

HYDROMETEOROLOGICAL HAZARDS – RISK AND MITIGATION



PARTNERSHIP

Milestone 7: Training Content

DOCUMENT INFORMATION PAGE

Grant Agreement No.: 101101710

Deliverable Due Date: M6

Project Starting Date: 01 January 2023 (24 months)

Actual Submission: December 2023

Deliverable No.: 3.3 (WP3)

Leading Partner: NALAS

KEY WORDS

Training curriculum

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VERSION HISTORY

Release	Status	Date
0.1	Initial Draft	18.12.2023
1.0	Final Version	22.12.2023

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Executive Summary

Europe has experienced devastating hydrometeorological hazards in the past and, with the current climate change prospects, will do so even more in the future. An interconnected world and systems make disaster governance a key issue in dealing with different risks as hydrometeorological hazards can potentially also affect technological infrastructure and be the trigger for further hazards.

Europe faces challenges due to diverse governance structures, varying risk perceptions, and different levels of vulnerability across countries. Effective disaster governance requires collaboration among stakeholders at all levels and investment in research and innovation.

Disaster governance actors include public agencies, emergency and rescue services, academia, NGOs and CSOs, industries, and operators of critical infrastructure. A survey conducted among COVALEX stakeholders revealed that public authorities are the most prominent actors in the network at the moment. Their main concerns are floods, torrential rain, and storms.

Risk perception is an important factor in disaster governance. The participants expect a shift in relevance towards risks such as heat waves, droughts, and wildfires in the next 10 years. In terms of requirements for the COVALEX network, the participants expressed interest in the exchange of best practices and experiences, learning about different disaster governance strategies, and collaboration and education.

About COVALEX

COVALEX aims to establish a common and extended community of experts on the experience, geographical coverage and diverse sectoral networks in hydro-meteorological multi-hazards events. Science can practically challenge the phenomena, science can practically challenge those phenomena and foster the processes of prevention, preparation and testing. It pools four DG ECHO networks and project-driven first responders' communities, mainstreams the evidence- and science-based risk governances and interoperability communications approach to decision-makers, rescue and humanitarian actors.

The Community will build capacity by engaging 11 partners from 10 countries and their networked members. Though we bring together, promote and strengthen the capacities and knowledge of experts, decisionmakers, politicians and multipliers as public service providers, media, NGOs. We build a databank of experts that can be further engaged and involved in international and local case studies and events. We bring academia, practitioners, and decision-makers for multidisciplinary and cross-sectoral cooperation to apply scientific knowledge to disaster risk management (DRM), accentuating hydrometeorological and technological driven disasters.

Main outputs: pipeline with scenario-based exercises, living-learning content combined with open-source support tools for decision-makers, scientific community events, including hackathons, themed discussions and boost of science for resilience, activated over 200 experts in the COVALEX database, delivered three scenario-based experiences trained over 200 persons, one common framework for engaging all actors, scientists and IT developers for greater use of human-centered scientific approach to resilience and civil protection.



Table of Contents

Milestone 7: Training Content	1
Executive Summary	2
About COVALEX	2
Milestone 7 Training Content	4
Deliverable D3.3: Training Curriculum	4



Milestone 7 Training Content

Deliverable D3.3: Training Curriculum

Starting point:

This comprehensive training curriculum has been designed to address the critical challenges faced by local governments in managing hydrometeorological hazards.

Acknowledging the existing lack in comprehensive knowledge in these areas, the training curriculum seeks to rectify this gap by providing a thorough understanding of the topic. Beyond merely addressing the identified knowledge gap, the curriculum also intends to equip participants with tools and platforms for further improvement, capacity development, and engagement in practical activities.

The curriculum covers a wide spectrum of topics, including risk assessment, resilience building, and the utilization of international frameworks and EU mechanisms. Recognizing the complexity of these issues, the training aims to equip local government officials with the knowledge and tools necessary to navigate the multifaceted landscape of disaster management.

This curriculum provides a comprehensive overview of hydrometeorological, technological and multi-risk aspects hazards, risk assessment, resilience building, and the utilization of international frameworks and EU mechanisms. It also emphasizes practical applications through case studies and the use of IT tools and platforms.

According to the NALAS' methodology for development of trainings, the curriculum format provides a frame and serves as a base for development of the training content and training materials by the team of experts.



