RiskPACC

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

RISK PACK PHYSICAL BOX

Deliverable D8.6

Dissemination Level: PU

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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 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; a repository of international best practice; and tooled 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 deliverable describes the demonstrator « Risk Pack », one of the main outputs of the RiskPACC project. The Risk Pack is a physical collection of the key results of the project, bundled to be disseminated during and beyond the project. The Risk Pack will help municipalities and, in particular, Civil Protection Authorities (CPAs) and citizens alike to get acquainted with the RiskPACC project and its key results and thus enable them to improve the disaster risk management within their municipality, especially when it comes to two-communication.

The physical Risk Pack does include the key findings from various work packages in RiskPACC, ranging from theoretical findings to more concrete guidances and recommendations, as well as technical and conceptual solutions.

To ease the access to the wealth of documents and results of RiskPACC, a serious (board) game was developed, which is the centerpiece of the Risk Pack. The game does help municipalities to identify their most relevant Risk Perception-Action Gaps (RPAGs), as well as the right 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.

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Glossary and Acronyms

Acronym	Meaning
CPA	Civil Protection Authority
D	Deliverable
Efus	European Forum for Urban Security
RPAG	Risk Perception-Action Gap
WP	Work Package

TABLE 1: GLOSSARY AND ACRONYMS

1 INTRODUCTION

Overview

According to the Description of Action, the main results of the RiskPACC project are consolidated in the "Risk Pack", encompassing (a) a framework and methodology to understand and close the Risk Perception-Action Gap (RPAG); (b) a repository of international best practice; (c) tooled solutions based on new forms of digital and community-centred data; and (d) associated training guidance. It further explains that there will be both a digital and a physical version of the Risk Pack. The digital version of the Risk Pack has been developed as an online platform, i.e. the RiskPACC platform (https://riskpacc-platform.eu/). The deliverable at hand is on the physical version (the "physical box"). Such a phyiscal box, containing the key results of the projects, is an important instrument for the legacy of RiskPACC. Especially CPAs will be able to use it to conduct workshops or other dialogue formats within their municipalities. The phyiscal risk pack does aim to reach everyone in a municipality that has no access to the digital platform for any reason. It furthermore does ensure that the key RiskPACC results can be disseminated long after the project, even if the digital solutions might not be available or not be updated anymore.

The core part of the physical Risk Pack is a physical board game, which serves as an entry point to the project's results, insights gained, and more specifically, the developed solutions (incl. conceptual as well as technical tools). RiskPACC findings and developed solutions are integral part of the game, represented in play cards: "goal cards", which are based on identified gaps in risk perception and two-way communication, and "solution cards" representing both the conceptual approaches and the technical tools. The game is structured along the RiskPACC collaborative framework.

While not all results can be transferred to physical format to be included in the box, they are linked to it in terms of references to the pertinent paper documents, training material including documents as well as videos etc. This report provides first an overview on the board game – the related documents including a players guidebook, facilitator guidelines, a picture of the playing field and the playcards are included in the annex. This is followed by an overview on related pertinent paper documents and other material.

Structure of the deliverable

This document includes the following chapters:

- Chapter 2 provides an overview over the printed documents that are part of the RiskPACC Physical Pack.
- Chapter 3 describes the "RiskPACC Game", a table-top serious game developed to serve as a key physical result of RiskPACC.
- Chapter 4 finally concludes the Deliverable.

2 PAPER DOCUMENTS

The key outcomes of the RiskPACC project are an integral part of the physical Risk Pack. The respective documents are listed below:

Name	Deliverable	Considered Part
Best Practice Report	D1.2	Chapter 2.4 – "Best Practices in DRM and Resilience for CPAs"
CPA Gap Report	D1.3	Chapter 3 – "Gaps in CPA activities"
Community-driven Resilience Tools	D2.2	Chapter 3 – "Increasing resilience in communities"; Chapter 4 – "Communities and technology"
Community Gap Report	D2.3	Chapter 3 – "Key gaps in Risk Perception and Action: A community resilience perspective"
Lab methodology and glossary	D3.4	Full Deliverable
Prototype Knowledgebase Repository	D4.2	Full Deliverable
RiskPACC Collaborative Framework	D4.4	Full Deliverable
Training Material	D4.6	Full Deliverable
RiskPACC Tool Training Material	D5.4	Full Deliverable
Recommendations	D6.3	Full Deliverable
White Paper and Roadmap	D6.4	Full Deliverable

TABLE 2: DOCUMENTS IN THE RISK PACK

The above documents, as a collection, present the key outcomes of the RiskPACC project beyond the digital tools and thus are collectively added to the Risk Pack as a legacy.

The item in the list from WP1 and WP2 present the best practices and existing gaps of disaster risk management, from the perspective of CPAs and citizens alike. They directly help CPAs and citizens to raise awareness about existing risk perception actions gaps and further their understanding of these. They furthermore provide an insight into existing tools and solutions that are capable of narrowing down existing gaps.

In Deliverable D3.4, the methodology of the lab modules of RiskPACC is detailed. The Deliverable does include the full description of the conceptual solutions of RiskPACC and a glossary of the most crucial terms used in the project. The conceptual solutions, in particular, are a key tool to close the RPAG, as they enable CPAs and citizens to work closer together and start or improve an active two-way communication.

Deliverable D4.2 provides CPAs and citizens an understanding of the existing (digital) repository of RiskPACC and, beyond that, details how a useful commented repository can be set up for their own fields and fulfilling their specific requirements. Accessing the repository and understanding the logic behind it helps CPAs and citizens alike to find the right solutions to close the RPAG in their own context.

Deliverable D4.4. provides a theoretical framework for a phased improvement of disaster risk management in a target municipality. It helps municipalities to self-assess their current maturity of two-way communication and select tools appropriate to further close or narrow down the Risk Perception-Action Gap based on their status quo.

Deliverable D4.6 contains training material for the RiskPACC Framework, as well all other non-technical results of RiskPACC as a project. It thus is the key document to qualify CPA staff and citizens alike to use the conceptual solutions designed to close the RPAG that RiskPACC developed.

In D5.4, training material for the technological tools of RiskPACC is presented. It helps municipalities, CPAs and citizens alike to get acquainted with the RiskPACC technological tools and study the functionalities on their own. The training material also encompasses trainings on the digital platform of RiskPACC and thus helps municipalities to fully explore the range of RiskPACC tools.

Finally, D6.3. and D6.4 provide recommendations for different target groups to improve two-way communication to enhance disaster risk management in future. While D6.3 focuses on recommendations to CPAs, citizens and policy makers on local level, D6.4 addresses addresses the EU and national level by providing a whitepaper including a roadmap to efficiently close or narrow down the RPAG.

3 RISKPACC GAME

A key challenge for civil protection authorities or citizens interested in enhancing disaster resilience, risk awareness, preparedness or risk communication, is finding orientation in existing approaches and solutions, and in identifying most suitable strategies for the own municipality. Given the wealth of material and results RiskPACC has produced, this challenge does persist for everyone who gets newly acquainted with the result and its findings. In particular, it is not always intuitive for users to find the tools or solutions that best fit their requirements and are capable of tackling their own RPAGs efficiently. On the digital platform, a quiz was thus implemented to direct

users in the right direction, although this digital guidance is limited to the digital solutions.

As part of the physical risk pack, a serious game developed just for that purpose serves that goal. The main aim of the game is triggering a directed discussion among stakeholders in a target municipality to both, clearly define their own targets for narrowing existing RPAGs and finding the right solutions to achieve those targets. The game is moderated by an informed facilitator that guides the players through the process. Observers are then documenting the results of the game, which serve as a first starting point for the future implementation of solutions.

The game material itself consists of a brief introductory presentation, a guidebook, the game material, a facilitator guideline and an observer booklet. All these items can be found in annex to this deliverable.

