07/05/2020

POLICY RESEARCH DIALOGUE ROUNDTABLE 2

Position paper on the needs and requirements for an improved capability development process

Context

Adopting the Sendai Framework for Disaster Risk Reduction 2015-2030[1] showed a clear shift from managing disasters to managing the underlying risks. It clearly recognised the strong role that the scientific community can play in an improved understanding of risk and communicating about new knowledge and innovations. With the new rescEU policy framework recently entering into force[2], new ways of collaboration, decision-making, information exchange and of allocating responsibilities will need to be established.

The EC has implemented a co-design process to prepare the Strategic Plan for Horizon Europe – the European Union Framework Programme for Research and Innovation 2021 – 2027 (Horizon Europe)[3]. An open web consultation was conducted between 31 July 2019 and 4 October 2019, and several meetings and exchanges at the European Research and Innovation Days (24-26 September 2019) were held. This consultation was primarily aimed at gathering comments and ideas regarding the whole process reflecting a project lifecycle, from proposal submission to reporting and exploitation of results[4]. How to organise and implement a co-design process to define the topics and content of future Research and Innovation programs has not established yet.

For this purpose, building upon the outcomes of the Program Committee meeting (17 October 2019) and the Security Research Event (6-7 November 2019) the DRIVER+ project[5] together with DG HOME, organised a second Policy-Research Dialogue Roundtable (PRDR) in Brussels on 18th December 2019. This PRDR2, which is a follow up of the first PRDR (28 February 2019) explored a roadmap approach supporting the capability development process in relation to the priority 'Disaster-resilient societies' of the envisioned Horizon Europe cluster "Civil Security for Society".

The discussion was guided around three main questions:

- How can the future program for research and innovation improve the current capability development process by ensuring a better uptake of results from previous projects?
- How can these elements be best implemented in the Horizon Europe Work Programme and other funding instruments?

[1] https://www.unisdr.org/we/coordinate/sendai-framework

[2] Decision (EU) 2019/420 of the European Parliament and of the Council of 13 March 2019 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism

[3] https://ec.europa.eu/research/pdf/horizon-europe/ec_rtd_orientations-towards-the-strategic-planning.pdf

[4] https://ec.europa.eu/info/sites/info/files/research_and_innovation/contact/documents/ec_rtd_he-codesign-implementation_112019.pdf

[5] https://www.driver-project.eu/

– How can the synergies between the Community of Users framework and the envisioned UCPM Knowledge Network be best exploited to enhance the European capability development process in Disaster Risk Management?

The event focussed on the needs and requirements for an improved capability development process regarding climate-related risks (wildfires and floods) as well as CBRN-E, that should be addressed in Horizon Europe and other Union programmes.

Adoption of a roadmap approach

There is value in adopting a strategic and foresight approach to engage in exploratory thinking, especially when supported by a structured and graphical template often referred to as visual roadmap. Indeed, such a template not only prompts thinking and stretches the mind in a non-incremental way but also facilitates discussions and reporting back. It also helps adopt a dynamic perspective and assists in exploring and identifying a range of useful information against a clear timeline, including enablers, barriers, objectives, milestones, interdependencies between various activities and coordination-related issues.

In the PRDR2 context, the roadmap's architecture (see Annex 1) was tailored in order to help participants:

- visualise and explore over time a number of key dimensions related to the uptake of research projects' solutions, ways to improve capability development through research programming and to impact the Work Programme of Horizon Europe, and potential roles that the UCPM Knowledge Network should play
- identify and anticipate barriers, enablers as well as potential linkages such as alignment and coordination opportunities between the three topics at stake
- build a shared vision which provides a sense of directions, identifies key actions against a timeline and allows for easy update and circulation
- list and prioritise key actions to address guiding questions

In more details, the template was structured around 8 different items to be explored in a step-by-step way:

Key elements and timeline:

Step 1: Definition of ideal state	Key capabilities that should exist in an "ideal world" (i.e. established connections between existing frameworks)
Step 2: Record of the current state	Capabilities which exist today (in 2019 – 2020)
Step 3: Development of path forward	Detailed actions which would need to be conducted in the short term, medium term and long term to reach the ideal state
Step 4: Reflection on timeline	Reasonable timeframe within which the different actions could be carried out and achieved

Milestone and actions:

