



RiskPACC

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

GAP ANALYSIS AND ROADMAP OF KEY ACTIONS TO ADVANCE SOTA (CITIZENS)

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RiskPACC

Integrating Risk Perception and Action to enhance Civil Protection-Citizen interaction

D2.3 Gap Analysis and Roadmap of Key Actions to Advance SOTA

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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. Awareness of risks and levels of preparedness across Europe remain low, with gaps between the risk perceptions and actions of citizens and between the risk perceptions of citizens and 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, identifying 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 seven (7) 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; a repository of international best practice; and toolled solutions based on new forms of digital and community-centred data and associated training guidance. RiskPACC consortium comprised of CPAs, NGOs, associated organisations, researchers and technical experts will facilitate knowledge sharing and peer-learning to close the RPAG and build disaster resilience.

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Executive Summary

This report will draw together findings from the previous tasks in Work Package 2 (WP2) identifying academic and policy literature, best practices, stakeholder outcomes and end user perspectives and requirements, as well as key gaps in the current operationalization of concepts in risk perception and action as they pertain to community resilience and civil protection. The report will provide the basis for the development and refinement of work undertaken in subsequent WPs to bridge the risk perception action gap (RPAG).

The report is structured with four key sections. The *first* section provides an overview of WP2, where Deliverable 2.3 (as well as D1.3 in WP1) fits into this and its relevance to the rest of the RiskPACC project. This highlights how this Report has been informed by previous Deliverables and how it will in turn inform the subsequent work programme in RiskPACC.

The *second* section presents the adopted approach in identifying emergent gaps in the utilisation of community risk perception and community resilience in civil protection and disaster management. It begins by presenting some refined working definitions of disaster and community resilience, and risk perception, that will be utilised in subsequent project work. It then identifies the 'Theory of Change' approach that the project adopts and through which RiskPACC's vision of community resilience is unfolded. Based on this the intended plan is to work backwards from so as to ascertain key outcomes; the interventions that are needed to be made in current practice and how these might be delivered in the context of the project and through its planned and intended activities.

The *third* section details 18 key gaps within current approaches to community resilience and community risk perception that have subsequently been categorised in four groups and which are discussed in the remainder of this chapter:

1. Gaps between theory and practice
2. Governance gaps
3. Operational and implementation gaps
4. Data and technology related gaps

In detailing these gaps, a range of questions that arise for civil protection stakeholders and communities charged with enhancing resilience have been identified and are also explored.

In the *fourth* and final section of this report we present a detailed roadmap that charts a course through the remainder of the project, ensuring that key identified gaps and barriers to the operationalisation of community resilience are continually reflected upon as tools are developed and training programmes and the 'RiskPack' are produced.

Glossary and Acronyms

Term	Definition/Description
AI	Artificial Intelligence
CPA	Civil Protection Agency
D1.3	Deliverable 1.3
D2.1	Deliverable 2.1
D2.3	Deliverable 2.3
DRM	Disaster Risk Management
EU	European Union
ICT	Information and Communication Technology
IoT	Internet of Things
SOTA	State Of The Art
NGO	Non-Governmental Organization
RPAG	Risk Perception Action Gap
SWOT	Strengths, Weaknesses, Opportunities, Threats
VGI	Volunteer Geographic Information
WP	Work Package

TABLE 1: GLOSSARY AND ACRONYMS

1 INTRODUCTION

1.1 Overview of RiskPACC and the Risk Perception and Action Gap

RiskPACC is a project that focuses on increasing disaster resilience across society by closing the so-called Risk Perception Action Gap (RPAG). The main objective of the project is to close the explore and document the different understandings of concepts such as disaster resilience, community resilience and disaster risk perception and co-create innovative pathways and tools to improve disaster risk management through advancing communication between Civil Protection Authorities (CPAs) and citizens groups. In more detail, the project aims to provide an understanding of disaster resilience from the perspective of citizens and Civil Protection Authorities (CPAs) by identifying resilience building initiatives and good practices led by both citizens and CPAs. Research over many years and across many disciplines indicates that the risk perceptions of professionals and citizens differ (Meldrum et al., 2015). Moreover, there also appears to be a mismatch between the risk perception of citizens and their subsequent actions (Margolis, 1996), as well as a misalignment between actual citizen action and the perceptions of the CPAs or response organisations related to the incident and the expected citizen response (Birkholz et al., 2014; Ropeik, 2012). This disconnect between risk perception and action, and the risk perceptions of experts and lay persons, has been described in the literature as “the risk perception paradox” (Wachinger et al., 2013) “an understanding gap” (Thistlethwaite et al., 2018), and “the perception gap” (Slovic, 2012). Figure 1 expressively illustrates this gap, which in the context of RiskPACC has been conceptualised as the Risk Perception Action Gap (RPAG).

The RPAG and the investigation of innovative and inclusive ways to involve citizens and local communities in an attempt to narrow and ultimately bridge it, is the major focus of RiskPACC. While CPAs normally have risk preparedness structures, governance arrangement, emergency plans and action manuals and agendas they follow to prevent, prepare, respond to, and recover from different hazards, such plans in many cases do not involve citizen participation or their perception of risk. As a result, many existing plans for disaster risk management across Europe are often disconnected from the realities of local citizens and the impact of unfolding crises to the built environment and the livelihoods of local communities is frequently exacerbated, as the COVID-19 crisis has illuminated. During this unprecedented emergency situation, municipal and national authorities have asked their citizens to respect hygiene requirements and lockdown rules, testing their resilience, awareness, and perception of risk. This crisis, and its management, has highlighted the problematic resource dispersion and risk communication, the multiplication of disconnected actions stemming from the differential public risk perceptions and an overall feeling of contradictory statements from the authorities; in other words, it has showcased the need to close the RPAG. Arguably, all these consequences could have been reduced with more effective two-way communication and interaction between citizens and CPAs.

Mounting evidence suggests that the RPAG is not a result of a lack of citizen interest in preparedness and resilience building measures but is rather related to the divergent ways in which risk is perceived and acted upon. RiskPACC aims to fill this

gap by a) enhancing the understanding of the Risk Perception Action Gap (RPAG) and advancing conceptual and technical solutions for bi-directional communication between CPAs and citizens, and b) integrating new forms of citizen-generated data with conventional approaches so as to recalibrate risk management practices in ways that enhance disaster resilience.

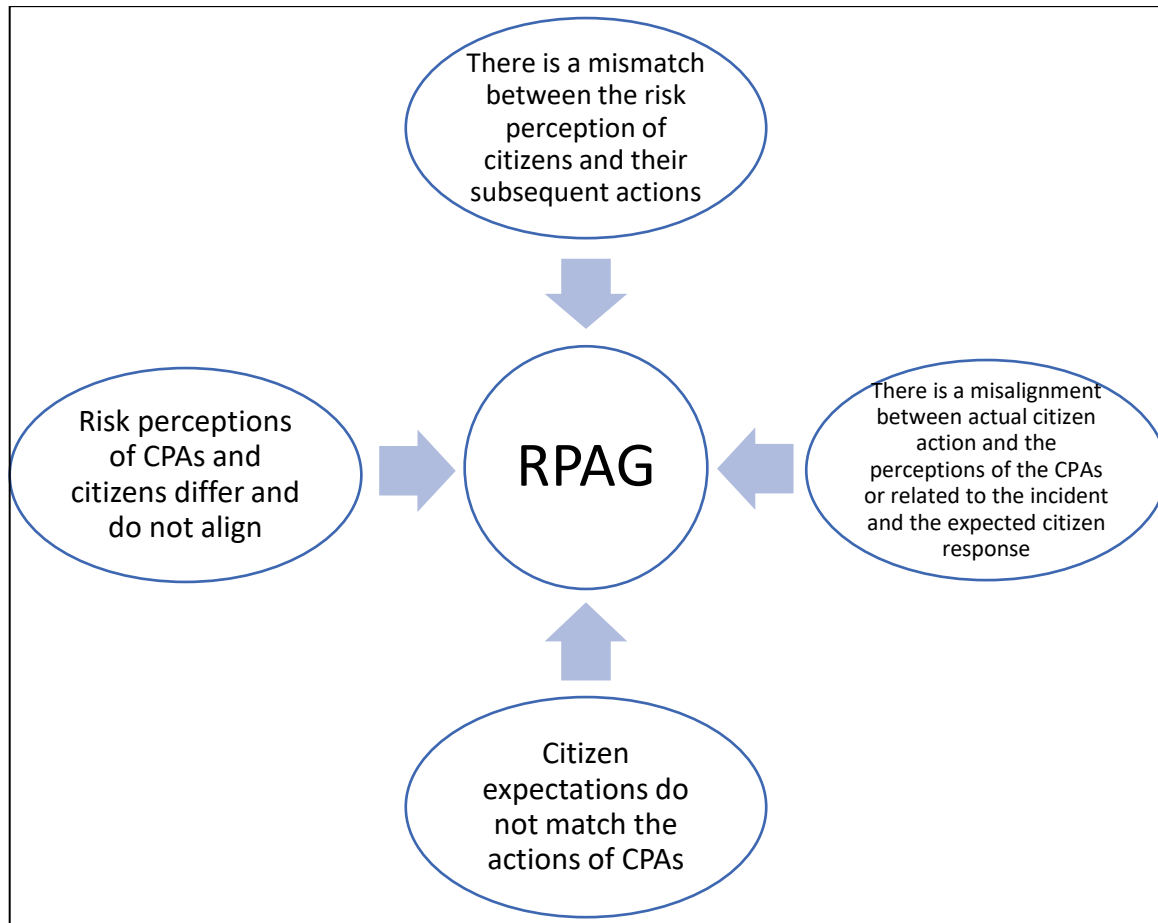


FIGURE 1: THE RISK PERCEPTION ACTION GAP

1.2 Community Resilience in the context of RiskPACC

In the process of bridging the RPAG, some central concepts surrounding citizen participation, and understandings of resilience had to be clarified in the context of RiskPACC, so as to establish a common understanding among project stakeholders. Among such concepts, the concept of 'community resilience' has a central position. D2.1 has provided a thorough and extensive review of the ontological and epistemological fermentations that led to the rise of community resilience. In this context, community resilience, largely reflects the gradual upgrade of the role of civil societies (and communities in particular) in reducing vulnerability and managing disaster impact. From this standpoint, it also echoes evolutionary understandings of resilience (Davoudi et al., 2012) as the process of developing *adaptive capacity* to deal with complexity and uncertainty (Beilin & Wilkinson, 2015) in local communities, instead of merely the ability to increase the capacity for learning and adaptation. The notion of adaptive capacity is inherently embedded in the understanding of resilience as a process, since it connects the idea of 'bouncing forwards' following a disturbance to the mobilisation of resources to prepare for confronting a range of known and unknown future risks and