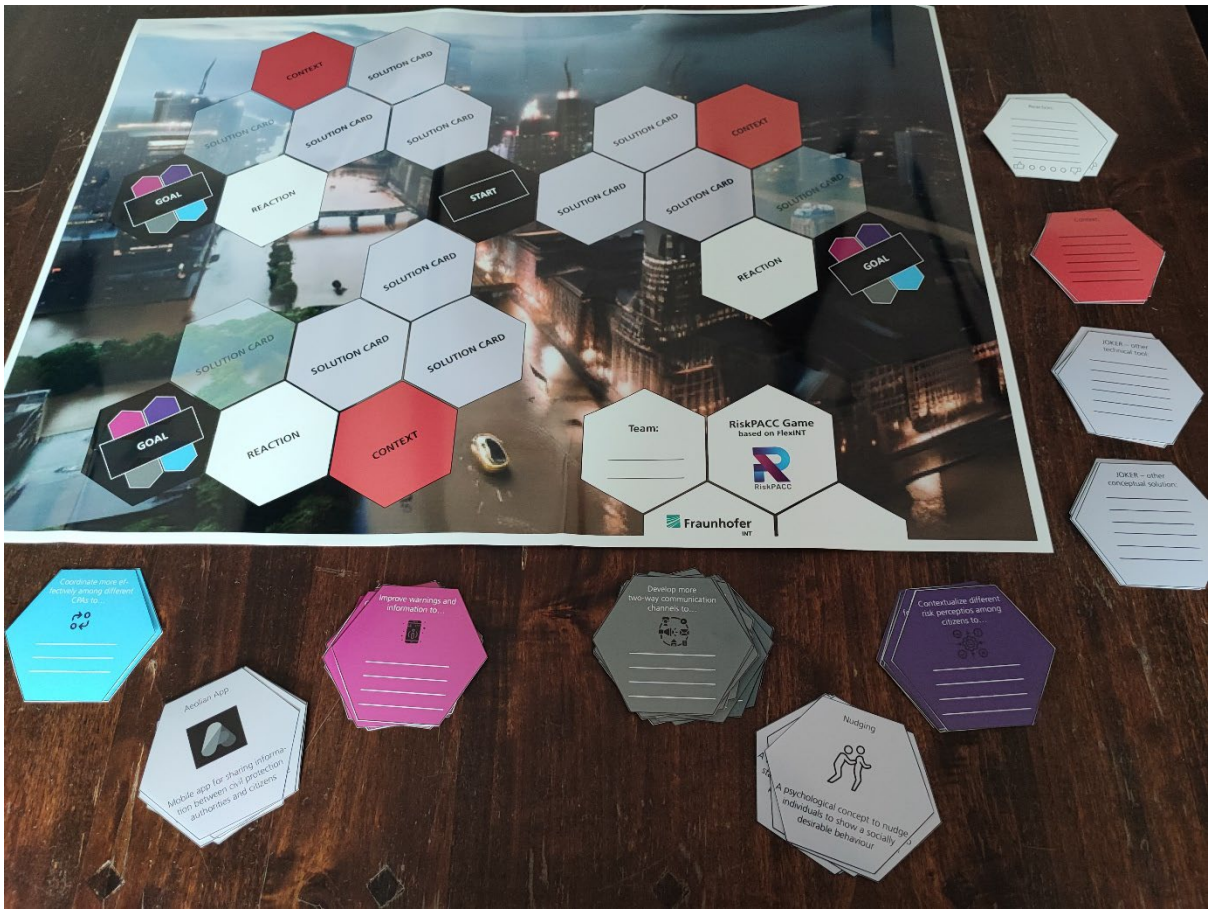


FIGURE 1: THE RISKPACC BOARD GAME

Roles

The RiskPACC game is designed to be played by a group of 4 to 15 players. These players shall represent key stakeholders in civil protection of a specific municipality, region or country. Such stakeholders can include, but are not limited to, civil protection authority representatives, police, firefighters, policymakers, citizens or representatives of vulnerable groups, e.g. youth, elderly people, minorities.

Apart from the players, a trained facilitator has to direct and moderate the debates. Finally, at least one observer notes down the results and the key points of the discussions to document the outcomes and the main discussion points for further municipal, regional or national planning purposes.

Gameplay

While playing the game, the players will debate and have to find consensus on one to three RPAGs that are of particular importance for their municipality, region or country. As the players represent different stakeholders, including CPAs and citizens, this debate is a two-way communication between CPAs and citizens to identify existing RPAGs. These RPAGs are represented by respective playing cards and are based on the results of WP1 and WP2 of RiskPACC. They are color-coded to reflect the related stage of the RiskPACC framework, a key result of WP4, the respective RPAG is part of. To address specific, locally most relevant, challenges, the players have to further elaborate on the chosen RPAG and define an overarching target they want to reach by closing it. This is written straight onto the card.

Once the goal(s) are fully defined, the players are tasked to choose up to three solutions that enable their municipality to reach these goals. These solutions can be the conceptual (WP3) and technical (WP5) solutions from RiskPACC or, by using a "joker card", any solutions beyond those from RiskPACC. By proposing the RiskPACC solutions, while retaining the flexibility to propose any other solutions, the players are directedly debating and further studying the RiskPACC solutions, but at the same time compare them to other solutions they are aware off.

To further consider the specific context of the discusses municipality, region or country, a context card can be played. On this card, the players can document relevant context factors, such as the structure of CPAs in the concerned region or specific hazards, scenarios or target groups that are addressed or might less profit from the chosen selections.

Once the players are convinced that they chose the right three solutions to reach their goal, they present their results to an external assessor. This assessor can either be one of the observers or any other external expert. The assessor will provide feedback to the players, both orally and in writing on the "reaction card" of the game. This feedback will rate the chosen selection of solution cards, as well as provide critical feedback on any circumstances that the players might not have considered initially.

Based on the reactions, the players do then have the opportunity to play one additional solution card to address any shortcomings raised by the assessor. This concludes the game.

Application

The RiskPACC Game, as well as the Risk Pack as a whole, is predominantly a dissemination tool for RiskPACC as a project. It is planned to play the game with municipal actors outside of the RiskPACC consortium following the end of the project, to further disseminate the project results and foster an implementation of the RiskPACC tools. It thus is a key tool to enhance the impact of the project as a whole.

Yet, the game was tested during the RiskPACC project itself, already. During five workshops in Heidelberg, Karlsruhe (both Germany), Setubal (Portugal), Kalamaria (Greece) and Gdansk (Poland), local stakeholders did play the game and provide valuable feedback to enhance the playing experience. The results of these sessions will be presented in D6.2, as the respective workshops were conducted within WP6.

The RiskPACC Game and RiskPACC

The RiskPACC game is based on the key findings and materials of RiskPACC as a whole. The following table provides an overview of RiskPACC Deliverables that the game is based on.

Game element	Deliverable	Relation
« Goal Cards »	D1.3	Within Deliverable D1.3, the main RPAGs are identified from a CPA perspective. The gaps listed on p.14 of D1.3. defined half of the « Goal Cards » of the game.
« Goal Cards »	D2.3	Within Deliverable D1.3, the main RPAGs are identified from a citizen perspective. The gaps covered in Chapter 3 of D2.3. defined half of the « Goal Cards » of the game.
« Goal Cards »	D4.3	The « Goal Cards » were color-coded to reflect the different phases of the RiskPACC Framework they are part of. The assignment of the gaps to the respective Framework phases was directly drawn from page 13 ff. of D4.3.
« Technological Solution Cards »	D5.4	The « Technological Solution Cards » of the game are representing the technological solutions developed within RiskPACC. The selection process is in line with the (virtual) quiz described on page 15 of D5.4.
« Conceptual Solution Cards »	D3.7	The « Conceptual Solution Cards » of the game are representing the conceptual solutions tested and used during RiskPACC. These are discussed in more detail in Chapter 4.1.1. of D3.7. The WP lead of WP3 recommended to add « Nudging » and « storyboard user activity » as dedicated

		solution cards, in addition to those listed in the Deliverable.