Step 5: Identification of key enablers and barriers	Enablers fostering the achievement of the ideal state (e.g. dedicated funding agency; technology allowing for the data collection, management and analysis to support a European repository data;

	research programme; Common Operational Picture with European symbols, …) and factors representing challenges to overcome (e.g. lack of funding; different cultures, mindset and approaches between countries and/or agencies, organisations; insufficient training of people; missing innovative tools; lack of cooperation due to sensitive data; ...)
Step 6: Selection of top key enablers and barriers	Ranking of enablers and barriers to give a sense of priority and urgency
Step 7: Listing of key milestones	Thresholds to reach to make the ideal state for capability development possible (e.g. dedicated research programme; common training standards across Europe; interoperability between different repository data; good command of English from field practitioners to management and policy; etc…)
Step 8: Prioritisation of actions to conduct	Key and "high-level" actions to conduct to support capability development and make achievable the capabilities expected in an ideal state (e.g. research synergies between national and European programmes; standards development; launching of a European data repository; …).

During the PRDR2, these steps were applied for two climate-related risks (wildfires and floods) and CBRN-E. This resulted in an overview of which topics and research questions have already been addressed sufficiently, what are the open research questions, what are the emerging topics, which topics may be included in the Horizon Europe programming and an outline of a roadmap for addressing these topics. An overview of the results is presented in Annex 2.

Recommendations

From the debate which took place among the PRDR2 participants, structured by the three guiding questions, six key recommendations were identified and framed by the DRIVER+ project (see Figure 1).

Figure 1: "At a glance" recommendations of PRDR2

1. *Implement a forward-looking capability planning mechanism in practitioner organisations*

Many practitioner organisations do what they have to do: prepare for and respond to urgent and actual crisis situations. Planning is usually covering a period up to 5 years ahead. The initiation of research and innovation activities is often triggered by specific events. This limited timeframe and reactive approach leads to a situation in which fast-changing security situations are not adequately dealt with. The risk is that research and innovation programmes are focusing on solving yesterday's crises. A pre-condition to a capability deployment programme would be the establishment of a forward-looking capability planning process in Disaster Risk Management and Security. Such a process would identify medium to long-term needs and gaps and would contribute to the definition of EU R&I agendas matching the end-user requirements.

To achieve this goal, besides the practitioners, experts from various technological and social sciences, both from the crisis management and other domains, need to closely collaborate with each other. These experts conduct technology watches, inventory socio-cultural, climate and demographic developments, and determine the potential impacts on the practitioners. Based on these potential future scenarios, capabilities can be described and associated topics for future research programs identified.

This needs to be implemented at MS level. And ideally, these expert groups collaborate across the EU and Associated Countries, in order to avoid unnecessary duplication of efforts, to learn from each other and to allow an exploitation of synergies between the efforts already undertaken at MS level and the ones expected to be complementary on the EU level.

Several tools are useful in this respect. The Portfolio of Solutions (PoS)[6] is a repository that provides an overview of innovative solutions for crisis management. The PoS is online, open-source and interactive, and matches available solutions (supply) with practitioner needs (demand). For each solution, practitioners can share their user experiences and solution providers can give background information and offer support. The PoS therefore helps practitioners to decide whether a solution may be useful for them and provides support for the implementation and deployment.

[6] https://pos.driver-project.eu/en/PoS/solutions

The Lessons Learned Library (L3)[7] is an online repository in the domain of DRM for collecting and sharing lessons from preventive or response activities at events such as severe incidents, crisis situations, tests or exercises. It offers the opportunity to inventory whether a specific issue requires new research and/or developments, or that available lessons learned can be adopted.
The Gaps Explorer[8] is an online overview of targeted recommendations, tailored to different stakeholder profiles (policy-makers, practitioners and scientists). Although in many domains knowledge is abundant, gaps do still exist. Based on results of EU-funded research and innovation projects[9] and the conclusions of multi-stakeholder workshops and consultations, key recommendations are formulated with a view to adapt policies and to propose R&I topics. An initial integration between the Portfolio of Solutions and the Project Explorer has been established to create a complementary overview of projects and results.

