Besides, the development of roads (old National Road as well as modern motorways) and railway axes (old and modern) almost perpendicularly to the streams is estimated that led to the cutoff of the smooth runoff.



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4. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

There must be systematic monitoring for the implementation of the existing legislation and instructions by the authorities as well as by local people (individuals and organizations).

We think that the old infrastructures (e.g. the old railway axis to Corinth, which is not used anymore and which has been destroyed in some parts of the flooded area) should be removed and the geomorphology should be restored as much as possible. All constructions directly related to the obstruction of the streams course should be expropriated.

We also believe that regular exercises for the implementation of the contingency plans and activities which should take place during and immediately after the event, are necessary for the preparation and the psychological support of the citizens under the control of experts.

5. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. Besides publishing and disseminating the above mentioned results and thoughts on OIKO.POLI.S. blogspot and social media, we are planning to inform local people (elderly and young ones) by presentations (on actions before-during-after an event) and workshops, in collaboration with experts in civil protection.

** Andreadakis E., Diakakis M., Nikolopoulos E.I., Spyrou N.I., Gogou M.E., Katsetsiadou N.K., Deligiannakis G., Georgakopoulos A., Antoniadis Zacharias, Melaki Maria, Lekkas E., Kalogiros J. (2018) Characteristics and impacts of the November 2017 catastrophic flash flood in Mandra, Greece. Geophysical Research Abstracts Vol. 20, EGU2018-12215, EGU General Assembly 2018, Vienna, 8 April.*

Case study III-OIKO.POLI.S

1. Give a title to the case study, and shortly describe the event (category, date, consequences, etc.) and the environment (bio-geo-natural) in which it occurred.

Wildfires in Mati village and holiday resort, located on the east coast of Attica, on July 23rd 2018.

The fires started at the east part of Penteli mountain, and spread quickly eastwards due to very strong gusts of wind, leading to the tragic loss of around 100 people. Furthermore, a lot of people (around 200) were taken to hospital with injuries (some of them died) and extended damage in houses, cars etc. was recorded.

It was a typical case of fire in a mixed zone of forest and settlements (wildland urban interface) which spread very quickly due to strong winds.



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2. According to the event describe if there are intervention plans related to it and describe them briefly.

Despite the existence of instructions and plans for risk and hazard management, as well as the responsibilities of the competent bodies, distributed by the General Secretariat for Civil protection, the rapid lateral spread of the fire was, possibly, the main reason for the late warning, which contributed to the large number of victims.

3. Conduct a survey concerning details related with the incident (human interventions, related legislation, environmental impact, etc.), using multiple sources of information.

According to the research team of the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens, elevated houses or buildings with several floors were mainly affected, while ground and underground houses were less affected, which is a typical crown fire specimen.

Field research by the same team, has identified weaknesses in the construction of houses with sensitive parts on the roof, windows and other parts, which have contributed to their destruction. Besides, the urban planning of the settlement (narrow streets, dead ends, elongated building blocks, etc.) acted as a "trap" for the population who tried to escape. Moreover, the coastline morphology (steep shores) made access to the beaches difficult and tricky, which, in combination with low visibility and smoky atmosphere, contributed to the catastrophe.

4. Work using the information gathered and ask for scientific documentation of it, in order to investigate factors that could be used to limit or even avoid similar incidents in the future (prevention, effective treatment, psychological support).

We think that, despite the lack of or the defects in planning and infrastructure in the village areas, regular exercises for the implementation of escape routes during a similar event and activities which should take place during and immediately after the event, are necessary for the preparation and the psychological support of the citizens under the control of experts.

5. Publish and disseminate the derived and scientifically documented conclusions, as well as the necessary actions before, during and after an emergency, aiming at raising the awareness of the general public and preventing as many harmful consequences as possible. Besides publishing and disseminating the above mentioned results and thoughts on OIKO.POLI.S. blogspot and social media, we are planning to inform local people (elderly and young ones) by presentations (on actions before-during-after an event) and workshops, in collaboration with experts in civil protection.