Curriculum for training on “Effective application of DRR IT tools for hydrometeorological hazards at local level”

Overall learning objective:

The participants are equipped with the knowledge and tools necessary to understand how to address the critical challenges faced by the local governments in managing hydrometeorological hazards.

Specific learning objectives:

- Participants are acquainted with the hydrometeorological hazards and understand the process of risk assessment and the need for resilience building.
- Participants are informed about the European Union perspective and coordination mechanisms in hydrometeorological hazard management.
- Participants are informed about the existing IT tools and platforms for hydrometeorological hazards’ risk assessment and management and their applicability at local level by the local governments.

Key topic(s)/potential sessions:

Module 1: Introduction to Hydrometeorological Hazards

- 1.1 Understanding the Risk
- 1.2 Building Resilience
- 1.3 Reducing Risks

Module 2: Risk Evaluation and Readiness Assessment

- 2.1 International Frameworks and Indicators
- 2.2 Evaluation Process

Module 3: European Union Perspective

- 3.1 EU Institutions and Research in JRC
- 3.2 EU Civil Protection Mechanism
- 3.3 Emergency Response Coordination Centre (ERCC)

Module 4: IT Tools and Platforms

- 4.1 DG ECHO and JRC Offerings
- 4.2 Resources for Practitioners
- 4.3 Commercial IT Platforms

Target group:

- Local government practitioners;
- Digital innovation hubs of local governments;
- Local governments headquarters for protection and rescue.

Duration and format:

1 day training (online)

Curriculum Topics:

Module 1: Introduction to Hydrometeorological Hazards

1.1 Understanding the Risk

- Definition and classification of hydrometeorological hazards
- Overview of historical events and their impacts
- Glossary of terms used in hydrometeorological hazard assessment

1.2 Building Resilience

- Definition of resilience in the context of hydrometeorological hazards
- Strategies for building resilience at the local government level
- Case studies showcasing successful resilience initiatives

1.3 Reducing Risks

- Exploring methods for risk reduction and mitigation
- Implementing early warning systems
- Community engagement and participation in risk reduction

Module 2: Risk Evaluation and Readiness Assessment

2.1 International Frameworks and Indicators

- Overview of SDG indicators related to hydrometeorological hazards
- New Urban Agenda Monitoring Framework and related indicators
- UNDRR Disaster Resilience Scorecard for Cities
- OECD indicators for resilient cities
- Risk Systemicity Questionnaire
- Introduction to the ThinkHazard! tool

2.2 Evaluation Process

- Step-by-step guide for cities and municipalities to assess their risks
- Identifying vulnerabilities and capacities
- Utilizing international indicators for evaluation

Module 3: European Union Perspective

3.1 EU Institutions and Research in JRC

- Overview of EU institutions involved in hydrometeorological hazard management
- Role of the Joint Research Centre (JRC) in research and data analysis

3.2 EU Civil Protection Mechanism



- Definition and elements of the EU Civil Protection Mechanism
- Assistance provided by the mechanism during emergencies

3.3 Emergency Response Coordination Centre (ERCC)

- Understanding the role of ERCC in coordinating responses in Europe
- Case studies demonstrating effective coordination

Module 4: IT Tools and Platforms

4.1 DG ECHO and JRC Offerings

- Overview of IT tools and platforms provided by DG ECHO and JRC
 - The European Union's Mechanism for Civil Protection offers a range of IT tools and platforms, such as:
 - Copernicus Emergency Management Service (EMS) On Demand Mapping, <https://emergency.copernicus.eu> Copernicus EMS On Demand Mapping provides on-demand detailed information for selected emergency situations that arise from natural or man-made disasters
 - European Flood Awareness System (EFAS) <https://www.efas.eu/en>; https://www.efas.eu/efas_frontend/#/home;
 - MARINER Knowledge Tool and modelling Platform mariner-project.eu Favicon http://mariner-project.eu/assets/uploads/mariner/resultados/33a7c-booklet_environmental_monitoring_final.docx.pdf
 - Euro-Mediterranean Cooperation on Natural Disasters <https://www.iemed.org/publication/euro-mediterranean-cooperation-on-natural-disasters-civil-protection-and-emergency-management>
 - The INFORM risk assessment tool is open-source and its results support decisions at different stages of the disaster management cycle, including prevention, preparedness and response. <https://drmkc.jrc.ec.europa.eu/inform-index>
 - Prevention web https://www.preventionweb.net/files/50823_drmkcnl5final.pdf.
- Demonstrations of their functionalities

