

RiskPACC

INTEGRATING RISK PERCEPTION AND ACTION TO ENHANCE CIVIL
PROTECTION-CITIZEN INTERACTION

WHITE PAPER AND ROADMAP

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ABOUT RISKPACC

Increasingly complex and interconnected risks globally highlight the need to enhance individual and collective disaster resilience. While there are initiatives to encourage citizen participation in creating a resilient society, these are typically fragmented, do not reach the most vulnerable members of the communities, and can result in unclear responsibilities for building disaster resilience.

New technologies can also support preparedness and response to disasters, however, there is limited understanding on how to implement them effectively. Both awareness of risks and levels of preparedness across Europe remain low. The risk perception of citizens does not necessarily align with their actions and may also diverge from the risk perception of Civil Protection Authorities (CPAs).

The RiskPACC project seeks to further understand and close this Risk Perception Action Gap (RPAG). Through its dedicated co-creation approach, RiskPACC will facilitate interaction between citizens and CPAs to jointly identify their needs and develop potential procedural and technical solutions to build enhanced disaster resilience. RiskPACC will provide an understanding of disaster resilience from the perspective of citizens and CPAs and identify resilience building initiatives and good practices led by both citizens (bottom-up) and CPAs (top-down). Based on this understanding, RiskPACC will facilitate collaboration between citizens, CPAs, Civil Society Organisations, researchers and developers through its six (6) case studies to jointly design and prototype novel solutions.

The “RiskPack” toolbox/package of solutions will include a framework and methodology to understand and close the RPAG. It will be a repository of international good practice and toolled solutions based on new forms of digital and community-centred data and associated training guidance. The RiskPACC consortium is composed of CPAs, NGOs, associated organisations, researchers and technical experts. It will facilitate knowledge sharing and peer-learning to close the RPAG and build disaster resilience.

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Executive Summary

This deliverable presents the White Paper that will be published by the time of submission of this deliverable, i.e. end of July 2024. Bringing together the insights generated during the RiskPACC project, we derived policy and governance recommendations addressing the EU as well as the national level and suggest a future roadmap for closing the Risk Perception-Action Gap on a broader scale. The overall RiskPACC Framework and the co-creation approach is explained, followed by specific recommendations. We further explain how specific RiskPACC solutions, strategic, technical and conceptual ones, could possibly support the implementation of these recommendations. Finally, the roadmap summarises the recommendations and insights, situated in the higher-level policy framework such as the Sendai Framework for Disaster Risk Reduction.



Fostering collaboration to close the Risk Perception-Action Gap

RiskPACC White Paper and Roadmap

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1 INTRODUCTION

Recent disasters underlined the need to develop collective and individual resilience to increasingly complex systemic risks. To achieve this, strengthening citizens' risk awareness and preparedness, as well as communication between citizens and civil protection authorities (CPAs), is indispensable. It has been observed that there is often a mismatch between risk perception and subsequent actions, on self-preparedness in particular. Further, risk perception differs, especially among citizens and CPAs. In addition, expectations towards each other are often not aligned, i.e. citizens may expect support from CPAs to an extent that these cannot fulfil, and CPAs may expect from citizens a degree of self-preparedness that does not reflect reality. These mismatches are what we call, in sum, the "Risk Perception-Action Gap" (RPAG).

The EU H2020 project RiskPACC¹ has focussed on narrowing down this RPAG, through an enhanced understanding of the RPAG and citizen engagement, and by developing – in a co-creative manner – technical solutions, non-technical solutions, and a staged approach to engaging citizens and strengthening two-way risk communication. This document elaborates on the approach and possible solutions, and provides recommendations and a roadmap for actions on EU and national level, which are required for implementing approaches at a local level, to increase societal resilience.