2. Adopt a common trial and validation framework

Following the steps in the capability development cycle, from an analysis of gaps and needs, via an assessment of what is available, to research and innovation, and eventually to acquisition, strongly supports the successful implementation of innovative technologies into the field of operations at MS level. Validation of whether these needs have been properly addressed should be the responsibility of the MS. In order to support this validation already during the research and innovation projects, it is beneficial to introduce a Pan-European trial and validation framework into the European research programme. It was acknowledged by the workshop participants that a standardised methodology for trialling and validation should be adopted, or at least that there should be a requirement to clearly explain the trial and validation methods to be used. This is not always the case, leading to the potential risk of having an imprecise or inaccurate understanding of the outcomes of a trial, of the reliability and validity of its results and its potential benefits for practitioner organisations. The DRIVER+ test-bed offers the required functionalities and comprises two main components. The Trial Guidance Methodology (TGM)[10] provides practitioner-centred step-by-step guidelines, a list of roles and responsibilities, tools and methods to perform a trial through a clear, structured and co-creative approach. The Test-bed Technical Infrastructure (TTI)[11] provides a toolkit to connect innovative crisis management solutions to each other and to legacy systems, and to create a realistic environment in which solutions can be trialled in a structured and systematic way.

It must be understood, however, that the future is volatile, thus research and innovation projects cannot and should not in all cases directly be linked to clearly defined capabilities. Low 'Technology Readiness Level' (TRL) research actions in the work programmes should be included and be as open as possible to allow the inclusion of potential disruptive technologies. A close link between the Future and Emerging Technologies (FET) program[12] and the domain of DRM needs to be established. Because there is much uncertainty about the future usability of these technologies, the initial duration of such projects should be limited with options for continuation if the results are promising and the future need is still acknowledged. This requires a more flexible and agile research and innovation programming.

3/ Establish a pan-European network of Centres of Expertise

[7] https://l3crisis.eu/
[8] https://drmkc.jrc.ec.europa.eu/knowledge/Gaps-Explorer
[9] https://drmkc.jrc.ec.europa.eu/knowledge/PROJECT-EXPLORER
[10] https://tgm.ercis.org/
[11] https://github.com/DRIVER-EU/test-bed
[12] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/future-and-emerging-technologies

The enhanced involvement of practitioners, not only within the projects, but already in preparing the work programme, thus steering the expected research outcomes, has already started to pay off and is an essential part in Security Research. The Practitioners Network projects are a good initiative. However, the follow-up after the closure of a project and the involvement of a wider network of practitioners in the uptake of the results needs further attention. The workshop participants identified the need to continue leveraging the knowledge-base of practitioner organisations. Many of these organisations still lack knowledge and experience on research and innovation, and on Public Private collaboration. This is a barrier to receiving, understanding, appreciating, adopting and implementing the outcomes conveyed by research projects. This requires a change of culture ("fire-fighters are not trained to innovate") and at the same time supporting them in managing innovation.

In order to work together within the innovation ecosystem, and applying a common trial and validation framework, exchange of information, results and experiences between all stakeholders, projects and knowledge networks should be facilitated. With this purpose in mind, DRIVER+ has established a pan-European network of Centres of Expertise. A Centre of Expertise (CoE) is a practitioner-centred organisation that plays a role in the capability development and/or innovation management of practitioner organisations and has close relations with (applied) research organisations, solution providers and policymakers. The CoEs apply the various DRIVER+ outcomes supporting their stakeholders. As the implementations and experiences will vary from organisation to organisation as well as between Member States, they will gather and share lessons learned, and, if necessary, adapt the respective DRIVER+ outcomes to organisational and/or national contexts. Sharing these experiences and lessons learned within the pan-European network of CoEs, is crucial. Only then a shared understanding in DRM and crisis management, and a shared approach in practitioners' capability development can be achieved and further improved.

4/ Align MS and EU capability development strategies

In many Member States, national institutions are often fragmented and spread across different line ministries leading to poor communication and lack of cooperation: national harmonisation is required. In addition, policy-makers should take ownership of the results. If they call for specific topics/research, they should feel responsible for implementing the results, or at least facilitating their implementation.

DRIVER+ believes that the establishment of the pan-European network of CoEs contributes to a partnership-based DRM innovation ecosystem supporting the alignment of capability development strategies of practitioner organisations, Member States' authorities, European institutions, the research community and the private sector (industry, incubators). This innovation eco-system should be practitioner-driven to ensure practical outputs, systematic tests and trials, and a service-oriented approach. Achieving this would require the adoption of a co-creation process and the constant involvement of practitioners. This multiple-stakeholder engagement is crucial, as the perspectives of practitioners, researchers, policy-makers, industry and citizens on what a "good" result is can be very different.