TABLE 3: INPUTS FOR THE RISKPACC GAME

4 CONCLUSION

The physical risk pack is a physical collection of the most crucial and impactful outcomes of RiskPACC. They consist of a number of documents and documentations, which are complemented by a serious board game, which serves as an orientation to users. The RiskPACC game has been tested in five workshops in Efus partner cities and have been perceived very well as a method to find orientation in the mass of information and solutions at hand.

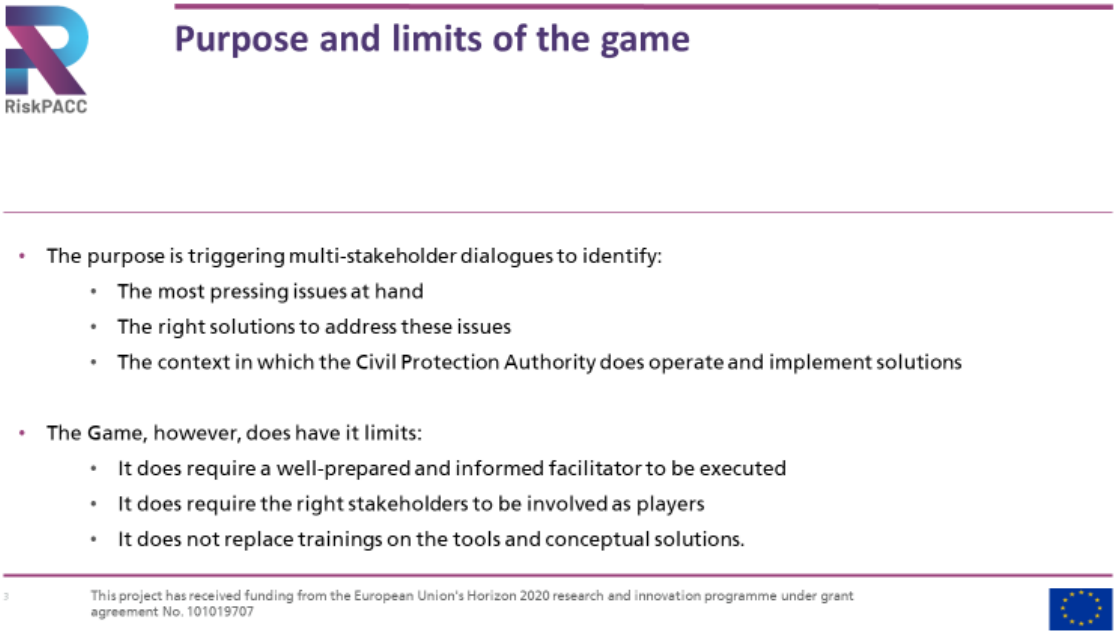
5 ANNEXES

Annex	Part of	Content
A	RiskPACC Game	Introductory Presentation
B	RiskPACC Game	Game Material
C	RiskPACC Game	Facilitator Guidelines
D	RiskPACC Game	(Players) Guidebook
E	RiskPACC Game	Observer Notebook

TABLE 4: ANNEXES

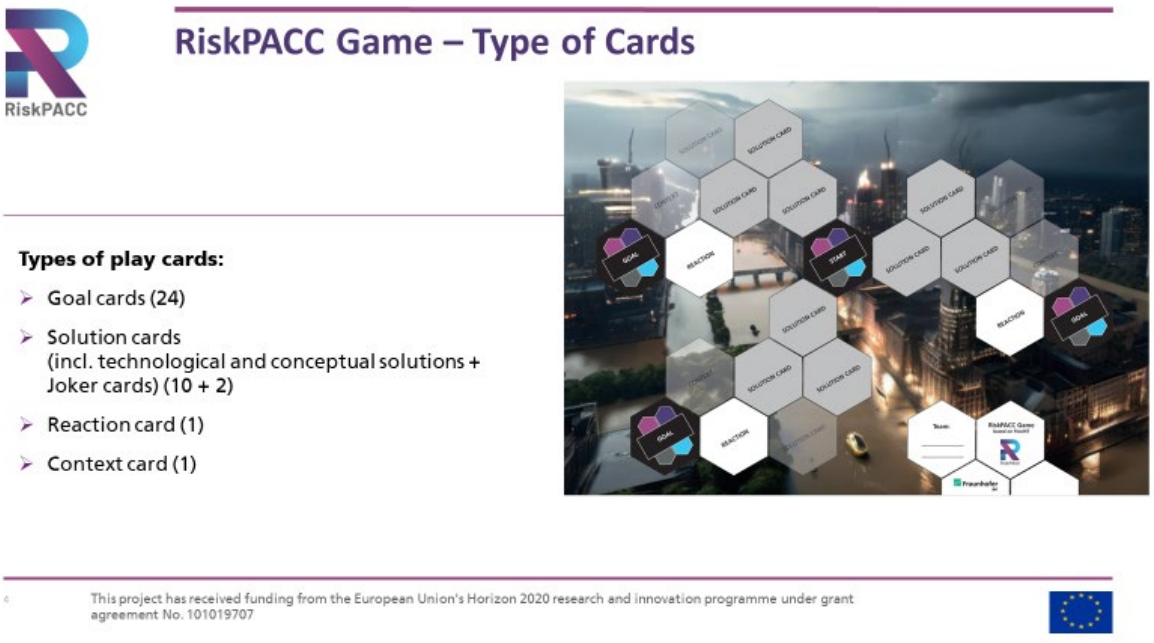
ANNEX A: RISKPACC GAME INTRODUCTORY PRESENTATION SLIDES

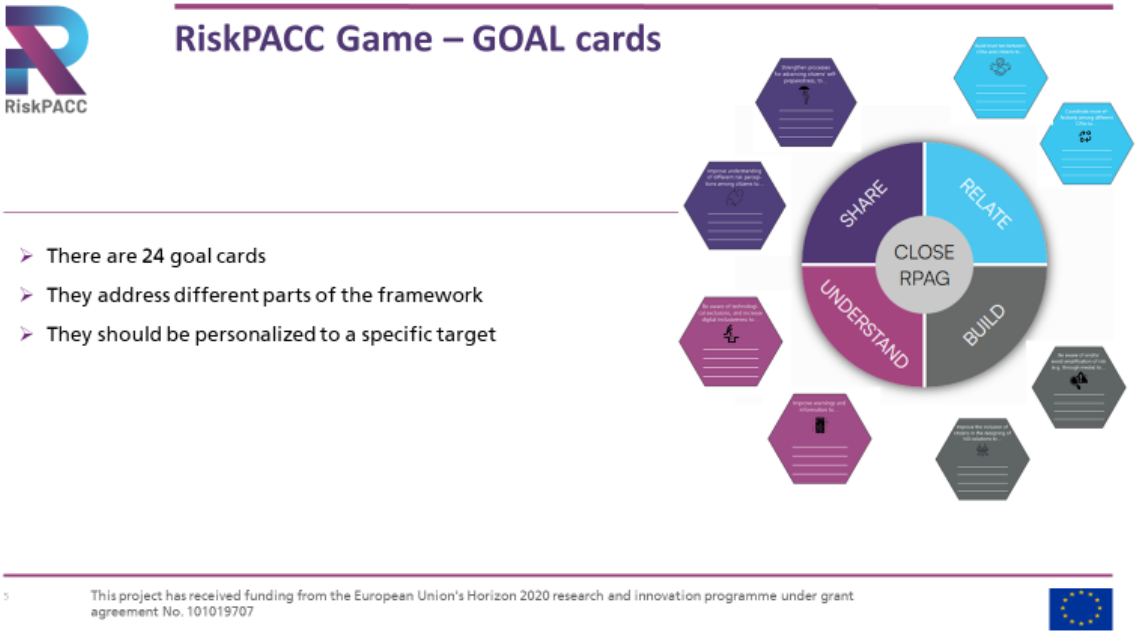
The following slides are presented before every game session, to briefly set the scene and introduce the game material, as well as the context of the game.



