

Conference Paper – Innovation in Disaster Prevention

Justification – Background

No one can deny that "the times they are a-changing". This does not only apply to the global, regional and local challenges we now are facing, but also to the ways in which we can reduce the risk of and respond to today's and tomorrow's disasters. During the three days of this conference, we invite you to join us in exploring challenges, solutions, and opportunities regarding the use of innovative solutions in disaster prevention and preparedness.

Day 1 will set the scene by focusing on current **challenges** and include presentations about the Sendai Framework and synergies with the EU Civil Protection Mechanism. The second day of the conference will highlight recent developments in the field of geospatial data management and other innovative **solutions** in disaster prevention, including examples from various countries. On the day 3, we will wrap things up by discussing the **opportunities** that lie within these innovations, e.g., in building resilient societies and improving risk communication.

The conference is made possible through support from the EEA/Norway Grants, as a Polish-Norwegian bilateral initiative under the Disaster Prevention and Preparedness programme. The programme guidelines underline that sharing knowledge and experience is crucial to reducing disaster risk and strengthening resilience. The conference will thus also address how the EEA/Norway Grants can be used to strengthen cooperation in disaster prevention and preparedness in the years ahead.

Participants will include politicians, public administrators and planners at the national and local level, crisis responders, researchers, NGOs and other international organisations. By joining the panel discussions, breakout groups, interactive sessions, a local excursion and social dinner, we hope that all participants will benefit from the conference as an arena for the exchange of knowledge, experience and good practices across professional and national boundaries.

Scope

In recent years, exposure to disasters has increased significantly due to climate change, rapid and unplanned urbanisation, demographic pressure, construction and more intensive land-use in hazard prone areas, biodiversity loss and eco-system degradation. Impacts vary across regions, but all countries are vulnerable to disasters.

To address these alarming trends, risk prevention and management policies as well as concrete and sustainable safety and security measures are essential to ensure resilient societies, sustainable development, and economic growth. There is a concern regarding the elevated risk of climate-related extreme weather events (such as high energy storms, wind gusts, heavy precipitation, flash floods and extreme temperatures), and slow onset climate events (such as sea level rise, permafrost thaw, land degradation and glacial retreat), which may in turn cascade into natural hazard triggered technological accidents (Natech), including industrial facilities holding hazardous substances.

In Europe there are still areas of vulnerability when it comes to disaster prevention. The wide-ranging consequences of the Covid-19 pandemic, and the consequences of climate change, are examples that illustrate the need for systematic and cross sector collaboration on prevention. We have to take into account the impact of new trends on possible risks and vulnerability in society. Such trends include climate change, globalization, digitalization, health issue, urbanization, loss of supply of critical services and goods, changing security policies, etc. Many severe events can be prevented through regulatory measures, knowledge development and sharing, as well as physical measures.

The work under EC DGECHO highlight the need for cooperation and joint efforts on this topic. This initiative will be supplementary to EU policies on Civil Protection, with a strong focus on disaster prevention.

The conference will be in accordance with topics and priorities in the Sendai Framework for Disaster Risk Reduction, 2015-2030, namely:

- i) Understanding disaster risk
- ii) Strengthening disaster risk governance
- iii) Investing in disaster risk reduction for resilience and
- iv) Enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction

Sharing of knowledge and experience is crucial to reduce disaster risk and strengthen resilience. Under the EEA-/Norway Grants it is a goal that the donor and beneficiary countries should cooperate to develop prevention competence and capacity, ensuring that robust systems are in place when incidents occur.

Objectives

The overall objective for the conference fits into guiding principles of EFDRR Roadmap 2021-2030 and findings of the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk reduction 2015-2030 which is among others to *Improve disaster resilience*.

Goals of the Conference

Improve disaster resilience.

