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Public awareness on natural and technological hazards as a key for safety: the BeSafeNet initiative contribution / Micallef, A., Alexandrou, A., Gerosimou, G., Castaldini, D., Papadopoulos, M., Pla, F., Poyarkov, V.. - ELETTRONICO. - -:(2014), pp. 1-6. (International Conference Analysis and Management of Changing Risks for Natural Hazards Padova, Italy 18-19 november2014).

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International Conference
Analysis and Management of Changing Risks for Natural Hazards
18-19 November 2014 l Padua, Italy

Abstract code: CP8

Public awareness on natural and technological hazards as a key for safety: the BeSafeNet initiative contribution[1]

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Keywords:
Natural hazards, technological hazards, risk, disaster, awareness, school, Europe, education, pedagogy.

INTRODUCTION

Natural and technological hazards cause great human and economic losses. Furthermore, as happened with the Great East Japan earthquake and tsunami in 2011, natural hazards can trigger technological accidents, introducing an additional negative effect on people and environment and requiring a more comprehensive risk assessment and emergency planning.
If we cannot prevent many of these hazards, we can try to minimize their potential consequences, in particular by informing people about the nature of the hazard and it's possible consequences for specific regions. This information may be made available to the general public directly or via teachers, medical doctors, local authority representatives and Civil Protection authorities. However, both students and the general public are also increasingly searching out information themselves, often via e-services.
General public behavior is an important factor in the success of any planning and mitigation efforts and providing it with clear explanations of all pertinent aspect of hazards is a prerequisite to foster a culture of safety that will support necessary preventive actions (Alexandrou et al., 2012).

Safety can greatly benefit from an increased awareness on facts such as:
- what types of hazards exist;
- the nature of associated risks;
- when hazards could occur;
- how their consequences can be minimized;
- what one must do in case of a disaster;

[1] *The authors would like to acknowledge the full administrative and funding support of the Council of Europe's EUR-OPA Major Hazards Agreement (and by extension, all the Agreement's member states and governments) that has made this initiative possible.*

THE BESAFENET WEB-PORTAL

The BeSafeNet initiative is a web-portal on Disaster Awareness *(Figure 1),* developed in the framework of the European and Mediterranean Major Hazards Agreement (EUR-OPA) of the Council of Europe that since 1987 has been a platform within the Council of Europe for co-operation in this field between 26 countries of Europe and the South of the Mediterranean.

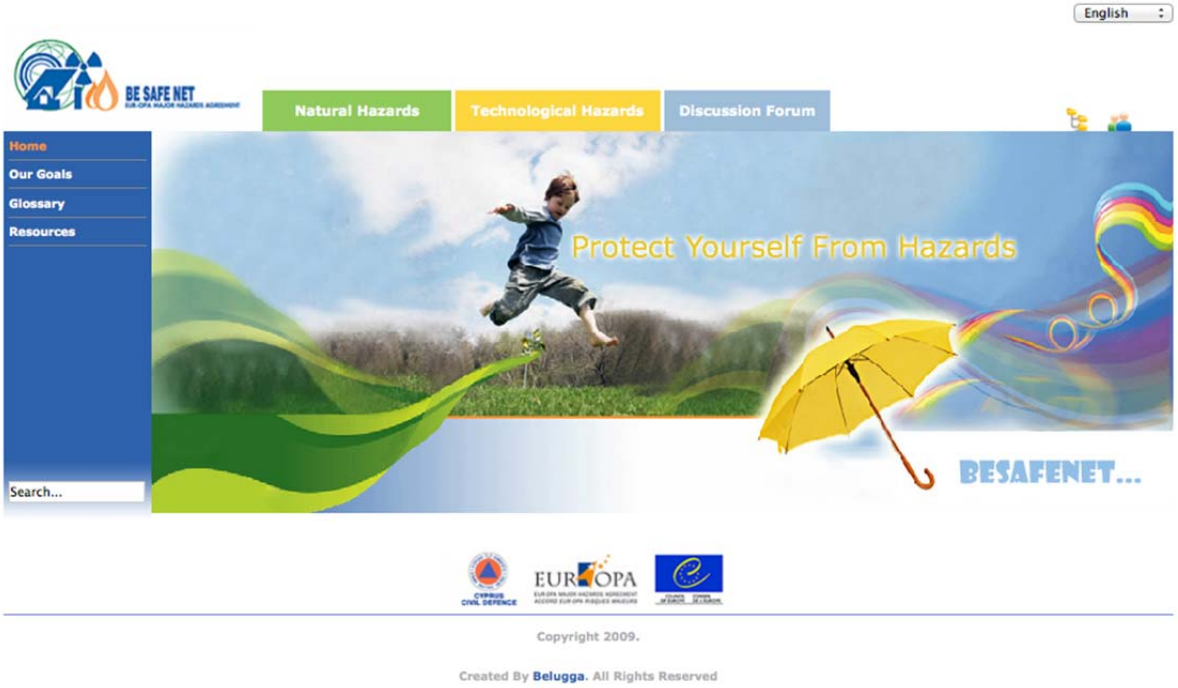


Figure 1. BE-SAFE-NET web-portal home-page.