In addition, it is important to note that R&I projects are no stand-alone projects, but rather a shackle in a chain. In order to have an as strong chain as possible, leading to a successful implementation of new solutions, key actors of the next step in the innovation process should already be actively engaged. Research is only part of the journey, only piece of the bigger security puzzle. One potential way of articulating the connections among the pieces, is to lift the coordination of useful project interactions to DG level, e.g. by a dedicated CSA or platform to facilitate synergies and to avoid duplication in efforts. As reflected in the Security Union, the high interdisciplinary of research topics in Secure Societies also asks for recognition of several other activities, e.g. under DG HOME, DG ECHO, DG SANCO, DG DEFIS and JRC which is difficult to achieve from the viewpoint of a single project.

The rationale for a partnership-based approach lies in the need to implement an efficient capability process that would allow the common missions, needs and operational requirements to be defined and, at the same time, identify possible solutions matching these requirements in a mid to long-term time frame. In the process, the demand side (responsible for the assessment of needs), the research community (better placed to identify technology and capability gaps) and the private sector (well positioned to develop solutions and provide services) complement each other. Such a "requirement pull" approach would make security research investments at MS and EU level more efficient by linking R&I activities to capability deployment, completing the mission-oriented approach proposed in the Horizon Europe Regulation.

5/ Advance the dialogue between all stakeholders

Preconditional to establishing structured partnerships and aligning capability development strategies, is the facilitation of a well-structured dialogue between all stakeholders. For this purpose, DG HOME has established the Community of Users for Secure, Safe and Resilient Societies.[13] The CoU acts as a platform of various users of the Secure Societies research program and as an interface between policy, end-users and R&I projects, with the practitioner organisations. It has the ambition to develop synergies among research and capacity-building projects and to contribute to Strategic Civil Security Research Agendas in support of the Horizon Europe programming.

As part of the rescEU policy framework, the Union Civil Protection Knowledge Network is developed. This Knowledge Network[14] brings together civil protection and disaster management experts and organisations, increases knowledge and its dissemination within the UCPM, and supports the Union's ability and capacity to deal with disasters. Currently under development, the Knowledge Network will support experts, practitioners, policy-makers, researchers, trainers and volunteers at every stage of the disaster management cycle through networking, partnerships, collaborative opportunities, and access to expertise and good practices.

DRIVER+ has developed the Crisis Management Innovation Network Europe (CMINE)[15], which is an online community platform that fosters innovation and enhances a shared understanding in the fields of crisis management and DRM. CMINE is creating an umbrella network of stakeholders by linking existing projects, networks, organisations and initiatives. By doing so, CMINE reduces fragmentation, generates ideas and helps to identify innovative solutions to improve European resilience.

It is recommended to use CMINE to advance the dialogue between all stakeholders involved in both the CoU and the Knowledge Network. Within the CoU, CMINE can support the collaboration and information sharing within and between the Thematic Working Groups as well as within and between the Practitioners Network projects. Identified gaps and solutions, as well as potential topics for future research programs can be discussed and reflected upon. It facilitates the organisation of joint events and workshops by projects and organisations. Furthermore, CMINE can play an important role as information platform in-between CoU meetings. It can be used to disseminate project results, announce project events, and to share information by the EC (DG HOME, REA, related DGs). In a similar way, CMINE can be a valuable building block to start the operationalisation of the Knowledge Network. It facilitates direct interaction with the policy makers. New ideas are reflected upon or pitched by experts. CMINE is used for direct communication with the Union Civil Protection Mechanism experts and modules on content, like improvement of procedures, standardisation and sharing experiences of missions. The Emergency Response Coordination Centre (ERCC) could use

[13] https://www.securityresearch-cou.eu/
[14] https://ec.europa.eu/echo/what/civil-protection/knowledge-network_en
[15] https://www.cmine.eu/

CMINE as a channel for their public reports and to get feedback. Finally, it is recommended to create a synergy between CMINE and the EU Research Results Platform[16] enabling follow up discussions about the public Security Research projects' key exploitable results.