challenges. Many scholars have also referred to the concept of 'adaptive resilience' as a fundamental quality of sustainable social systems. Others have extended this understanding to urban environments by underlining the contribution of community planning in the revitalisation of communities affected by destabilising shocks (Goldstein et al., 2012). Furthermore, in the context of environmental risk and disaster recovery, the potential of communities and individuals to mobilise and create social networks and reframe the traditional pathways of local risk management from a top-down to a bottom up approach, has been extensively emphasised by several researchers (e.g. Aldrich, 2012). Such work has illuminated how civil society has played a key role in post-disaster recovery on several occasions, especially through efforts concentrated at the neighbourhood scale.

Despite the widely acknowledged need for enhancing community resilience for, and communication between citizens and CPAS, to confront disasters more effectively, existing governance processes are still rarely consult on the perceptions and opinions of ordinary citizens in the decision making process (Coaffee et al., 2021). Civic communities are still considered in many cases as mere passive recipients and inactive stakeholders within the disaster risk management conundrum, while knowledge stakeholders with higher levels of expertise and political power appear to be overly privileged, in a top-down disaster risk management apparatus (Coaffee & Rogers, 2008). In this context, ideas such as community resilience, active citizenship (Kabeer, 2012; Swyngedouw, 2005) and horizontal and vertical communication between CPAs and citizen groups (Coaffee & Clarke, 2016; Pitidis & Coaffee, 2020), which challenge conventional top-down modes of disaster risk governance and one-way communication processes, are swiftly becoming more timely and relevant.

Community and societal participation is moving to the core of new approaches to resilience governance in the push for more holistic disaster risk management practices. Therefore, overall disaster resilience is seen as a co-creation process involving a shared dialogue between different stakeholders, *including local communities*. The building of such resilience is about new forms of collaborative governance which will be *'most effective when it involve[s] a mutual and accountable network of civic institutions, agencies and individual citizens working in partnership towards common goals within a common strategy'* (Coaffee et al., 2008). Involving citizens in the resilience building process is an endeavour that has the potential to enhance the quality of disaster risk planning, management and response, potentially allowing for the empowerment and consideration of marginalised groups in the development and implementation of assessments and measures, and thus producing more socio-spatially just outcomes (Fainstein, 2015; Ziervogel et al., 2017).

In this context the project proceeded in D2.1 with the introduction of a working definition for community resilience for RiskPACC, emphasising the key role of human agency and active citizenship while also highlighting the importance of communication channels and 'trust-ties' between communities and other local stakeholders. The working definition of community resilience used for RiskPACC is:

The capacity of communities and individuals to interact with their surrounding physical and built environment, comprehend risk and actively mobilise activities to enhance societal connectedness including the use of digital technologies, to co-produce knowledge and build two-way communication channels with the CPAs and other local stakeholders to cope with, adapt to, prepare for and recover from external perturbations or inherent stresses.

This Report, as more extensively discussed below, concludes the work of WP2 by drawing together findings from the previous two deliverables (D2.1 and D2.2) of WP2 by identifying best practices, community perspectives, requirements and vulnerabilities, and gaps in the current operationalisation of resilience community concepts across the different project case studies.

1.3 Overview of Work Package 2: Engaging citizens to expand understandings of risks, vulnerabilities and data collection opportunities

As mentioned above, this deliverable, along with D1.3, conclude the first phase of RiskPACC. This phase that started eight months ago with the inauguration of the project and comprises of WPs 1 and 2. This phase's key objective has been the establishing of the scientific foundations for the development upon which future Work Packages and Deliverables will construct the RiskPACC solutions, framework, and methodology for enhancing disaster and community resilience and bridging the RPAG. Both WPs started with a desk-based literature review in an attempt to advance understandings of disaster resilience from the perspective of CPAs (D1.1) and community resilience from the standpoint of citizens (D2.1), always with a focus on how these could be modified to bridge the identified RPAG. Both WPs review the current State-Of-The-Art related to key concepts such as disaster and community resilience and risk communication and perception, proceeding with the development of working definitions for the project. Building on this, RiskPACC will develop a detailed understanding of the role of human factors, societal dynamics and organisational arrangements related to building all-hazard disaster resilience.

WPs 1 and 2 continued with a local exploration in the case study areas of the project to map existing practices and signal the beginning of a recruiting process for citizens and community groups for WP3 (D2.2). In Deliverable D2.2 "*Community Consultation Report to identify how community resilience and risk perception operates in local settings*" an analysis of Strengths Weaknesses Opportunities and Threats (SWOT Analysis) took place, attempting to document and present a better understanding of community practices across the case study areas in terms of their understandings on community resilience concept, community need in terms of disaster risk management as well as methods that are currently utilised to enhance and support disaster and community resilience. D2.2, which has been methodologically based on semi-structured interviews carried across the case studies, identified the activities that are currently being undertaken by citizen groups in the case study areas to better understand how communities are conceptualising, practicing and developing resilience as well as technologies that can assist in citizen group activities. Table 2 below presents the seven case study areas across Europe

investigated in the context of RiskPACC along with the hazards and citizen groups interviewed for the purposes of D2.2.

Case Study Country	Case Study Hazard	Citizen group Hazard
Greece	Wildfires and Floods	Fires
Italy	Multi-hazard: floods, heatwaves, extreme rainfall	General civil protection
Israel	Earthquakes	Earthquakes, oil spills
Belgium	Multi-hazard, including terrorism	Flooding
UK	Terrorism and flooding	Flooding
Czech Republic	CRBN	Pandemic
Germany	Pandemic	<i>Not interviewed</i>

TABLE 2: HAZARDS ADDRESSED (SOURCE: RISKPACC PROPOSALS AND INTERVIEWS)

Specifically, D.2.1 and D2.2 focused on the different community practices and approaches that are currently used to close the RPAG. It examines the active role of communities in producing citizen-generated data, and how this might be integrated with official and conventional methodologies, risk models and datasets. Here, we approach citizen-generated data from a dialogic, critical pedagogical lens: citizen engagement is not merely a means to gather data, but also an opportunity for social learning (Coaffee et al., 2021; Porto de Albuquerque et al., 2021).

The final stage of WP2, which concludes this Work Package, is a gap analysis and progressive roadmap of key actions that will feed into the work of all subsequent Work Packages. Such actions are presented in this Report. The collective output from WP2 is aspired to be a detailed and expanded citizen-generated data understanding on risk and vulnerability; critical consciousness about environmental risks, enhanced local capabilities and a better understanding of citizen-led practices regarding risk management, and local development at the community, and neighbourhood levels. This will not only feed into the RPAG framework, which will be developed in WP4 of this project, but also in the tool development and field validation phases that will follow in WPs 4 and 5. Figure 2 schematically depicts the methodological approach and outputs of WP2.