4.2 Resources for Practitioners

- Accessing and utilizing resources available through EU mechanisms
- Case studies showcasing successful use of resources

4.3 Commercial IT Platforms

- Overview of commercially available IT platforms for hydrometeorological hazard management
- Considerations for choosing the right platform for local government needs

Explanations of modules:

Module 1: Introduction to Hydrometeorological Hazards

Justification for Training on Building Resilience and Reducing Risks:

Understanding what it means to “build resilience” and why it is crucial as many local governments (LG) may lack comprehensive knowledge in this area. LGs are weakly prepared in building resilience, and the lack of knowledge and understanding of what it involves prevails. This introductory part needs to cover the glossary and terms, discuss involvement of other levels of government, and stakeholders from local community to anticipate, prepare for, respond to, and recover from the adverse impacts of hydrometeorological hazards. The introductory part needs to discuss the vital importance of risk reduction, a range of measures to minimize the likelihood and impact of disasters on communities such as infrastructure development, early warning systems, land-use planning, community engagement, and policy implementation, but also inter-governmental cooperation and cooperation with EU agencies.

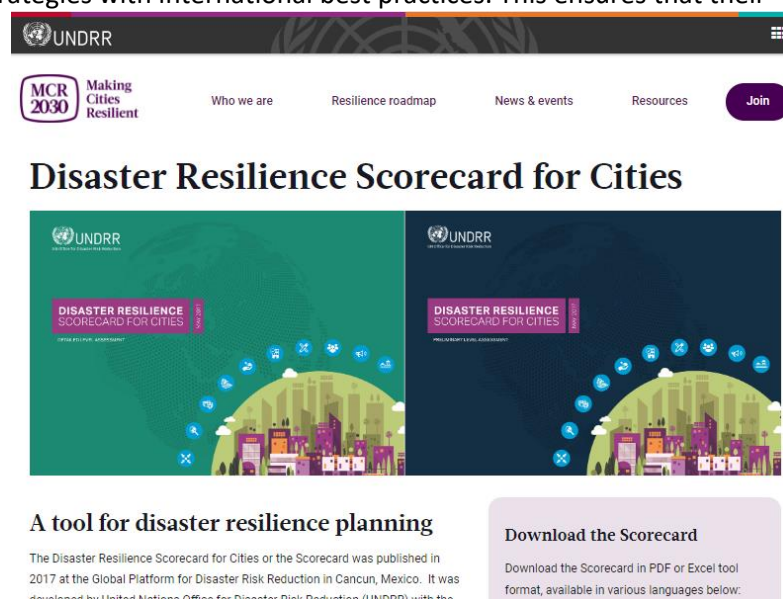
Without a clear understanding of these concepts, local governments may struggle to formulate effective strategies to enhance their community's ability to withstand and recover from disasters. The lack of knowledge in this area may result in inadequate planning, leading to increased vulnerability and prolonged recovery periods after hydrometeorological events.

Module 2: Risk Evaluation and Readiness Assessment

Justification for Training Modul on Risk Evaluation and Readiness Assessment:

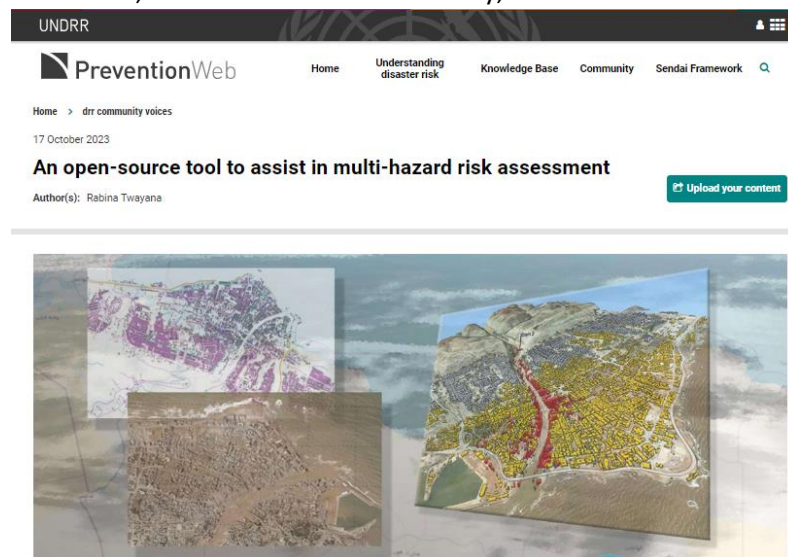
Understanding international frameworks and indicators (Module 2.1) is vital for local governments because it provides a standardized and globally recognized approach to assessing and addressing hydrometeorological hazards. The Sustainable Development Goals (SDGs), New Urban Agenda, UNDRR Disaster Resilience Scorecard, OECD indicators, Risk Systemicity Questionnaire, and the ThinkHazard! tool are instruments that offer a comprehensive framework for evaluating risks and resilience at the local level. By exploring these frameworks, local governments gain insights into globally acknowledged indicators and benchmarks, enabling them to align their strategies with international best practices. This ensures that their risk assessments and