6/ Tackle the fragmented (institutional) market

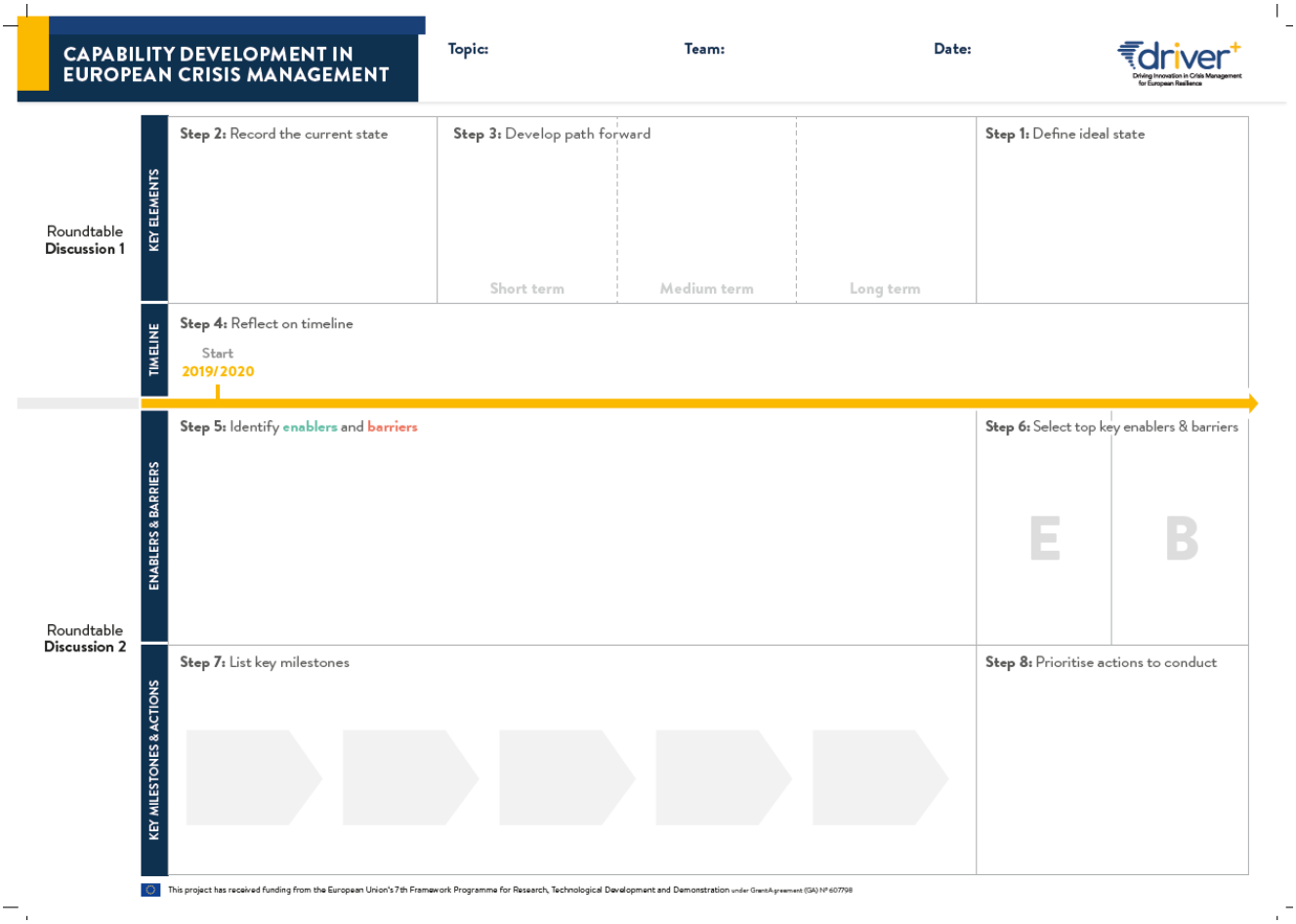
A more efficient approach to the research programming, and the consecutive procurement of solutions should be based on a medium to long-term approach following a systematic process of the definition of needs, identification of capability gaps and definition of common operational requirements that would allow the successful implementation of the solutions, enhancing interoperability and minimising, at the same time, the risk of security breaches.

A clear vision of the market needs, the barriers as well as enables to market uptake, and the go-to-market strategy already at the early stage of ideation, are considered as key to success. Since the security domain is defined by its complex nature, including multidisciplinary players on all levels from operational to political, successfully developing solutions in real-life use cases requires a well-coordinated multi-stakeholder approach.

Going from idea to market asks for a coherent development trajectory, reflecting all stages of technology readiness and maturity to be achieved to come up with a final innovative solution. This cannot be covered by one single R&I project: this trajectory comprises multiple, often sequential projects, partly involving different partners. It calls for a better alignment of H2020/Horizon Europe programs with other financial instruments and funding mechanisms (e.g. capacity building projects, InterReg, national innovation programs) to develop projects from early stage concept up to advanced prototype solutions leading to a successful implementation and market uptake.