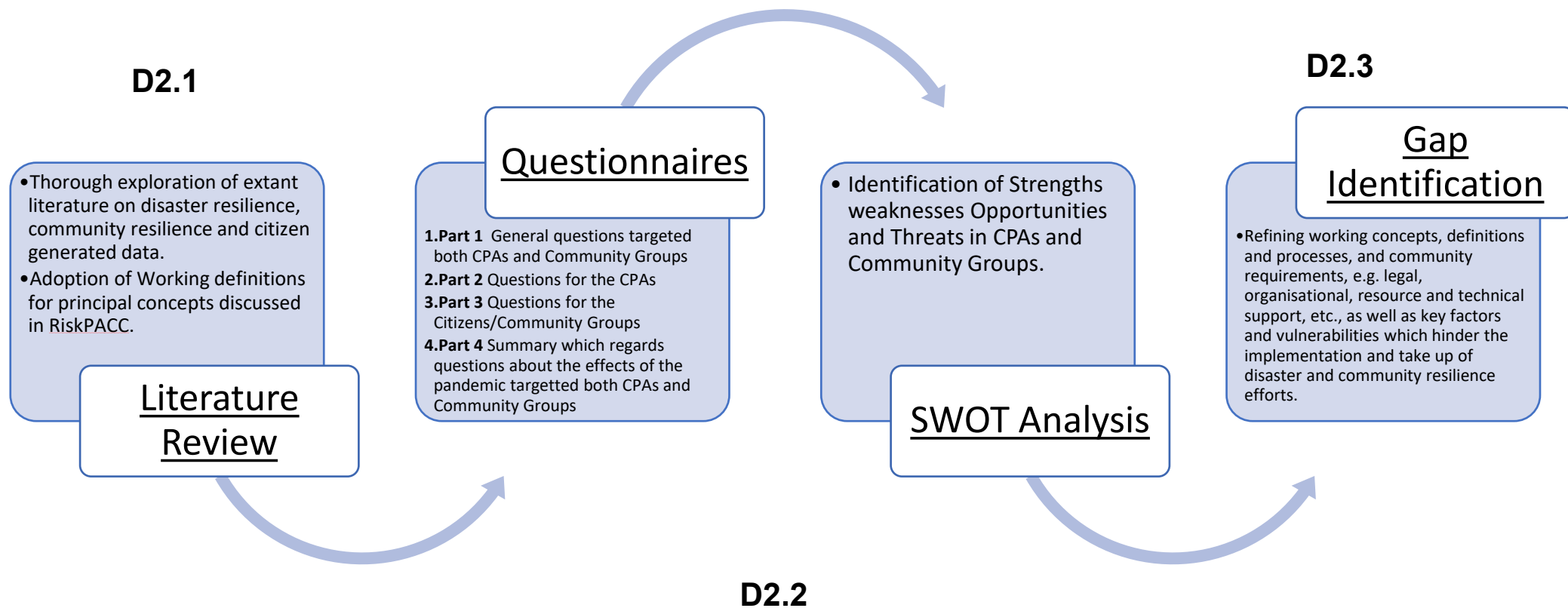


FIGURE 2: METHODOLOGICAL APPROACH AND OUTPUTS OF WP2

1.4 Outline of Task 2.3 and structure of D2.3

This Report '*Gap Analysis and Roadmap of key actions to advance SOTA*' is the output of Task 2.3, which aimed at identifying the gaps and misalignments in the current operationalisation of community resilience, risk perception concepts across the project case studies. It is presented as a gap analysis and includes further refinement of clear concepts, definitions and processes, and community requirements, e.g., legal, organisational, resource and technical support, etc., as well as key factors and vulnerabilities which hinder the implementation and take up of community resilience efforts. The Report draws together findings from the other tasks and deliverables of WP2, as presented above, and proceeds with the identification of best practices, community perspectives, requirements and vulnerabilities, and gaps in the current operationalisation of resilience concepts.

The principal objective is to document the gaps in current citizen practices from a community resilience perspective and create a roadmap for addressing them as the RiskPACC project unfolds. Methodologically, we follow the gap analysis process, which is based on ideas around Theory of Change and Impact Analysis (Vogel, 2012), which are more explicitly presented in Chapter 2. Following this, Chapter 3 continues with a short summary of the SWOT analysis outcomes from D2.2 and proceeded by the presentation of the identified gaps in risk perception and action from a community resilience perspective. We have identified 18 such gaps which we have categorised into four general groups, namely:

- Gaps between theory and practice
- Governance gaps
- Operational and implementation gaps
- Data and technology related gaps

Based on the analysis of the four gap categories and the 18 gaps, this deliverable continues with a presentation of the roadmap of key actions for advancing the SOTA and best practices for the RiskPACC project. Part of this roadmap is the refinement of the project's work plan and the informing of the approach to be undertaken in subsequent WPs of the project. The ultimate goal here is to take into account community considerations and gaps in existing practices throughout the development of the project framework and the accompanying tools to narrow, and eventually bridge, the aforementioned RPAG.

2 INTRODUCTION TO GAP ANALYSIS

2.1 What is gap analysis

Apart from the definition of community resilience mentioned above, WP1 and WP2 of the project has advanced working definitions for two more central concepts for RiskPACC, namely 'disaster resilience' and 'risk perception'. Although such concepts have been widely used in academia and practice and there are several definitions across different fields and disciplines, the definitions have been adjusted, for the purposes of RiskPACC, to reflect the aspired impact and prospective long-term and short-term outcomes of the project. In this context, such current working definitions adopted are:

Disaster resilience

The ability of an individual, community, region, or country to resist, adapt to, and recover from the impact of a hazard, either natural or anthropogenic. Enhanced resilience can be embedded in activities in all stages of the disaster cycle, and includes positive transformation that strengthens the ability of current and future generations to adapt to future crises, and to survive and thrive as conditions change

Community resilience

The capacity of communities and individuals to interact with their surrounding physical and built environment, comprehend risk and actively mobilise activities to enhance societal connectedness including the use of digital technologies, to co-produce knowledge and build two-way communication channels with the CPAs and other local stakeholders to cope with, adapt to, prepare for and recover from external perturbations or inherent stresses.

Risk perception

Risk perception involves people's beliefs, attitudes, judgements and feelings, as well as the wider social or cultural values that people adopt towards hazards and their benefits. The way in which people perceive risk is vital in the process of assessing and managing risk. Risk perception will be a major determinant in whether a risk is deemed to be "acceptable" and whether the risk management measures imposed are seen to resolve the problem.

For RiskPACC, the bridging of the RPAG involves a deep understanding of existing practices employed by both citizens and CPAs in all phases of disaster risk management, as well as a thorough identification of the gaps between their such practices and their actual needs (Lloyd & Hicks, 2021). While such gaps regarding the CPAs are explored in WP1, this report attempts to unveil the gaps from a community resilience perspective. After all, RiskPACC puts significant attention on the role of human agency and active citizenship while also highlighting the importance of establishing communication channels and 'trust-ties' between communities and other

local stakeholders as well as aligning the perceptions of risk between them, in the attempt to advance existing epistemic cultures and practices and ultimately enhance disaster resilience (Coaffee et al., 2018; Normandin et al., 2019). In other words, *a more effective two-way communication and interaction between citizens and CPAs* is a key objective of the project, reflecting more recent understandings of community resilience as a holistic praxis that manages complexity and uncertainty at the neighbourhood or community level (Moser et al., 2019; Pitidis et al., 2022).

2.2 Theory of Change thinking

Taking into account the working definitions of the project as well as the need to enhance disaster and community resilience and align risk perceptions and subsequent actions between citizens and CPAs (see Figure 1), specific pathways to maximizing the impact of RiskPACC emerge. Such pathways produce the project's 'Theory of Change'- a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context. Theory of Change thinking is a particular outcomes-based approach to impact which *'applies critical thinking to the design, implementation and evaluation of initiatives and programmes intended to support change in their contexts'* (Vogel, 2012, p.3). As an approach, Theory of Change has been widely used for many years across different disciplinary fields by national, international and civil society organisations, along with logframes and other tools, in order to support development outcomes and maximise project impacts.

There are different ways to perform a Theory of Change, but all of them require critical reflection and rational thinking on the aspirational goals and impact pathways that developmental projects propose. Moreover, every Theory of Change approach need to incorporate the following elements (Vogel, 2012, p.4)

- **Context** for the initiative, including social, political and environmental conditions and other actors able to influence change.
- **Long-term change** that the initiative seeks to support and for who ultimate benefit.
- **Process/sequence** of change that is anticipated in order to create the conditions for the desired long-term outcome.
- **Assumptions** about how these changes might happen, as a check on whether the activities and outputs are appropriate for influencing change in the desired direction in this context.
- **Diagram and narrative** summary that captures the outcomes of the discussion.

When implemented in a collaborative and inclusive way that reflects the contextual socio-political, cultural, and environmental realities of citizens and other project stakeholders, Theory of Change thinking is capable of stimulating wider and more substantive change beyond the short life of a research programme and could also become an invaluable method to advance communication between previously disconnected actors related to disaster risk management. Figure 3 presents a conceptual visual representation of the Theory of Change thinking.

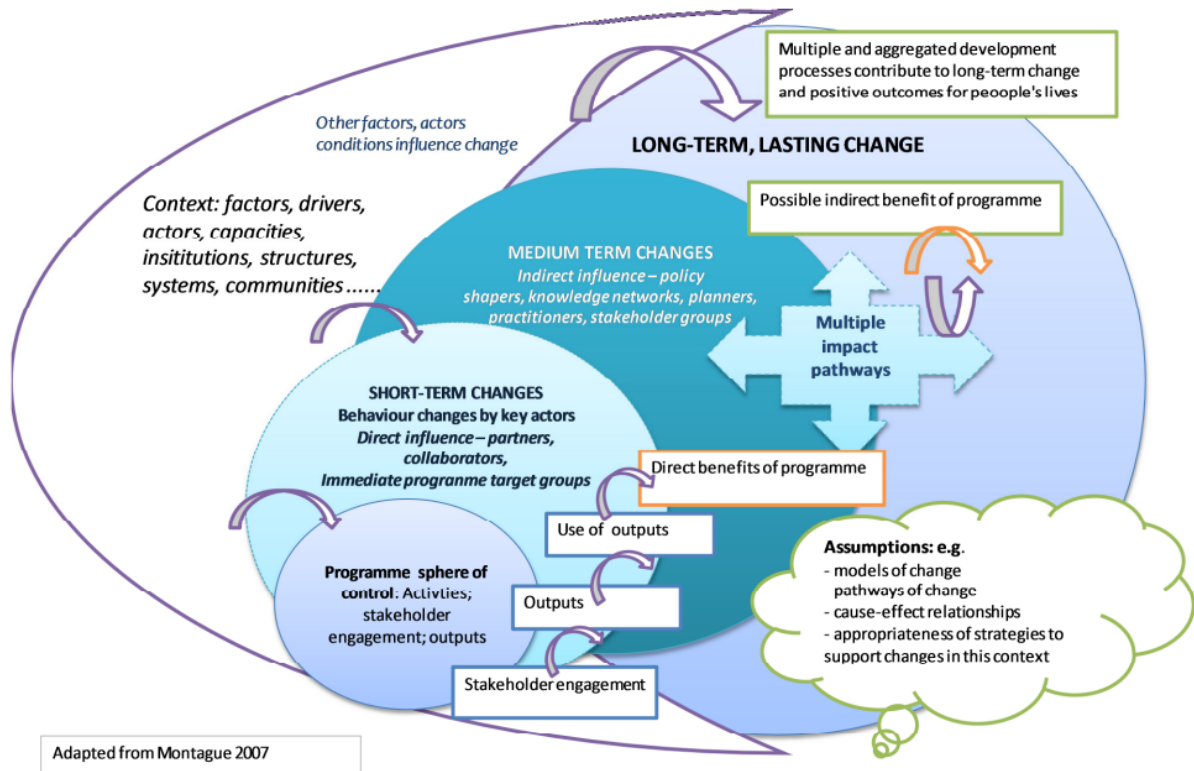


FIGURE 3: THEORY OF CHANGE THINKING (SOURCE: VOGEL:2012, P.22)

2.3 Theory of Change thinking in RiskPACC

For RiskPACC, the long-term, lasting change impact is undoubtedly the narrowing and eventual bridging of the RPAG. However, to achieve this impact, several medium-term outcomes (i.e., enhancing of community and disaster resilience) and short-term outcomes (WP outcomes) have been set, accompanied by specific project outputs, which are effectively represented by the project deliverables. Therefore, the model of change for the RiskPACC project, derived from a Theory of Change thinking consists of a long-term lasting change, medium-term outcomes, short term outcomes and outputs, as presented in Figure 5. Assumptions in this case have been presented in D1.2 and in the form of a SWOT analysis in D2.2 and are further refined and analysed in Chapter 3 of this Report (as well as in D1.3) in the form of gaps.