"Right stakeholders" in this case means that all relevant CPAs and citizen groups shall participate in playing the game. The facilitator and the municipality should analyse and define which of these stakeholders are relevant for the civil protection of the concerned municipality beforehand. If any relevant stakeholder is missing, the game can still be played and the debates it triggered and the results it achieved are still valuable.

Likewise, the municipality should, in such cases, critically reflect the absence of a relevant perspective.

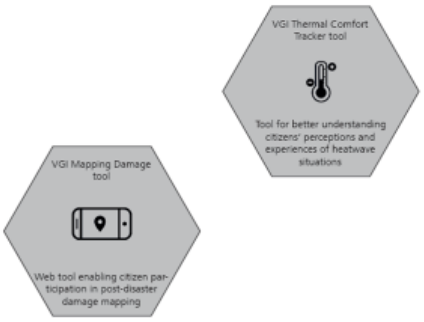




"Personalized" here means that the rather generic and theoretic goals pre-printed on the card (gaps as identified in WP1 and WP2) shall be made more specific to adequately describe the challenge at hand in the concerned municipality. The goal card "Improve warnings and information" could, e.g., be personalized to "Improve warnings and information to reach the tourists on the camp site".

RiskPACC Game – SOLUTION cards

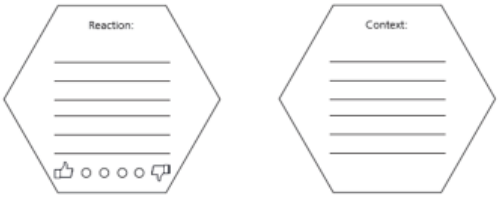
- There are 10 solution cards
- The solutions are technical or conceptual
- There additional Jokers to add your own solutions



6 This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101019707

RiskPACC Game – REACTION + CONTEXT cards

- There is one Reaction and one Context card
- They enable the players to further reflect on their goal



7 This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101019707

ANNEX B: RISKPACC GAME – GAME MATERIAL

The table top board of the RiskPACC game shows three different "pathways" in front of an AI-generated picture of a disaster-struck urban centre.

At the right bottom players can write the name of the team on the board to personalise it. This is particularly helpful for later identification, if several boards are used in the same room by different people.

Each pathway then consists of the Start as the centre of the board, the goal and a number of hexagonal fields in between. Within each pathway, the fields for solution cards, the reaction card and the context card are labelled accordingly.

FIGURE 2: RISKPACC GAME BOARD

The following graphic shows the playing cards of the RiskPACC game. The first two thirteen items on the following graphic are goal cards, which consist of a heading, an icon and free space to personalise them. The title and the icon can be found in the Guidebook (see below), too, where the concerned goals are explained in detail. The next three cards are "context cards", which provide room for the players to note additional context for their solutions down. The following three, white, playing cards are reaction cards, which consist of a text field and a basic Likert-scale that allows a non-playing party to assess how well the chosen solutions will be able to reach the defined goal. The next six, grey, cards are joker cards that allow the players to note down any (technological or conceptual) solutions they might be aware of and find

useful, which are not one of the RiskPACC solutions. The last three cards are goal cards, again.

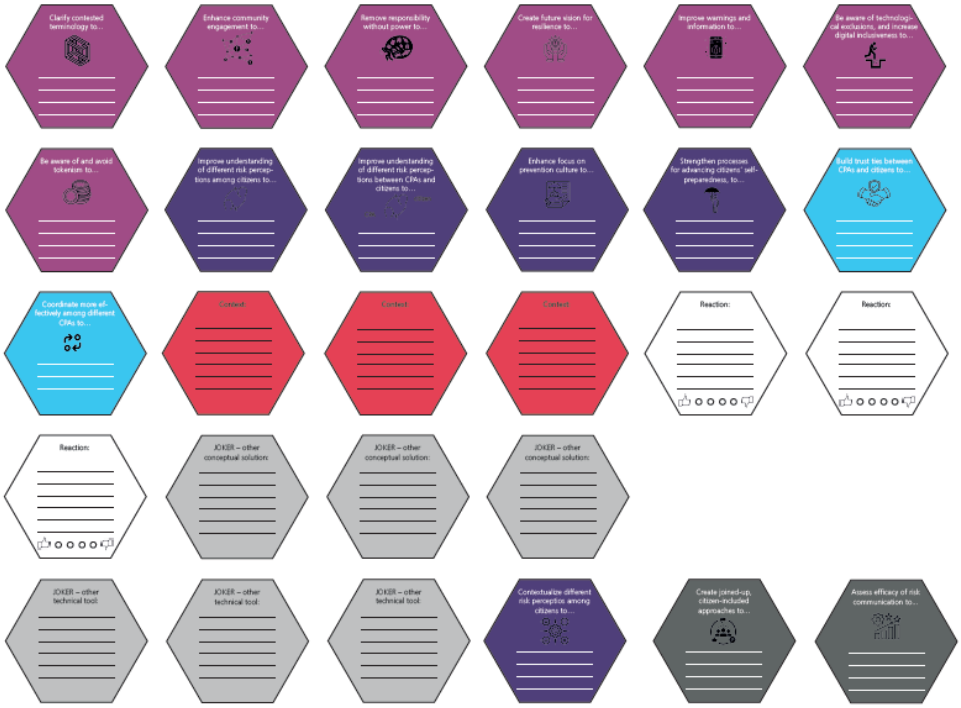


FIGURE 3: RISKPACC GAME CARDS (1)

On the following figure, the first 11 cards are goal cards. The final ten cards are the ten solution cards that represent the RiskPACC technological and conceptual solutions. They consist of a title, the logo or icon of the respective solution and a brief explanation of the solution.

FIGURE 4: RISKPACC GAME CARDS (2)

ANNEX C: RISKPACC GAME – FACILITATOR GUIDELINES

These Guidelines are meant to help facilitators guide a workshop session in which the RiskPACC Game is played by a number of stakeholders ("players"). It does not replace, but compliment, the Guidelines the players are provided and the presentation slides that introduce the Game to the players.

Preparations:

Before the start of the workshop session in which the Game will be played, ensure that the following preparations were carried out:

- The RiskPACC Game board is laid out on a table that is accessible from all side
- The RiskPACC Game cards are placed next to the board in 5 stacks:
    - Goal cards
    - Solution cards
    - Jokers
    - Reaction cards
    - Context cards
- The presentation slides are prepared and the required technology to present them is in place

Agenda:

To conduct a two-hour workshop session with the RiskPACC Game, the following agenda shall be used:

Agenda point	**Duration**	**Cumulated Time**
Short introduction of the facilitators	5 min	0:05 h
Presentation about the Game	10 min	0:15 h
Questions of players	5 min	0:20 h
The facilitators and players now move to the prepared Game table		
Short introduction of the players	10 min	0:30 h
Studying the Guidebook	20 min	0:50 h
Game Phase I	20 min	1:10 h
Game Phase II	20 min	1:30 h
Game Phase III	20 min	1:50 h
The facilitators and players now move back to a plenum		
Questions of players	10 min	2:00 h

Each of the agenda points is detailed in this document on the following pages.

Short Introduction of the Facilitators

The facilitator(s) shall briefly introduce themselves to the players. Make sure to include your full names, your affiliation, your role within the RiskPACC project and your relation to the Game ("part of the development team of this Game", e.g.).

Presentation about the Game

Present the slides that briefly introduce the core idea of the Game to the players. This should not take any longer than 10 minutes in total.

