



# Disasters and Risks: Information Service and Communication



REGIONAL ENVIRONMENTAL CENTER



# **Disasters and Risks: Information Service and Communication**

Educational material for Aarhus Centres



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## Abbreviations

ADA	Austrian Development Agency
CSO	Civil society organisation
DRR	Disaster risk reduction
ENVSEC	Environment and Security Initiative
IRS	Integrated rescue service
NGO	Non-governmental organisation
OSCE	Organization for Security and Co-operation in Europe
REC	The Regional Environmental Center for Central and Eastern Europe
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme

## Introduction

In all regions in which the Environment and Security Initiative (ENVSEC<sup>1</sup>) operates, people, societies and economies are affected by natural hazards such as earthquakes, landslides and floods. Although many disasters are of a transboundary nature, the majority of consequences are evident at community level. The impacts of natural hazards are exacerbated by environmental degradation and the increased frequency of climate change–induced extreme weather events. In addition, human vulnerability is increasing due to population density and the lack or ineffectiveness of government policies at all stages of disaster risk reduction (DRR<sup>2</sup>) — planning, monitoring, early-warning systems, protective measures, rescue operations, restoration and rehabilitation, and humanitarian and social aid.

Local stakeholders can play an important role in strengthening community resilience to disasters and increasing environmental security by maximising awareness and encouraging civilian participation in disaster preparedness activities. This, however, requires relevant knowledge and capacities on the part of local stakeholders, as well as close collaboration among local authorities, civil society and the private sector, each of which must have clearly assigned responsibilities.

Successful cooperation to reduce and mitigate disaster risks requires the underpinning of efforts at the local, national and regional levels by the participation and partnership of all stakeholders, including central government agencies, regional and local governmental authorities, academia, non-governmental organisations (NGOs) and the involved communities.

Aarhus Centres and public environmental information centres can serve as communication platforms and enhance partnerships among stakeholders in the ENVSEC regions. These centres have been established by the Organization for Security and Co-operation in Europe (OSCE) within the framework of ENVSEC to support the implementation of the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (the Aarhus Convention). Currently, the network comprises 60 Aarhus Centres in 14 countries across the ENVSEC regions (Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Serbia, Tajikistan, Turkmenistan and Ukraine).

Capacity building for Aarhus Centres is a component of the ENVSEC work programmes in all its regions: Central Asia, Eastern Europe, the South Caucasus and South Eastern Europe (SEE).

By promoting and putting into practice the core principles of the Aarhus Convention — the right to information, to participate and to seek access to justice — and by providing platforms that bring together national and local governmental authorities, NGOs and private-sector representatives, the Aarhus Centres serve as the public outreach facilities of the ENVSEC Initiative in a number of locations.

The role of the Aarhus Centres creates an opportunity for their practical involvement in, and contribution to, DRR. Although the actual capacities of individual centres differ, there is a set of specific areas on which the centres can focus, according to their individual capacities and expertise. Experience gained through collaboration with a number of centres during the ENVSEC project “Strengthening the capacities of Aarhus

1 The Environment and Security Initiative (ENVSEC) was established in 2003 by OSCE, UNDP, and UNEP. From 2006 ENVSEC has been strengthened by two new members – UNECE and REC. ENVSEC works in four regions: Central Asia, Eastern Europe, Southern Caucasus, and South Eastern Europe.

2 DRR – Disaster Risk Reduction. Natural hazards are often followed by disasters. A disaster’s severity depends on how much impact a hazard has on society and the environment. Disaster risk reduction is a concept and practice of reducing disaster risks through systematic efforts to analyse and reduce the causal factors of disasters. Reducing exposure to hazards, lessening the vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning systems for adverse events are examples of disaster risk reduction.

Centres in disaster risk reduction in order to enhance awareness of local communities”, supported by the governments of Switzerland, Finland and Austria shows that essential areas that need to be addressed include public education and watchdogging. There may be room for more technical cooperation on DRR — specifically risk mapping, urban planning and public participation, for example. However, the centres’ involvement will vary from country to country and will depend on each individual centre’s capacities and level of expertise.

This brochure provides Aarhus Centres with a broad overview of DRR, building on experience from the Czech Republic. Based on the needs identified by individual centres, greater emphasis has been placed on education and information dissemination.



## Main lessons learnt

Within the ENVSEC project “Strengthening the capacities of Aarhus Centres in disaster risk reduction in order to enhance awareness of local communities”, seven national training workshops for Aarhus Centres and other stakeholders were held on community-based disaster risk management and adequate communication and outreach skills in seven countries: Albania, Armenia, Bosnia and Herzegovina, Kyrgyzstan, Moldova, Serbia and Tajikistan. Based on the discussions that took place during these workshops, and the conclusions reached, a set of lessons learned was developed by the REC and is presented below.

### Warning and forecasting systems

Early-warning systems contribute to preventing casualties and reducing material losses. Such systems must be constantly operational (online 24/7), and the outputs must be user friendly and easily accessible. Modern systems publish outputs (both monitoring and forecasting) online, and websites with responsive design are also mobile friendly. Special applications for smartphones are another practical option.

### Integrated rescue service

The integration of all rescue services is of the utmost importance. It is essential to set up a framework assigning clear responsibilities and with a clear control and command structure. Regular trainings are very important. The integrated rescue service (IRS) in the Czech Republic is led by fire brigade officers, which has proved to be a very practical and efficient solution. Fire brigades are the backbone of the Czech IRS and officers have the authority to lead all rescue operations. Fire brigades are responsible for all strategic and operational tasks, such as building mobile flood barriers. Rescue work also has a social and psychological dimension, where civil society organisations (CSOs) have a potential role.

