

## Summary statement



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- Based on evidence of high economic losses due to natural and man-made disasters, as well as worsening trends of climate extremes due to climate change, disaster risk reduction and resilience building is gaining higher prioritisation; this element is central to a comprehensive approach to disaster risk management, recognising that the reduction and mitigation of existing risks and the prevention of new risks is a priority of action alongside the work undertaken in preparedness, response and recovery dimensions of disaster risk management.
- In order to develop robust disaster risk reduction strategies, it is essential for all engaged stakeholders to work in a coordinated way – the collection and sharing of data is a critical element multi-stakeholder engagement. Enhanced information exchange would benefit monitoring and forecasting activities, which would support decision makers, both operational and political, in local, national and European contexts. Strong governance around disaster risk reduction is key in encouraging data sharing and effective development of evidence-based policies and initiatives.
- As a result of the shift towards disaster risk management, research has become more important in order to understand the risks we are facing, to assess how we are using knowledge and what needs to be done in order to improve this. Ultimately, research will help to develop more evidence-based decisions. As such, EU initiatives such as the Community of Users should ensure a regular mapping of existing initiatives with common threats in contributing to the DRR agenda and to the implementation of the Sendai Framework. In doing so, the European Commission should reflect, digest and disseminate in detail how projects concretely contribute to the implementation of the global DRR framework and what meaningful change is achieved in driving the national, European and global DRR work forward.
- In developing disaster risk reduction strategies, policymakers must apply an inclusive approach. By engaging various groups within a community (in particular vulnerable groups), disaster risk reduction strategies ensure a representative approach tailored to local risks, their management and their perceptions.

## Introduction

This CoU brief summarises the topic Disaster Risk Reduction and Resilience and relevant EU-funded projects that participated in the 13th Meeting of the Community of Users (CoU) on Secure, Safe and Resilient Societies that took place 25 – 29 March 2019 at the BAO convention centre in Brussels.

The Community of Users is a DG HOME initiative that aims to improve information transfer of research outputs and their usability by different categories of stakeholders. During the meetings and thematic workshops, policy updates and information about H2020 projects are provided and interactive discussions facilitated to ensure that solutions and tools resulting from research will reach users.

## Scope & Relevance

As a result of the significant impact of natural disasters, the domain of Disaster Risk Reduction (DRR) and Resilience has attracted increased attention across the European Union in recent years. In addition to the human casualties, extreme weather events have cost the EU Member States over €410 billion.<sup>1</sup> Due to climate change, population growth and urbanisation, the impacts and thus the costs, of natural disasters are expected to intensify in the future. In order to be better prepared, the EU strives to adopt an integrative approach to disaster risk management, intends to mainstream DRR across all EU policies and promote greater investments in DRR. In addition, over the last years, the general approach towards DRR has shifted from managing disasters towards managing risks.<sup>2</sup> Moreover, during the 13th CoU, it was mentioned that pre-disaster planning should go hand in hand with pre-disaster financing in reducing disaster risks and reinforcing the sustainability of investments. In order to allow for sufficient funds and effective mechanisms, national ministries of finance and economy, alongside other sectors, should be invited in DRR-related discussions.

The strive for this integrative approach is supported by various (policy) initiatives on the European level, such as the Union Civil Protection Mechanism (UCPM)<sup>3</sup> which recast has entered into force in March 2019.<sup>4</sup> The UCPM now includes the rescEU initiative which establishes a new European reserve of capacities, thereby strengthening the response leg of the UCPM (more elaborate information on the UCPM can be found in the next section of this Brief).<sup>5</sup> In addition to the UCPM, the United Nations Sendai Framework for Disaster Risk Reduction (2015 – 2030) is aimed at reducing the risks and prevention new risks of natural and man-made disasters on the global level and encourages a shift from managing disasters to managing risks.<sup>6</sup> The UN Sendai framework is elaborated upon further in this brief.

A number of challenges remain; therefore, the European Commission is exploring opportunities to apply a more risk-based approach. To strengthen EU capabilities in the DRR landscape, DG ECHO has set up a Union Civil Protection Knowledge Network, which facilitates training, exchange of good practices and expertise among civil protection and emergency management personnel. Also, the Knowledge Network intends to stimulate research and innovation and aims to strengthen cooperation with international organisations.<sup>7</sup> In addition, the Joint Research Centre (JRC) provides scientific support to DRR activities at the EU level and encourages an evidence-based approach to policies and operations (i.e. a focus on foresights and forecasts).

### Thematic focus areas

During the 13th CoU event, the Thematic Workshop on Disaster Risk Reduction and Resilience was divided into nine different subthemes. The discussions held during these sessions are presented below.