Questions of the Players

Following the presentation, invite the players to ask any questions they might have. Emphasize that they will be provided further detail about the Game in the following and specifically ask for questions concerning the scope and the aim of the Game, the purpose of playing it on this day or the embedding within RiskPACC.

Short Introduction of the Players

As you proceed to the Game table and the board, ask the players to briefly introduce themselves, including their role in civil protection, their affiliation. Document this roll-call in an anonymised form on the following page.

Studying the Guidelines

After documenting the players and their roles, briefly introduce the material to the players. Show them the goal cards, the tool cards, the jokers, the reaction and the context cards, as well as the Game board.
Hand out the Guidebooks to the players and give them a very brief idea of the different types of cards.
Ask them to study the goals and the solutions in the guidebook and invite them to assist them, if they have any questions.

Phase I

In Phase I, the players are tasked to choose their goal card(s) and specify their specific goal for their community by writing additional text to them.

As a facilitator, follow the discussions and take notes, in particular in regards to the following key questions:

Phase II

In Phase II, the players shall choose the right solutions to reach their target. As a facilitator, remind them of the jokers at this point and highlight the flexibility this brings. Do offer them guidance, if they have any questions regarding the tools. Document the results on the following page.
You may also remind them of the context card, on which they can note down any requirements for the implementation of the selected solutions, be they organisational, technical or administrative.

Phase III

In Phase III, the selection the players made shall be reflected and assessed. If there are sufficient observers, invite them to do so. If there are none or not sufficient observers, provide feedback yourself.
Ask one person of the group to present and explain the selected goal(s) and respective solutions.
For the feedback, focus on the following key questions:

- Is there any specific group of people that would not benefit from the chosen solutions or might even be negatively impacted by its implementation?
- Is there any dependence on external parties that is not considered (e.g. “what if the national CPA does not use this solution or choose another tool?”)
- Is there any hazard, in which the chosen solutions would not have any impact at all or even be counterproductive?
- Are there any circumstances that would hinder the impact of the chosen solutions (e.g. power outages, ICT disruptions, etc.)?
- Is the right governance and management structure for these solutions either in place or planned by the players (e.g. “Who will manage this app?”)

Document the assessment, as well as the final reaction by the players to it, on the next page. Summarized feedback should be documented on the Reaction Card.

Based on the feedback, ask the group to reassess their selected solutions and possibly adapt. If useful, they can pick one more solution card and put it on the greyed-out Solution Card field on the board.

Questions of Players

Finally, allow some time for closing remarks and questions of the players.

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NOTES

ANNEX D: RISKPACC GAME – PLAYERS GUIDEBOOK

The following guidebook is distributed to all players of the RiskPACC Game.

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GUIDEBOOK

For the RiskPACC collaborative table top game

DRAFT VERSION FOR APPLICATION IN RISKPACC ASSOCIATED MUNICIPALITIES

RiskPACC

The RiskPACC Game

Purpose

The EU research project RiskPACC has determined a number of existing "risk perception-action gaps", which is defined later in this Guidebook. During the RiskPACC project, in order to address the RPAG, a number of solutions that have the potential to enhance the two-way communication between civil protection agencies and citizens were explored, enhanced, adapted or newly developed from scratch. The purpose of this game is to moderate a municipal debate among pertinent stakeholders that results in selecting the right tools for the right risk perception-action gap.

Scope

The RiskPACC game is a collaborative game that is used as a workshop methodology to motivate and moderate targeted debates among the pertinent stakeholders within a municipality. It is not a stand-alone game that can be played without a profound moderation and it is not able to solve existing risk communication or disaster management issues itself. It does, however, trigger fruitful debates and helps diverse groups of players to explore potentially existing gaps within their municipality, as well as potential tools that might be qualified to enhance the municipal disaster risk management.

Results

The outcome of playing the RiskPACC game is, predominantly, a better understanding of communal requirements and needs within the domain of risk communication and disaster risk management as a whole. These results are documented by the cards played during the game, as well as by the documentation of the key points of discussions and presentations.

PHASE I

Choose your goal(s)!

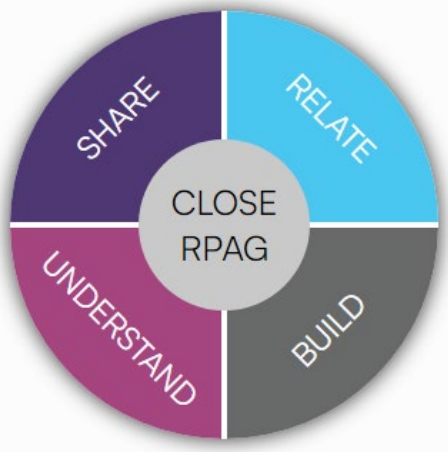
Within RiskPACC, we have identified a number of issues that contribute to the so-called risk perception-action gap (RPAG). The risk perception-action gap refers to (a) a mismatch of citizens' risk perception and respective actions taken; (b) differing risk perceptions among citizens and civil protection authorities; and (c) mutual expectation of citizens and civil protection authorities, often differing to what they actually do.

Depending on the instructions of the facilitator, **choose one to three goals** you want to play today. Ask yourself "What is the most prevalent gap my municipality is observing?" while selecting the right goal(s) for your game.

The specific goals are briefly explained on the following pages of this booklet. Each possible goal does represent one of the goal cards in front of you. The goal cards are colour-coded with the colours of the "RiskPACC Framework".

Context: The Framework

The RiskPACC Framework is a guide designed to help co-create strategies and tools for communicating about risks based on an ongoing two-way conversation between the public and authorities responsible for civil protection and emergency management. This framework is made up of four related modules, each connected to the others: understanding, sharing, relating, and building. Its goal is to close the gap in how risks are perceived and what actions are expected between the public and authorities.



Once you have decided which goal(s) you are playing, pick the respective goal card(s).

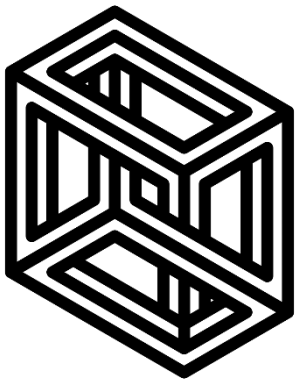
To target your community more precisely, add the socio-political target group you want to address to the goal card. **Write it on your goal card**.

Example: If your goal card is "Be aware of technological exclusions, and increase digital inclusiveness" you could add "Be aware of technological exclusions, and increase digital inclusiveness to reach elderly citizens" to the card.

Finally, **place your chosen goal card(s) on any of the "GOAL" fields of the playing board**.

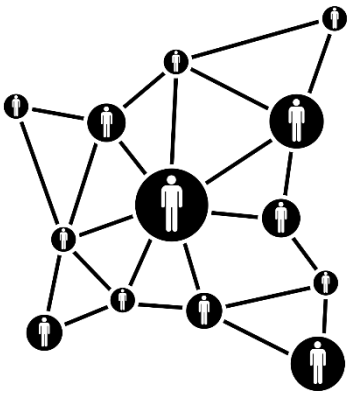
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101021271

THE GOALS



Clarify contested terminology

"Disaster resilience" and "community resilience" are contested terms. They mean different things to different civil protection agencies (CPAs), and to communities. They are not standardised across contexts, which occasionally leads to groups speaking past each other or having different priorities. In some cases, local communities do not use the term resilience to describe how they prepare for, respond to, and recover from a disaster event. In other cases, such as the UK, the notion of resilience is hardwired into community action. Most CPAs interviewed for RiskPACC provided a different definition of resilience, and used terms like "disaster management", "emergency management", and "hazard prevention" to describe their work instead. Terminological clarity can help produce more effective and integrated planning and response around disaster, if all groups within a particular context understand local priorities and theoretical concepts in the same way.