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Good practices

Good practice I- OIKO.POLI.S

Presentation of a CPP project to various social groups:

- To teachers who participated in a training seminar of Eleusina Environmental Education Centre on “Natural disasters, flood management in the framework of Sustainability Education” (20-1-2018).
- To members and friends of a coherent environmental and cultural organization, present at their general meeting (24-1-2018).

Objectives expected by it

- Communication with social groups, raising their awareness and utilizing interested volunteers.
- Collaboration with teachers, whom we will train, and who will subsequently train their students.
- Collaboration with coherent volunteer organizations for utilizing their members willing to act voluntarily in the field of civil protection.

Target group (or groups)

- At the Eleusina Environmental Education Centre seminar 60 educators participated (both from primary and secondary education schools) as well as specialized scientists and members of the local community.
- At the general meeting of the coherent organization 40 members, adults of different specialties participated (teachers, lawyers, engineers etc.).

Methodology of implementation (methods, materials, timing, etc.)

- At the Eleusina Environmental Education Centre there was a presentation of CPP under the title: “The role of the volunteer in the field of civil protection, a European dimension”. A discussion with the participants followed aiming to further cooperation in joint actions. A bookmark, created by members of OIKO.POLI.S., was distributed with the aim of informing the participants on CPP.
- At the general meeting of the coherent organization actions in the frame of CPP were mainly presented aiming at the approach of interested members.

Evaluation of the results

OIKO.POLI.S. members attended the seminar and were also informed by experts on the field of civil protection, especially in floods.
A member of the coherent organization, with volunteer training in the framework of civil protection actions, undertook the coordination of adult groups training by specialized staff.

Feedback following the activity

Contacts of OIKO.POLI.S. members were given to scientific experts from the Department of Applied Geology and Natural Disaster Management for conducting seminars for adults.



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Dissemination of best practices

Uploading of action results on OIKO.POLI.S. webpage as well as on CPP facebook.

Good practice II, OIKO.POLI.S

“LET'S RAISE AWARENESS OF 112 TOGETHER!”

Presentations and distribution of information material concerning the European Emergency Number (112) to different population groups (seniors and students).

Objectives expected by this action.

Informing citizens on the existence of 112, its uses and importance, and the necessity for the dissemination of its existence and importance to the wider public.

Target group (or groups).

- OIKO.POLI.S. members (on the occasion of the event of cutting the New Year's cake, where 55 members and friends were present).
- Representatives of other organizations (who were present in various meetings and undertook its dissemination).
- Students (45) and teachers (4) of the 3rd Gymnasium of Aegaleo.

Methodology of implementation (methods, materials, timing, etc.).

- Information of OIKO.POLI.S.' by experts on the Civil Protection sector.
- Presentation of 112 (existence, facilities, uses, etc.) in various meetings and discussion with the participants aiming at better understanding of 112.
- Distribution of an informative bookmark, created by OIKO.POLI.S. members, for basic information of people on 112.
- Challenging people, especially students, for dissemination of 112 to relevant social groups.

Evaluation of the results.

- Participants from various meetings disseminated informative material (e.g. a representative of an insurance company distributed the bookmark to its clients (at least 100)).
- School students informed their families and friends.

Feedback following the activity.

- Representatives of other organizations (at least 5) will promote the action to their organizations.
- An insurance agent and an accountant received material for the information of their clients.

Dissemination of best practices.

- Uploading of action results on OIKO.POLI.S. webpage: <https://www.oiko-polis.com/erasmus-ka2-civil-protection-cpp/> as well as on CPP facebook: <https://www.facebook.com/CPP-2095198254041416/>



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- It will also be uploaded on the CPP website.

Good practice I - Falchi della Rovere

Public awareness about flood risk.

Short description (or title) of the activity or event

Public awareness about flood risk.