### Implementing Sendai framework

The session on the implementation of the Sendai framework concluded that the framework remains driven at a strategic level and should strengthen its focus on its concrete implementation by practitioners and policymakers at national and local levels. One of the key challenges in the DRR domain is to make research outcomes actionable and ready for end-users. The Sendai framework can address this challenge by adapting a more integrative approach, in particular towards practitioners. In addition, the private sector could be more active in connecting the dots between research outcomes, government funds and the needs of end-users – such inclusive approach should be reflected in National Platforms for DRR. During the session, the role of the private sector was discussed in depth; it was concluded that reinforced engagement with the private sector is needed in order to better understand risks and to develop innovative Early Warning Systems (EWS). Furthermore, the role of private sector could be better reflected in national platforms for DRR.

The clear understanding of risks as a social construct is crucial in developing sustainable (tailored) solutions. Risks need to be understood along a same time horizon and must be clearly linked to concrete objectives and actionable outputs contributing to reducing risks.

Discussions also pointed on the importance of building on the opportunities related to BigData elaboration including social-media and crowdsourcing data in reinforcing risk awareness and building an understanding and culture of risks, in line with priority 1 of the Sendai Framework. Such technologies would benefit from moving beyond the proof of concept stage and need to show a clear understanding of national contexts and risk cultures as well as they need to develop strategies to generate more political buy-in.

A key recommendation of this session was for the Community of Users, in close collaboration with relevant EU initiatives (e.g. Disaster Risk Management Knowledge Centre) to provide a regular mapping of existing initiatives with common threads in contributing to the implementation of the Sendai Framework. In doing so, the European Commission, through the Community of Users, should explore in detail how projects concretely contribute to the implementation of the global DRR framework and what meaningful change is achieved

1 [www.ec.europa.eu/echo/files/aid/countries/factsheets/thematic/disaster\\_risk\\_management\\_en.pdf](http://www.ec.europa.eu/echo/files/aid/countries/factsheets/thematic/disaster_risk_management_en.pdf) (this number does not include losses related to cultural heritage or ecosystems)  
2 As presented in the United Nations Sendai Framework for Disaster Risk Reduction (2015 – 2030)  
3 [www.ec.europa.eu/echo/what/civil-protection/mechanism\\_en](http://www.ec.europa.eu/echo/what/civil-protection/mechanism_en)  
4 Decision (EU) 2019/420  
5 [www.europa.eu/rapid/press-release\\_IP-18-6766\\_en.htm](http://www.europa.eu/rapid/press-release_IP-18-6766_en.htm)  
6 [www.https://www.unisdr.org/files/43291\\_sendaiframeworkfordrren.pdf](https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf)  
7 Presentation DG ECHO, 13th CoU event, March 2019

in driving the national, European and global DRR work forward.

## Climate adaptation

The need for the shift from managing disasters towards managing risks was once again voiced during the 13th CoU event. Inherently linked to this renewed perspective is the need to reduce vulnerability and enhance resilience. In this regard, national, regional and local initiatives have a role to play as they are involved in implementing such climate adaptation plans. Local actors are often knowledgeable of climate adaptation-related issues, however, a systematic approach to compile information from different sources is lacking. In addition, efforts are needed to digest and structure the large volumes of information in order to identify the fit-for-purpose measure. In order to do so, local actors are in need of support as they often lack resources to fully implement adaptation plans.

However, in order to effectively implement climate adaptation, the issue needs to be streamlined throughout various policy domains (as does DRR). Coherency in terms of national, regional and local policies is required to ensure such strategies are in line with EU and UN visions. In order to reach such level of cooperation it is essential to develop synergies across stakeholders, projects, and geographic areas.

## Geohazards

The domain of DRR would benefit from applying a multi-hazard approach. Despite their relative low probability, geohazard events can be of vast impact; hydrological events and earthquakes in particular account for a large amount of fatalities annually.<sup>8</sup> A multi-hazard approach would help to address the variety of challenges that different parts of the European Union face; hydrological events tend to be more frequent in central Europe whereas the South faces earthquakes, volcanoes and landslides more often.<sup>9</sup> Such multi-hazard approach would thrive by a more inclusive strategy towards practitioners in order to foster a better understanding of the needs of practitioners (in terms of training, equipment, etc.) across other stakeholders as well as to enhance risk awareness among practitioners. The EU approach towards geohazards would particularly benefit from investing in monitoring, forecasting and evaluation as these activities would help to enhance awareness and preparedness. In addition, it allows for response strategies by first responders to be assessed and fine-tuned.

In order for researchers to provide the practitioners with accurate and up-to-date information, data sharing would need to be improved. Ideally, data is openly shared across different stakeholders. In reality however, the sensitive nature of the data and reluctance of states and geohazard test sites to share data thwarts the effective exchange of information. In addition, the process of down streaming data towards the public is in need of development.