### Appropriate legislation

It is important to have in place appropriate legislation for states of disaster, which defines the responsibilities of local authorities and the IRS. Such legislation allows local authorities to force citizens to leave their property, to use private resources (cars, construction machinery) to tackle the disaster, and to bypass some standard administrative procedures (e.g. public procurement procedures). The legislation also defines responsibilities with respect to forecasting and warning systems and planning.

### Planning and urban planning

Plans must be developed for response at national and local administration level in the event of disasters. Such plans must define, for example, responsibilities, endangered zones, stores of technology and systems of communication.

Urban planning plays a crucial role in guiding and safeguarding the orderly development of settlements and urban areas. Local-level planning must take into consideration potential disasters and follow experts’ recommendations. Basic recommendations should be contained in the legislation. In most SEE countries, at least, the involvement of the public in urban planning has been foreseen in the legislation, thus it would be appropriate to further strengthen their foreseen role.

## International cooperation

There are several mechanisms in place on DRR which are based on river basin areas. This approach makes more sense because of the diverse character of European geomorphology and hydrology. The most important systems, in which the Czech Republic has also participated, include the Danube and Elbe river basin mechanisms (<http://www.ceframe.eu>).

## Education and awareness raising

Information sharing and awareness raising, along with environmental education, are key areas in DRR. Such activities help to promote public participation in decision making, ultimately determining the direction of development and the state of the environment.

Aarhus Centres and CSOs in general can play a crucial role in supporting public participation, and also in education and awareness raising through the use of tools such as brochures, websites and trainings. The international transfer of knowhow can also be boosted by CSOs and Aarhus Centres.

## Experience from the Czech Republic: Protection and prevention

The Czech Republic has enjoyed a long period with a very moderate climate. Due to its geographical location, major natural disasters such as large landslides are not expected to occur. However, the country is vulnerable to minor landslides, earthquakes, volcanic eruptions and extreme windstorms. Although the country has been hit by floods, thanks to its geographical and hydrological conditions these have tended to be moderate in scope and, until recently, have not involved serious risks. The first wakeup call came in 1997, when unpredicted and extremely heavy flooding affected Moravia, the eastern part of the Czech Republic. Due to the absence of monitoring and early-warning systems, not to mention the lack of plans, procedures, clear responsibilities, approved techniques and trained staff, the rescue operations comprised entirely improvised activities directed by the Czech Army. It became clear that a large number of procedures, plans and measures existed in the form of documents, but not in practice. Large material losses, and even human casualties, attracted the attention of government and regional authorities to the issue and changes were made in the legislation.

People who live outside the Czech capital claim that nothing can boost flood prevention activities more effectively than floods hitting Prague. This actually happened in 2002, when even the most vital infrastructure was seriously affected. As a result of the serious damage to the Prague zoo, the metro system and the wastewater treatment plant (not to mention the flooding of governmental offices situated on the riverbank), anti-flood measures and policies immediately became a high priority.



## Necessary changes

The lessons learned, outlined above, led to the adoption of necessary legislative changes (the main amendments were adopted between 2000 and 2003). Measures related to planning, the distribution of responsibilities, communication and prevention were put in place.

## Main legislative changes – Emergency situations

Based on international experience, the new Czech legislation defines two states of emergency: state of danger; and state of catastrophe.

### State of danger

A state of danger may be declared by the representative (*hejtman*, or governor) of any of the Czech Republic's 14 regions. The main purpose is to facilitate administrative procedures, such as the renting or purchasing of equipment. A state of emergency is typically declared when one region is hit by a natural disaster but the regional authorities are fully capable of handling the situation. In the event of a flood, however, a state of danger may be declared in neighbouring regions.

### State of catastrophe

A state of catastrophe is declared by the government when the entire country, or several regions, are hit by a serious disaster and immediate operations on a large scale are required. Besides facilitating administrative procedures, the state of catastrophe also suspends and limits some civic rights. Based on lessons learned in 1997 and 2002, the authorities must have the right to force citizens to leave the affected area, and the right to make use of privately owned property such as cars and heavy construction machinery. A state of catastrophe may be declared for a maximum of 30 days, after which the approval of Parliament is required. The state of catastrophe may be terminated by the Parliament during the 30-day period.

## Main legislative changes – Planning and coordination

The newly adopted legislation (1997-2012) establishes strategic, tactical and operational structures to address disaster situations. Although the authority, responsibilities and tasks of such bodies vary, together they create a logical system that was successfully tested during the heavy floods in 2013.

### Emergency councils

Emergency councils were established, comprising a system of government bodies working at several levels to deal with both natural and human-made disasters. Their tasks vary according to their level.

- **Governmental emergency council**  
The governmental emergency council works at the highest level and comprises the prime minister and selected ministers. They are in charge of top-level security tasks (both military and non-military or intelligence).
- **Central disaster headquarters**  
The chair of this strategic body is appointed by the prime minister, depending on the particular situation. The chair is typically the minister of the interior or the minister of defence. The headquarters coordinates all activities during emergency situations or disasters.
- **Regional and county emergency councils**  
These are strategic and consultation bodies working at regional or county level.
- **Regional or county disaster headquarters**  
The chair of this strategic body is appointed by the *hejtman* (regional representative or governor). The headquarters coordinates all activities during emergency situations or disasters at the regional or county level.
- **Municipal disaster headquarters**  
These work at municipal level and are set up by the city (or village) mayor.