This identification of gaps and the production of a project Roadmap for key actions to advance the SOTA (Chapter 4) will also constitute the basis for preparing and implementing the co-creation labs in the case study areas, an activity that is planned to take place during the first phase of WP3. In fact, internal workshops have already been undertaken between Work Package leaders and case study representatives to prepare the ground for this stage of the project. Moreover, building upon the conceptual foundations established through the desk-based research performed the first phases of WP1 and WP2, and in conjunction with the identified gaps discussed, RiskPACC will attempt to answer the question ‘*What works on closing the RPAG?*’, through the development of a conceptual Framework in WP4. A first version of this dynamic Framework has already been developed, but its final form will be informed by the workshops that will be undertaken in across the different case studies of the

project. This Framework will also consist of both a knowledgebase of practices and tools, and a guiding methodology on how best to make use of it to build capacities for CPAs and citizens. Finally, the Framework will assist in understanding risk perceptions, communications between CPAs and communities, and other factors that may exist behind the RPAG in different settings.

Furthermore, user requirements that will be identified during the case study workshops, as detailed in WP3, will inform the development of the RiskPACC toolbox in WP5, along with, reflecting the gaps in existing tools and methods of communication between CPAs and community groups that are set out in D1.3 and D2.3, and contribute to the development of the 'Risk Pack' toolbox to bridge the RPAG. The interconnections and interrelations between the work packages are schematically presented in Figure 4.

Following this brief introduction to Theory of Change thinking and its application in the context of RiskPACC, Chapter 3 proceeds with a detailed analysis of the four groups and 18 key gaps in citizen risk perception and action, from a community resilience perspective. Such gaps will later inform the roadmap of key actions to advance the SOTA that will follow in Chapter 4.

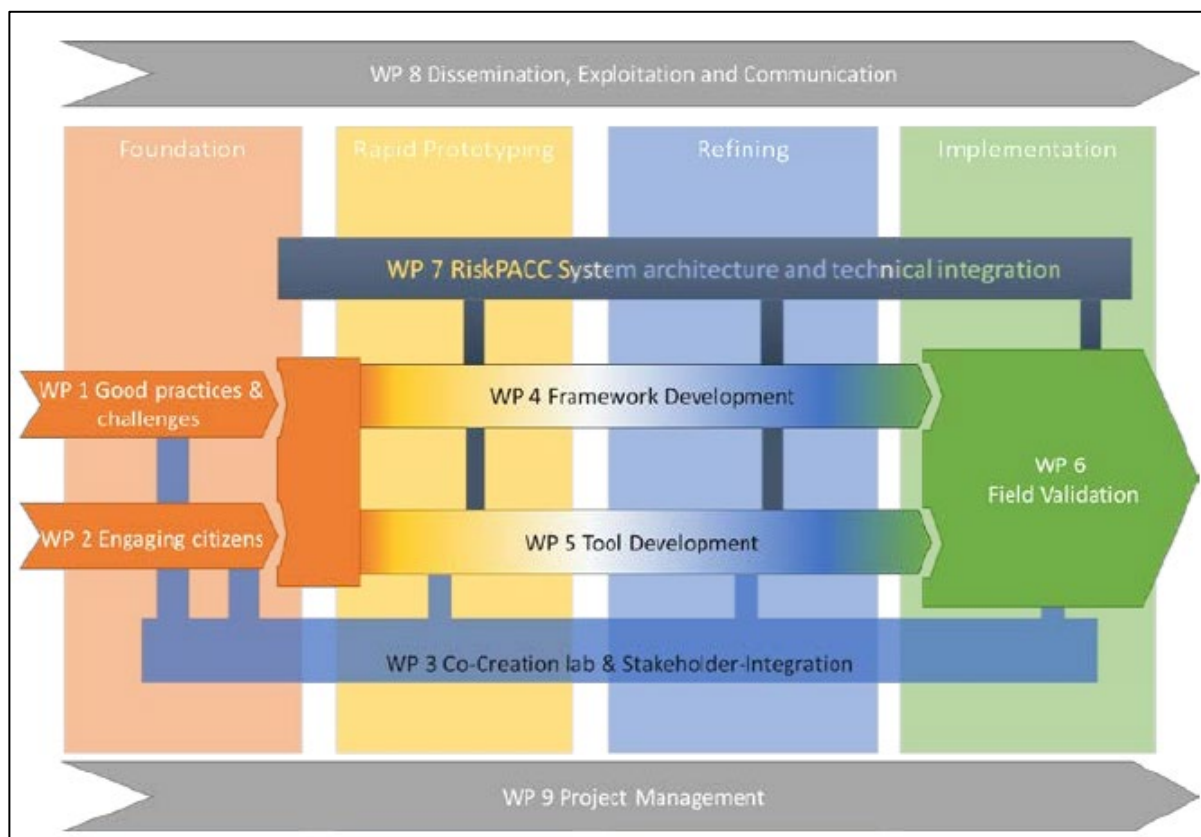


FIGURE 4: INTERRELATIONS BETWEEN THE DIFFERENT WPs OF RiskPACC

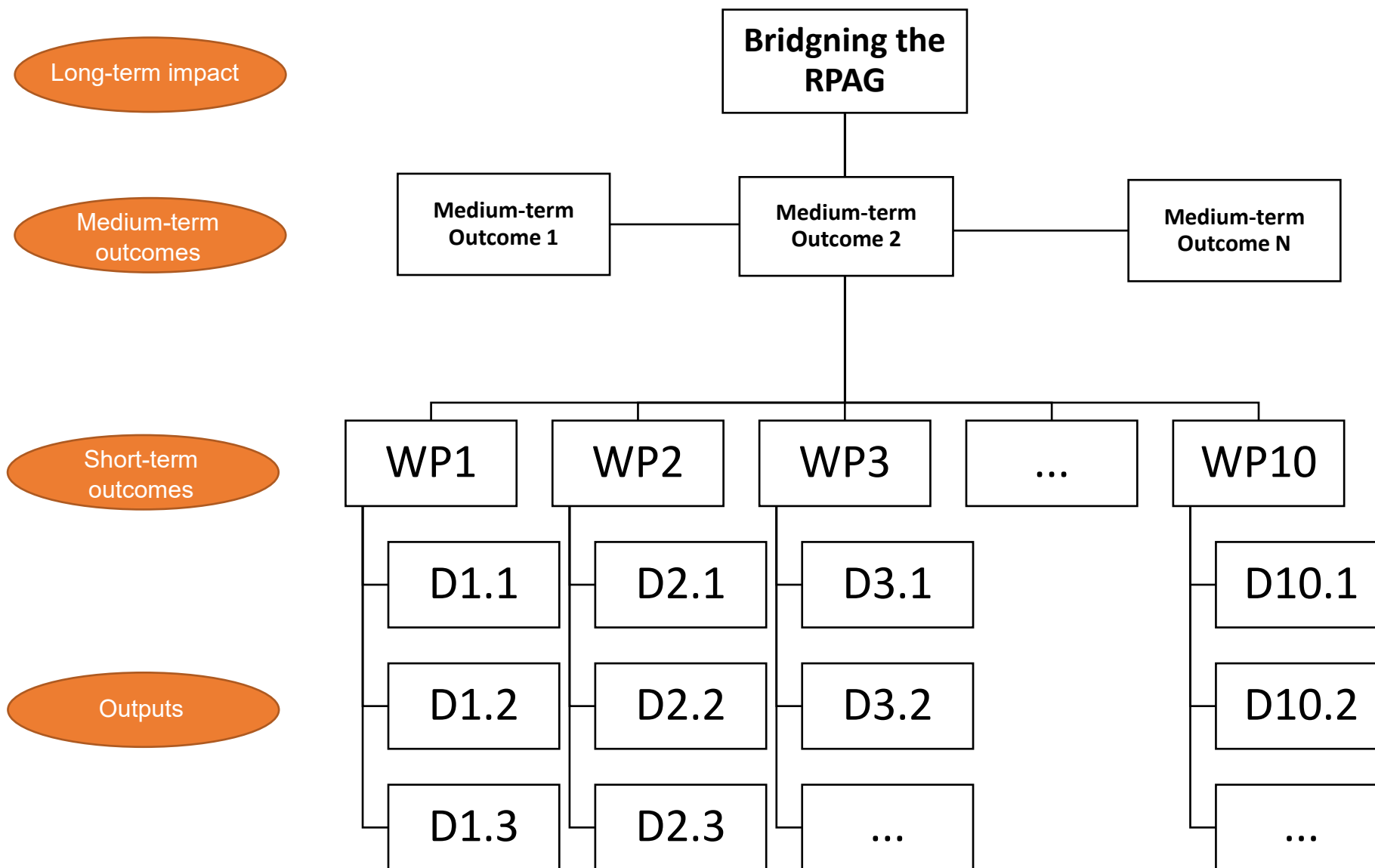


FIGURE 5: RISKPACC MODEL OF CHANGE

3 KEY GAPS IN RISK PERCEPTION AND ACTION: A COMMUNITY RESILIENCE PERSPECTIVE

As presented above, the Model of Change for RiskPACC, following a Theory of Change thinking, compartmentalises the intended impact of the project, in a bottom-up view from the Outputs to the long-term impact. In this context, connections between and difficulties in moving from the one level of the model to the upper implies some specific assumptions, which largely relate to the perceptions and actions of CPAs and citizens in a risk situation. Such assumptions, which are understood and presented in this chapter as gaps, are thoroughly explored from a CPA's perspective in D1.3 and from the citizens standpoint in this Report.