RiskPACC key messages

- ❖ RiskPACC fosters an understanding of the "**Risk Perception-Action Gap**", i.e. misalignments among citizens and civil protection authorities in risk perceptions, related actions, as well as mutual expectations.
- ❖ Applying a **co-creation methodology**, RiskPACC partners, civil protection authorities and citizens have jointly identified needs, and jointly developed solutions to address the Risk Perception-Action Gap.
- ❖ A combination of strategic, technical, and procedural solutions facilitates **engagement and two-way communication between citizens and civil protection authorities**.
- ❖ The **RiskPACC collaborative framework** guides citizens and civil protection authorities in closer collaboration, structured along (a) Understanding the context (of risk and of the community), (b) Sharing (of knowledge, risk perceptions, and expectations), (c) Relating (developing relationships of trust), and (d) Building (of collaborative solutions to enhance communication).
- ❖ RiskPACC's **two-way communication tools** take advantage of crowd-sourcing and volunteered geographical information (VGI) technologies, while acknowledging and addressing related challenges (e.g. digital divide).

¹ RiskPACC – *Integrating Risk Perception and Action to Enhance Civil Protection-Citizen Interaction* (09/2021-08/2024)

2 FACILITATING TWO-WAY COMMUNICATION AND CO-CREATION

2.1 The RiskPACC Framework

RiskPACC has developed a framework for closing the Risk Perception-Action Gap (RPAG). It provides guidance on how professionals and citizens can relate to each other, in order to develop the shared understanding needed to build effective risk communication tools and strategies. The four modules of the RiskPACC framework are *understanding, sharing, relating, and building*.



Understanding: The characteristics of a local area (for example, its hazards and its population diversity) shape how its residents perceive risks and the actions they take to prepare and respond. Understanding the local context is therefore essential for developing risk communications that are tailored to real experiences. Furthermore, understanding if/how local stakeholders collaborate around Disaster Risk Reduction (DRR) is key to developing effective co-creation for risk communications. To develop this understanding, both residents and civil protection authorities can start with available resources like official websites, policy papers or community data. Yet a more impactful approach is to foster a shared understanding of the local context through two-way discussions between residents and authorities.

Sharing: The public and civil protection authorities often see risks differently and expect different actions from each other. Impactful risk communication recognises and addresses these differences. It involves authorities and residents regularly discussing their views on risks and what they expect from each other. Through these ongoing shared conversations, they can come to understand each other better and bridge the RPAG.

Relating: Effective risk communication relies on regular conversations between residents and civil protection authorities about the local context, how they view risks

differently, and what actions they expect from one another. To support this ongoing dialogue, it's crucial to build strong, positive relationships focused on reducing risks among everyone involved, characterized by trust, mutual understanding, and collaboration. A good first step for authorities and residents is to evaluate the current state of these relationships. If needed, they can then 'reset' them, ensuring that there are positive connections among all parties.

Building. Risk communication works best when civil protection authorities and residents create strategies and tools together. Co-designing risk communications is more successful when there's a strong, ongoing relationship focused on reducing risks, rather than just coming together for a single event. When authorities and residents have a positive, ongoing relationship, they can regularly share their thoughts on the local area, how they see risks differently, and what actions they hope to see from each other. This ongoing dialogue makes the joint creation of these tools more relevant and effective.

2.2 Co-creating with citizens and civil protection authorities

Co-creation aspires to increase the levels of co-operation and collaboration between all relevant stakeholders, here especially between CPAs and citizens. Collaboration and the joint development of ideas, strategies and tools promotes the connection and motivation of all those involved. The incorporation of different points of view and perspectives and the joint development of solutions facilitates substantial dialogue between the different interest groups and thus enhances the applicability and usability of the results. The co-creation approach was chosen for RiskPACC's case studies' workshop series because it is an embodiment of democratic, public participation, or citizen participation.

RiskPACC's co-creation methodology applied in the case studies' workshop series includes four main phases: Introduction phase, conceptual phase, collaboration phase and continuation phase. In the first phase of a workshop, the 'Introduction Phase', the pre-defined workshop structure is explained to the participants, the facilitator and all other participants introduce themselves and the aim of the workshop is discussed and defined. In the 'Conceptual Phase', the methodologies to be used later in the collaboration phase are explained to the participants. Methodologies (e.g. participatory mapping, storyboard user stories, co-design of risk communication processes) are selected that best suit the needs and objectives. During the 'Collaboration Phase', via the selected methodologies, the participants test and evaluate suggested approaches in small sub-groups and develop ideas for innovative solutions, which they then present to the other sub-groups. The final phase is the 'Continuation Phase', which is used to facilitate follow-up communication among workshop facilitators and participants (Anniés, 2022).