## Flood committees

The emergency council system includes specialist committees that focus on practical tasks related to particular disasters. As a result of conditions in the Czech Republic, the best developed among such committees are the flood committees. These are responsible for prevention, planning, monitoring, early warning and strategic coordination in the case of on-going disasters. The structure consists of five levels:

- **Central committee** (Ministry of the Environment in cooperation with the Ministry of the Interior, chaired by the minister of environment)
- **Regional committees** (chaired by the *hejtman*, or regional representative)
- **County committees**
- **City committees** (chaired by the city mayor)
- **Municipal committees** (small cities and villages have committees that are supervised by the corresponding county committee)

According to their particular level, these committees play a significant role in planning and prevention. During a disaster, the committees play a strategic role. At the municipal level, their role is partly tactical, as operational tasks are the responsibility of the IRS, led by the fire brigade.

## Integrated rescue service

One of the most important lessons learned during the Czech floods in 1997 was that all rescue operations must be coordinated from one command point. It is vital to have one clear and efficient command and communication structure in place, which must be established before a disaster. Based on the 1997 experience, this resulted in the integration of all rescue services and cooperating bodies into one integrated rescue service (IRS).

### Main components of the IRS:

- Fire brigades (professional and voluntary)
- Medical rescue services and helicopter rescue service
- State police

### Additional components of the IRS:

- Czech Army (selected troops)
- City police
- Civil protection service
- Other municipal and professional organisations (emergency services etc.)
- NGOs

The commanding bodies at all levels are professional fire brigades, which have their own command and communication structure (at national, regional and local levels). The fire brigade command points are in charge of all tactical and operational tasks.



Source: Hugo Charvát, 2013 (Czech Republic)

Fire brigade officers have the authority to manage rescue operations and to coordinate the IRS.



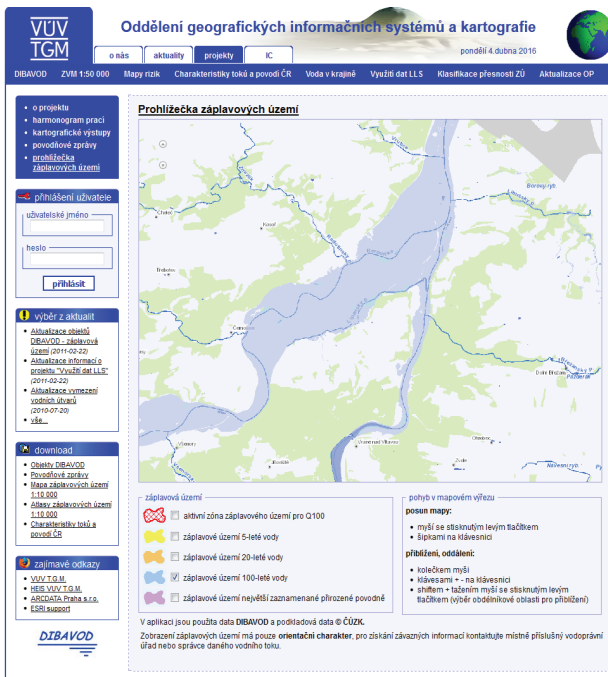
Source: Denfk/Martin Divišek, 2013 (Czech Republic)

Fire brigade officers are responsible for the storage and use of all special protective technical devices and mechanisms.

## Flood prevention

### Strategic planning

Municipalities have begun drafting urban plans and development plans with respect to city resilience and identified flood zones (i.e. areas that are inundated by various degrees of flooding).



In addition to maps indicating areas at risk, which are compiled on the basis of data collection and modelling, it is useful to draw on the experience of local inhabitants, especially at municipal and village level.

Old rural settlements, mills and farmhouses were either built where there was no risk of flooding, or, where such a risk did exist, were built in such a way as to minimise damage (e.g. mills were constructed lengthwise, in parallel with the river, with a large door on each side on the ground floor, which was used exclusively for storage).

Source: Pavel Činčera, 2015 (Flood zones)

The Ministry of Environment and the T. G. Masaryk Water Research Institute are responsible for data collection and the development of flood zone maps<sup>3</sup>. The primary sources of data are the water authorities

<sup>3</sup> <http://www.dibavod.cz/70/prohlizecka-zaplavovych-uzemi.html>

and municipalities. These official maps are used in prevention and urban planning and are easily accessible online. Municipalities may also obtain authorised digital maps and data from the water research institute.

Trainings and simulations are an essential part of any strategic planning, as they help in the identification of bottlenecks and potential challenges and strengthen communication and coordination among the main stakeholders. Thanks to the three-day BLACKOUT 2014 command post exercise, organised by Prague City Hall, several challenges were identified and addressed via updated disaster plans (e.g. a schedule for transporting people dependent on life support systems to the nearest hospitals, communication network backups etc.).

## Broader prevention

Broader prevention is based on strategic measures contained in, for example, nature protection systems, sustainable forest management and the revitalisation of watercourses. In order to be successful, broad prevention requires, in particular, appropriate education. The target groups include municipalities, local and regional authorities and the general public.

A natural riverbed, or a riverbed in a condition that resembles its natural state, is perfectly resilient to flooding. A number of public policies therefore support re-naturalisation — that is, the restoration of the nature-like state of riverbeds and watercourses. Nevertheless, extensive education is needed in order to convince village and city authorities to opt for the re-naturalisation of rivers and streams rather than the building of concrete structures.