Generally, the EU could benefit from adopting a more international perspective and explore whether information gathered at non-European sites could be useful to further develop the EU approach towards geohazards.

## Community resilience

A critical element in DRR is the inclusion of the community level in prevention, preparedness and response measures and activities in order to ensure disaster risk reduction strategies are tailored to the community's needs, wishes and abilities. Through co-creation, disaster risk reduction strategies that are sensitive to the desires and abilities of all involved stakeholders in a community can be developed; this includes residential actors, those who work in a community, young people, elderly, migrants, people with disabilities and other minorities. Hereby, risk strategies can be tailored to local realities and local risk perceptions. Given the need for risk strategies to be tailored to the local realities, municipalities can play a key role.

In addition, it allows for the risk strategies to be disseminated in a manner that is preferred by the different types of actors. Ultimately, the risk strategies need to be translated into simple guidelines, which can easily be digested by the general public. One way to facilitate this co-creation is through the Responsible Research and Innovation Roadmap (RRI Roadmap),<sup>10</sup> a tool with easy to follow steps for facilitating the stages of involving society and all security actors in effective risk management actions.

Such inclusive approach requires the public to share personal data about their lives and vulnerabilities. Given the sensitive nature of such data, the public might be reluctant to share this information. It is, therefore, essential to communicate in a transparent manner how the data will be used. In the light of the current GDPR,<sup>11</sup> additional efforts are required to explain why data sharing is essential and how it contributes to improving the safety and security of communities. The general reluctance to share data can be overcome by good governance; authorities need to be aware of the history of resilience in a community and the willingness to share data. By elevating the level of trust between the public and authorities as well as trust between organisations, the willingness to share data can be enhanced. A challenge that remains in this regard is that all collected data needs to be plugged into a common system. One solution here could be to create pan-European resilience network in which results and lessons learned can be shared.<sup>12</sup>

8 ESPREsso Vision Paper, 2018

9 ESPREsso Vision Paper, 2018

10 As was done by the Marina project: <https://www.marina-project.eu/index.php/2019/03/17/the-rri-roadmap-is-released-a-marina-tool-to-make-responsible-research-and-innovation-real/>

11 Regulation (EU) 2016/679

12 A solution identified during the 13th CoU Event, March 2019

## Forecasting extreme events

In line with the shift towards managing risks, the EU has invested resources into initiatives aimed at developing methodologies and tools to better detect extreme events. In developing methods to better detect extreme events, it is crucial to ensure local orientation of such solutions. This allows to take into account the local reality and particularities which allows the forecast to be more precise. This, in turn, will enhance the impact of the forecast. In addition, simulation environments to model the possible damage of extreme events like floods, storms or snowfall can be helpful in assessing appropriate protection measures. In this regard, already existing and future simulation software tools on the national, regional and local level should be connected, adapted and further developed.

As citizens are the group that is most affected by extreme events, this group (and volunteers) needs to receive (more) training in order to be better prepared and more aware of response strategies.

## Forest fires

Climate change has led to an increase in the number and severity of forest fires resulting to the extension of areas at risk and the increased probability of major fires. Annually, forest fires in the EU burn on average half a million hectares of forest and natural lands.<sup>13</sup> 85% of the total annual burnt area in Europe is located in 5 countries: Portugal, Spain, France, Italy and Greece.<sup>14</sup> Recent developments have stretched the traditional fire seasons both in timing and in geographic spread.<sup>15</sup> During the 13th CoU event, the lack of knowledge of public authorities on strategies to deal with such fires was discussed. Mega fires are of such intensity that existing solutions such as helicopters do not suffice anymore. It should be recognised that fire prevention is not only preferable but also a cost effective way to manage forest fire when compared firefighting and suppression. Therefore, one needs to address mega fires through an integrated approach (prevention, preparedness and suppression) rather than by reactive suppression. It is essential to develop a fire resilient landscape to address forest fire occurrences.

Moving forward, technology on the fire prevention and suppression can play a role in developing this integrated approach. Currently, technologies are useful in emergency situations but a strategic vision is lacking. Policymakers need to realise that the development of prevention and preparedness instruments (e.g. integrated sustainable management approaches of landscape) should be applied beyond the forest land integrating the whole landscape (forest, agricultural and urban land uses).