[16] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform

Annex 1: Visual overview of the roadmap template



Annex 2: Results

2.1: Participants

The group of participants of the PRDR-2 was, in addition to several DRIVER+ partners, composed of policy makers (DG ECHO/DG HOME) and representatives of major crisis management organisations, research representatives of related projects, and industry.

Policy makers	Practitioners, crisis management organisations	Research representatives	Industry	DRIVER+ partners
DG ECHO	Lithuanian Cybercrime Center of Excellence for Training, Research & Education (L3CE)	Eurecat	SES System Engineering Solutions	TNO
DG HOME	German Federal Agency for Technical Relief (THW)	SINTEF / Norwegian University of Science and Technology	CIDSS	DLR
REA	The International Emergency Management Society (TIEMS)	Center for Security Studies (KEMEA)	Tecnoalimenti	Danish Red Cross /IFRC Reference Centre for Psychosocial Support
COST	Resilience Advisors	University of Louvain	Riskaware Ltd	ARTTIC
Worldbank	SAFE Cluster	Instituto Superior Agronomia, - University of Lisbon	CASTRA	JRC
Rijkswaterstaat	Red Cross EU Office	Fraunhofer INT		SRC PAS
Austrian Research Promotion Agency (FFG)		LUPT/ University of Naples		EOS
Stad Geel		University of National and World Economy, Sofia		DIN
				HKV Consultants

From the discussions which took place among the PRDR2 participants in the three topic-based sessions, emerged a number of considerations and recommendations.

2.2: Roundtable session on Wildfires

Step 1: Ideal state

The ideal state for the capabilities needed for fire management was defined around five different dimensions:

1. To implement capability planning for future development in a longer-term view

2. To model and simulate wildfire spread and wildfire risk
3. Based on EUCPM to develop yearly trainings specific for wildfires, to have a mechanism to exchange good practices, knowledge and equipment innovations and to adopt common standards regarding equipment, readiness, capability and action.
4. To implement good practices for landscape management, for example: to have structural budget available for ecosystem services to be used by private and public owners.
5. To implement a common directive for integrated fire management.

Step 2: Current state

1. Focus on day to day activities and less focus on planning future capabilities.
2. Existence of fuel maps on different regions situated in different entities but no fuel map of the entire continent. No common repository either and need to access other data for modelling and simulation of wildfire spread and risk is through various public and private entities
3. No regular and compulsory trainings specific for wildfires. Good practices like EUCPM include various types of crisis.
4. Poor landscape management regarding risk of wildfire
5. No common directive for integrated fire management

Steps 3 & 4: Path forward & timeline

1. 2 years for implementation, long term for support: annually at national level, to request and review a capability development plan of the agencies, related to wildfire integrated management.
2. 3 to 5 years: To fund the development of a fuel map of Europe as well as data repository and models for wildfire risk and wildfire spread development.
3. 2 years: To develop specific training programs for practitioners and to derive lessons learned, then 5 years to develop standards regarding equipment, readiness, capability and action.
4. 2 to 5 years: To explore and develop good practices for landscape management.
5. 5 to 10 years: To implement the good practices for landscape management.
6. 3 to 5 years: To develop and implement a common directive for integrated fire management

Steps 5 & 6: Top enablers (E) & barriers (B)

Key enablers in capability development for fire management were identified as the past experience and the learning from the steps already taken. Key barriers were considered as resulting from the lack of common acceptance; budgetary restrictions and the ownership of property and information resources.

In more details, for each dimension, participants listed the factors they were considering as enabling or hindering ones as follow:

1. At national level – every year, to request and review a capability development plan of the agencies, related to wildfire integrated management.

   E: There is an obligation to prepare a risk assessment. ISDR platforms. EFIS, JRC, Copernicus. Use the existing living labs related to wildfires

B: Short term view, Risk perception. Priorities of practitioner organizations. Lack of close cooperation and coordination between the involved entities.

2. To fund the development of a fuel map of Europe as well as data repository and models for wildfire risk and wildfire spread development.
   E: We have weather and topography EFIS and JRC already have data. Copernicus.
   B: Data perceived as sensitive. Validation and perception about the utility of the models.
3. To develop specific training programs for practitioners and to derive lessons learned, thus developing standards regarding equipment, readiness, capability and action.
   E: We already have good practices - EUCPM.
   B: Language skills, long term funding for interoperability. Time consuming activities to allocate resources and equipment for training. Lack of knowledge for latest technological development.
4. To research and develop good practices for landscape management.
   E: Already have such practices and several projects working on that.
   B: Information sharing.
5. To implement the good practices for landscape management.
   E: Already have such practices and several projects working on that. Technology of other agencies could be used.
   B: Ownership of the land and related private and public interests. Public acceptance of the funding.
6. To develop and implement a common directive for integrated fire management
   E: We already have research and talks on the topic. Extreme wildfires that EU has encountered.
   B: A broad acceptance is required**,** and it will pose a lot of questions.