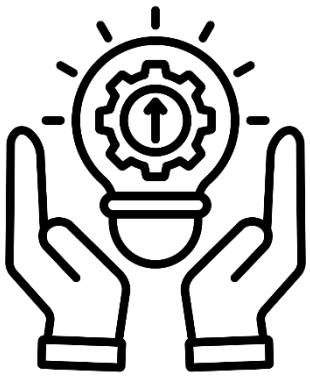


Enhance community engagement

Attempts at enhancing broader structures of disaster resilience by CPAs are frequently mobilised through highly centralised – and siloed – governance. These attempts can be overly technical, as well as legalitic, and often pay inadequate attention to the ability of communities to adapt and embrace change. In turn, these moves can preclude wider participation of stakeholders from engaging with decision-making, particularly communities. Where feasible, communities should be further included at each level of decision-making – to help with the design, preparation, and delivery of resilience measures.

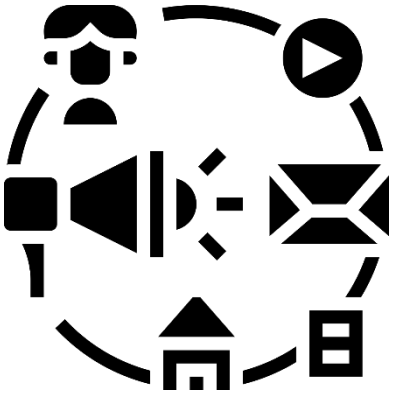
Empower citizens to act only in relation to their resources

Critiques of community resilience efforts see expected action as falling on citizen shoulders, a under the remit of 'responsibilising' local citizens – a method to devolve responsibility from the state to civil society, in an attempt to relocate responsibility for disaster response. This approach is often associated with parallel failure to delegate appropriate resources and the ability to act effectively in local areas. In turn, citizens and communities disengage further from efforts to produce resilience in their locales. Instead, citizens should be granted authority to act only in proportion to the resources they have access to and in coordination with CPAs and other local representatives.



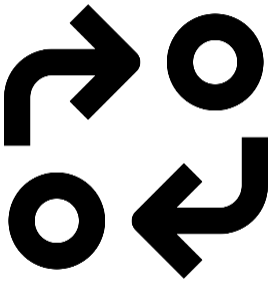
Create future vision for resilience activities

There is often a lack of future vision in building resilience efforts, particularly around citizen engagement and the function of communities. Most of the discussion around future activities has foregrounded better communication and collaboration with CPAs in the area, to both better understand the role of citizen groups and to better incorporate these groups into local CPA structures. Work to engage communities in disaster response frequently occurs only after a disaster event, rather than in the preparedness and anticipatory phase. Citizen groups should be consulted to co-develop a future vision around priorities in the area of disaster prevention and resilience building.



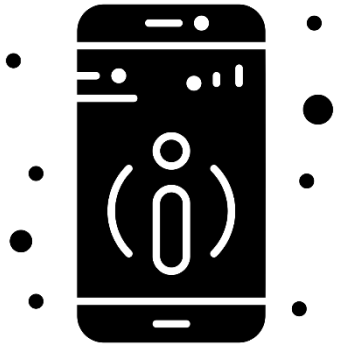
Develop more two-way communication channels

Communication channels between CPAs and citizen/community groups were non-existent in many of RiskPACC's case studies. This ultimately deprives risk governance planners and decision-makers from the ability to adjust and tailor risk response to the fluctuating needs of different communities – as well as depriving the needs of local communities from being integrated within resilience plans. CPAs suggested that issues with engaging citizens in prevention activities (including the dissemination of risk communication) as a major gap in their activities. Social media as one possible forum may offer a bi-directional communication platform whereby messages can be pushed to the public and feedback received. This however comes with ethical issues (regarding privacy and consent around data gathering), as well as concerns over digital exclusion.



Coordinate more effectively among different CPAs

Different parts of Disaster Risk Management activities are the domain of separate agencies, according to many RiskPACC interviewees. Integrated working between CPAs is therefore frequently imperiled or inadequate, in relation to the needs of the situation. This siloing produces different priorities, disjointed working practices, and communication gaps between CPAs. Better coordination across CPA working should be mobilised, to improve resilience at all levels of prevention and response, including in design, preparation, and delivery of local disaster risk management/reduction plans.

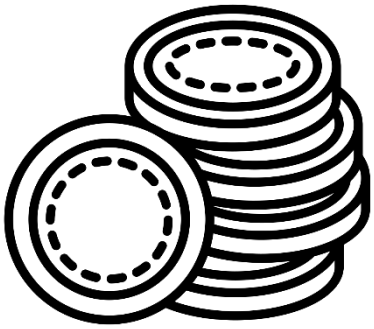


Improve warnings and information

Several citizen and community groups highlighted a warning-and-informing deficit. In effect, these groups highlighted how local communities often only have a superficial level of knowledge about disaster risk, and raised the importance of increasing risk-related information available to local communities. More rigorously-communicated warnings can help citizens act in appropriate ways. In this context, targeted and inclusive educational programmes and information campaigns were indicated as means of not only informing but also involving civil communities in the disaster risk management process.

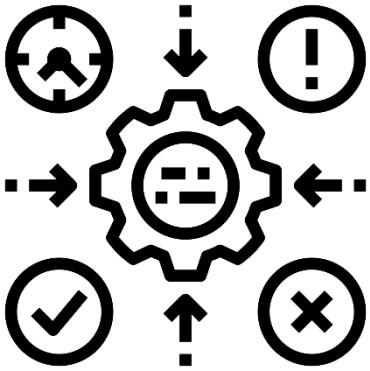
Be aware of technological exclusions, and increase digital inclusiveness

Resilience solutions are often technology-led, including VGI solutions. The emphasis on tech-based approaches can marginalise socio-economically disadvantaged groups, and less technology-savvy people. This in turn exacerbates the digital divide, which already has implications particularly for race, class, and age-based inequalities. There are limits in how technological solutions (including VGI) can represent citizens, since such approaches unfairly privilege those with money, access, and time to utilise the technology. There may be some ways of mitigating this exclusivity, although without significant resourcing the exclusions can reproduce existing inequalities.



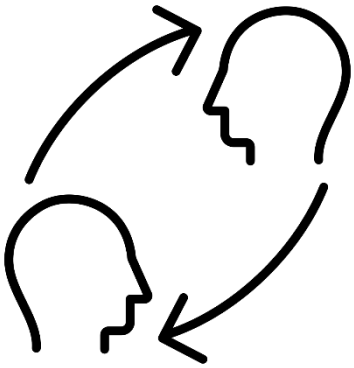
Be aware of and avoid tokenism

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. The view is that such approaches do not meaningfully address underlying factors – such as marginalisation and environmental degradation – that produced them. Being cognisant of such critiques and avoiding an exclusive focus on response at the expense of mitigation is a key factor in disaster risk reduction.



Contextualize different risk perceptions among citizens

Risk perceptions 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 often misalignment between how CPAs and community perceive risk. This gap is characterised as multiple psychological, sociological (including gender, class, disability, and race), economic, experiential, and cultural factors that affect risk perception and its impact upon subsequent actions. Therefore, it is important to situate people in their sociopolitical context, instead of merely considering them as individuals. This will enable CPAs to better understand what resources are required, and where – and enable communities to react more effectively if their context is recognized in design and preparation for disaster.



Improve understanding of different risk perceptions between CPAs and citizens

Many CPAs have observed that citizens and CPAs have a very different understanding of risk and what occurs in emergency situations. These gaps in perception can lead to conflict if citizens have very different idea of what CPAs should be doing in response. Interrogating the gap between CPAs and citizens will enable CPAs to better recognize why citizens act as they do, and intervene differently if required. Mutual understanding can assist in the building of trust, which in turn can make actions around disaster more effective.