In addition, the need for an integrated fire management approach was voiced. Formally, there is no EU forest policy as competences are with the national authorities. However, the European Commission has adopted an EU Forestry Strategy<sup>16</sup> which has paved the way for an integrated approach. In addition, DG ECHO has initiated several initiatives aimed at heightening the level of protection across the EU. Examples of such projects are the Advisory missions and Peer Review Programme, the UCPM Knowledge Network and the EU Forest Fire Prone Countries Expert Meeting (complementary to the Expert Group on Forest Fires). In addition, the implementation of Forest Fire Prevention and preparedness Projects in the EU and non EU countries supported by UCPM Fund. These projects have developed forest fire early warning systems, IT operational solutions and forest fire monitoring tools facilitating the prevention and emergency responses to address forest fires and enhance cross-border cooperation among neighbouring countries to address risks. The UCPM has developed forest Fire Monitoring tools such as EFFIS<sup>17</sup> and Copernicus<sup>18</sup> programs. Also, the European Commission is publishing annual reports on forest fires<sup>19</sup> and a technical report on basic criteria for wildfire risk assessment.<sup>20</sup> A guidance document on land-based wildfire prevention is scheduled for publication in May 2019.

## Operational support DRR

The main objective of most projects involved in DRR is to offer targeted support to disaster management professionals. A key challenge for projects in this domain is to identify and reach out to the target audience who is in need of operational support. In this regard, it can be beneficial to build public private partnerships and solid business models for resilience to make operational support efforts sustainable. Opportunities for such partnerships could be to embed and institutionalise them into wider ecosystems at the local, national or EU level

In addition, knowledge management forms a challenge in this domain; more standards, handbooks and practical recommendations are needed to reduce fragmentation and reach a common understanding of operational support across Europe. Scenarios are perceived as a useful instrument to build bridges between stakeholders and to enhance common understanding. Furthermore, operational preparedness can be enhanced by digitising preparedness plans and making them widely accessible.

<sup>13</sup> [www.ec.europa.eu/echo/sites/echo-site/files/swd\\_2017\\_176\\_overview\\_of\\_risks\\_2.pdf](http://www.ec.europa.eu/echo/sites/echo-site/files/swd_2017_176_overview_of_risks_2.pdf)

<sup>14</sup> Ibid.

<sup>15</sup> Examples are Sweden, Finland and Latvia

<sup>16</sup> COM(2013) 659 final

<sup>17</sup> <http://effis.jrc.ec.europa.eu/>

<sup>18</sup> [www.copernicus.eu/en](http://www.copernicus.eu/en)

<sup>19</sup> [www.effis.jrc.ec.europa.eu/reports-and-publications/annual-fire-reports/](http://www.effis.jrc.ec.europa.eu/reports-and-publications/annual-fire-reports/)

<sup>20</sup> Basic criteria to assess wildfire risk at the pan-European level, JRC, 2018

## Water-related events

'Flooding is, along with storms, the most important natural hazard in Europe in terms of economic losses'.<sup>21</sup> During the 13th CoU event the need to differentiate between riverine floods, flash floods, and pluvial floods was emphasised as these floods have different causes and features and, therefore, require different approaches.

Much research has already been done in the domain of water-related events, however, the challenge is to make the outcomes of this research actionable. In addition, new risks such as heavy rainfall, frozen landscapes and the vulnerability of small rivers are evolving and the research community is encouraged to enhance our understanding in this regard.<sup>22</sup>

Furthermore, the ability of the public to protect itself requires additional attention and resources. As floods can strike unexpectedly, citizens need to be better aware of response strategies. In order to ensure these strategies are developed in line with the citizen's needs, abilities and the local realities, the development of risk strategies would benefit from including citizens in an early stage.

## Health-related events

The complex nature of health-related events requires actors in this domain to apply the 'One Health' perspective.<sup>23</sup> Despite the low probability of health-related events, first responders and the public need to be more aware of the potential risks in such events. To this end, first responder training needs to emphasise that situations (e.g. fires) could potentially be CBRN events; which would allow practitioners to take appropriate safety precautions. In addition, efforts to raise awareness among the public are required to enhance knowledge on responses in a CBRN event. Young people form a particularly vulnerable group as a portion of CBRN accidents result from children playing with what they find on the ground.<sup>24</sup> Nevertheless, such awareness-raising efforts need to be shaped carefully given the thin line between informing and scaring the public.