Objectives expected by it

Promote a culture of prevention, train a more aware and specialized volunteer and launch a process which will help citizens acquire an active role in risk reduction.
Improvement of people's behaviour before, during and after floods.

Target group (or groups)

The initiative addresses citizens, who live in flood risk areas, through other organized, trained and prepared citizens: the Civil Protection volunteers. They are, men and women who work every day to reduce the risk, involving themselves directly.

Methodology of implementation (methods, materials, timing, etc.)

Besides public events, the campaign supports initiatives regarding the work force and schools, through the distribution of information material (leaflets), showing old pictures of previous floods, interactive activities about how to behave in case of a flood emergency.

Evaluation of the results

During the last flood emergency, volunteers observed the behaviour of citizens exposed to the risk: their actions were correct according to the project goals.

Following the activity

In the course of the last emergency, in response to this initiative, citizens who live in the flood risk areas, reached autonomously the shelter areas, and those who stayed in their houses went upstairs.

Dissemination of best practices

Every year, this good practice is conducted in squares, schools and work environments.

Good practice II - Falchi della Rovere - Earthquake Italy

Short description (or title) of the activity or event

School evacuation in case of an earthquake. Students' rules of conduct.



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In each class the head-line is the one sitting closer to the door, while the end-line is the student sitting further from the door. The head-line student takes the envelope containing students' names. The end-line student has to close the door after making sure that all the students are already outside the classroom, otherwise the door should be left open, leaving wounded people in the classroom.

Once the assembly point is reached, the head-line student should connect to the end-line (making a circle = nest)

Head-line

End-line



Objectives expected by it

Quick evacuation of the school and name call in order to identify the wounded people inside the building.

Target group (or groups)

Students and all school staff.

Methodology of implementation (methods, materials, timing, etc.)

At the beginning of the academic year training of the new students by the emergency supervisor, through slides and practical tests.

Evaluation of the results

Following this task, the evacuation of about 650 people takes an average of one minute and thirty seconds.

Feedback following the activity

Students and school staff responded positively to the rules of conduct given by the emergency supervisor.

Dissemination of good practices

Training at the beginning of every academic year.

[Here](#) is the scenario of 16 October 2018 –EARTHQUAKE SIMULATION



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Good practice I, Georgian Technical University

HSE (Health, Safety and environment) Toolbox for the employees

Short description (or title) of the activity or event

HSE (Health, Safety and environment) Toolbox for the employees

Objectives expected by it

Train the employees of the construction company for covering the following topics:

- Personal Protective Equipment (PPE);
- Working at height;
- Hand tools;
- Slipping & Tripping hazards;
- Manual Handling;
- Ladders;
- Cold stress.

Target group (or groups)

Construction facilities workers and their supervisors

Methodology of implementation (methods, materials, timing, etc.)

The head of Health, Safety and Environment organized the training of new workers and staff in the field of construction engineering. Using the special brochures, textbooks and video materials along with practice, they had a half day training at polygon contraction.

Evaluation of the results

After the training the learners took a test for the evaluation of theoretical knowledge and practical exercises for the evaluation of practical skills; the trainer observed the cases, which were prepared in advance and the work was graded. 90%-100% meant that the learner achieved a positive result. 80 % of the learners had positive grades.

Feedback following the activity

A survey was filled out by the learners. All of them agreed on the need of retraining and evaluated this training practice positively.

Dissemination of best practices

Social media, website.



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Good practice II, Georgian Technical University

Civil Protection and implementation of a new programme in safety and emergency situations

Short description (or title) of the activity or event

Training for trainers in the field of civil protection and emergency situations in construction engineering

Objectives expected by it

Train the teachers of the vocational college “New Wave” in Kobuleti for covering the following topics on civil protection and emergency situations:

Introduction of the European standards;

- Familiarization with the employee and employer's obligations;
- Risk assessment and evaluation issues;
- General state attitude and approaches towards the emergency sector.