Enhance focus on prevention culture

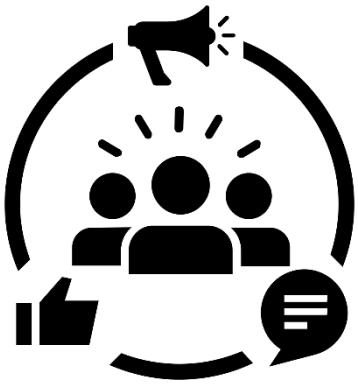
Among some of RiskPACC's case studies there appeared a lack of local ability to understand the potential impact of risks. There were also inconsistencies regarding the coordination of prevention activities and community actions when they occur. More emphasis on a culture of prevention would educate citizens (especially in more precarious positions) about the dangers they may face. It would illustrate the impact and consequences of disaster, as well as producing stronger relations between citizens, communities, and CPAs. In turn, this would mean flows of communication operate more fluidly between communities and CPAs.

Strengthen processes for advancing citizens' self-preparedness

There is a need for citizens to act in contexts where their actions would be appropriate, rather than passively wait for government intervention. Many CPAs noted that citizens can wait for CPAs to "come and save them" while there may be actions that they can take themselves – actions which would make sense for the citizens to perform whilst government intervention is being prepared. A shift from passive to more active citizenship should be sensitive to different social contexts, and be undertaken in a culturally appropriate manner (and bearing in mind resources that are differentially-accessible to particular groups of citizens).

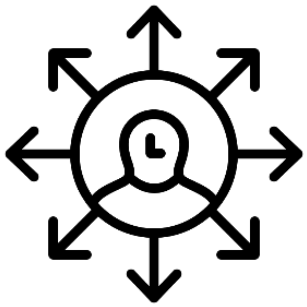
Build trust ties between CPAs and citizens

A traditional focus on infrastructure resilience is not sufficient for mitigating crisis, and more emphasis should be place on enhancing social capital. Here, 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.



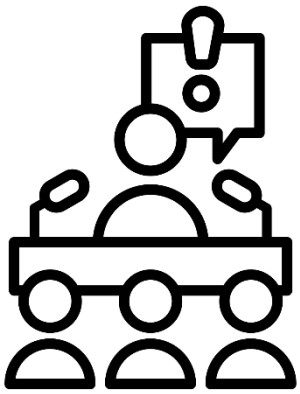
Create joined-up, citizen-included approaches

The building of disaster and community resilience should emphasize new forms of joined-up governance. These might be made effective through mutual working between civic and agency institutions, as well as including citizens, and by operating in contexts of accountability and working towards shared goals. 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 measures. Communication and networking should involve bottom-up activities to better incorporate citizens, especially since these processes are currently predominated by top-down approaches.



Understand and take seriously nuances within local perception of risk

There is no causal link between risk perception and subsequent action. There is a pressing need to understand how risk is conceptualised by local communities, and how risk adaptation and preparedness make sense in local contexts. Furthermore, institutions overseeing disaster resilience might better understand the nuances of risk perception instead of generalising it – in order for any response to account for the complexities of local contexts. Here key policy and risk governance questions emerge about how to engage with risk perception when different CPA actors and the public have different views of risk, different degrees of risk acceptance, and divergence with regard to the appropriateness of risk reduction actions to take.

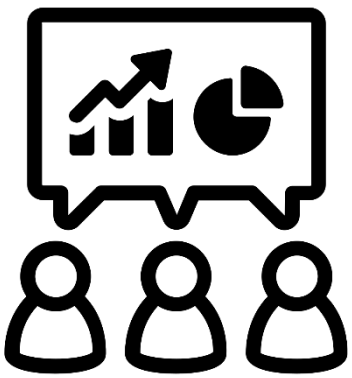


Enhance proper risk communication channels

It can be challenging to connect CPA and citizen perceptions of risk. Several RiskPACC partners described being concerned about providing information on worst case scenarios without causing alarm. Care should be taken to consider the likely impact on citizens when communicating about worst case scenarios. Communication should therefore be designed with feedback from citizens and community groups in mind. This will enable communication between government agencies, civic groups, and citizens to be effective and responsive.

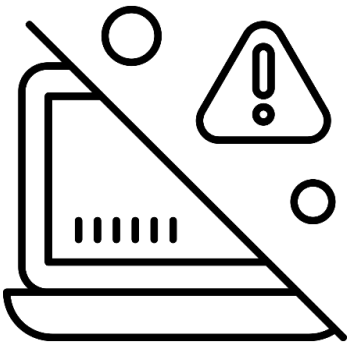
Be aware of and/or avoid amplification of risk

There is much to learn in devising effective and contextual strategies by which CPAs communicate with the public regarding the risks faced, especially during an ongoing incident. The importance of media and CPA communications should be understood in how they amplify or downplay risk, during an event. The potential impact of these communications should be considered in the context of the risks being communicated about, as an event unfolds.



Utilise local knowledge when building datasets

Perceptions of risk between CPAs and community members are often not aligned. This is in part due to existing datasets for disaster risk preparedness, management, and response not utilising local knowledge. As a result, local disaster responses often fail to produce user-centered and tailored risk management plans, particularly for the smaller administrative and geographical areas. Datasets should be produced in cooperation with citizens and community groups, to ensure any processes or actions taken more accurately reflect local contexts.

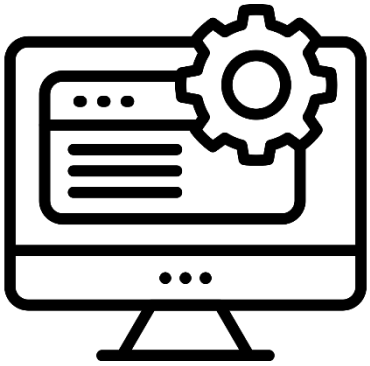


Avoid purely relying on technical tools

There is concern among CPAs about relying solely on new tools for risk communication, as they may not increase risk perception. Relying on technological solutions can also produce the assumption that technology alone can be sufficient in mitigating disaster. Technology-led approaches can also exacerbate rather than alleviate the unequal effects of disaster, since this may leave behind some of the most vulnerable people (including the elderly and the less technologically-savvy). It is important to design activities and processes that will not exclude those who have limited access to tech, and so any technological tools should be deployed in concert with other approaches.

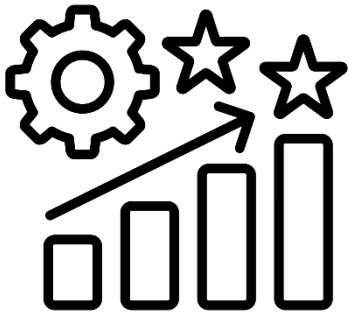
Enhance comprehensive use of Volunteered Geographic Information (VGI) and other citizen science approaches

The compartmentalisation and marginalisation of VGI methods often restricts VGI usage to single stages of the disaster continuum, or to a single type of disaster event. Encouraging the take-up of this approach could not only enhance the role of citizens in navigating disaster, but through citizen-led recording of environmental changes also connect different stages and forms of disaster with each other. There is much space for data-sharing, as well as the generation of common databases across CPAs, to be improved. CPAs making procedural improvements here would in turn render the information and efforts provided by citizens more meaningful.



Assure regular updates and continuous engagement in using VGI tools

The potential for VGI and other citizen science tools to capture community risk perception and enhance disaster resilience is substantial. Yet engagement with these tools is peripheral, and they remain frequently sidelined in the development of plans around disaster. Their potential therefore is substantially underdeveloped, and the tools do not get updated, and are frequently not incorporated systematically within resilience measures. VGI tools should be assessed, and updated where appropriate, in order for them to make a meaningful contribution. Emphasising this citizen-led approach could operate as a medium between local communities and CPAs.