In spite of the low probability of occurrence of health-related events, the economic and societal impact of such events are vast.<sup>25</sup> During the 13th CoU event, food terrorism was discussed as an example of a low probability, high impact instance of health-related threats.<sup>26</sup> Given its vast impact, the case is made to consider food supply as a critical infrastructure. Recent natural disasters have shown that food and water facilities may become contaminated with CBRN agents. Prior to any emergency, regardless of whether it is natural or caused by human (ex. food terrorism attack), the first responders and practitioners community need to understand their roles and responsibilities related to food security based on applicable laws and established plans and guidance. Therefore, efforts are required to enhance the recognition of food supply as a vital infrastructure among first responders and practitioners; ideally, collaborative emergency and preparedness trainings should also address the food aspect. The most effective way to accomplish this goal is through international cooperation by a multi-sectorial approach combing different expertise with the perspective of establishing a network of food protection practitioners that will contribute to increase the European food safety resilience

Challenges in the health domain are manifold. On the one hand, sharing data between stakeholders, optimising data collection approaches and the existing operational legal framework pose challenges to developing an integrative approach towards health-related challenges. On the other hand, non-research related challenges pertain: these include regulatory challenges which hinder vaccines from being spread when they do not have a marketing license yet, the large-scale manufacturing of medicines and the delivery of vaccines (e.g. to warzones).<sup>27</sup> In addition, the low probability of health-related events causes challenges in the involvement of end users in the design of solutions as those actors are often occupied on an ad-hoc basis with high priority events. Furthermore, the health protection of the first responders themselves should be also taken into account e.g. by special protective cloths and equipment as investigated (e.g. in the project EDEN). The EU attempts to address those issues by facilitating data collection and analysis on the EU level, developing European research infrastructures and by aiming for rapid mobilisation of funds.<sup>28</sup>

## Current debates & stakeholder perspectives

This section describes why the topic of DRR is particularly important for each stakeholder group.

### Practitioners

Practitioners such as first responders, as crucial actors in the aftermath of a disaster, have voiced the need for a more bottom-up approach towards DRR. Currently, the needs and wishes of this

21 [www.eea.europa.eu/publications/...the...natural/mapping-the-impacts-of-the.pdf](http://www.eea.europa.eu/publications/...the...natural/mapping-the-impacts-of-the.pdf)

22 Mentioned by Magda Stepanyan of Risk Society during the 13th CoU event, March 2019.

23 [www.who.int/features/qa/one-health/en/](http://www.who.int/features/qa/one-health/en/)

24 Example project: "Popularization and visibility of the EU CBRN CoE Initiative among the Various Layers of the Population" by Central Asia Regional Secretariat

25 An excellent example is the Australian case of strawberries that were sabotaged with needles: <https://www.bbc.com/news/world-australia-46175243>

26 Defined as intentional acts of adulteration, contamination or sabotage of food products (through use of B, C or R agents) to inflict wide scale harm to the public, Marco Gerevini (Tecnoalimenti), 13th CoU Event, March 2019

27 Presentation DG RTD, 13th CoU Event, March 2019

28 Ibid.

stakeholder group are perceived to be not sufficiently recognised, which has led to a mismatch between research activities, solutions produced by the industry and the actual needs of practitioners. However, practitioners have limited time and their activities are of ad-hoc nature, which poses a challenge to the adequate inclusion of this group in an early phase of research and/or solution design.

At the same time, the need to enhance risk awareness among practitioners has become increasingly stronger. Despite the low probability of many DRR events, it is essential for practitioners to be aware of potential risks (in particular in regards to CBRN events) and, therefore, training courses would benefit from paying more attention to this component. Monitoring, forecasting and evaluation would also help practitioners to be more risk-aware and to develop evidence-based work processes.

## Industry & SMEs

The shift from managing disasters to managing risks has created opportunities for industry players to play a more active role in minimising impact and damage. With the number of natural disasters rising, there is space for the (insurance) industry to grow and to reduce the impact of disasters on communities, societies, and property. In addition, industry can play a role by developing more accurate monitoring and forecasting tools and methods which can help both researchers and practitioners to be more prepared and to develop more adequate response strategies.

## Policy

One of the challenges in the DRR landscape is the inclusion of different societal groups in the development of risk strategies. Policymakers could, therefore, benefit from applying a more inclusive approach by engaging different (vulnerable) groups in developing response strategies. Simultaneously, it was recommended to include practitioners' perspectives in such approaches in order for solutions to fit the needs and ability of those working on the ground. To further fuel this inclusive approach, it is recommended to boost awareness raising activities in order to educate the public about prevention and response strategies.

Currently, the EU has a variety of policies in place aimed at reducing disaster risk both within the Union and beyond, these include amongst others:

- **Council Regulation on the provision of emergency support within the Union**<sup>29</sup> which further encourages solidarity and the exchange of emergency services across the different Member States of the EU.
- **DIPECHO** (since 1996)<sup>30</sup> stands for the Disaster Preparedness ECHO Programme and is one of the building blocks of the EU's efforts in global DRR. DIPECHO aims to enhance the resilience of communities in developing countries. Through training, early warning systems and contingency planning, these communities are able to better prepare themselves for disasters.
- **Directive on European Critical Infrastructures**<sup>31</sup> is one of the key components of the European Programme for Critical Infrastructure Protection (EPCIP)<sup>32</sup>. The Directive established a procedure for identifying and designating European Critical Infrastructures (ECI) and supports the development of a common approach for assessing the needs to improve ECI protection. The EPCIP programme applies an all-hazards, cross-sectoral approach, thereby, providing response and prevention capabilities for all types of hazards.
- **EU Adaptation Strategy Package**<sup>33</sup> includes the EU Strategy on Adaption to Climate Change and facilitated the development of Climate-ADAPT, a platform where Member States can share knowledge on climate change and its impacts on environmental and social systems. Climate- ADAPT encourages knowledge exchange on climate change and allows Member States to learn from each other regarding resilience and preparedness for natural hazards and geological events.
- **EU biodiversity strategy to 2020**<sup>34</sup>, adapted in 2011, lays down the EU strategy towards a halt of biodiversity loss until 2020. The strategy includes six targets which address the key drivers of biodiversity loss. Since 2011, the European Commission has carried out a mid-term review in which the progress achieved so far has been assessed.

29 Council Regulation (EU) 2016/369

30 European Commission, EU Civil Protection and Humanitarian Aid Operations

31 Directive 2008/114/EC

32 COM(2006) 786 final

33 COM/2013/0216 final

34 COM(2011) 244 final

- **EU Floods Directive**<sup>35</sup> on the assessment and management of flood risks entered into force in 2007. The Directive requires Member States to assess the risk that their coast lines and water courses are exposed to and to map the assets and human lives that are at risks in these areas. This helps the Member States to take action to mitigate the risk and the reduce the potential harm. Moreover, the Directive allows the public to access information and to engage in the planning processes.
- **Sendai Framework** (2015 – 2030)<sup>36</sup>. The UN Office for Disaster Risk Reduction is custodian of the global Sendai Framework for Disaster Risk Reduction, for which it ensures coordination of DRR across the UN system, coherence with other international processes, and, importantly, coordinate and support national authorities in implementing the Sendai Framework priorities and in monitoring their progress against global targets and indicators. The European Commission developed a specific strategy, the Action Plan on the Sendai Framework for Disaster Risk Reduction 2015-2030<sup>37</sup> aimed at outlining the implementation of the Sendai Framework across European Commission services, policies and operations. The Action Plan covers the full fifteen years of the UN framework and allows for a systematic approach in EU policy making regarding disaster risk management.
- **Seveso Directives I, II, III**.<sup>38</sup> These are the EU guidelines that intend to minimise CBRN-E risks and prevent major accidents from happening. The Seveso Directives help Member States to develop response and mitigation measures. In order to maximise its impact, the Seveso directive has been integrated in other EU policies such as the Union's Civil Protection Mechanism , the Security Union Agenda and the Regulation on the classification, labelling and packaging of chemicals , among others.
- **Strengthening EU Disaster Management: rescEU**<sup>39</sup> enhances the EUs disaster management capacity in order to offer better protection to people, communities, economic interests and the environment. The Communication introduces changes to the current civil protection legislation to allow the EU to develop its prevention and preparedness strategies for natural and manmade disasters both within and outside the Union.
- **Union Civil Protection Mechanism**<sup>40</sup> aims to strengthen European Civil Protection across the disaster management cycle, including by funding prevention and preparedness, by developing additional reserve capacities (rescEU) for major and simultaneous disasters and by co-financing deployment of Member States' national response capacities. Prevention and preparedness are enhanced by sharing information among Member States and the Commission as well as through a Knowledge Network.

## Research

The academic field would benefit from more effective data exchange between states but also across research facilities and from and towards the public. The shift towards risk management requires researchers to rely on complete and accurate data and, therefore, the need for data sharing needs to be promoted. Efforts towards ensuring compatibility of data are welcomed in order to ensure different types of data can be complementary.

Furthermore, the field of DRR would thrive by closer cooperation between researchers and practitioners, both in terms of recognising practitioners' needs as well as in regards to supporting those on the ground with accurate information and forecasts. At a UN level, a European Scientific and Technical Advisory Group (E-STAG) has been established as a voluntary group of scientific experts providing scientific and technical support to European and Central Asian countries for the implementation of the Sendai Framework, and other relevant frameworks in the EU in close collaboration with existing initiatives, such as the Disaster Risk Management Knowledge Centre.

## Public

In recent years, efforts have been made to come to a more inclusive approach in developing risk strategies. Whereas these efforts are successful, further attention is required to include vulnerable groups and minorities in developing preparedness and response strategies that are tailored to local risk perceptions. Such activities can also help to enhance risk awareness among the public, which would, in turn, help to reduce risks.

Adequate risk strategies are predominantly based on various types of data, therefore, it is crucial that the public is informed on why sharing their personal data (to some degree) is essential in order to develop solid risk strategies. Efforts need to be made in order to develop a sense of trust between the public and the authorities; one way to do this is through applying good governance.