One of its main objectives is to reinforce and to promote co-operation to ensure better prevention and protection against hazards and risks and a better preparation in the event of major disasters. Apart from its intergovernmental dimension, the Agreement has an effective network of Centres spread over its member states; the material presented in the website comes from their respective expertise in the different fields of major disasters management.
The BeSafeNet web-portal is hosted by the European Centre for Disaster Awareness with the use of the internet (BE-SAFE-NET, Nicosia, Cyprus) and the coordination of the website development and its day-to-day operation is carried out by the Cyprus Civil Defence and an international editorial board.

AIM

The main aim of the Besafenet initiative is to better protect people from hazards through an improved information process on the nature, causes and consequences of natural and technological hazards. A wide distribution of such knowledge will help people to better understand the potential risks and consequently to better protect themselves against them. In a wider context, this web-portal aims to provide information on disaster prevention, preparation, immediate reaction and rehabilitation.
The conceptual understanding of BeSafeNet portal is to provide a dedicated Website for schools (school-level children, teachers, administrative and technical staff), their families, local authorities and the general public at large, a platform to provide an enhanced access to:

- Information on regulations, tools for raising awareness on natural and technological hazards and on preventative measures;
- educational and pedagogic material;
- hazards related interactive diagrams, photographs, videos and games;
- interaction among users that should preferably include newsgroups and electronic conferences;

OBJECTIVES

To this end, the BeSafeNet initiative has three major objectives:

1. Promotion of safety among people by replacing fear with a preparedness culture and raising awareness on implications of their actions in emergency situations;
2. Creation of a pertinent knowledge-base inspired by international best-practices and its dissemination in several languages to benefit a wider, multilingual audience;
3. Provision of a freely available interactive tool to pool additional knowledge and share experiences for the common benefit.

SPECIFICITY

The BeSafeNet initiative represents an opportunity for networking to provide e-earning material on natural and technological hazards and related risks. While the BeSafeNet portal is not unique in addressing natural and technological hazards[2], many existing websites, including those specifically dedicated to specific hazards[3] or those addressing specific languages[4] do not necessarily provide didactic material, specifically target secondary school level and provide the website in a host of ever increasing languages.
In this sense, the main specificity of BeSafeNet is to provide unified information to the largest number of persons in their native language. In addition to English, French, Russian, Greek and Italian versions, it wishes to be available in the future in other languages. The website glossary provides to the general public in the simplest way the main risk and safety definitions.

WEBSITE STRUCTURE

A clear distinction is made between natural hazards, attributed mainly to natural phenomena, and technological hazards, linked mostly to human action, with both categories implying potentially a disaster with a significant threat to people, infrastructure, economic assets and the environment.

A. Natural Hazards

If the origin of the disaster is related to Nature, its magnitude is not entirely due to natural phenomena as human activity can aggravate or mitigate risks through for example, the level of consideration to where and how settlements are built, or how natural resources are exploited. Natural hazards are classified based on their causes and thus subdivided in:

1. Geological hazards

Geological hazards *(Figure 2)* are caused by earth processes either internal (volcanic eruptions and earthquakes) or external (landslides); Tsunamis can be included among them as they are triggered by undersea earthquakes and other geological events.

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[2] *DEBRIS and OIKOS Web Educational Tools) (http://www.e-oikos.net/; http://www.e-debris.net/*
3 (land-man.net) (Guadagno et al., 2003)
4 such as the Catalan EDRINA and FLASH websites (Llasat-Botija et al., 2008)

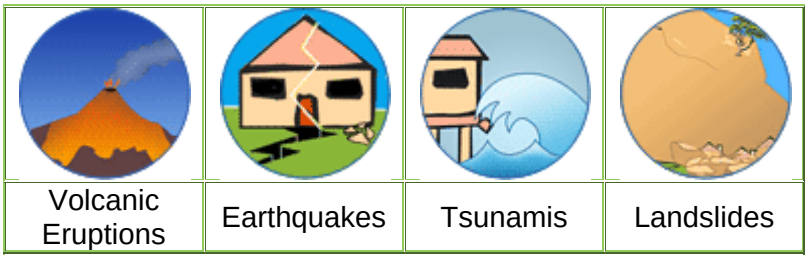


Figure 2: Entries in the Geological hazards section

2. Hydro-Meteorological hazards

Hydro-meteorological hazards *(Figure 3)* are most often weather-related phenomena (such as floods, drought/desertification, avalanches, hurricanes/storm surges and sea level rise).