Increase knowledge on UNDRR Sendai Framework

Promote cross-border learning, enhanced mutual knowledge and understanding

Boost regional cooperation within Sendai Framework for DRR

Promote new technologies within disaster prevention and preparedness

Promote EEA-/Norway Grants as a tool for preparedness and resilience building

Innovation in Disaster Prevention

The global population is more and more often exposed to risks of disasters – both natural and man-made. Especially climate change is causing increased natural hazards, resulting in death and displacement of people, destruction of environment and property, and longer-term economic impact. According to the European Civil Protection and Humanitarian Aid Operations (ECHO) in the EU, from 1980 to 2020, natural hazards affected nearly 50 million people and have cost Member States an average of €12 billion per year. Therefore, there is a growing need for safer, more resilient, and capable response infrastructure, taking full benefit of existing technological capabilities and innovative solutions in order to carry out the crisis operations more cohesively. Disaster management and control are crucial to mitigate the effects of all kinds of crisis events and they require more and more cross-sectoral and cross-border coordination and cooperation. Fires and floods know no boundaries and no administrative regulations and limits. Efficient crisis management involves information and communication with several different players (at national level among different «blue light services» and local first responders, and at international level among different states, EU or international agencies and organizations) to have a high-fidelity awareness of the situation to implement adequate and effective measures and minimize the negative impacts. All new IT solutions and communication technologies play a key role here, facilitating the necessary information exchange.

In the last 20 years more than 120 000 people worldwide died due to floods. However, the death toll decreased significantly in the last decade. This fact can be linked to the improved disaster management that is being supported by new technological solutions, including – but not limited to – better environmental monitoring and weather forecasting thanks to satellite Earth observation and resulting ability to issue more precise and timely warnings and making sure that they are properly acted upon. Satellite remote sensing provides decision-makers and civil protection authorities objective and timely information that can be used for early warning systems and for monitoring the extent of a disaster. For the EU key role is played by Copernicus system, especially the Emergency Management Service (CEMS), which comprehends a rapid mapping service and the Risk and Recovery Mapping, both accessible by authorised national authorities. Having access to previously difficult (and expensive) to obtain EO data is very important, but it becomes a true „game changer” for risk management and disaster prevention only when combined with innovative technologies like machine learning, cloud computing and artificial intelligence – enabling integration of different available data sources (EO, in-situ, drones, public administration databases, GIS, social media etc.) to analyse long-term trends, assess risks and vulnerabilities, map and monitor the current situation and predict its possible evolution and prepare as accurate as possible risk and crisis management plans. Another important element of efficient disaster prevention open for innovative solutions is an alert system providing life-saving information to the public through multiple communication pathways relying on several integrated technologies. And when a disaster does occur, apart from constant monitoring of the situation using all available means (in particular Unmanned Aerial Systems and EO) it is crucial to ensure safe and effective communication to emergency services involved and always be aware of their precise location provided by GNSS technologies.

As briefly described above, innovative technologies play a significantly growing role in improving disaster prevention and thus reducing negative consequences of different crisis events. However, simply having access to a new tool or a technological solution is not enough – one has to learn how to properly use it to take full advantage of the capabilities it offers and eliminate any possible disadvantages. It is very important to properly assess the potential impact of a change brought by a new solution on the socio-technical setup of a crisis management organisation. Investments in new innovative solutions (including geoinformation products), which are not properly adapted to the

needs of a given user, his mode of operation, rules and procedures not only generate significant costs, but may also have a negative impact on the operational efficiency of crisis management services. One might argue that there is no place for experimentation in crisis management, while there is plenty of space for innovation. Therefore, it is crucial to develop and share best practices, guidelines and procedures related to operational implementation of innovative solutions in crisis management sector. Several “success stories” are described in the GIS report prepared for the conference, but it is equally important to share and discuss all lessons learnt – both positive and negative. Knowledge of difficulties and barriers encountered by the others in implementing innovative solutions will help to avoid similar problems in the future, while the awareness of benefits they brought and continue to bring to your peers will encourage you to also try it for yourself. That is the aim and motivation behind the survey described in more detail in one of the next sections.

The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk reduction 2015-2030

The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk reduction 2015-2030 sets out main targets and priorities in disaster risk reduction for next seven years. It notes that global access to disaster data and applicable risk knowledge, including multi-hazard early warning systems, remains inadequate as the increased economic costs of disasters are not matched with financing for disaster risk reduction. The quantifying risk-informed preventive financing also remains a challenge.