resilience-building efforts are not only effective locally but also contribute to broader global objectives.



The screenshot shows the UNDRR website with a navigation bar including 'Who we are', 'Resilience roadmap', 'News & events', 'Resources', and a 'Join' button. Below the navigation bar is the title 'Disaster Resilience Scorecard for Cities'. Two versions of the scorecard are displayed: one with a green background and one with a dark blue background. Below the scorecards, there is a section titled 'A tool for disaster resilience planning' which states: 'The Disaster Resilience Scorecard for Cities or the Scorecard was published in 2017 at the Global Platform for Disaster Risk Reduction in Cancun, Mexico. It was developed by United Nations Office for Disaster Risk Reduction (UNDRR) with the'. To the right of this text is a button that says 'Download the Scorecard' with the subtext: 'Download the Scorecard in PDF or Excel tool format, available in various languages below:'.

The Evaluation Process (Module 2.2) is important as it equips cities and municipalities with a systematic and practical guide to assess their risks and readiness for hydrometeorological hazards. This guidance facilitates a structured approach, allowing local governments to start their analysis and identify vulnerabilities and capacities within their communities. By utilizing international indicators in the evaluation process, this will ensure that assessments are comprehensive, standardized, and comparable globally. With this module, local decision-makers are empowered with the knowledge on the importance of measurements and evaluations in order to prioritize actions, allocate resources effectively, and tailor their strategies based on the specific needs identified through the evaluation process. The module's focus is on understanding that the evaluation process is important in enabling local governments to make informed decisions and implement targeted interventions that enhance their community's resilience to hydrometeorological hazards.



Module 3: European Union Perspective

The European Union Perspective module is critical for local governments as they lack knowledge and comprehensive understanding of the EU's role in hydrometeorological hazard management. The overview of EU institutions involved in hazard management (3.1) ensures that local authorities are aware of the diverse agencies and bodies contributing to the region's resilience. This knowledge is important in fostering collaboration, both nationally and internationally, as local governments can leverage the expertise and resources offered by EU institutions. Describing the role of the Joint Research Centre (JRC) emphasizes the importance of research and data analysis in informed decision-making. Local governments can benefit



from JRC's contributions to scientific understanding and its role in providing data that informs effective hazard management strategies.

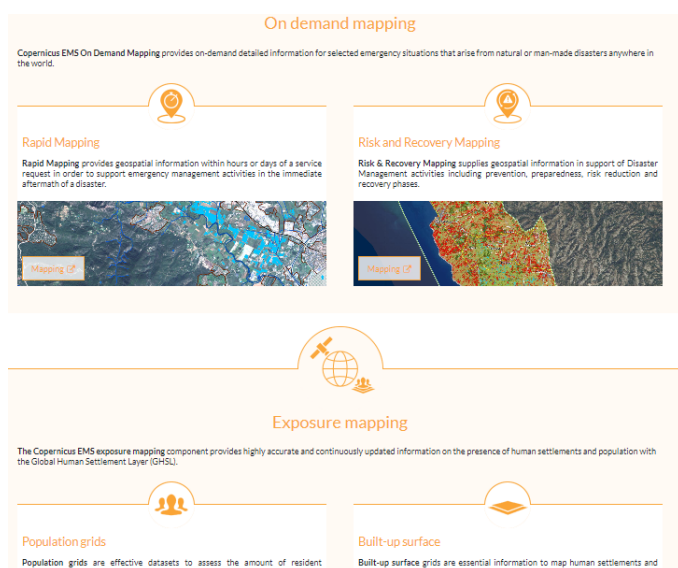
The look at the EU Civil Protection Mechanism (3.2) further enhances the training's significance by outlining the structure and elements of a collaborative approach to disaster response.