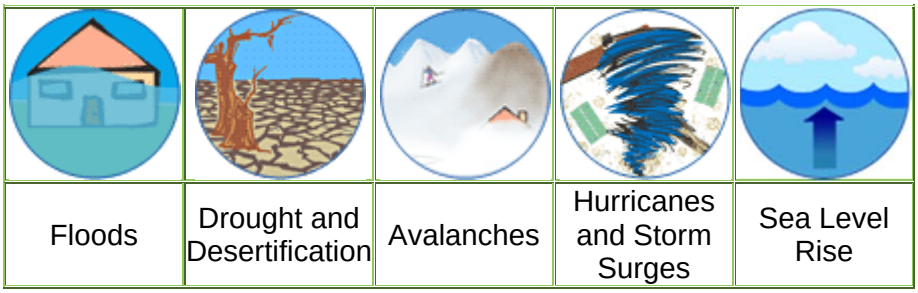


Figure 3: Entries in the Hydro-Meteorological hazards section

B. Technological Hazards

Modern technologies offer people many commodities but imply additional risk from materials or technologies used, such as radioactive or toxic substances (*Figure 4).* Such hazardous substances are present mainly in industrial facilities and during transportation. Accidents caused by fires, explosions or leakages can result in the release of these substances and harm human health, property and the environment.



Figure 4: Entries in the Technological hazards section

Human exposure to hazardous substances can cause injury or even death. Accidents such as Bhopal in 1984, Chernobyl in 1986, Toulouse in 2001 or Fukushima in 2011 demonstrate the high risk of hazardous materials being released into environment and that they affect a large number of people many kilometres away. Such chemical or radiological disasters, as well as dam failures, result mainly from human activity and consequently their occurrence seems more foreseeable than natural ones.

CONTENT

The information on nine natural hazards (volcanic eruptions, earthquakes, tsunamis, landslides, floods, drought & desertification, avalanches, hurricanes and storm surges and sea level rise) and three technological hazards (chemical emergency, radiological

emergency and dam failures) is presented by posing and answering 12 specific questions for each type of hazard addressed, namely (using earthquakes as an example):

1. What is an earthquake?
2. What are the types of earthquakes?
3. Why do earthquakes occur?
4. Where do earthquakes occur, and what were the largest earthquakes in the World and in Europe?
5. What could be the consequences of earthquakes in terms of human, socio-economic and environmental loss?
6. Can the causes of earthquakes be influenced by human behaviour?
7. Can the consequences of earthquakes be influenced by human behaviour?
8. Can earthquakes be predicted?
9. Is there any option to prevent earthquakes?
10. Is there any option to mitigate the consequences of earthquakes?
11. What can one do in case of an earthquake?
12. What type of maps on earthquakes exists? What is their use? Does the public have access to these maps and where from?

For each of the 12 questions answered, the web portal presents a limited introductory (first level) reply on its main page, with links to a second (more in-depth) level providing additional and more detailed information (Maquaire,*et al.,* 2009A; 2009B). In addition, it is intended that the portal will also provide (where possible) additional available material, such as pedagogic case studies, lessons learnt, exercises, relevant images, videos and web links for each of the questions considered.

FUTURE DEVELOPMENTS

The BeSafeNet website is still a work in progress. While the pilot phase is now complete, additional steps of development will include:

1. Raising awareness of this website;
2. The involvement of secondary school teachers to evaluate and test the material;
3. Translation of the current material into new additional languages;
4. Increasing interaction with web-users to assimilate their knowledge, experiences and valuable comments.
5. The website organisers will also endeavour to further improve and where necessary expand material.

REFERENCES

BE-SAFE-NET Webportal::http://besafenet.org
Resource LAND-MAN.NET: http://www.land-man.net/
OIKOS Web Educational Tools: http://www.e-oikos.net/
DEBRIS.NET initiative: http://www.e-debris.net/

Alexandrou A., Ger o simou G., Papadopoulos M., Castaldini D., Micallef A., Poyarkov, V. & Pla F. (2012) - *Be Safe Net*. *www.Besafenet.net*. EUR OPA Major Hazards Agreement. Council of Europe. European Centre for Disaster Awareness with the use of internet, Nicosia, Cyprus, 22 pp.

Guadagno, F.M., Dhital, M.R., Pedley, D. (2003): *Land-Man: A new curriculum based on open distance learning*. Geophysical Research Abstracts 5, 14507.

Llasat-Botija, M.; Llasat, M.C.; Prat, M.A.; Barnolas, M. (2008). *The use of a Web as a learning tool about natural hazards: EDRINA and FLASH*. European Geosciences Union, Vienna, avril 2008. Geophysical Research Abstracts, Vol. 10, EGU2008-A-03621.

Maquaire O., Castaldini D., Malet J.-P., Pla F., von Elverfeldt K., Soldati M., Greco R. & Pasuto A. (2009A). *The education on landslides through the be-safe-net webportal on disaster awareness*. Geophysical Research Abstracts, vol11, EGU2009 – 11073

Maquaire O., Malet J.-P., Castaldini D., von Elverfeldt K., Pla F., Soldati M., Greco R. & Pasuto A. (2009B). *The Be-Safe-Net website: a tool for the education on landslides*. In: MALET J.-P., REMAITRE A. & BOGAARD T. (Eds.), *Landslide processes. From geomorphologic mapping to dynamic modelling*. Proceedings of the Landslide processes Conference. A tribute to Dr. Theo van Asch. 6-7 February 2009, Strasbourg, France, CERG Editions, Strasbourg France, ISBN 9518317-1- 4, 321-326 pp.