New and emerging technologies present opportunities for overcoming data gaps. The scarcity of quality, interoperable or accessible data remains a roadblock to effective disaster risk reduction. Even when data is available and tools exist, lack of capacity to interpret data and develop risk information impedes risk-informed decision-making and policy uptake.

That is why Midterm Review of the Implementation of the Sendai Framework for Disaster Risk reduction 2015-2030 recommends (among others) to:

- improve the standard of official risk data and broaden the application of risk assessments,
- prioritize circulation and interoperability of data and risk information across domains and data systems, within and among government agencies, and to and from non-State actors, with advances in computing power, data availability and use of artificial intelligence,
- developing data-sharing platforms and related data-sharing agreements, and in respect of transboundary risks and cross-border comparability,
- further implement and improve disaster loss databases and disaster risk mapping at the national level,
- creation of governance arrangements that support integrated understanding and management of risks across all sectors, scales, and domains,
- continuation by Member States mobilization of resources, technology and capacity to implement and extend the reach of multi-hazard early warning systems, developing guiding strategies and governance arrangements across all four phases of multi-hazard early warning systems implementation: risk knowledge, monitoring and forecasting, dissemination and communication and preparedness and response capability,
- place by Member States and stakeholders' principles of resilience at the heart of developing infrastructure systems, both in upgrading existing systems and integrating risk assessments and data into future projects.

EFDRR Roadmap 2021-2030 For a disaster-resilient European and Central Asian Region in 2030

The EFDRR Roadmap 2021-2030 acknowledge need for global, regional, national and local collaborations and partnerships as well as comparable learning that supports the implementation of the Sendai Framework by:

- Supporting regional, national, and local disaster risk reduction strategies and actions by identifying shared gaps and challenges to and opportunities for enhancing disaster resilience in the region
- Highlighting effective arrangements for national and local sharing of good practices, pathways, and opportunities for more risk-informed, gender-responsive, age-sensitive and inclusive policies, strategies, programmes and approaches
- Promoting and supporting systems for regional collaboration and shared learning

The EFDRR Roadmap 2021-2030 note that future climate and disaster risks are no longer predictable from just historical risks and assumptions. Countries are committed to but struggle with the approaches to understand and build resilience set out by the Sendai Framework, the Paris Agreement and the Sustainable Development Goals (SDGs). Identifying, understanding and assessing – as well as communicating in a manner that is accessible to a wide range of audiences – emerging and future disaster and climate-driven risks is challenging.

Building resilient systems requires integrating a wide range of realities, vulnerabilities, and capacities: future climate-driven scenarios, changes in environmental conditions and levels of biodiversity, demographic shifts, gender, age and disability issues, human rights concerns, the intersectional nature of risk, socioeconomic variables, and rapid digitalization and technological advances. The region's disaster risks are becoming increasingly complex and interconnected; a variety of multi-hazard, rapid and slow-onset hazardous events is increasing the risk of cascading and cumulative disasters, threatening development gains and critical systems. The understanding among stakeholders of existing, emerging and future systemic risks remains fragmented, as does the robust use of statistical data or scientific expertise. Moreover, systems supporting policies and strategies often function in isolation.

But Road Map sees opportunities for the future such as scenario simulations, evidence-based scientific data and new technologies, including earth observations, which provide transformative tools for decision makers, scientists and stakeholders to better understand, communicate and monitor disaster and climate risks, enabling them to plan coherent resilient systems. Information and communication technology, big data and artificial intelligence – including probabilistic modelling, horizon scanning, forecasting, interactive simulations, and participatory, scenario and data-driven analyses, which might transform our understanding and communication of risk. Shared spatial, system-wide, ecosystem and dynamic socioeconomic frameworks can help transform stakeholder's understanding and monitoring of existing, emerging, and future systemic risks.



Case studies – best practise-success stories

During the conference presenters will share with us good examples of initiatives for innovative solutions on disaster prevention and preparedness. These examples will be integrated in the final report from the conference. The GIS-report delivered from the Crisis Information Centre in Space Research Centre of Polish Academy of Science (CIK CBK) will be a very important contribution to the report.