3.1 Outcomes of the Community Consultation Report

To understand the gaps in risk perception and action from a citizen's standpoint, a revisiting of the outcomes of the Community Consultation Report (D2.2) and the empirical research undertaken with stakeholder groups across the project case studies is needed. Following the conducting and analysis of the interviews, the approach that has been adopted for the analysis of the results was a SWOT analysis. SWOT analysis (also addressed as situational assessment or situational analysis) is a method used mostly in organisational studies, such as strategic planning and management, to identify existing strengths and weaknesses but also potential opportunities and threats on a given task. Here, strengths and weaknesses most commonly refer to existing and internal attributes and needs of a system/strategy, including processes and methods currently in place, while opportunities and threats are more external factors that could become aspirational goals or pose extrinsic pressures to the intended activities.

In the context of this RiskPACC, SWOT analysis has been used to examine a range of processes and methods traditionally used by local communities to increase their resilience, particularly focusing on the potential of digital technologies, such as crowdsourcing and VGI, to support disaster risk preparedness, management and response. Finally, the SWOT analysis undertaken in D2.2 has attempted to identify how specific human factors, including vulnerabilities, facilitate or limit the use of respective digital technologies with the ultimate goal of exploring different community practices and approaches to close the RPAG.

Figure 6 clearly presents the results of the SWOT analysis related to community practices. In more detail, the SWOT analysis has identified several strengths and opportunities related to traditional practices as well as new technologies for disaster risk management. The most profound strengths and opportunities from a community resilience perspective identified are the following:

- There is a high level of interest by several individual citizens, citizen groups and organisations for getting involved across all of the project case studies to get involved and support the Risk Management process.
- In several cases, an ability to quickly and effectively mobilise community members and citizen groups has been identified.

- There are limited (but existent) channels of communication between citizen groups and CPAs in the context of DRM in some of the project case studies (Greece and Israel).

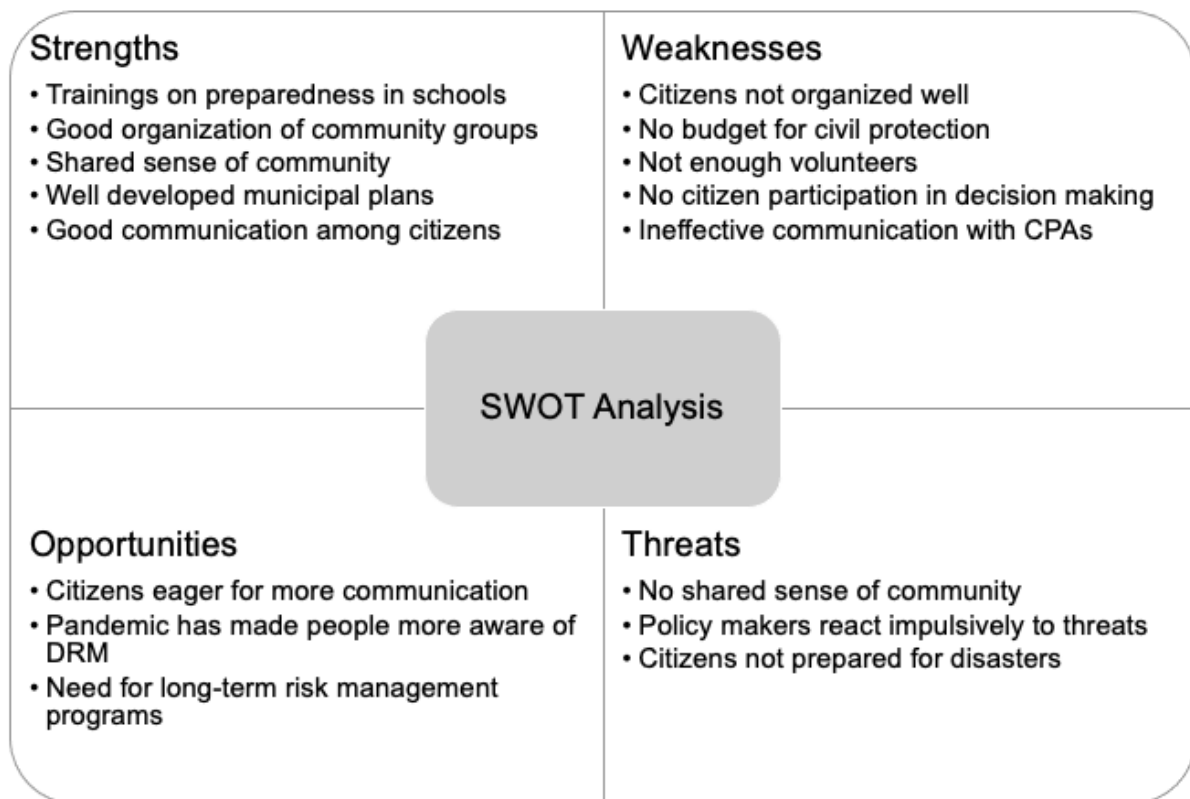


FIGURE 6: SWOT ANALYSIS RESULTS

Apart from such strengths, several gaps in risk perception and action have also been pinpointed from a community's perspective. In total, 18 such gaps have been identified from the analysis of the empirical research outcomes, and have subsequently been categorised in four groups and are thoroughly discussed in the remainder of this chapter:

- Gaps between theory and practice
- Governance gaps
- Operational and implementation gaps
- Data and technology related gaps

3.2 Gaps between theory and practice

3.2.1 CONTESTED TERMINOLOGY

Resilience, and in particular community resilience, are contested terms and mean different things to different communities. In some cases, resilience is not the terminology used to describe actions local communities take to prepare for, respond to and recover from a disaster event. This has been identified in several of the project case studies, some of which were only recently exposed to the ideas and concepts surrounding the term, such as Greece, Italy and Israel. On the contrary, in the UK (as well as the US and Australia) the notion of resilience is hardwired into community action.

3.2.2 TOKENISM

For some, where community engagement occurs in disaster management operations, this is seen as superficial and a failure to deal with the consequences of crises and subsequent recovery efforts without meaningfully dealing with the underlying factors – such as marginalisation, environmental degradation, etc., that produced them – a key factor in disaster risk reduction (Frantzeskaki & Rok, 2018). Tokenism phenomena have been identified in several of the RiskPACC case studies, most probably an outcome of a responsive and not pre-emptive and holistic culture of risk management.

3.2.3 MAINSTREAMING RISK PERCEPTION

Risk perception is a key contextual factor that CPAs should consider when deciding if a risk needs to be mitigated and if so, how this should be best done in conjunction with local communities. Currently there is misalignment between how CPAs and community perceive risk and how the multiple psychological, sociological (including gender), experiential and cultural factors that affect risk perception impact upon subsequent actions. The process of collecting citizen risk perceptions can help understanding but also routinizing or even bureaucratising collective visions and imaginaries of resilience (Pitidis et al., 2022; Pozek, 2022).

Therefore, it is important to situate people in their socio-political/community context, instead of merely considering them as individuals. Better aligning such processes would us better understand the attributes of communities that have greater potential for effectively engaging resiliency process and those groups where additional support will be required. This is a substantial issue identified across the different project case studies and constitutes one of the major medium-term aspirational outcomes of RiskPACC.

3.2.4 LACK OF COLLECTIVE FUTURE VISION

A lack of future vision about citizen engagement and community's role in future resilience building efforts, often being trapped in what has been called as the 'tyranny of the urgent' (BRIDGE, 1996). Most of the discussion around future activities has been centred around better communication and collaboration with CPAs in the area, to both better understand the roles of the citizen groups and better incorporate those groups into the local CPA structures. Many interviewees also believed that they could work to capitalise on disasters that have occurred to both increase the participation and understanding of citizens.

3.3 Governance gaps

3.3.1 RESPONSIBILITY WITHOUT POWER

In some of the project case studies a process of as the 'responsibilisation' of local citizens through advanced citizen action, but without a subsequent devolution of power has been identified. This echoes theoretical and academic debates criticising community resilience as a neoliberal method to devolve responsibility from the state to civil society, in an attempt to relocate responsibility for disaster response and denounce potential political costs (Chandler & Reid, 2016; Joseph, 2016; Neocleous, 2013).

3.3.2 BUILDING OF TRUST TIES

A traditional focus on infrastructure resilience is not sufficient for mitigating crisis and more emphasis should be placed on enhancing social capital (Aldrich, 2012; Aldrich & Meyer, 2015; Iwasaki et al., 2017). Leveraging a network of professional and community groups in local disaster response requires the consolidation of 'trust ties' in order to form lasting relationships and improve communication between CPAs and the civil society so as to harness the power of social networking and advance community resilience to cope with crisis situations. There are various levels of 'trust ties' across the RiskPACC case studies, but further strengthening of such bonds and cross-institutional relations is needed.