A careful selection of stakeholders according to the objective to be addressed is the basis for target-oriented results. This includes the identification and involvement of

minorities and vulnerable groups, and all of them need to have an equal voice during the co-creation process.

The co-creation approach aimed to create a higher level of understanding of how the different parties perceive and deal with risks with the aim to reach better cooperation, collaboration and two-way communication between CPAs, civil society organisations and citizens. Co-creation was used in all project phases of RiskPACC and CPAs, civil society organisations and citizens were actively involved in each phase, from analysis and design to implementation and testing.

Participating CPAs and citizens in RiskPACC co-creation workshops indeed acknowledged several valuable insights from engaging with each other. For example, it became evident that often CPAs and citizens perceive the same hazards in their area but think about them in a different way, which highlights the importance of exchanging views for an enhanced mutual understanding. In many cases, discussions also confirmed that CPAs seem to focus on making citizens more self-reliant, while citizens, on the other side often displayed high expectations of CPAs, again highlighting the value of co-creation workshops, and an improved communication between CPAs and citizens.

3 FOSTERING COLLABORATION TO CLOSE THE RISK PERCEPTION-ACTION GAP

3.1 A collaborative governance approach to risk communications

The four modules of the RiskPACC framework - understanding, sharing, relating, and building (see Figure 1) - necessitate collaborative governance for their effective implementation. Collaborative governance is defined as a form of governance where multiple stakeholders convene with public agencies in common forums to engage in consensus-based action (Ansell and Gash, 2007). It refers to the processes and structures that enable multiple government agencies, non-governmental organisations, the private sector, and citizens to share knowledge and resources, thereby facilitating effective collaboration. This approach emphasises developing constructive relationships and regular dialogue, promoting inclusive participatory processes, redressing power imbalances, facilitative leadership, transparency, and clear ground rules. The approach aims to overcome the isolated and fragmented ways of working that make it hard to deliver public services effectively, especially for complex problems such as disasters (Kalesnikaite, 2019). It also aims to overcome the disconnect between CPAs and citizens that result in mutual misunderstandings and actions that do not actually meet local needs (Bang & Kim, 2016).

UNDERSTANDING	SHARING
<p>It facilitates the inclusion of:</p> <ul style="list-style-type: none"> • diverse perspectives • a broader range of expertise • local knowledge <p>This leads to</p> <ul style="list-style-type: none"> • new insights • new approaches • holistic, adaptive DRR • tailored solutions 	<p>It improves:</p> <ul style="list-style-type: none"> • communication channels • data and information sharing • dialogue between DRR stakeholders • pooling of expertise and resources <p>This leads to</p> <ul style="list-style-type: none"> • joint risk assessments • mutual understanding • shared goals and consensus
RELATING	BUILDING
<p>It facilitates:</p> <ul style="list-style-type: none"> • broad and diverse DRR engagement • more collaborative and inclusive action • continuous stakeholder interaction <p>This leads to:</p> <ul style="list-style-type: none"> • constructive long-term relationships • perceived legitimacy and trust • enduring structures for collaboration • increased participation 	<p>Overall, it enables:</p> <ul style="list-style-type: none"> • better coordination and integration <p>This leads to:</p> <ul style="list-style-type: none"> • better strategies • more outputs • better outcomes • better alignment with local needs • greater flexibility and adaptability • more support from the community

FIGURE 1: HOW COLLABORATIVE GOVERNANCE HELPS IMPLEMENT THE FOUR MODULES OF THE RISKPACC FRAMEWORK

Collaborative governance works best when collaborative relationships, protocols, and communication channels are established and strengthened during calm times (Kapucu & Garayev, 2011). This is because working together during a crisis comes with unique challenges like urgency, uncertainty, and high stakes, which require quick and effective responses from different organisations (Nohrstedt et al., 2018). The urgency and pressure of a crisis make it a poor time to start new collaborative efforts around risk communication.