In addition, the organisers of the conference will invite participants to deliver additional case studies/good examples during and after the conference.

The initiative you are invited to describe below can illustrate an initiative/a project which are developed to:

- Raise awareness of the use of geoinformation data within relevant public authorities/industry
- Enable governments, industry and other relevant stakeholders to govern risks related to climate, technological and biological hazards and risks
- Initiatives and solutions that will be of importance for disaster prevention and preparedness at regional and local level
- Specific geoinformation systems
- Initiatives considering risks in decision on land-use planning and siting
- Initiatives that address the understanding the transboundary consequences of disaster events.
- How initiatives have been used in the development of contingency plans, including harmonized contingency plans across borders and in river basins
- Strengthen collaboration between public authorities and private sector for the prevention and preparedness to disasters

The initiatives described can be regional, national, cross-border or international.

See annex no 1 for a template that can be used for delivering a case study/good example.



About the organizers

RCB – The Government Centre for Security

The Government Centre for Security is a state budget unit subordinate to the Prime Minister. It was activated on 2 August 2008 and was established under the Act of 26 April 2007 on crisis management. The idea of the establishment of the institution was the construction of an effective and comprehensive system of crisis management thanks to which it shall be possible to prevent crises and in the event of their occurrence, through professional actions, to minimize their effects. In the Polish administration system this is a new solution, because there was constructed a supraministerial structure whose objective is to optimise and uniform the perception of threats by particular ministries and ipso facto to increase the degree of capability of coping with difficult situations by competent services and bodies of public administration. The Centre provides service of the Cabinet, the Prime Minister, the Government Team for Crisis Management and the minister in charge of the interior with relation to crisis management and functions as the national center of crisis management.

The Government Centre for Security is in charge of developing optimal solutions occurring in crisis situations and also of coordinating the flow of information about threats. Within this scope, the Government Centre for Security carries out its tasks by drawing up a catalogue of risk, monitoring threats, activating crisis management procedures at the national level, conducting planning and programme activities in the field of crisis management and critical infrastructure protection, supervising cohesion of crisis responding procedures, organising and carrying out trainings and exercises in crisis management, cooperating at the international level, in particular with the NATO and the EU within crisis management. Most importantly, it is also a National Sendai Focal Point for Disaster Risk Reduction and coordinator of the implementation the Sendai Framework in Poland.

DSB – The Norwegian Directorate for Civil Protection

DSB's overall task is maintaining a complete overview of various risks and vulnerabilities. The directorate's responsibilities cover local, regional and national preparedness and emergency planning, fire safety, electrical safety, handling and transport of hazardous substances, as well as product and consumer safety.

Nødnett – the Norwegian Emergency Public Safety Network is a separate radio network, built specifically for rescue and emergency users. This network is owned and managed by DSB.

Furthermore, the Norwegian Civil Defence, the DSB College, the Norwegian Fire Academy and the Civil Defence Academy belong to DSB's portfolio. As do the Norwegian Support Team (NST), an internationally focused emergency capacity.

The head office of DSB is located in Tønsberg, 100 km south of Norway's capital, Oslo. Currently, DSB's staff consists of about 700 employees, divided between the head office and a wide range of locations and functions throughout all of Norway.

CIK CBK – Crisis Information Centre in Space Research Centre of Polish Academy of Science

CBK PAN is the leading institution for UAV, satellite and geoinformatic support for civil protection authorities in Poland. The Crisis Information Centre (CIK), provides operational support for crisis management structures and conducts R&D activities based on its insight into user needs in this field, specializing in optimisation of information flow between technology providers and security end-users. CIK is an interdisciplinary team consisting of geographic information system, Earth observation and UAV data analysis experts and well-qualified crisis management specialists.

The main mission of CIK is to increase effectiveness and efficiency in safety and crisis management domain by:

- Optimising the use of existing technological capabilities in geospatial information, especially satellite- and aerial-based remote sensing
- Developing new information products and integrating external data sources in order to support situational awareness during crisis events and planning activities (hazard and risk analysis in the planning and preparation phase, damage analysis in reconstruction phase)

- Testing usability of new, pre-operational technical solutions during exercises and demonstrations
- Providing advisory services, education and trainings, table-top exercises, simulations etc.