The State Land Office plays a specific role in broader flood prevention. In addition to other responsibilities (supporting the rational management of land by landowners, protecting agricultural soil, securing accessibility to land, protecting nature and supporting better living conditions in rural areas) the office is in charge of water management in the Czech Republic. The goal is to protect the landscape and villages against the adverse effects of flooding, bearing in mind that about 50 percent of Czech agricultural land is considered vulnerable. In addition to water management monitoring, the office implements a number of projects aimed at increasing natural landscape resilience.

Source: State Land Office, Czech Republic, 2016

## Tactical and operational planning

Decision making and planning related to responsibilities and the corresponding executive bodies must involve all stakeholders, including flood committees, municipalities, NGOs, as well as representatives of the IRS. Open communication and public participation are crucial in the planning process. The Aarhus Centres therefore have a clear role to support and ensure full public participation in the planning process.

The planning process should result in appropriate disaster plans that cover responsibilities, technical measures, the storage of necessary machinery, and the creation of applicable maps. Disaster plans usually comprise three parts:

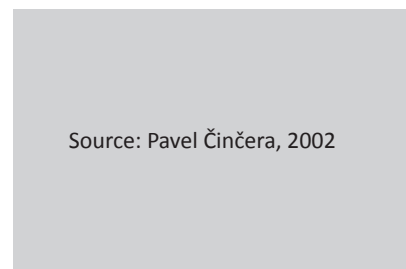
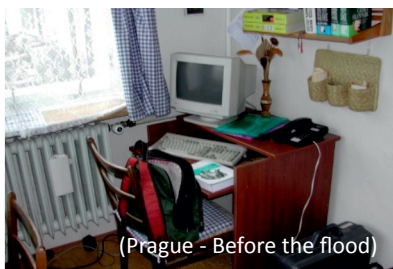
- A **technical part** defining flood zones, objects of vital importance, objects that are highly vulnerable, areas and objects that will (or will not) be protected, as well as how the protection will be implemented and at what level of threat.
- An **organisational part** describing institutional and personal responsibilities, command and control systems and means of communication, and giving contact information for responsible persons.
- **Maps** indicating all the areas and objects mentioned in the technical part (flood zones, hazardous areas, objects of vital importance, evacuation points etc.).



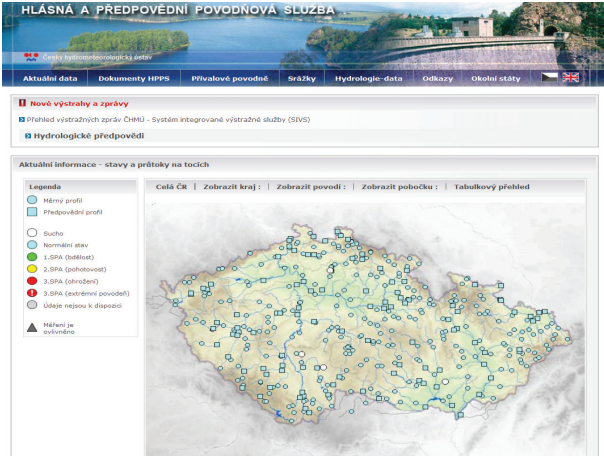
## Experience from the Czech Republic: On-going disasters and responsibilities

### Warning (early-warning systems, responsibilities)

An efficient early-warning system is key to limiting material losses and eliminating human casualties. The absence of functional early-warning systems in the Czech Republic in the case of the major floods in 1997 and 2002 resulted in extensive material losses, and even human casualties. During the Moravian floods in 1997, people were trapped in their homes and had to be rescued by Czech Army helicopters. The situation in Prague in 2002 was chaotic, with the mayor of Prague claiming that “The situation is excellent” just a few hours before Prague’s metro was flooded.

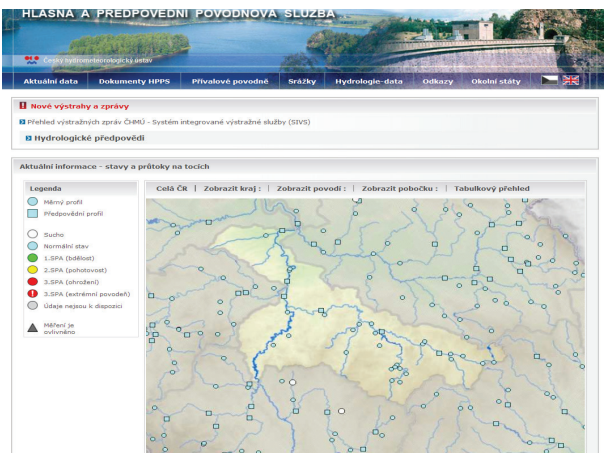


These were costly lessons learned. Since then, a comprehensive online monitoring and early-warning system has been developed and put into operation. The Czech Hydrometeorological Institute, which is a specialised institute of the Ministry of Environment, is responsible for the monitoring and early-warning system and for sending alerts. All the monitoring reports and the outputs of the early-warning system are available online, thus all citizens and small municipalities have independent access to information and can take appropriate action.