Assess efficacy of risk communication

Some CPAs gather data on whether their risk communication efforts are working, but many others do not know whether they're really being effective. Without this information, it can be challenging to know whether risk perception is changing, and how it affects citizen actions locally. Processes for assessing the utility and shortfalls of existing communication, including how communication affects how citizens act, should be developed. This will enable the effectiveness of communication to be analysed, and any lessons incorporated into CPA action.

Enhance processes around prevention activity

CPAs interviewed tend to focus more on response, where the RPAG is best addressed by prevention work. Prevention activity might include community or agency efforts to build resilience against the effects of disaster, including steps being taken to address underlying factors that might contribute to the impact of disaster (from marginalisation to environmental degradation, for instance). These efforts might be formalised in order that they are made more sustainable, and that they become part of the infrastructure of local approaches to managing disaster.

PHASE II

Reach your goal(s)!

To reach your goal, you are now tasked to find the right solutions for your municipality to get there. These solutions can be technical or conceptual. On the following pages, the RiskPACC solutions will be presented in more detail.

Select up to three solution cards that refer to solutions that will help you achieving your self-defined goal. As a group, discuss which solutions are best suited and take a collective decision to ensure it is the best suited for all of your requirements and preferences.

If you do have another solution in mind that is not represented by any of the cards, use a (technical or conceptual) joker card instead and write the name of your (technical or conceptual) solution straight on it.

When you did find a consensus and did select your solution cards, **put them on the three grey "Solution Card" fields** on the playing board in no particular order. You have made your first steps towards your goal!

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THE SOLUTIONS

AEOLIAN APP

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

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.

VGI Mapping Damage tool

The VGI Mapping Damage tool enables citizen participation in post-disaster damage mapping, providing valuable insights for both citizens and CPAs to comprehensively assess the extent of physical impacts and identify community recovery needs.

VGI Thermal Comfort Tracker Tool

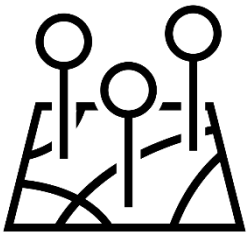
The VGI Thermal Comfort Tracker tool enables CPAs to conduct controlled experiments to understand citizen perceptions of heatwave situations, their experiences on heatwave and non-heatwave days, and the relationship between subjective perceptions and objective thermal indicators.

Public Sonar

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 you in early warning and comprehensive situational awareness. PublicSonar offers you, 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 your situational needs.

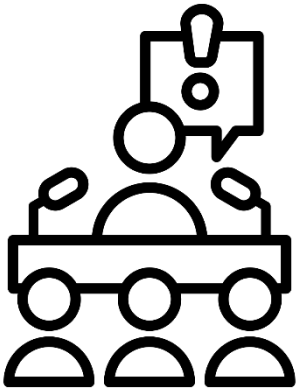
Co-Creation

Co-creation is a methodology adapted from rather practical, instead of scientific environments. The co-creation approach employed in RiskPACC serves 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.



Participatory Mapping

Participatory mapping is mostly referred to the representations and visualization of spatial information that have been produced with the application of 'participatory' processes and with the direct involvement of community groups or individuals. It is fundamentally established upon the ideas of dialogue and participation, while producing physical maps, or digital geospatial datasets generated by citizens, researchers, public authorities, and other interested parties through a process of participatory co-production.

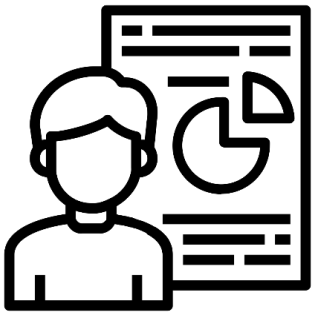


Risk Communication Exercise

The risk communication exercise we designed aimed to provide a flexible solution for case study partners to address the Building module of the RiskPACC framework within their own specific context. The aim of the risk communication exercise is (1) to address a need by CPAs to communicate to citizens and/or volunteers a particular risk that they have identified. (2) to open up a structured space for dialogue and sharing of risk perceptions between CPAs and citizens/volunteers on the meanings and measurements of this particular risk (3) to identify the best forms of risk communication to help citizens and/or volunteers to take informed and appropriate risk reduction actions (4) to meet the needs of co-design and build relationships of trust through working together on a defined activity.

Nudging

Nudging is a concept in behavioural sciences such as psychology or communication science. "A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid" (Thaler, & Sunstein, 2008, p. 6). To give an example for nudging that is very easily understood, a nudge used in road traffic is the digital display of an approaching car's velocity. The speed is evaluated on the digital display with smiley faces, for example, a sad smiley face is shown as soon as the car drives faster as permitted. The driver can both alter their behaviour and avoid the nudge very easily – non-compliance will not have any legal consequences. But being exposed to such nudges can persuade a person to comply to a socially desirable behaviour, in the best case without manipulation. The concept of nudging shows similarities with safety and security priming, which are concepts that have also been applied in the resilience domain (cf. Groves et al., 2017, e. g.). Therefore, we consider nudging to be integrated in a conceptual user story to be a perfect fit.



Storyboard User Story Activity

A story board user story is a method to simulate the implementation of a technical tool. It is written by looking at the functionalities of technical tools and writing a story about a (hazardous) situation in which it might be used. It is kept neutral and only describes the features of the tool. It is then evaluated by participants of a workshop to derive advantages and disadvantages of the concerned technical tool.

PHASE III

Present, reflect, adapt!

If additional context for your selection is required, e.g. any requirements or demands from any parties, **note them down on your Context Card**. Place the card on the foreseen field on the board.

Now that you have made your steps towards reaching your goal, **present your strategy** to the facilitator and anyone else in the room. Why did you choose the goal that you chose? Why did you pick the solutions you did and how exactly will they help your municipality to reach the goal?

Answer any questions your audience might have and highlight relevant points of the debates you had in Phase I and II.

In this phase, the facilitators and others in the room will reflect on your choices and critically assess them. They will, finally, sum up their impressions and feedback on a Reaction Card, on which they will rate the selections you have made and provide you a brief written feedback. Did you insufficiently consider a specific group of people in your municipality? Did you forget a part of the municipality or simply not think about a specific possible disaster in the first place?

Finally, you get the chance to adapt based on the reaction you receive. If useful, **pick one more solution card and put it on the greyed-out Solution Card field on the board**. With that, you have finally reached your goal. Congratulations!

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ANNEX E: RISKPACC GAME – OBSERVERS DOCUMENTATION

The following documentation sheets are distributed to all Observers of the Game.
For citizens that are not affiliated to a CPA, the field "Role within CPA" should indicate their specific role in the case of a disaster. Representatives of citizen groups, e.g., might assume a specific role in such a case. All fields can be left void, if there is no fitting description, too.

Player (e.g. „Municipality 1")	**Affiliation** (e.g. „Municipality – Mayors Office")	**Role within CPA** (e.g. „Drafting alert messages")

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Question	Documentation
Which card did they choose and why?	
Did any of the players have conflicting views on the selection? If so, which?	
How did they specify the goal card to suit their municipality?	
Did the players already have a specific hazard in mind when selecting the card? If so, which?	
Did the players highlight a specific target group for their goal,? If so, which?	

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Question	Documentation
Which cards did they choose and why?	
Which context did the players define?	
Did they discuss any requirements for the implementation of these solutions? If so, which?	
Did any of the players assume responsibility for the implementation or management of these solutions? If so, who and why?	
Did the players highlight a specific target group they could reach with the chosen solutions? If so, which?	

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Question	Documentation
How was the selection of solutions assessed?	
What additional context was defined?	
Which additional solution cards did the players play in reaction?	
Why did they choose this final card?	
Are the players convinced that the goal has been reached?	

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The RiskPACC Consortium

FIGURE 5: THE RISKPACC CONSORTIUM