3.3.3 TOP DOWN MEETS BOTTOM UP

The building of disaster and community resilience is about new forms of joined-up governance which will be 'most effective when it involve[s] a mutual and accountable network of civic institutions, agencies and individual citizens working in partnership towards common goals within a common strategy' (Coaffee, Murakami Wood, et al., 2008). Involving citizens, if done appropriately, can enhance capacities and capabilities of disaster resilience, potentially allowing for the empowerment and consideration of marginalised groups in the development and implementation of disaster resilience. This dialectic relationship between top-down- and bottom-up risk management action is a key objective of RiskPACC and a significant identified governance gap.

3.3.4 LACK OF EXISTING COMMUNICATION CHANNELS BETWEEN CPAs AND COMMUNITY GROUPS

Although in some of the case studies (Greece, Italy, Israel) communication channels between CPAs and citizen/community groups exist, in other cases such channels are non-existent in most of the case studies, depriving risk governance planners and decision-makers from the ability to adjust and tailor risk response to the fluctuating needs of the different communities. Strengthening existing channels of communication and creating new ones, based on mutual trust and responsibility is pivotal for enhancing disaster resilience and bridging the RPAG.

3.4 Operational and implementation gaps

3.4.1 LACK OF COMMUNITY ENGAGEMENT

Often attempts at enhancing broader frameworks of disaster resilience by CPAs have highly centralised and siloed governance and are operationally overly technical and legalistic (command and control) and pay less attention to the ability of communities to adapt and embrace change and transformation - community resilience - or encouraging wide participation of stakeholders in decision-making. There needs to be a shift from passive to active citizenship. Engagement with the public in this sense needs to be sensitive to an array of different social contexts and be undertaken in a culturally appropriate manner.

3.4.2 AMPLIFICATION OF RISK

Linked to better understanding risk perception is the importance of media or CPA communications in amplifying or downplaying risk, in influencing risk awareness and in the adoption and acceptance of safety measures, and the decisions the public make. There is much to learn in devising effective and contextual strategies by which CPAs (or Governments) communicate with the public regarding the risks faced or during an ongoing incident. Here social media, in particular, offers a bi-directional communication platform whereby messages can be pushed to the public and feedback received. This however comes with privacy and ethical issues and concerns over misinformation and digital exclusion (see later point).

3.4.3 RISK PERCEPTION AND BEHAVIOUR

There is no causal link between risk perception and subsequent mitigation behaviours. There is a pressing need to understand how risk is conceptualised by local communities, and how risk adaptation and preparedness make sense contextually and how institutions which govern disaster resilience can better understand the nuances perceptions of risk – the ‘local psychosocial dynamics’ - instead generalising it. Here a key policy and risk governance questions emerges about how to engage with risk perception when different CPA actors and the public have differential viewpoints regarding risk, different degrees of risk acceptance, and hence diverge with regard to the appropriateness of risk reduction actions to take.

3.4.4 INADEQUATE ATTENTION ON PREVENTION ACTIVITIES

Among some of the case studies there is a lack of ability to understand the potential impact of risks and what could have been done to mitigate the impact of such risks in advance. There was also an inconsistency regarding the coordination of prevention activities and community actions in phase of a disaster. This means that in some of the case studies, communities were ill prepared for risk, crises and disasters when they occurred and while also both communities and CPAs cantered the disaster response apparatus towards responsive and reactive actions instead of emphasising pre-emptive and precautionary measures.

3.4.5 NEED FOR BETTER INFORMATION FOR THE CIVIL SOCIETY

Across the project case studies a significant gap identified was the lack of adequate information and training for citizen response in crisis situations. This gap relates to an often problematic connection and communication between citizens and CPAs, which could stem from either lack of trust, political disputes or just outdated traditional bureaucratic beliefs and epistemic practices (Sharpe, 2021). Several citizen and community groups highlighted the importance of increasing the risk related information available to local communities, as they only have a superficial level of knowledge about the concept so far. In this context, educational programmes and information campaigns were mentioned as means of not only informing but also involving civil communities in the disaster risk management process.

For RiskPACC, appropriate training and information sharing between CPAs and local citizens is fundamental for bridging the RPAG and thus a number of activities and project outputs are dedicated to the production of training material and the facilitation

of data and information circulation among not only CPAs and citizens but other urban stakeholders.

3.5 Data and technology related gaps

3.5.1 LACK OF CONTEXTUAL SENSITIVITY IN EXISTING DATASETS

Perceptions of risk between CPAs and community members are often not aligned and ultimately existing datasets used for disaster risk preparedness, management and response usually do not utilise tacit local knowledge in disaster risk preparedness and response measures. As a result, local disaster responses often fail to produce user-centred and tailored risk management plans, particularly for the smaller administrative and spatial scales, ultimately failing to take into account contextually sensitive information for local communities. This has been particularly visible in the ways CPAs are currently operating, while it also reflects the disconnection between top-down, centrally operated plans and actual needs of citizens on the ground.

This has been particularly relevant across the project case studies, as the results of the empirical research show. Here, although CPAs in many cases have very detailed and granular information and authoritative datasets for their respective territories, citizen perceptions of risk as well as contextual knowledge regarding land-uses or topological significance of specific areas are not depicted on the datasets. Such a lack of context sensitivity in risk-related datasets deprives the CPAs and other risk managers from the opportunity to tailor risk planning and response measures to the contextual particularities of each territory, essentially limiting the effectiveness of the designed preparedness and response measures.

3.5.2 DIGITAL DIVIDE AND LACK OF INCLUSIVENESS

Digital technologies such as VGI solutions are often technology-led, eventually marginalising the less technology-savvy and socio-economically disadvantaged populations, further broadening the digital divide and inevitably supporting the argument that VGI cannot represent every citizen and privileges those with money, access, and time to utilise the technology. During empirical research and analysis undertaken for D2.2, several interviewees also expressed a concern over the digital divide that an over-reliance on technology this would involve. Although the majority of the citizens that participated in the interviews have been technologically competent, they have pointed out that other members of the local community with concentrated knowledge of the case study areas (predominantly elderly population) are effectively excluded from participatory methods due to the prospective overreliance on technological tools.

With technology playing a continuously more central role in DRM activities, the need to consider the digital divide will be particularly important for RiskPACC. Hence, the project aspires to develop different platforms and applications in an attempt to close the RPAG among the case study areas, and therefore the digital divide in case study communities needs to be considered in their development. Much of the work in the coming years will concern technological solutions to the RPAG, which could further the digital divide if it is not considered. Special consideration needs to be taken with all technical solutions to determine if they are easily accessible to all groups.

3.5.3 FRAGMENTED UTILISATION OF VGI AND OTHER CITIZEN SCIENCE METHODS

The compartmentalisation of VGI solutions often restricts its usage to single stages of the disaster continuum, and for a single type of disaster event (Horita et al., 2013). Taking a multi-hazard and multi-dimensional approach showcases the magnitude-frequency relationship of multiple hazards and their interrelated effects on the community's vulnerability and could potentially encourage sustained citizen participation in monitoring and recording environmental changes.

In the majority of the project case studies, VGI and other citizen science methods are mostly absent from existing disaster risk management apparatus. This absence exacerbates the problem of non-contextually sensitive datasets, as there is a lack of horizontal and vertical data circulation across between citizens and CPAs. Yet, such a circulation of data and information are capable of enabling coordination and communication between, facilitating changes in governance cultures, arrangements, and structures and ultimately improving cross-sectoral collaboration.

3.5.4 INADEQUATE INCLUSION IN THE DESIGNING OF VGI SOLUTIONS

The utility of VGI solutions for community resilience are undermined due to the exclusion (or inadequate inclusion) of important factors such as political and governance systems, institutional structures and unequal power distributions, when designing VGI solutions (Haworth et al., 2018). This is especially relevant since governmental institutions hold the administrative power to encourage the standardisation and regularisation of VGI practices through the inclusion of VGI concepts in mainstream Spatial Data Infrastructure frameworks.

However, the process of effectively and meaningfully engaging citizens and other community groups in the designing of such VGI solutions is significantly challenging. This has been particularly relevant in the few RiskPACC areas where such solutions have been already introduced, and thus it is rather a threat that the project needs to take seriously into account as activities of WP3 (Co-creation Workshops) and WP5 (Tool development) are planned and implemented.

3.5.5 LACK OF UPDATING FOR VGI TOOLS

This is another identified threat and existing gap that needs to be carefully taken into account as the future activities of RiskPACC are unfolding. In more detail, although the high potential of VGI and other citizen science tools in capturing community risk perception and enhancing disaster resilience is undisputed and has been highlighted across all the deliverable of WP3, lack of updating or continuous engagement with such tools may limit their capacities to operate as a medium between local communities and CPAs. This means that the technological and practical solutions designed in the context of RiskPACC need to be adequately not only inclusively designed, based on wide and meaningful dialogue with local community members, but they would also need to be embedded in the DRM organogram for disaster risk planning, management and response across the project case studies.

4 ROADMAP OF KEY ACTIONS TO ADVANCE STATE OF THE ART (SOTA)

Following the exploration of the key gaps in risk perception and action from a citizen perspective, the scope of this chapter turns to attempts to bring together the analysis of the gaps presented above and using the Theory of Change technique and the ways through which such gaps are going to be addressed in the context of RiskPACC. As Figure 7 notes, the project adopts a dialogical and co-productive problem-solving approach based on the facilitation and improvement of two-way communication between citizens and CPAs and citizens, always focusing of narrowing and eventually bridging the RPAG.