Step 7: Milestones

The milestones, understood as indicators showing that good progress is made towards the achievement of the ideal state for capabilities, identified by the participants included:

1. The identification of best practices available in long term capability planning
2. Consensus around capability gaps
3. Activities for identification of good practices
4. Established funding
5. Common training requirements & development of training programs
6. Lesson learning from the trainings
7. Development and implementation of standards
8. Identification of best practices
9. Prepared requirements for landscape management
10. Development and implementation of plans for landscape management
11. Preparation and implementation of a common directive for integrated fire management accepted by all stakeholders

Step 8: Priority actions

1. At national level – every year, to request and review a capability development plan of the agencies, related to wildfire integrated management.

2. To develop specific training programs for practitioners and to derive lessons learned, thus developing standards regarding equipment, readiness, capability and action.
3. To implement the good practices for landscape management.
4. To fund the development of a fuel map of Europe as well as data repository and models for wildfire risk and wildfire spread development.
5. Citizens preparedness and involvement programmes

2.3: Roundtable session on Floods

Step 1: Definition of ideal state

When reflecting on the ideal state, the audience stretched their mind beyond the mere development of capabilities for dealing with flooding to focus on those capabilities needed to raise risk awareness and risk acceptance up to a level at which all stakeholders would be able to "thrive through floods". This awareness would not only be about what can happen but more importantly about what to do to handle the situation and how to recover from it.

In this ideal state, there would also be better synergies between all initiatives, at national and EU level, in order to share good practices, data, methodology and experiences, and also clearly recognized roles and responsibilities with established communication channels between the EU, the government and the local level. Information of population through data management would be key in such an ideal state, with well-informed population and up-to-date, real-time flood risks information. At the EU level, this would be supported by comparable flood risk mapping, land use planning and life-saving strategies.

Step 2: Current state

The current state is highly contrasted with locally varied situations and varied level of access to flood risk data and community resilience.

Among these different groups of people who show different level of experience and knowledge, some can respond well to flood situation (by, for instance, being connected to an app providing updates, warnings and guidance) but others require special assistance, mainly due to lack of actual information and personal perspectives.

Steps 3 & 4: Path forward & timeline for completion

Exploring the different actions to conduct in order to achieve the ideal state by 2040, the participants observed three distinct periods:

- Within 1 year: creation of flood risk awareness through education at school and in the private sector through incentives and data campaigns (where can you find information that is relevant for you); appropriate transcription of information which is already available; more funding for impact research and the development of easy to follow strategies (self-supportive life-saving activities)
- 2 to 7 years: open sourcing of the information and standards; making information available via tools with tailoring and overlay of information from different sources to be of optimal

value for its users; organisation of hands-on experiences and awareness raising events to prepare for floods and enable a proactive response to flooding; making people aware about possible locations to go to and to live at through spatial planning

- Up to 15 years: design and organisation of repetitive events (for example declare a yearly 'Day of the flood risk') and exercises to clarify people's roles and tasks and ensure that each stakeholder understands and agrees to its responsibilities; "education" / learn from your lessons of policy makers; action plan to guide people out of dangerous zones; raising awareness about probabilities and impacts; prevent permanent activities in high risk flood prone areas

Steps 5 & 6: Top enablers & barriers

	Enablers	Barriers
Key	• Lot of information already available, "just" difficult for stakeholders to find or manage it • Centralised information hub to pool expertise and collect virtual and physical information • Campaigns and demonstrations about climate changes, environmental risks, flood impact, evacuation strategies • Possibility to build on networks (for instance through a dedicated Community of Users)	• Misdirection of some EU funding mechanisms with EU research money overspent on technical solutions and innovation
Secondary	• Efficient tools/ approaches to assess risk perception • Targeted communication for children • 35% Horizon Europe for climate change • Use of multi-hazard locally specific and early warning system	• Limited space and informal settlements (e.g. people living in dangerous areas for lack of affordable housing) • Issues to tackle all connected and urgent and potential difficulties to set priorities • Networks in competition for money • Varied interest from the general public

Step 7: Key milestones

The possibility to transform data from a wide range of sources into manageable knowledge and the development of mechanisms to access the general public in a targeted way were considered as key in the capability development for flood crisis management.