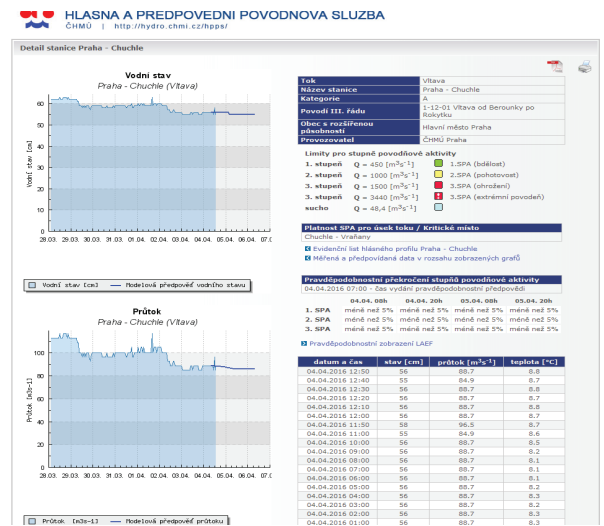
The monitoring and early-warning system operates continuously in real time and is accessible online. It is very user friendly, uses simple graphics and provides information that is updated every 30 minutes. The system covers the entire country, based on monitoring stations on each river.

Source: Pavel Činčera, 2015 (Flood zones)



Since flooding typically affects a whole river basin, the advance of a flood should be monitored from a regional perspective. Although the monitoring and early-warning system works well, it has limitations that need to be taken into consideration. Problems may arise on the upper stretches of a river where flooding may occur very quickly, giving local authorities very limited time to put appropriate measures in place.

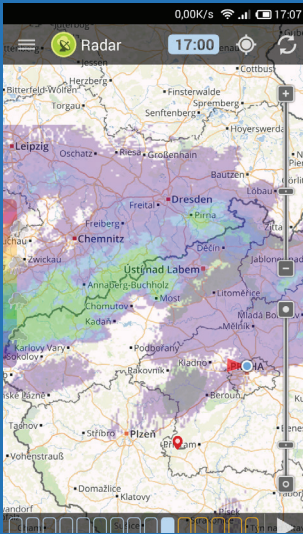
Source: Pavel Činčera, 2015 (Flood zones)



The individual stations provide information about water level and volume, allowing users to compare the current state with different states of threat, and also providing a simple forecast for the coming hours. All information is presented in the form of simple graphs, tables and graphics, giving users, who are assumed not to be hydro specialists, appropriate and immediate information about the current situation and possible threats.

Source: Pavel Činčera, 2015 (Flood zones)

Although the monitoring and early-warning system described above (financed entirely by the EU) has resulted in important progress, early warning is still problematic in relation to flash floods. In order to be able to provide early warning in such cases, the Czech Hydrometeorological Institute built two modern rain radars covering the whole of the Czech Republic and its border areas. The radars were fully upgraded in 2015 and now provide a wide range of online monitoring and forecasting services that are easily accessible on the Internet. A simple mobile application is also available free of charge.



A smartphone screenshot (at 17:00 on December 11, 2015) showing current precipitation and rain in the Czech Republic and northeast Germany.

A simple simulation shows the advance of rainy weather. Simple colour coding shows the intensity of the precipitation.

The service and application are available free of charge.

Source: Pavel Činčera, 2015

## Communication

Communication includes:

- 1) Operational communication between authorities (municipalities, IRS etc.), which is described in disaster plans.
- 2) Communication and information between authorities and citizens in affected areas, which involves primarily information flowing from the authorities to citizens (instructions, alerts, information about evacuation points, humanitarian aid etc.). Various means are used, including loudspeakers and sirens in the streets, text messages, the Internet and radio broadcasts.
- 3) Information provided by the authorities to citizens not affected by the disaster (information about the current situation, restrictions, instructions etc.), which is disseminated through mass media (newspapers, televisions, radio broadcasts, Internet).

## Evacuation and rescue

Evacuation and rescue services are provided by the IRS. Since the prevention and early-warning systems are highly developed, the need for rescue implies a shortcoming. Videos showing army helicopters evacuating people from their rooftops are proof that better planning was required and that warnings were unfortunately inadequate.

## Humanitarian aid

The first humanitarian aid is usually provided by local or regional authorities, in cooperation with humanitarian NGOs. Aid is distributed at evacuation centres (usually schools), where people are provided with drinking water, food, warm clothes and blankets if necessary, along with hygiene and sanitary supplies. Once the immediate problems have been resolved and people are able to return to their homes, social programmes and help with renovation work are needed. The Czech experience has shown that psychotherapy is not required at this stage. However, the provision of counselling at later stages is highly recommended in order to address potential post-traumatic disorders, the symptoms of which have been observed in people even several years after a disaster has hit their homes.

## Security and recovery

Once a disaster is over, security becomes an important issue. Properly implemented security measures can help to convince people that they can leave their homes without fear of them being looted, making evacuation easier. Proper security measures are also necessary prior to starting renovation and rehabilitation work. Security is usually ensured by the police in cooperation with other bodies such as the army or municipal police, while in some cases private security contractors may be employed. Precise instructions are needed that define how security personnel should behave in situations where there is a threat to health (from polluted water, infection etc.).

Renovation work starts immediately after a disaster. The priorities and means are described in disaster plans, which are specific to each area. Private houses are usually renovated by their owners, with financing from insurance companies. Insurance policies may be an issue in some countries or regions where commercial insurance is not available. In such cases, government support is necessary, and further government or regional policies must be developed.