Target group (or groups)

VET teachers, VET students and college administration.

Methodology of implementation (methods, materials, timing, etc.)

Georgian Technical University professor for construction engineering, Irma Gharibashvili developed the training courses for VET Colleges. She used the local professional standards and the special textbooks for her presentations. At the same time she took into consideration the OSHA standards. Moreover, the topic of her workshop was the materials of the conference of civil protection, which was held in Belarus. The materials were relevant to safety policies and reducing the risks in engineering sector.

Evaluation of the results

After the training and the workshop 40 learners took a test for the evaluation of theoretical knowledge and practical exercises for the evaluation of practical skills; the trainer observed the cases, which were prepared in advance and the work was graded. 90%-100% meant that the learner has achieved a positive result. 80% - 90% of the learners had positive grades. 60-80% - satisfactory grades and 0-59% - negative grades.

Feedback following the activity

The college shared all the skills and experiences from this workshop and they put the special modules in their VET program. Georgian Technical University actively worked in these colleges and observed their development process in the field of civil protection and emergency situations. A survey was filled out by the learners.

Dissemination of best practices

Social media, TV, Radio, website.



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Good practice I- Akdeniz University

Providing awareness about Natural Disasters for Low-level Socio-economic status Pupils

Objectives expected by it

Providing awareness of natural disasters to pupils who live in low-level socio-economic areas via seminars on the following topics:

What are natural disasters? Definition?

How important is it?

What do we have to do before, during and after a natural disaster?

Focus on earthquakes, landsliding, flooding ...

Target group (or groups)

Pupils who live in low-level socio-economic areas

Methodology of implementation (methods, materials, timing, etc.)

The presentation used 43 slides and presentation time was 45 minutes.

Evaluation of the results

In total, 340 pupils and 25 teachers took part in the seminars. (If calculating their family members it would be approx. 1500 people). They were informed about the natural disasters especially frequent in Antalya-Turkey where they live. The seminars contained what children have to do before, during and after a disaster. Therefore, the children who attended the seminar could prepare themselves for a disaster as well as warn their families. They can make a plan for it and if the disaster occurs they can protect themselves. After the disaster, they know what they have to do to return to normal life conditions.

Feedback following the activity

Antalya's Provincial Directorate for National Education officers have declared that the seminars were useful for the students and they want to repeat these actions.

Dissemination of good practices

Facebook

Good practice II-Akdeniz University

Providing awareness about the Environment, Forest Fires and Natural Disasters for Low-level Socio-economic status Pupils

Objectives expected by it



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Providing awareness about the environment, forest fires and natural disasters to pupils who live in low-level socio-economic areas via seminars, workshops and experimental learning practice.

Target group (or groups)

Pupils who live in low-level socio-economic areas, volunteer university students.

Methodology of implementation (methods, materials, timing, etc.)

6 different activities were realized within a 6 week period. The first activity was about awareness of natural disasters and the presentation was used for it. The aim of the second activity was a workshop with a painting exhibition by pupils on natural disasters. This was integrated in the first activity.

The third activity was about raising environmental awareness. A seminar was organized and pupils were given as homework to design some materials from waste. The pupils exhibited their designs in their schools.

The next activity focused on forest fires. The material was prepared after an interview with a specialist on this topic and relevant bibliography. The last activity was forest hiking to raise awareness of forest fires.

Moreover, a survey was conducted to determine the differences in the awareness of natural disasters and the environment..

Evaluation of the results

After all the activities 30 pupils took a test for evaluating knowledge on natural disasters, forest fires and environmental issues. The work was graded and it was determined that all grades were positive. This meant that the activities created a positive effect on the pupils and provided awareness in all cases.

Feedback following the activity

Antalya's Provincial Directorate for National Education officers have declared that all actions were useful for the students.

The volunteers will promote the action to university students.

Dissemination of good practices

Social media, website



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