Understanding the mechanism's definition and elements enables local governments to tap into EU-wide assistance during emergencies. This not only enhances the efficiency of emergency responses but also fosters a cooperative and coordinated response to hydrometeorological events and a sense of solidarity among European nations. Finally, the examination of the Emergency Response Coordination Centre (ERCC) (3.3) underscores the importance of centralized coordination in responding to crises.



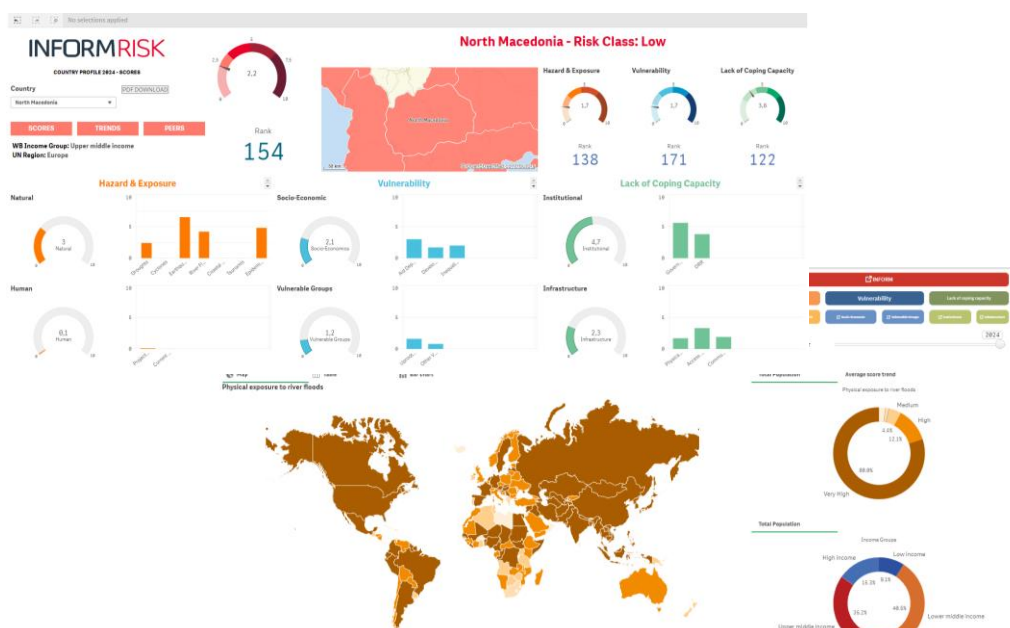
Module 4: IT Tools and Platforms

The IT Tools and Platforms module addresses the growing importance of technology in hydrometeorological hazard management. The overview of IT tools and platforms provided by



DG ECHO and JRC (4.1) introduces local authorities to technologies specifically designed for disaster response and risk reduction. Understanding these tools is essential for optimizing decision-making processes during emergencies and by demonstrations, their functionalities will empower local officials to use the full potential of these tools, ensuring efficient data analysis, communication, and coordination in the face of hydrometeorological hazards. In times where technology plays a

pivotal role in disaster management, this module provides local governments with the skills and knowledge necessary to leverage the ICT for effective response and resilience building.



Additionally, the Resources for Practitioners component (4.2) is equally vital as it guides local authorities in accessing and utilizing resources available through EU mechanisms. This includes not only IT tools but also valuable knowledge repositories, guidelines, and case studies. By showcasing successful use cases, this module provides practical insights into how these resources can be effectively employed in real-world scenarios.

Commercially available platforms or tools offered via non-governmental and civil society organizations need to be discussed too.

The module will serve as a bridge between technological tools and the wealth of knowledge available, empowering local practitioners to make informed decisions for the safety and resilience of their communities.

Optional workshop for practical application and case studies

Optionally, an additional workshop will be developed in cooperation with all COVALEX partners which will present the collected materials for the LibLab. The use of resources available on the LibLab will be described, following new updates and increasing the community of knowledge and practitioners.



HYDROMETEOROLOGICAL HAZARDS – RISK AND MITIGATION –



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