[POLICY AND GOVERNANCE RECOMMENDATIONS](#)

Policymakers can assist local DRR stakeholders in closing the RPAG by promoting effective collaborative governance at the local level through the following strategies:

Policies

- Create policies that require setting up multi-stakeholder platforms for DRR at both national and local levels. These platforms should include CPAs, first responders, critical infrastructure providers, businesses, volunteer organisations, and citizens.
- Develop policies that ensure marginalised and underrepresented groups are included in these platforms, either directly or through organisations that represent them.

- Set up accountability measures to monitor and evaluate these collaborations, and enforce rules that ensure transparency in decision-making processes.

Guidelines

- Offer clear guidelines and frameworks for setting up and running multi-stakeholder platforms for DRR. Make sure these processes and platforms are accessible to everyone, taking into account language differences, disabilities, and socioeconomic barriers. Ensure long-term maintaining of platforms (e.g. also beyond a project).
- Provide clear guidelines for co-creating risk communication, focusing on the modules of the RiskPACC framework: understanding, sharing, relating, and building.

Funding and Incentives

- Provide financial incentives for successful co-creation in DRR, by offering bonuses for achieving collaboration milestones and additional funding for exceptional projects.
- Develop recognition programs to celebrate and publicise successful DRR co-creation initiatives, enhancing the visibility and prestige of participating organisations.
- Establish dedicated funding streams for co-creation projects in DRR that engage multiple societal stakeholders.
- Ensure that metrics for evaluating progress or success in these projects are adaptable, allowing stakeholders to incorporate new and unforeseen insights.
- Allocate funds for training programs aimed at enhancing the capacity of stakeholders to engage in co-creation for DRR.
- Provide financial support for technical assistance programs that offer expertise in facilitation, co-creation, and collaborative governance.

Collaboration and Learning Mechanisms

- Establish institutional frameworks that foster and support co-creation and collaborative governance for DRR. This involves creating dedicated offices for inter-agency cooperation and stakeholder engagement.
- Expand existing EU-wide knowledge hubs (such as CMINE²) focused on DRR to include sections that compile and disseminate best practices, case studies, and guidelines on co-creation and collaborative governance, including the RiskPACC framework.

² CMINE – Crisis Management Innovation Network Europe, <https://www.cmene.eu/>

- Develop and promote digital tools and platforms for stakeholder dialogue, such as the RiskPACC platform, online forums, collaborative workspaces, and virtual meeting tools.
- Establish the use of digital two-way communication tools.
- Facilitate the use of tools leveraging social media data to support CPAs, and facilitate the use of tools leveraging Volunteered Geographic Information (VGI).
- Launch and support regional cross-border collaboration programs to facilitate the sharing of resources, tools, and data on co-creation and collaborative governance for DRR, promoting mutual learning.

3.2 Insights from the RiskPACC project

Several solutions, strategic, technical and conceptual ones, have been developed in RiskPACC that can support fostering collaborative governance, two-way communication and narrowing down the Risk Perception-Action Gap.

Co-creation (see chapter 2.2), specifically supporting the RELATE and BUILD modules of the RiskPACC framework, is a methodology adapted from rather practical, instead of scientific environments. The co-creation approach employed in RiskPACC served a two-fold objective: A horizontal approach for the whole project and a vertical approach for structuring the workshops. The core idea of co-creating solutions is involving all key stakeholders, including citizens, in the process to develop solutions together.

A (digital) **Repository of good practices** has been developed in RiskPACC, which is accompanied by a description of how a useful commented repository can be set up for specific fields and fulfilling context-specific requirements. Accessing the repository and understanding the logic behind can support civil protection authorities and citizens alike to find the right solutions to close the RPAG in their own context. This can serve as an example of the above-mentioned required knowledge hubs, strengthening the UNDERSTAND and SHARE modules of the RiskPACC framework. The Repository is integrated in the RiskPACC platform.

