How science can help in the preparation of National Risk Assessments

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CONTENTS

- National Risk Assessment: what is it and why to do it?
- Limitations and opportunities found in National Risk Assessment reports
- The Report Recommendations for NRAs for DRM in the EU (version 0)
- Other activities of the Joint Research Centre
Science and knowledge service of European Commission

Support EU policies with independent evidence

3000 staff
Almost 75% are scientists and researchers. Headquarters in Brussels and research facilities located in 5 Member States.
DRMKC PROVIDES A NETWORK APPROACH TO THE SCIENCE POLICY INTERFACE IN DISASTER RISK MANAGEMENT

OUR ROLE

EC DIRECTORATES

DEVCO  HOME  Community of Users H2020
ECHO  GROW  JRC
CLIMA
REGIO  RTD  H2020
ENV  SANTE

DRMKC

PARTNERSHIP

KNOWLEDGE

INNOVATION

SERVING

UN  NGOS  OTHERS

MEMBER STATES

EUROPEAN COMMISSION

DRMKC
To strengthen the **cooperation** between the Union and the Member States and to facilitate **coordination** in the field of civil protection.

Member States to develop **risk assessments** at national or subnational level and make available to the Commission a summary of the relevant elements every 3 years.

Critical Infrastructure disruption was identified by most of Participants States, usually in relation to transport and energy sectors (Overview of risks EU may face, 2017)
'Risk assessment' means the overall cross-sectoral process of risk identification, risk analysis, and risk evaluation undertaken at national or appropriate sub-national level;

National Risk Assessment

- Common understanding among stakeholders
- Of national or supra-national level relevance
- Relative importance of different risks
- Underlying disaster risk drivers relate to components of risk
Risk Assessment meets Risk Management

**COMPONENT OF DISASTER RISK**

\[ H \times E \times V = R \]

- **H**: Hazard
- **E**: Exposure
- **V**: Vulnerability

**UNDERLYING DISASTER RISK DRIVERS and CAPACITIES**

**POTENTIAL FOR IMPACTS**

**DISASTER RISK ASSESSMENT**

**DISASTER RISK MANAGEMENT**

Assessment of potential impacts

Loss Data Sendai Framework Monitoring

Understanding the drivers to act upon them
NRAs as a tool for prevention and preparedness

A challenge for Member States

- Governance frameworks within Europe
- Level of information available
- Past experiences
  - Dynamic nature of risk
  - Emerging risks
  - Scope
  - Quantitative approaches

Overview of natural and man-made risks European Union may face

SWD (2017) 176 final
SWD (2014) 134 final
NRAs as a tool for prevention and preparedness

More **collaboration** is needed across sectors

More tools for prioritizing and for risk mapping to help **policymakers** to develop disaster risk reduction frameworks
Risk Assessment as an input for planning measures to prevent risk, but also for raising awareness, informing land use, updating Early Warning systems, etc.

Requires involvement of all the sectors and many of domestic stakeholders
Towards more coherent and consistent RA methodologies to make risks arising from different hazards comparable

To understand the relative importance of different risks for a given region

In order to assist decision makers in DRM in their prioritising of DRM planning and actions

Decision makers in DRM:
- Ministries
- Civil Protection Groups

Direct contribution of 9 research groups from JRC:
- Droughts
- Earthquakes
- Floods
- Biological disasters
- Terrorist attacks
- Nuclear Accidents
- Critical Infrastructures
- Chemical Accidents
- Natech

Scientific support to NRA reporting

Scientific community
Recommendations for NRAs in the EU

1. Governance

To ensure there is coordination among all parties involved in the NRA

Data-providers, technical experts and end-user (practitioners and policymakers) from different sectors at the same table

Each RA is performed by technical team
Recommendations for NRAs in the EU

2. Context of National Risk Assessment

To define the needs of the exercise and establish the commonalities of the RAs to ensure consistency and comparability of results.
2. Context of National Risk Assessment

- What needs to be protected?
- Which are the hazards that the country is exposed to?
- Which are the risks to be considered, the potential impacts?
- What is the time window for the potential impacts?
- If required, how impact and likelihood levels should be defined?
- Quality criteria
- Protocol for the use of experts opinion
- Risk criteria?
Recommendations for NRAs in the EU

3. Aggregation process

To derive to the potential impacts at the national level of different hazard types and different probability of occurrence.

Scale and scope
List of assets
Recommendations for NRAs in the EU

3. Aggregation process

- **Sectorial** and better facilitate the management
- Concrete result of disaster risk assessment
- Related to the asset
- Multihazard
- A tool for communicating risk for/to different stakeholders
- Should coincide with loss and development indicators (SFDRR, CCA, SDG)
- A tool for better governance
- Requires knowledge about its limitations and uncertainties
- For mapping risk and prioritizing
- For measuring disaster risk and effectiveness of scientific solutions
- A tool for decision making
- A tool for better governance

**RISK METRICS**
Recommendations for NRAs in the EU

2010 - Risk Assessment and Mapping Guidelines for Disaster Management

NRA Context
1. List the assets to protect
2. Decide risks to study:
   - Hazards
   - Potential impacts
   - Time window
3. Select the minimum quality criteria
4. Design protocols for expert opinion
5. Define risk criteria

Risk Identification
1. Characterize risk:
   - hazard,
   - exposure,
   - vulnerability,
   - capacities
2. Build scenario(s)

Risk Analysis
Calculate the likelihood and the related impacts of the event.
- Qualitative
- Semi-quantitative
- Quantitative
  - Probabilistic
  - Deterministic

Risk Evaluation
1. Share Risk Analysis outputs:
   - Maps
   - Curves
   - Indicators
   - Risk Matrix
2. Compare and confront risk to the risk criteria

Risk treatment
Decide which risks need to be reduced and possible paths of action

...risk prioritization...
Where do we stand?

Single-hazard
- Droughts
- Earthquakes
- Floods
- Biological hazards
- Terrorist attacks
- Nuclear accidents
- Chemical accidents

Multi-layer single hazard
- Critical Infrastructures

Multihazard
- Natech

Many advances in the last decades in risk assessment but...

- Data quality and availability
- Scenario building
- Reach the impact
- Transparency on limitations and assumptions
Way forward

Version 1
- New scientific communities engaged, such as forest fires or cyber security
- Consultation of scientists from outside JRC and risk managers with experience in the field

Until the 30th September!


Version 1 to be published by December 2019
Other activities at the DRMKC

Risk Data Hub

A Web GIS platform for exchanging and sharing geospatial data. It provides tools and methodologies for data collection, dissemination and visualization.

The Report centres its analysis on the impacts of disasters across several sectors and human activities, such as Critical Infrastructures.

More than 250 participants acting as Advisor, Authors or Reviewers.

Currently open for External Review.


Any questions?
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