35 Directive 2007/60/EC

36 Sendai Framework, UNSDR, 2015

37 Action Plan on the Sendai Framework for Disaster Risk Reduction 2015-2030 A disaster risk-informed approach for all EU policies

38 Directive 82/501/EEC; Directive 96/82/EC; Directive 2012/18/EU

39 COM/2017/0773

40 Decision (EU) 1313/2013/EU

Activities conducted as part of the following projects were outlined by project representatives during the Disaster Risk Reduction and Resilience session at the 13th CoU meeting:

- **ANYWHERE**<sup>41</sup> (June 2016 – January 2020). The purpose of ANYWHERE is to empower exposed responder institutions and citizens to enhance their anticipation and pro-active capacity of response to face extreme events. The project is geared towards implementing a multi-hazard platform for identifying expected variables pertaining to weather-induced impacts prior to their occurrence through the use of pre-existing data.
- **beAWARE**<sup>42</sup> (January 2017 – January 2020) proposes an integrated solution to support forecasting, early warnings, transmission and routing of the emergency data, aggregated analysis of multimodal data and management the coordination between the first responders and the authorities. The project intends to rely on platforms, theories and methodologies that are already used for disaster forecasting and management and add the elements that are necessary to make them working efficiently and in harm under the same objective.
- **DAREnet**<sup>43</sup> (September 2017 – September 2022) supports flood management practitioners across the EU Danube River region and builds a multi-disciplinary community of practitioners, operating in a network of civil protection organisations, supported by a broad range of stakeholders from policy, industry and research. Together they will build a transnational and interdisciplinary ecosystem to foster synergies, innovation and its uptake.
- **DRIVER+**<sup>44</sup> (May 2014 – April 2020) is a project funded under the 7th Framework Programme of the European Commission, whose main aim is to develop a pan-European Test-bed and Portfolio of Solutions to improve the way capability development and innovation management are tackled, by assessing and validating, in realistic environments, solutions that are addressing the current and emerging operational needs of practitioners.
- **EFAS**<sup>45</sup>, the European Floods Awareness System aims to support preparatory measures before major flood events strike, particularly in the large trans-national river basins and throughout Europe in general. EFAS is the first operational European system monitoring and forecasting floods across Europe.
- **ESPRESSO**<sup>46</sup> (May 2016 – October 2018) aimed at contributing to a new strategic vision to approach natural risk reduction and climate change adaptation, thereby opening new frontiers for research and policy making. From this perspective, the project is of support to the EC research and development and to the JRC Knowledge Centre on Disaster Risk Management as it identified opportunities for further research.
- **GEO-GSNL**<sup>47</sup> (since 2010) is structured around six supersites around the world that allow for improved scientific research and geohazard assessment. GSNL aims to enhance international capacity building and contributes to understand disaster risk. Ultimately, GSNL attempts to provide open, full and easy access to data from the supersites and national laboratories. Furthermore, GSNL promotes advancements in geohazards science and the fast uptake of scientific results by DRR stakeholders and decision makers. Finally, GSNL encourages global scientific collaboration, capacity building, and data sharing.
- **IMPRESX**<sup>48</sup> (October 2015 – October 2019), Improving predictions of hydrological extremes, aims to improve the forecast skills of meteorological and hydrological extremes, explore novel avenues in forecasting and managing extremes, demonstrate the value for stakeholders, and with stakeholders and produce a seasonal risk outlook.
- **IN-Prep**<sup>49</sup> (September 2017 – August 2020) will establish and demonstrate a next generation programme by enabling a reference implementation of coordination operations and a training platform to the entirety of civil protection stakeholders (firefighting units, medical emergency services, police forces, civil protection units, control command centres, assessment experts).
- **I-REACT**<sup>50</sup> (June 2016 – June 2019) is a European-wide platform integrating emergency management data coming from multiple sources, including information provided by citizens through social media and crowdsourcing. The I-REACT approach allows for fast information production and allows citizens, civil protection services and policymakers to effectively prevent and/or react upon disasters.