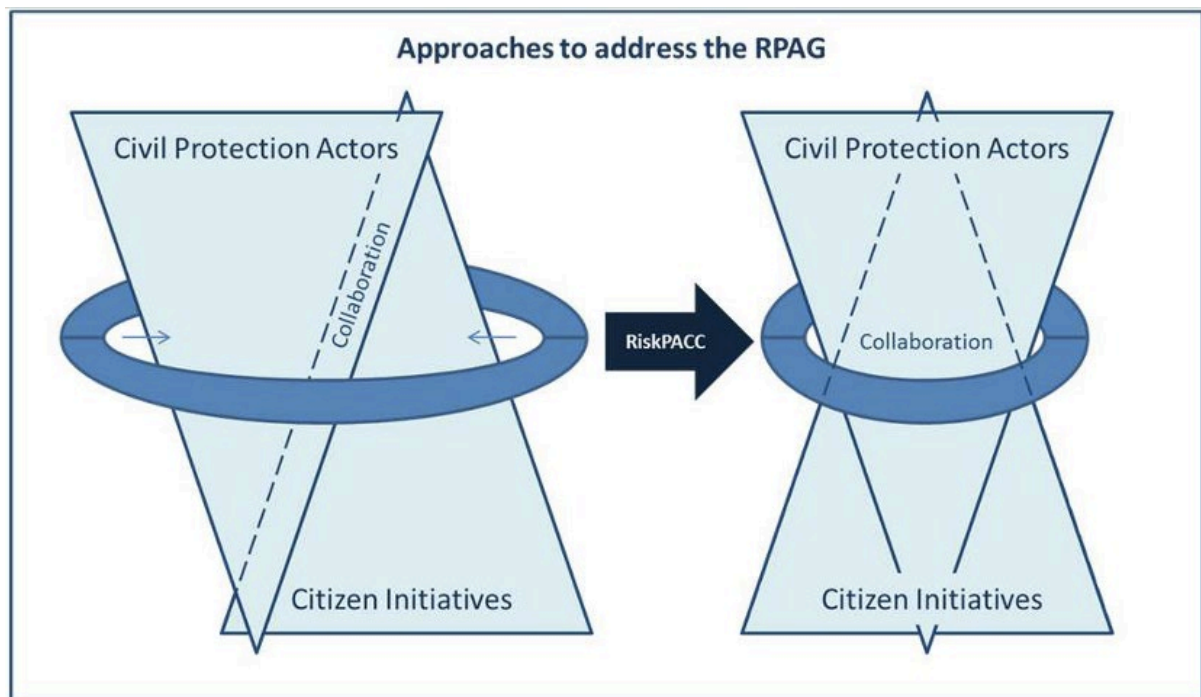


FIGURE 7: RISKPACC APPROACH TO ADDRESS THE RPAG

Below we present a roadmap that fulfils the initial requirements and objectives of the project by addressing the key actions needed to advance the state of the art in community resilience work, based on the identified gaps discussed in Chapter 3. Such gaps, as categorised in four distinct groups, highlight the specific thematic and operational areas where additional attention needs to be paid in order to maximise the impact of the planned future activities of the project.

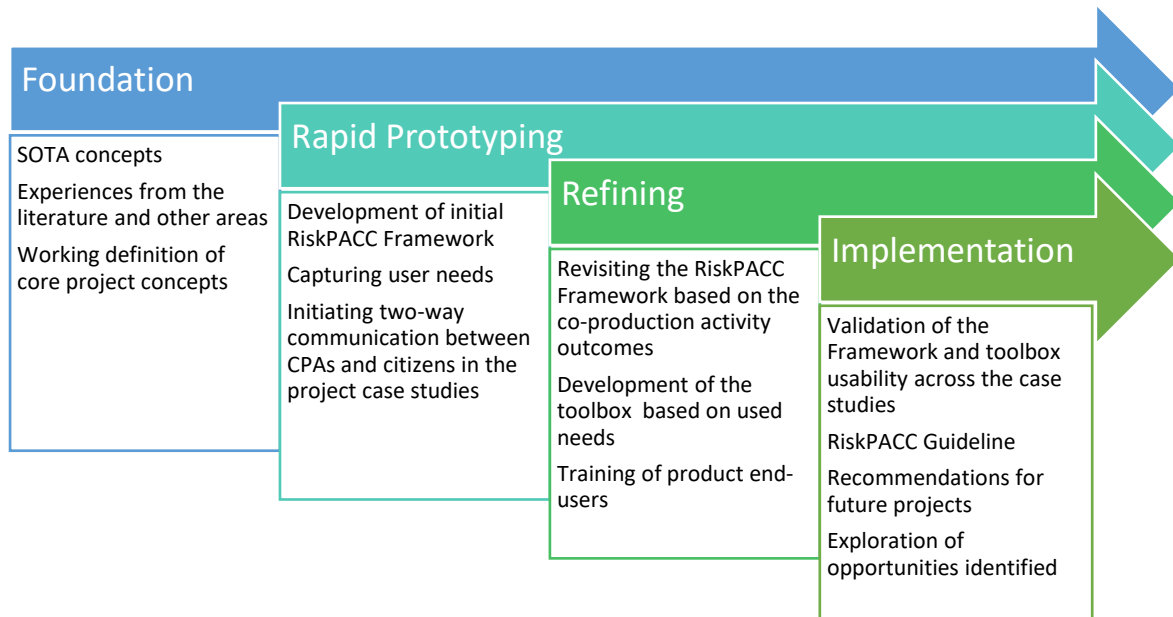


FIGURE 8: SCHEMATIC REPRESENTATION OF THE ROADMAP

For RiskPACC, the roadmap is divided into four major categories, below which all project activities are further categorised. The creation of the roadmap is an opportunity to reflect on the state-of-the-art, take account of the gaps in the knowledge collated, and to refine the remaining tasks of the RiskPACC project in light of this. In particular, the roadmap will:

- Seek to ensure that identified gaps in risk perception and action will be filled in as the RiskPACC project progresses.
- Continually refine our knowledge and understanding of these gaps through:
 - future co-creation activities such as workshops and meetings;
 - participatory development of further technological solution to narrow the RPAG.
- Provide extra clarity on linkages between WPs and tasks.
- Ensure we deliver on the project milestones and objectives.

As discussed in Chapter 3, the gaps in risk perception and action from the citizens perspective are divided into four distinct groups and reflecting the different epistemological and ontological characteristics of the processes and methods undertaken to reduce disaster risk across the different project case studies. Table 3 summarises the details of each gap group and provides a specific number for each gap, which will be later used in the roadmap table to highlight the project activities targeting at bridging it. The roadmap for key actions to advance the SOTA is outlined in Table 4, which is presented later. For each Work Package task the refinements and considerations suggested are summarised and linked to the gaps identified and numbered in Table 3, the outcomes expected from the RiskPACC project, and the project milestones identified in the Description of Work. Yet, it will be the up to the work of the Work Package leads and the communication between them to advance these actions through their Work Package Work plans and suggested activities.

Gap group	Gap group details	Specific Gaps in SOTA	Relevant RiskPACC Tasks
Gaps between Theory and practice	Gaps related to ineffective operationalisation of conceptual ideas and theoretical understandings the ground	1. Contested terminology	3.5; 4.2; 7.2
		2. Tokenism	3.5; 7.2
		3. Mainstreaming risk perception	3.3; 3.4; 3.5; 3.6; 4.3; 4.4; 7.2; 8.3; 8.4
		4. Lack of collective future vision	3.3; 3.4; 4.3; 6.2; 7.2
Governance gaps	Gaps predominantly related to governance traditions, cultures, and structures as well as communication challenges	5. Responsibility without power	4.3; 4.4; 7.2
		6. Building trust ties	3.1; 3.3; 3.4; 3.6; 7.2
		7. Top-down meets bottom-up	3.1; 3.5; 4.3; 6.1; 7.2; 8.4
		8. Lack of existing communication channels	3.3; 3.4; 3.6; 4.3; 6.1; 7.2
Operational and implementation gaps	Gaps related to the lack of a link between aspirational top-down visions of disaster risk management bottom-up community-focused realities	9. Lack of community engagement	3.3; 3.4; 3.5; 3.6; 4.4; 6.3; 7.2
		10. Amplification of risk	3.5; 4.2; 6.1; 7.2
		11. Risk perception and behaviour	3.1; 3.5; 3.6; 5.2b; 6.2; 7.2
		12. Inadequate attention on prevention activities	4.2; 5.1; 5.2a; 5.2b; 7.2; 8.3
		13. Need for better information for the civil society	3.1; 4.4; 5.3; 6.1; 6.3; 7.2; 8.3
Data and technology related gaps	Gaps related to the generation, circulation and usage of data and other digital technologies for disaster risk management	14. Lack of contextual sensitivity	3.6; 4.2; 5.1; 5.2a; 5.2b; 7.1; 7.2; 8.4
		15. Digital divide and lack of inclusiveness	5.2a; 5.2b; 5.3; 7.1; 7.2
		16. Fragmented utilisation of VGI	5.1; 5.2a; 5.2b; 7.1; 7.2
		17. Inadequate inclusion in the designing of VGI solutions	5.1; 5.2a; 5.2b; 5.3; 7.1; 7.2
		18. Lack of updating for VGI tools	5.1; 5.2b; 6.2; 7.1; 7.2