Step 8: Priority list of actions

For participants, five "high-level" actions were identified and ranked as priority actions to foster capability development in response to flooding and make achievable the capabilities expected in the ideal state as initially identified.

One set of actions concerned research, from the creation of funding for impact research (action 1) and the increase of research funding for the accessibility of data (action 2) to the involvement of SMEs and public authorities in the EU research programming to ensure that research informs decision-makers (action 3). Increasing the community resilience to flooding was considered as another key action which could be conducted through education and training (action 4). The adoption of a user-driven approach was also deemed as a key action, resulting in a guiding principle when assembling flood intelligence and developing response and recovery capabilities (action 5).

2.4: Roundtable session on CBRN-E

Statement from the group: Gaps and needs from high level to low level being already dealt with by many networks programme research and no need to reinvent the wheel, adoption of a high view on the issues at stake.

Step 1: Ideal state

The ideal state for the capabilities needed to address CBRNE-related crisis was defined around 9 key principles:

1. Integration of CBRNE as a piece of a wider space of crisis management
2. Civil – military cooperation
3. Taking advantage of close sectors where solutions can be relevant to CBRNE (environment, health …)
4. Complete set of tools for detection, identification, situation awareness developed by projects
5. Common repository of gaps and needs
6. Common economic vision and procurement strategy
7. Perfect coordination between all actors including Member States through an EU CBRNE Agency
8. Interdisciplinary exchange of professionals
9. Impact study of EU projects' results on the market
10. Innovation-minded end-user community
11. Integration of research, innovation and best practice in training centres

Step2:

1, 3, 6 & 7: EU projects with no impact
2: insufficient civil-military interaction
5: each project defines its own goals and needs
7: EDA but nothing inside EU
8: Social aspects (soft science) are insufficiently taken into account
4, 5, 6: fragmented action
6: Insufficient EU procurement

Steps 3 & 4: Path forward & timeline

The path forward includes 3 series of actions:

- In the short-term: feasibility study with the setting of a taskforce that will conduct the studies and foster coordination; new template for exploitation of results for all projects; definition of the end-user landscape emphasising their needs, expectations and everyday practice; new CoU setting priorities and supporting coordination; EU access to NATO initiative for aligning civil-military terminology
- In the medium-term: creation of an executive board to foster joined efforts for setting repository, priorities for world programs; reflection to conduct on reasons why a project was successful and if it includes some social aspects and not technology only; focus to put on knowledge, not only tools, with knowledge as important as technology transfer; creation of an ERASMUS-type fund for security (for instance, to promote exchange of experts); joined training, I.e. civil-military, cross-border and multidisciplinary with materials and curriculum from EU projects
- In the long-term: development of a sustainability network of professionals building on existing initiatives

Steps 5 & 6: Top enablers (E) & barriers (B)

Key enablers in capability development for CBRNE-related crisis management were identified as all emerging technologies (AI, communications), networks and Community of Users, standards for innovation. Key barriers pointed out included the reluctance from industries to have a single market and from member states to have a single CBRNE Agency in the EU. Interestingly, standards which were considered as enablers were also deemed as potential barriers. The lack of dynamic link between the CBRNE Action Plan and second call for projects was also identified as a barrier.

The other enablers encompassed the adoption of an innovation culture, the uptake of results of existing projects, the use of a common language, the tracking of impact, EU defence funds, Horizon Europe and all technological progress. The lack of feedback from the EU regarding the impact of projects and the disconnection between the CBRNE Action Plan and R&D even if both in the hands of DG HOME were other barriers acknowledged by the participants.

Step 7: Key milestones

Participants didn't have much time to look into this dimension. They agreed that milestones in the CBRNE domain had to echo the ones concerning the CoU.

Step 8: Priority list of actions

Five actions were deemed as to be taken in priority:

1. The creation at a supra-national level of an Executive Board embedded in the CoU's new CBRNE theme to support impact studies, coordination between members states and joined repository of gaps and challenges
2. The fostering of an innovation-oriented spirit in practitioner organisations

3. The establishment of links between supra-national associations, the CoU and networks of practitioners
4. Joined training (civil-military, cross-border, multidisciplinary) using materials and curriculum
5. Demonstration and validation of new technologies

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