41 [www.anywhere-h2020.eu](http://www.anywhere-h2020.eu)  
42 [www.beaware-project.eu](http://www.beaware-project.eu)  
43 [www.darenetproject.eu](http://www.darenetproject.eu)  
44 [www.driver-project.eu](http://www.driver-project.eu)  
45 [www.efas.eu/en](http://www.efas.eu/en)  
46 [www.espresso-project.eu](http://www.espresso-project.eu)  
47 [www.geo-gsnl.org](http://www.geo-gsnl.org)  
48 [www.imprex.eu](http://www.imprex.eu)  
49 [www.in-prep.eu](http://www.in-prep.eu)  
50 [www.i-react.eu](http://www.i-react.eu)

## Relevant projects and initiatives

- **Pau Costa Foundation**<sup>51</sup> (since 2011) is advocating a profound change in the perception of landscape fire by the society, divulging the knowledge on fire ecology, facilitating fire management at landscape level and bridging the gap between research, practitioners and society. Its objectives are the research in the field of forest fire ecology, the creation of knowledge, tools and techniques for the management of forest fires, and the dissemination of this knowledge to the technical world through training and dissemination instruments.
- **Resccue**<sup>52</sup> (May 2016 – April 2020) aims to deliver a framework enabling city resilience assessment, planning and management by integrating into software tools new knowledge related to the detailed water-centred modelling of strategic urban services performance into a comprehensive resilience platform. These tools will assess urban resilience from a multisector approach, for current and future climate change scenarios and including multiple hazards.
- **The International Society for the Prevention and Mitigation of Natural Hazards** (since 1988) promotes research in all aspects of natural hazards; assist in distribution of national preparedness and emergency-response plans worldwide; assist in drawing up and implementing education programmes on hazard prevention and mitigation.
- **TOXI-Triage**<sup>53</sup> (September 2015- September 2019) addresses the operational, technological, ethical and societal dimensions of CBRN response and recovery, and importantly the economic base from which sustainable CBRN and multiuse systems are derived.

## Possible synergies (and links to policies and practitioners' operations)

For an overview of DRR and resilience-related projects funded prior to 2018, see sections 1 (Disaster Risk and Crisis Management), 2 (Health threats), 3 (Food threats) and 8 (Societal resilience and civil protection) of DG HOME, “**Community of Users on Secure, Safe and Resilient Societies – Mapping Horizon 2020 and**

**EU-funded Capacity-Building Projects under 2014-2017 Programmes**”<sup>54</sup> The projects referenced within this section of the aforementioned document are universally geared towards tackling similar subjects as those discussed in this brief, and thus have the potential of exhibiting synergies with them.

## Challenges and way forward

Based on evidence of high economic losses due to natural and man-made disasters, as well as worsening trends of climate extremes due to climate change, disaster risk reduction and resilience building is gaining higher prioritisation; this element is central to a comprehensive approach to disaster risk management, recognising that the reduction of existing risks and the prevention of new risks is a priority of action alongside the work undertaken in preparedness, response and recovery dimensions of disaster risk management. Throughout the discussions during the 13th CoU event, the need to prioritise DRR was voiced repeatedly. Not only should DRR be more prominently positioned in the policy realm, it also needs to be incorporated more effectively into practitioner training modules and public awareness campaigns in order to enhance their risk awareness.

The shift from managing disasters towards managing risks enhanced the need for accurate and readily available information. Through monitoring and forecasting, disaster events can be

identified in an early stage and damage can (partially) be reduced. In addition, forecasting and evaluating can help practitioners to fine-tune their response strategies. Nevertheless, in order to succeed, data needs to be shared more widely between Member States, between academic facilities and towards the public. In addition, the public needs to be more aware that data sharing from their side is essential for solid risk strategies to be developed.

In general, there is a need for an integrative approach in the DRR and Resilience domain; different types of stakeholders should be included (in particular vulnerable groups), also on the regional and local level. In addition, research and innovation can play a crucial role in moving the DRR domain forward; additional investigations are required to better understand how knowledge is currently used and how this could be improved. Retrieving and sharing data form challenges and the willingness to from the public and other stakeholders to share and exchange data is likely to increase when the levels of trust are enhanced. The JRC's Disaster Risk

51 [www.paucostafoundation.org](http://www.paucostafoundation.org)  
52 [www.resccue.eu/resccue-project](http://www.resccue.eu/resccue-project)  
53 [www.toxi-triage.eu](http://www.toxi-triage.eu)  
54 [www.securityresearch-cou.eu](http://www.securityresearch-cou.eu)

Management Knowledge Centre (DRMKC)<sup>55</sup> attempt to support these data collection and sharing activities by distilling knowledge and making it more digestible. Furthermore, research can help to understand risks better, both in terms of the creation of new risks and cascading effects. This will in turn, help to make more accurate risk-informed decisions and investments.

Key to making such decisions is the application of the local perspective as this would allow the risk strategies to be tailored to local realities and risk perceptions. Furthermore, it is recommended to adopt a multi-hazard perspective.

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## Forthcoming CoU events & other related events

- 14th CoU event,  
16 – 20 September, Brussels, Belgium
- Security Research Event,  
6 – 7 November, Helsinki, Finland

55 [www.drmmc.jrc.ec.europa.eu](http://www.drmmc.jrc.ec.europa.eu)

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