## Social assistance

Besides the standard social programmes, specific government programmes supporting areas affected by a natural disaster may have an important role. Regional or local social programmes may also be described in disaster plans, the intention being to get life back to normal in affected areas as quickly as possible. Psychological help is vital during the renovation stage and later. The Czech experience shows that such assistance can be provided by specialists hired by the fire brigade, or by NGOs. It should be borne in mind that, according to the Czech experience and statistics, the suicide rate rises for up to two years following a disaster.

## Experience from the Czech Republic: Flood walls and mobile barriers



Mobile barriers made by the Czech company EKO-SYSTEM are widely used to protect Czech cities. The EKO-SYSTEM technology involves the construction of a vertical mobile wall of any length, which is capable of withstanding a flood wave. The system comprises two main parts: a permanent solid foundation; and mobile barriers. An underground wall protects the area against groundwater, which rises simultaneously with the flood level. The depth of this wall depends on the bedrock and the expected height of the barrier. The permanent elements of the mobile barrier feature underground wall fittings: lateral guides, anchor plates and low gate seats. The lateral guides are used to attach the mobile barrier

to the permanent structure. The anchor plates are used to attach the mobile poles (known as portable shores). Between the anchor plates there may be steel or stone sills or a smooth surface onto which the horizontal stop logs are fitted. All the permanent elements are made from high-quality stainless steel. Mobile barriers are often placed on an existing solid wall, which offers natural flood protection.

### Flood wall construction



The elements of the mobile barrier include the portable shores, stop logs and tightening devices. Portable shores are steel-welded H-shaped poles into which the stop logs are inserted. The surface is protected by hot-dip galvanisation and they are attached to the anchor plates by screws. They are designed to take stop logs with a width of 50, 90 or 100 mm. The height of the barrier is always a multiple of the height of the selected type of stop log. The highest portable shores constructed so far are 6,270 mm. Portable shores up to a height of 2,600 mm are constructed without lateral support, while higher portable shores require support.

## Flood wall segments



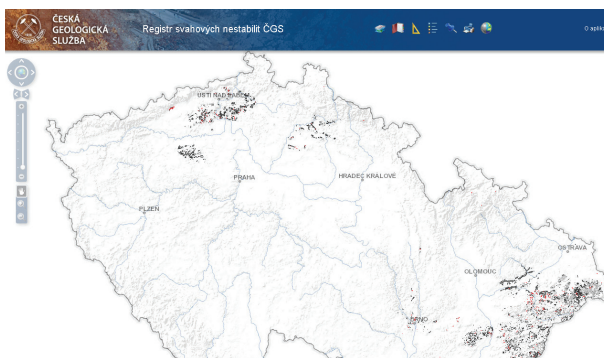
Source: EKO-SYSTEM, 2015  
(Flood walls segment)

Stop logs are hollow structures made from AlMgSi0.7 aluminium alloy. The extruded objects have a dimension of 50/215, 90/165, 100/200 or 150/200 mm. They feature EPDM profile sealing and are available in various lengths, mostly up to 3,600 mm. Longer stop logs are not used due to storage and handling issues. The selection of the individual type depends on the spacing of the stop logs and the barrier height. In order to create a perfect seal between stop logs, tightening devices are mounted onto the portable shores and lateral guides in order to tighten the individual stop logs. If the barriers do not contain a bottom sealing threshold, the lower stop log is equipped with an additional microcellular threshold sealing that is able to balance bigger irregularities of up to 15 mm.

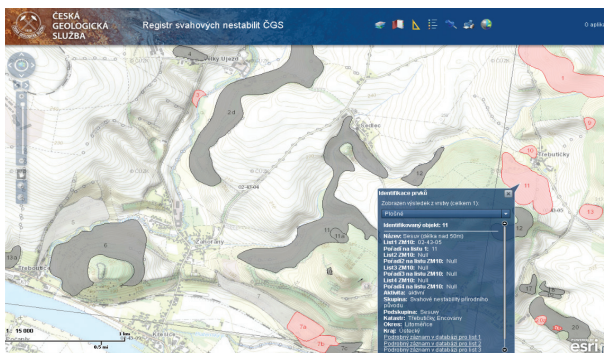
In addition to maximum tightness and reliability, barriers of this kind have other advantages. In places where the barriers are installed, the permanently mounted parts are almost invisible. They are built into the terrain in such a way that they remain unnoticed. Flood wall installation is fast and easy and can even be done without prior training. Mobile barrier parts do not require any machinery. Stop logs of the same length are mutually interchangeable thus cannot be placed incorrectly during installation. The solid elements do not require any maintenance due to the quality of the materials used, while the mobile parts are easy to store. Stop logs can be stored in bundles and portable shores on storage pallets. They can be loaded onto vehicles using forklifts to ensure faster installation. During storage, no maintenance is necessary and visual checking is sufficient.

## Experience from the Czech Republic: Other disasters

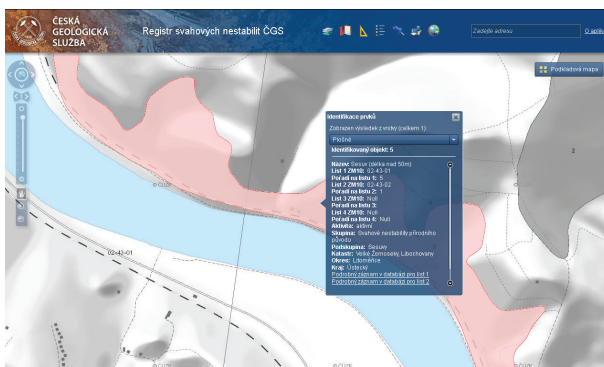
The Czech Republic’s geography and typical landscape mean that other types of natural hazards are rather rare. The exception is landslides, which are quite common and pose a serious threat to infrastructure and villages. The Czech Geological Service, which is responsible for geological mapping, has created an online register of existing and potential landslides. This register serves as a planning tool for both public and private authorities, is accessible via the Internet, and is regularly updated.