TABLE 3: KEY GAPS AND GAP GROUPS IN RISK PERCEPTION AND ACTION

Task Outline	Actions for Roadmap	Identified SOTA Gaps	Expected Outcome	Relevant Deliverables
WP3				
Task 3.1	Baseline assessment of case study areas, in order to understand the RPAG and need to reduce gaps. This includes participatory workshops and interviews with case study partners and determining different technical specifications with CPAs and citizen groups.	6, 7, 11, 13,	This task will provide insights into the RPAG and develop indicators for what success may look like, providing an opportunity to discuss several of the gaps identified	D3.1; D3.2; D3.3
Task 3.3	Co-creation labs with CPAs, civil society, and citizens will provide space to develop creative approaches to addressing the RPAG. It will also prototype technical solutions. This task includes the first round of labs.	3, 4, 6, 8, 9	This task will provide the first opportunity for two-way communication between CPAs and citizens in the case study areas as well as the ability to test the tech solutions	D3.5
Task 3.4	This task is the second round of co-creation labs, where the set of solutions discussed in round one will be refined and tested.	3, 4, 6, 8, 9	The technical tools will be further developed, providing additional opportunities for two-way communication, CPA integration, and bottom-up collaboration	D3.6
Task 3.5	The solutions identified in Task 3.4 are examined for their usefulness, where a privacy, social, and ethical impact assessments is conducted. A gender focus will be used to assess the inclusivity of RiskPACC solutions	1, 2, 3, 7, 9 10, 11	This task will examine the human and social factors, most importantly gender, as well as the digital divide and enhancing community engagement	D3.7
Task 3.6	Case study areas will conduct events specifically dedicated to knowledge exchange and the sharing of best practices. In such events, information by the local citizens will be gathered. The format of the events will vary across the project case studies to reflect their contextual particularities, but they will all involve co-production workshops.	3, 6, 8, 9, 11, 14	This task focuses on the exchange of community data, therefore addressing gaps in communication and community interactions	D3.8

WP4				
Task 4.2	A repository of knowledge products and effective processes will be gathered to be used by CPAs and citizens to enhance collaboration and existing practices. It will include a wide matrix of practices for different purposes and contexts and will be included in the 'Risk Pack'.	1, 10, 12, 14	This task will provide products and effective tools that CPAs/citizens use for enhancing collaboration, therefore addressing many of the communication and community understanding gaps	D4.2
Task 4.3	A collaborative framework will be developed to help CPAs and citizens work in collaborative and effective DRM partnerships, including co-creation methods for closing the RPAG	3, 4, 5, 7, 8	This task will focus on CPA and citizen collaboration, which will address many of the communication and collaboration gaps	D4.3; D4.4
Task 4.4	Training materials based on the needs identified will guide the users on the repository and the framework developed.	3, 5, 9, 13	This task will provide training materials to help CPAs and citizens address needs, which will provide training on many of the gaps identified. This includes communication, data, and operational gaps	D4.5; D4.6
WP5				
Task 5.1	The crowdsourcing solutions developed by specific project partners will be updated based on the needs assessment and co-creation workshop outputs	12, 14, 16, 17, 18	This task will enhance crowdsourcing tools, therefore addressing data and technology gaps as well as communication gaps and gaining a better understanding of community needs	D5.1
Task 5.2a	Crowdsense BV (CS – Partner 15) will use the online sentiment analysis to measure the RPAG, including before and after communication with CPAs during disasters, to establish correlation between citizen sentiment, citizen risk perception, and effectiveness of risk communication. Data will be collected from available citizen channels and citizen sentiments will be measured before and after CPA communications during a hazardous event.	12, 14, 15, 16, 17	This task will help better understand risk perception and the link to behaviour, therefore addressing that gap as well as the communication and gaps regarding CPA integration.	D5.2; D5.3

Task 5.2 b	This task will enhance the VGI solutions based on the outcome of co-creation lab activities and will focus on i) the creation of a tool to implement a range of human factors, ii) the development of methods for improved validation and - possibly- corrections of volunteered contributions and iii) the translation of experimental ICT framework into a quasi-operational tool.	11, 12, 14, 15, 16, 17, 18	This task will examine a range of human factors to create protocols and insights in order to develop an operational tool to be used by CPAs.	
Task 5.3	Training material for the tools developed will be created, including fact sheets or videos, based on consultation with CPAs and citizens. These materials will focus on those that are less familiar with technological tools.	8, 13, 15, 17	This task will provide training on the tools generated by the project. This will address many of the communication gaps, as well as provide a focus on the digital divide and human and social factors associated with these tools	D5.4
WP6				
Task 6.1	Peer learning will be organized between RiskPACC partners and non-RiskPACC end users to teach end users about the RiskPACC approach and solutions	7, 8, 10, 13	The integration of RiskPACC tools into the wider community may have the potential to address most of the gaps identified	D6.1
Task 6.2	Specific cities will be chosen to test the RiskPACC solutions, including the methodology, platform, and tools. This will enrich lessons learned and provide more evidence on the effectiveness of these tools.	4, 11, 18	The integration of RiskPACC tools into the wider community may have the potential to address most of the gaps identified	D6.2
Task 6.3	Insights generated during the RiskPACC project will be processed into recommendations for different audiences, including citizens, volunteers, CPAs and policy makers.	9, 13	The integration of RiskPACC tools into the wider community may have the potential to address most of the gaps identified	D6.3; D6.4

WP7				
Task 7.1	The architecture of the RiskPACC platform and the overall system design will be developed based on the pilot scenarios and applications across different contexts. The input of citizens will be pivotal for the final RiskPACC system design and architecture.	14, 15, 16, 17, 18	This task will develop the RiskPACC system, addressing many of the data and technology gaps. The focus on interoperability will address CPA integration	D7.1; D7.2
Task 7.2	This task will bring together the co-creation methodology, the repository of good practices, frameworks, and technical tools to create the RiskPACC platform	1-18	The creation of the RiskPACC platform may have the potential to address the majority of the of the gaps identified from a citizen perspective.	D7.3; D7.4
WP8				
Task 8.3	This task will design and create of the main outputs of the Project the 'Risk Pack', in both physical and virtual form. The virtual 'Risk Pack' will equal the generated platform, while the 'Physical Box' will include paper documents and lab modules from WP3 as well as training material produced within WP3 and WP5.	3, 4, 12, 13	The production of a physical and virtual version of the 'RiskPACC' will consolidate and materialise the outcomes of the co-creation approach followed throughout the project.	D8.3.1; D7.3
Task 8.4	This task will coordinate the Awareness Workshops, where the overall project findings will be shared and disseminated to a wide array of external relevant stakeholders to ensure strong interaction with industry, end-users, citizens, solution providers and academic partners outside the consortium.	3, 4, 7, 14	The Awareness Workshops will be an excellent opportunity for project partners to shar their experiences in dialogical co-production of tools with external relevant partners.	D8.4.1; D8.4.2; D8.4.3; D8.4.4; D8.4.5

TABLE 4: A ROADMAP TO ADVANCE KEY ACTIONS IN SOTA FROM A CITIZEN PERSPECTIVE

5 SUMMARY AND CONCLUSIONS

This Report has summarised the theoretical and empirical research and analysis undertaken in the context of WP2 and concludes its work. Research in WP2 started with a thorough literature review on existing definitions approaches and concepts surrounding community resilience, community risk perception and the potential of citizen generated data, and specifically VGI, to enhance community and disaster resilience (D.2.1). The work continued with empirical research on existing understandings of community resilience across the project case studies, along with a documenting of practices and methods undertaken by individual citizens and community groups to capture their risk perception and contribute to disaster risk management. The results of this empirical analysis were presented in the form of a SWOT analysis and were further discussed in D2.2.

Building on the foundations of the previous theoretical and empirical work in D2.1 and D.2.2, this Report has identified a series of gaps (n=18) in the current SOTA regarding community resilience from a citizen perspective. Such gaps highlight that in there are significant considerations that need to be taken into account in order to allow citizen voices to be adequately heard and depicted in newly-created datasets, as well as an improvement in communication between CPAs and community groups to avoid misalignment of risk perception and actions, in order to ultimately bridge the RPAG. The Report concludes with a detailed presentation of a Roadmap (Table 4) to address the identified gaps in SOTA through the outcomes and outputs of RiskPACC. Such required actions are mapped in relation to the respective gaps in SOTA and the prospective outcomes and they aspire to address.

Finally, it should be mentioned here that while this report has focused on the gaps between the SOTA and current citizen actions, there are also several strengths and opportunities identified across the project case study areas. First, there is a high level of interest by several local citizens and organisations for getting involved in DRM process in the majority of the case studies; a situation that can possibly facilitate the implementation of the co-creation activities planned in the context of RiskPACC, and could also produce more tailored and user-centred tools for local communities to utilise. Second, there is a proven ability to mobilise community members and citizen groups in most of the case studies, securing the participation and potentially the sustainability of the proposed RiskPACC solutions. Finally, there are limited (but existent) channels of communication with local organisations in some of the case studies, where the project focusing on both strengthening these and on creating new ones in the attempt to bridge the RPAG.

Future project activities are very ambitious and require determination and coordination by all RiskPACC stakeholders. However, the potential reward through the project impact in all case studies across Europe renders the effort undeniably worthwhile. Such activities reflect the a gradual but steady shift towards more experimental approaches to disaster risk management, which are focused on harnessing local worldviews and understandings and *'create polycultural and transcontextual knowledges in practice'* (UNDRR, 2022). Here, the ultimate objective is to progressively move away from scripted and obdurate ways of

perceiving and confronting risk and align relational and interdependent perceptions and subsequent actions in the context of disaster risk management with a view towards creating more disaster resilient communities. This process however, requires an fundamental turn from understanding CPAs and citizens as external and separate actors to conceptualising them as parts of the same disaster risk management system (UNDRR, 2022). RiskPACC attempts to highlight and promote this turn not only theoretically but also in practice through the collaborative methodology and user-centred tool development it adopts and implements across the project case studies.

6 REFERENCES

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