About the EEA and Norway Grants

EEA and Norway Grants – Working together for a green, competitive and inclusive Europe.

The EEA and Norway Grants represent the contribution of Iceland, Liechtenstein and Norway towards a green, competitive and inclusive Europe.

There are two overall objectives: reduction of economic and social disparities in Europe, and to strengthen bilateral relations between the donor countries and 15 EU countries in Central and Southern Europe and the Baltics. The three donor countries cooperate closely with the EU through the Agreement on the European Economic Area (EEA). The donors have provided €3.3 billion through consecutive grant schemes between 1994 and 2014. For the period 2014-2021, the EEA and Norway Grants amount to €2.8 billion. The priorities for this period are:

#1Innovation, Research, Education and Competitiveness

#2Social Inclusion, Youth Employment and Poverty Reduction

#3Environment, Energy, Climate Change and Low Carbon Economy

#4Culture, Civil Society, Good Governance and Fundamental Rights

#5Justice and Home Affairs

Eligibility for the Grants mirror the criteria set for the EU Cohesion Fund aimed at member countries where the Gross National Income (GNI) per inhabitant is less than 90% of the EU average.

The EEA and Norway Grants scheme consists of two financial mechanisms. The EEA Grants are jointly financed by Iceland, Liechtenstein and Norway, whose contributions are based on their GDP. Norway Grants are financed solely by Norway.

EEA and Norway Grants - FAQs

What?

Iceland, Liechtenstein and Norway are providing €2.8 billion in funding to 15 EU and EEA member states in Central and Southern Europe and the Baltics for the period 2014-2021.

Why?

The EEA and Norway Grants have their basis in the EEA Agreement. Under this agreement, Iceland, Liechtenstein and Norway are part of the EU internal market. The agreement sets out a common goal of working together to reduce social and economic disparities in Europe. For this purpose, the donors have established the EEA and Norway Grants.

Where?

The beneficiary countries are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece¹, Hungary, Latvia, Lithuania, Malta, Poland, Portugal¹, Romania, Slovakia and Slovenia.

Which areas?

Through the EEA and Norway Grants, Iceland, Liechtenstein and Norway aim at contributing to, among other things, growth and jobs, tackle climate change and energy dependency, and reduce poverty and social exclusion.



Who?

Beneficiaries are local, regional, and national authorities, educational and research institutions, students, teachers and researchers, non-governmental organisations, small- and medium-sized enterprises and social partners.

More information: www.eeagrants.org / www.norwaygrants.org





ANNEX no 1

Name of the respondent(s):	Organisation(s):	Country:
Email:		

Please feel free to take as much space as you need to provide your response to each question.

<p>1. Title of the initiative (policy/regulation/measure)</p> <p><i>Your response:</i></p>
<p>2. Provide a short description of the initiative and of the context in which it was developed; e.g.</p> <ul style="list-style-type: none"> • <i>What problem/challenge was it trying to solve?</i> • <i>What sort of improvements were you hoping to achieve?</i> • <i>Description of type of challenge/problem that the policy, regulation, measure or project aim to manage</i> • <i>Overview of responsible authorities</i> • <i>Whether and how any transboundary coordination has been pursued.</i> <p><i>Your response:</i></p>
<p>3. How was the initiative implemented (e.g., preparatory work, testing, process of implementation, feedback, etc.) and did it require additional resources, training?</p> <p><i>Your response:</i></p>
<p>4. Indicate any challenges in the implementation of the initiative, including any setbacks, improvements and changes that were needed to achieve a satisfactory result.</p> <p><i>Your response:</i></p>





5. Describe the observed benefits of the initiative following its implementation.
<i>Your response:</i>
6. Are there any lessons learnt you would like to share from the implementation of this initiative?
<i>Your response:</i>
7. If there are any relevant documents or weblinks, pictures, etc that help understand how the practice works, please indicate it in the space below and provide the link or attach the document. The documentation does not have to be in English.
<i>Your response:</i>