The **RiskPACC platform** (<https://riskpacc-platform.eu>) is intended to offer different users the opportunity to get information on the various components of risk perception, communication and prevention, as well as possible solutions. Information about RiskPACC, the background and the tools and methods developed during the project are displayed. As a result of the project, it should offer CPAs, volunteers and citizens the opportunity to inform themselves, to enhance communicate and to better prepare for possible risks. Depending on the affiliation of the user, i.e. whether the user belongs to a CPA, or is a volunteer, or a citizen who intends to deal with risk prevention, there are different access permissions. The platform includes an interactive map displaying the latest hazards in the country where the user is logged in. It provides dedicated information on the RiskPACC framework, and provides access to the Repository of good practices. A “training” section provides detailed information and training material. The various conceptual tools, such as the co-creation methodology, a participatory

mapping exercise, a risk communication exercise as well as the approach of nudging are explained (text, videos, presentation slides). The platform also offers a “Quiz”. This is a kind of decision survey and is intended to help define and clarify which of the solutions developed can be helpful for the specific municipality with a certain goal or a certain risk. Finally, the technical tools developed in the project and related information can be accessed via the platform. In sum, the RiskPACC platform offers both CPAs and citizens various information options. The composition of the platform offers users the option of broad information and the choice of solutions that are suitable for them. With direct links to the technical tools for example, the platform is very user-friendly, and thus significantly lowers the threshold for use. The RiskPACC platform is an example of a multistakeholder platform, addressing the UNDERSTAND, SHARE and RELATE modules.

The **RiskPACC board game** helps municipalities to identify their most relevant Risk Perception Action Gaps, as well as the right strategic, conceptual and technical solutions - from within RiskPACC and beyond - to address these gaps. The game, which is making use of the key findings of the project, thus functions as a conversation starter between stakeholders and as a solution finder at the same time, and thus can be understood as a physical version of the digital RiskPACC platform. To ensure that the game runs smoothly and is successful, an experienced facilitator is needed to guide the players through the game. The success of the game naturally depends fundamentally on the participants. Target groups for the game include representatives of municipalities, civil protection authorities, citizens including volunteers, and representatives of vulnerable groups or minorities. Even after the end of the project, the game can continue to be played with local stakeholders in order to disseminate the results of the project and increase awareness of the solutions and tools developed. Such a gamified approach can support all modules of the framework, and more specifically, support inter-agency cooperation and stakeholder engagement.

Examples of digital two-way communication tools are the **AEOLIAN** App and the **HERMES** platform. The Aeolian AR mobile app enables dissemination of timely bi-directional information (e.g. warnings) and media (e.g. photos, videos) between citizens and CPAs, supporting preparedness against and response to natural and man-made hazard events. This crowdsourcing solution is a user-friendly tool that enhances inclusivity, knowledge generation and exchange. It also supports properly designed trainings, thus addressing lessons learnt and prevention phases of disaster risk management. HERMES is a social-network-like web-application where different communities of citizens be created and receive useful emergency information. In particular, HERMES supports the communication between citizens and CPAs via a two-way communication channel, disaster information communication, alerting and disaster knowledge communication.

Leveraging information from citizens – via social media – can be achieved using digital tools such as the **PublicSonar** tool. In the event of risks, crises and incidents, extracting the most important information from huge amounts of data is a major challenge. Intelligently generated insights can support in early warning and comprehensive situational awareness. PublicSonar offers, by using artificial

intelligence (AI) and natural language processing (NLP), continuous access to the most important insights, being at the same time easy to adjust to situational needs.

Leveraging information from citizens – via Volunteered Geographic Information (VGI) – can be achieved using digital tools such as the **VGI Mapping Damage Tool** and the **VGI Thermal Comfort Tracker Tool**. The VGI Mapping Damage tool enables citizen participation in post-disaster damage mapping as well as in pre-event preparedness assessment, providing valuable insights for both citizens and CPAs to comprehensively assess the extent of physical impacts and identify community recovery needs. The VGI Thermal Comfort Tracker tool enables CPAs to conduct controlled experiments to understand citizen perceptions of heatwave situations, their experiences on heatwave and non-heatwave days, and the relationship between subjective perceptions and objective thermal indicators.

In general, it can be assumed that if a (technical) solution is rolled out and used at a national level, the number of users can be increased much better (also at a local level) than if each municipality has its own solution, which is possibly only known to interested and committed citizens. Solutions at a national level, such as the Warning App NINA in Germany, attract greater attention and therefore more people use them.