Source: Czech Geological Service, 2014  
(Register of slope instabilities: National view)



Source: Czech Geological Service, 2014  
(Register of slope instabilities: Local view)



Source: Czech Geological Service, 2014  
(Register of slope instabilities: Detailed view)

Although it is an advanced tool, it is not necessarily used appropriately in all cases. One example of failure to use the register properly was during the construction of the D8 highway in North Bohemia, the planned route of which crossed through the middle of a landslide area. Despite warnings by geological and environmental experts, a landslide was triggered and construction was stopped for over a year. This example shows how such tools might be used in NGO watchdogging activities, although in this case the warnings were not taken seriously.

## Publication and awareness raising

Publicity, education and awareness raising are the main fields in which Aarhus Centres can provide a real benefit in terms of DRR. As mentioned above, education should focus on a variety of target groups and should have several goals. Without informed and committed stakeholders at national, regional and local levels, it is hard to put into practice the necessary changes in landscape management, nature protection, agriculture and forestry. An important task for the Aarhus Centres would be to organise public hearings, seminars and trainings and to raise awareness in close cooperation with research institutes, universities and NGOs.

Based on the Czech experience, it is advisable to include the following topics in educational or publishing programmes:

- Broader prevention through changes in landscape management, nature protection, agriculture and forestry.
- The re-naturalisation of streambeds and watercourses.
- City resilience policies.
- Urban planning in relation to areas at risk (flood zones).
- Warning systems (functioning and limitations).
- Protection and rescue technologies and best practices.
- Practical tips and advice for populations affected by disasters.
- Public participation in disaster planning preparation.

Based on authors' experience in online publishing, several tips and general rules are offered in the following sections. They are intended to help the Aarhus Centres to publish information that will be respected by both experts and the wider public. This is very important when running a website that addresses a complex environmental issue.

### Impartial processing of information and ensuring objectivity

Advocacy work is important, but further work is needed in order to increase the availability of information on the important issues identified by each Aarhus Centre. News and information, for example, should be separated from commentary articles. This working rule will contribute to maintaining a high level of trust on the part of readers. Although it appears simple, unfortunately it is not so in practice. In order to be respected and trusted, an Aarhus Centre must choose an appropriate role and position, whether advocacy work or the dissemination of information to the broader public. Both approaches have advantages and disadvantages.

This issue can be illustrated by means of a case study concerning discussions about the environmental management of the Šumava National Park in the Czech Republic. The highly sensitive and heated debate focused, at least initially, on the intensity of forestry management within the national park, where a growing bark beetle population had started destroying the trees. The forest managers and forestry engineers decided to adopt a classic approach to deal with the calamity — that is, logging. Opposition was voiced by NGOs, who proposed allowing natural forest processes to take their course. The NGOs had the support of academia, although when academics began to uphold the NGO agenda, using NGO tools (petitions, demonstrations and public letters), they forfeited their position as independent experts and scientists, and, paradoxically, weakened the opposition.





*Who is an expert and who is an activist?*

Source: Ekolist.cz, 2015

Another problem related to the impartial processing of information may arise when politicians are involved in supporting an agenda. This is typically the case when the promotion of nature-friendly measures is discussed, such as changes in landscape management, nature protection, agriculture, forestry and the re-naturalisation of streambeds and watercourses. Such measures are usually supported by environmentally sensitive parties such as the Green Party. A similar situation may then emerge when the information service loses the trust of part of its readership, who may have different political preferences.

### **No exclusive support for one decision, attitude or organisation**

Any complex environmental issue and any changes in nature protection, water management, forestry and agriculture can be viewed from various angles. Openness to different solutions helps in identifying the best or most acceptable option. This is linked to the previous issue. In order to be trusted and respected, an information service must be open to different attitudes and must be willing to publish contributions from all stakeholders (taking into account the difference between news and opinion/commentary). The publisher of information can encourage various stakeholders to explain their attitudes, even if they are controversial.

### **Thorough understanding of the subject (a trained and specialised staff is a must)**

The complexity of DRR issues makes a sufficient, although not necessarily expert, level of knowledge a must. Those who prepare materials must have at least a basic professional background: it is important not to depend exclusively on external experts. For this reason, staff must attend periodical trainings.

### **Articles must be understandable to average readers**

The published information is not intended primarily for experts, but rather for the general public, as experts have their own professional and scientific sources of information. In order to maintain an appropriate balance, communication must address a very diverse group of readers, from experts to city mayors and the general public. Content must be correct from an expert point of view, while being understandable to the general public. This is not an easy task and it is worth hiring someone with journalistic experience as an editor. The following basic rules of thumb are worth following:

- Avoid expert terminology.
- Start with the most important message so as to attract readers' interest.
- Use photos, pictures and graphs instead of tables.
- If you publish online you have no more than two minutes of a reader's attention, so keep articles short.
- Use subheadings to separate parts of the article.
- Keep readers interested by publishing a series of articles to tell the full story.