When working together with municipalities in RiskPACC, it became evident that many are of the opinion that purely organising and implementing appropriate solutions at a local level would not be beneficial. Many solutions would need to be initiated and organised at national level, while the individual municipalities can each contribute. Solutions that only work at a local level are often not stable in the long term and do not help to solve many problems. Taking the example of a flood disaster, it can happen that the affected region is during the disaster not sufficiently in a position to organise the support of CPAs and volunteers coming from outside the affected region. Therefore, in order to enable orderly organisation and planning, it must be possible to communicate and plan across regions. It is therefore recommended to do more to initiate and prepare solutions at national level, while at the same time acknowledging the specific needs on local level.

In all associated municipalities in RiskPACC the topic of budget naturally came up, as financial resources are required for implementation, regardless of the solution. This supports the recommendations on providing funding and financial incentives.

RiskPACC activities that have taken place over the past three years have highlighted some interesting **ethics considerations** that need to be addressed alongside the policy recommendations that will ensure the recommendations consider accessibility, inclusivity, and privacy.

The recommendations in section 3.1 highlight different activities that policy makers can do to improve co-creation practices for DRR. While inclusivity is already highlighted in the section, it is imperative that all recommendations highlight the importance of inclusivity in the DRR process. For any policies and guidelines developed, inclusivity needs to be considered in their development. This includes tailoring some policies and guidelines to different target groups, such as those with low socioeconomic status or with a focus on gender, while making sure that general

policies do not leave anyone behind. Using the RiskPACC framework, especially the UNDERSTANDING and SHARING modules, to develop these policies will ensure inclusivity is well integrated.

When developing funding recommendations, national authorities should examine the different schemes to enhance inclusivity. Funding should focus on activities that bring further inclusivity into the DRR process.

This consideration for inclusivity should extend to the different tools or solutions that are being presented as well. If a tool is only available on a specific operating system, backups of the operating system should be available so that everyone can access the tool. The tools themselves should also consider different inclusivity aspects, such as having larger font available, captions on videos and other aspects that can increase inclusivity.

When working with citizens and CPAs, recruitment should consider different target groups. These groups will change depending on what the aim of activity is, but typically should include a good gender representation. Intersectionality should also be considered, as it is challenging to classify an individual into one group and different factors will impact an individual's perception.

One final consideration, in both research and development of different initiatives and tools, is privacy. Maintaining participant privacy wherever possible is vital when conducting co-creation work and other activities with citizens and CPAs. Care needs to be taken to ensure that privacy is respected during research, technology development and co-creation activities.

4 ROADMAP

Summarizing the insights from chapters 2 and 3, Figure 2 presents a Roadmap of policy and governance recommendations along the different modules of the RiskPACC framework and indicates possible implementation support via examples of RiskPACC solutions.

The roadmap can be seen as very well situated in the higher-level policy framework. The Sendai Framework for Disaster Risk Reduction requires states to encourage civil society, volunteers, organized voluntary work organisations and community-based organisations to provide specific knowledge and pragmatic guidance managing disaster risk. This requirement was taken up by the European Commission's Sendai Action Plan for Disaster Risk Reduction. At the same time, interaction between policy makers, scientists and citizens is still a shortfall. For example, research on Priority 1 (Understanding Disaster Risk) found that "the lack of policy implementation and coordination between communities, line departments and scientific community is poor and need proper attention" (Rahman & Fang 2019, p.1).

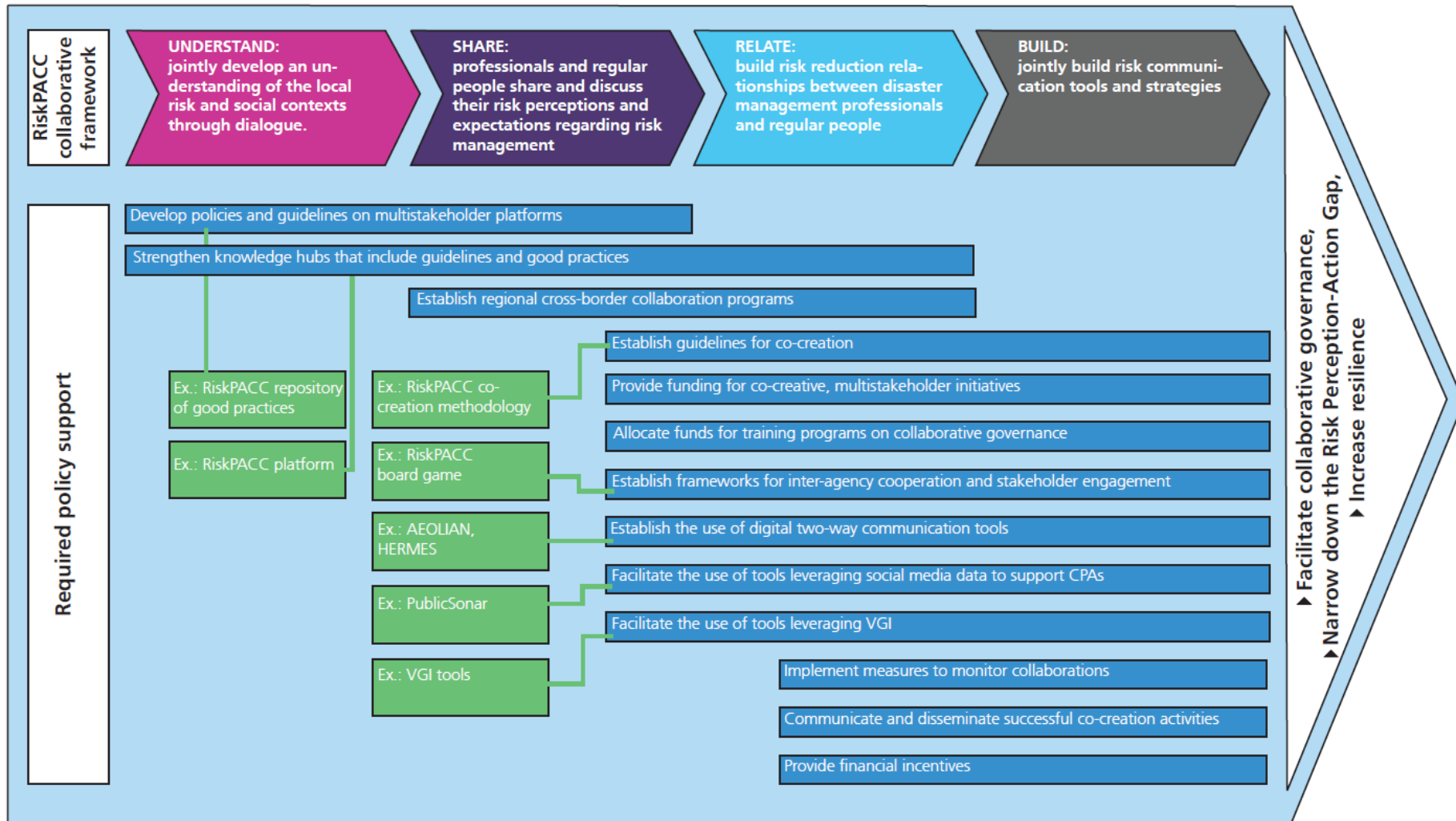


FIGURE 2: ROADMAP

In this context, work in progress is also a dedicated “Voluntary Commitment” on the “Sendai Framework Voluntary Commitment online platform” of the United Nations Office for Disaster Risk Reduction (UNDRR), where information on RiskPACC’s contribution to the implementation of the Sendai Framework will be included.

Further, the revision of the European Union Civil Protection Mechanism (UCPM) in 2019³ has led to the introduction of the Civil Protection Knowledge Network. It was “set up to strengthen the efficiency and effectiveness of civil protection training and exercises, promote innovation and dialogue, ...”.⁴ A dedicated RiskPACC section⁵ has been established on the Network’s website, aiming to enhance knowledge exchange.

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³ 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

⁴ <https://civil-protection-knowledge-network.europa.eu/about-knowledge-network> (accessed on 29/07/2024)

⁵ <https://civil-protection-knowledge-network.europa.eu/projects/riskpacc> (accessed on 29/07/2024)

The RiskPACC Consortium