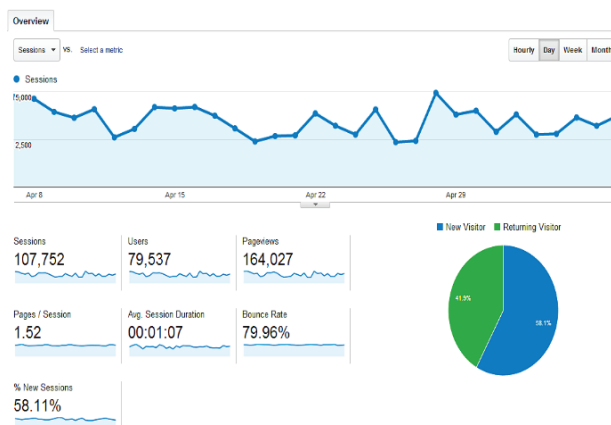
### Monitoring, marketing, promotion and metrics help improve your content

For online publications, make use of powerful monitoring and evaluation tools such as Google Analytics. They will help you to understand the regions your readers come from, when they visit your online service, and what topics they are interested in.

Evaluating your efficiency regularly using Google Analytics, which is available free of charge, can help you to improve both content and marketing as it provides practical information about your readers and their behaviour.

By using analytical tools, you will know:

- which articles and topics are popular;
- when (month/season/day/hour) you are being read and for how long; and
- which websites your readers have been directed from.



Reading patterns have changed. Readers are now looking for information that is not limited to a specific medium. You can promote your content via several websites (RSS channels, links and articles). If you deliver your content via an RSS channel, you can select the most appropriate articles for the readers of the website, but you can and must offer them additional information to what they are reading on those websites.

Source: Pavel Činčera, 2015

### Social networks

For active marketing and promotion, make use of social networks (Facebook, Vkontakte and Twitter). This will give you an advantage in the form of another channel for spreading information among your target group. Encourage your staff to use their private social network accounts to promote your website informally, for example by announcing fresh or interesting articles

Remember that social networks may cause harm if not used properly. The following basic rules can help:

- Communicate! React to posts and answer questions.
- Be on Facebook, add posts and reactions each day (one hour is enough).
- Be brief and be funny. If you can't be funny, just be brief.
- Be polite and tolerant, and block people who are not.
- Motivate journalists to share posts from your Facebook page, and allow them to make very informal comments.

- Use photos and video.
- Give your readers the opportunity to “like” your website.
- Think about allowing discussions only for Facebook readers.
- Facebook can be an important channel for bringing new readers to your website: try to have as many “friends” as you can.
- Be active! Motivate people to share your Facebook posts, comment and “like”.

## Respecting authors' rights

Make sure you cite correctly and acknowledge your information sources (NGOs, the government etc.), and respect licensing policies (you can use public copyright licences).

## Web design is crucial

Good design goes beyond graphics. A well-designed layout and structure are of the utmost importance. As this issue goes beyond the scope of the present brochure, a few basic rules can be noted:

- A webpage is read diagonally from the upper left corner to the bottom right corner. The most important message should therefore be in the upper left corner, and this is where you need regularly updated content, as it is the first place your reader will look. The upper right corner is a “blind spot”, although you can attract readers’ attention by publishing an article here with a large picture.
- Articles must be short and divided into sections. The average time spent on any website is around one minute, so the main message must be delivered in this time.
- Graphs, photos, diagrams and maps explain more and more quickly than lengthy text. (Remember that you have your readers’ interest for a very limited time.)
- The website structure must be simple, with a maximum of two or three levels and only a few sections.

zprávy o přírodě, životním prostředí a ekologii

**ekolist.cz**

The screenshot shows the homepage of ekolist.cz. At the top right is a search bar with the text "rozšířené vyhledávání" and a "vyhledat" button. Below the search bar is a navigation menu with links: "titulní strana", "zpravodajství", "publicistika", "zelená domácnost", "kultura", "kalendář akcí", "fotobanka", and "partnerská sekce". The main content area is divided into several columns. The left column features a large article titled "Experti: Nárůst hladiny moří může být vyšší, než se předpokládalo" with a photo of an icebergs. Below it are smaller articles: "Portugalští čápi bili rezignovali na cesty do Afriky a usadili se na skládkách", "Plynáři: Antifosilní zákon by neměl jít proti zeminnu plynu", "Lední medvědi ze Zoo Brno má za sebou první veterinární prohlídku", and "Zeman: Požadavek na nové EIA je zbytečnou byrokratickou překážkou". The middle column has a section "Publicistika / názory a komentáře" with an article "Vladimír Wagner: Jak je to s počtem úmrtí vinou radiace z Chernobylu?". Below it is "Zelená domácnost" with an article "Brňané mohou dát nepotřebné věci k využití jiným. Drobné za prodej půjdou na městskou zelen". The right column has "Nepřehlédněte" with an article "Cestovatelé v trabantech podpořili záchranu outloňů. Roztomilé primáty ohrožuje výsadba palm olejních". At the bottom right, there is a Facebook widget for ekolist.cz showing 10,323 likes and 780 followers.

Ekolist.cz is an environmental website operating in the Czech Republic since 1997. It is visited by between 80,000 and 100,000 readers each month. Education related to necessary changes in landscape management is one of its priorities.

Source: Ekolist.cz, 2016

**Author:**

The Regional Environmental Center for Central and Eastern Europe (REC)

**Contributors:**

Pavel Činčera,  
Gordana Kozhuharova,  
Martin Petrushevski,  
Matthias Pühringer,  
Tomas Rehaček.

**Photos:**

Czech Geological Service (pages 21);  
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