RiskPACC

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

PROTOTYPE KNOWLEDGEBASE REPOSITORY

Deliverable D4.2

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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 develop 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

The objective of D4.2 “Prototype Knowledgebase Repository” is to document how the RiskPACC Repository of good practices was set up and designed. The present deliverable thus details what exactly is understood to be a good practice for the scope of RiskPACC, which content was considered for the deliverable and how it was organised within the repository, and how the items in the repository can be assessed. Finally, the deliverable provides the documentation of the technical implementation of the repository, which is embedded within the RiskPACC platform.

This deliverable and the way the items are analysed and organised are building upon the work done in WP1, WP2 and other work done in WP4, in particular on interim results of the RiskPACC Collaborative Framework. The resulting repository and the theoretical definition of it in turn do provide direct input to the final version of the framework (D4.4). Training material to be developed and presented in D4.5 will guide possible users on how to use of the repository. Results of WP5 (technical tool development) are taken up in the repository, and WP7 will use the results of this deliverable to integrate the repository in the RiskPACC platform.

The main aim of this deliverable is to establish a methodology how to populate and organise a repository for disaster and risk management solutions, whether they are technical, structural, or legal. It further aims to provide the RiskPACC platform to host, populate and maintain such a repository during and after the RiskPACC project.

The resulting, already implemented, online repository allows Civil Protection Authorities (CPAs) within and outside of the RiskPACC consortium to add their own practices into the repository, while organising and analysing it in a consistent way. Vice-versa, it does enable CPAs and citizens that need a solution to close any observed Risk Perception Action Gap to assess a structured and commented repository of known practices.

While at this stage of the project, the repository mainly contains practices from outside the project, RiskPACC currently identifies additional (“good”) practices and develops new approaches that can later on feed into the repository. Especially, the currently ongoing development of the RiskPACC Collaborative Framework includes an identification of existing, and development of new practices relevant for the repository.

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Glossary and Acronyms

Acronym	Glossary
CPA	Civil Protection Authority
CSO	Civil Society Organisations
D	Deliverable
DRIVER	EU Project title of the FP7 project "DRiving InnoVation in crisis management for European Resilience"
DRM	Disaster Risk Management
eMARS	Electronic Major Accident Reporting System
EU	European Union
FRONTEX	European Border and Coast Guard Agency
HRT	Hellenic Rescue Team
GITEC	Genesis and Impact of Tsunamis on the European Coasts
HSEES	Hazardous Substances Emergency Events Surveillance
ICT	Information and Communication Technologies
IOC	International Oceanographic Commission
NEAMTWS	North-Eastern Atlantic and Mediterranean Tsunami Warning and Mitigation System
rescEU	European Civil Protection and Humanitarian Aid Operations (EC upgrade of the EU Civil Protection Mechanism)
RPAG	Risk Perception Action Gap
T	Task
UK	United Kingdom
UN	United Nations
VGI	Volunteered Geographic Information
WP	Work Package

TABLE 1: GLOSSARY AND ACRONYMS

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1 INTRODUCTION

1.1 Overview

The main aim of task T4.2 was the creation of a repository that includes practices for different purposes and contexts that could be used by Civil Protection Authorities (CPAs) and/or citizens to close what the project understands and defines as the Risk Perception-Action Gap (RPAG); see deliverables from WPs 1 and 2. It furthermore was part of this task to implement a prototype repository and populate it with practices that could potentially be beneficial for CPAs and citizens to address or close the perceived or observed RPAG (or aspects of it). The results are documented in this deliverable D4.2.

1.2 Structure of the deliverable

In Chapter 1, the context and structure of the deliverable is briefly elaborated. In particular, relations to other Work Packages (WPs) of the RiskPACC project are explained.

In Chapter 2, the development of the RiskPACC Repository of good practices is documented and elaborated in detail. While subchapter 2.1 briefly sums up the context of the repository and thus sets the scope for the chapter, subchapter 2.2 elaborates what exactly a good practice is and how the term will be used in the following of this deliverable and in the project as a whole. Then, subchapter 2.3 documents how the Repository was populated with initial practices and how it was organised to be in line and coherent with the RiskPACC Collaborative Framework developed in D4.3 and D4.4 respectively. In subchapter 2.4, the filtering process for current and future practices that might not enter the repository is briefly explained, before finally subchapter 2.5 documents the technical implementation of the repository and its integration into the wider RiskPACC digital platform developed under WP7.

Chapter 3 concludes on chances as well as limits of the repository and provides an outlook to upcoming activities that may support a useful implementation and usage of the repository.

1.3 Relation to other Work Packages

This deliverable builds on findings of WP1 (especially D1.2) and WP2 (especially D2.2). These, in particular, influenced the criteria that practices are assessed on.

The repository itself is organised along the draft RiskPACC Collaborative Framework model that is currently developed further and that will be presented in D4.3 by M24/August 2023, and later on improved based on the learnings within RiskPACC, for D4.4. Training material to be developed and presented in D4.5 will guide users on the use of the repository. Results of WP5 (technical tool development) are taken up in the repository.

Finally, within WP7 the repository will be integrated into the RiskPACC digital platform.

2 THE RISKPACC REPOSITORY

2.1 Context

The RiskPACC Repository of good practices (from here on forth: Repository) is meant to be a collection of tools, both technical and non-technical (e.g., conceptual), that potentially are able to close one or more of the gaps discussed in D1.3 and D2.3. These are gaps in current practices that lead to the RPAG that RiskPACC is attempting to address. In particular, the Repository is meant to supplement the technical and non-technical tools developed within RiskPACC by providing the stakeholders, i.e., CPAs and interested citizen groups', insights into existing good practices and their possible field of application. This way, CPAs and citizens are provided with an extensive overview over all kind of practices, including an assessment of these practices, which may assist in enhancing their current operations. This will allow CPAs and citizens to choose the right practice to address the RPAG they observe, whether that is a RiskPACC solution or a pre-existing practice.

This Repository will be a collection of practices and guides to use, which will exist in a digital format that is integrated as a static component into the RiskPACC digital platform developed in the frame of WP7.

In its initial stage, the content of the Repository will consist of some first good practices, most of which have been identified from external sources within D1.2 and D2.2. Then, within RiskPACC, approaches are currently developed and/or identified that can later on feed into the Repository. Especially, the currently ongoing further development of the RiskPACC Collaborative Framework includes the development of new, and identification of already existing practices relevant for the Repository. In addition, the technical tools developed within RiskPACC are included as practices.

2.2 Definition of a 'Good Practice'

Already in D1.2 *CPA Consultation Report and Repository of Best Practices*, it is stated under the definition of the term that "*best practice will refer to good practices that have proven successful in past cases*", since *"the term 'best practice' … connotes that an ideal has been achieved, whereas 'proven practice' more reasonably asserts that an approach has been tried successfully*". The present D4.2 thus refers to "good practices". This is further explained in the following, and a working definition of "good practice" will be derived.

2.2.1 DECOMPOSING 'BEST PRACTICE'

It is a standard practice for scientific projects like RiskPACC to identify the so called 'best practices' to tackle a certain issue out there already, before potentially developing a new solution to the issue. However, and as outlined above, the concept of *best* practice does have a number of issues, which is the reason that this deliverable instead seeks to deliver good practices rather than best practices. Namely:

1. As Reinking (2007; p. 75) pointedly phrased it, a “good or better understanding of best practices” is required, before naming any. A best practice, taken literally, would mean that all other practices anywhere in the world are worse practices. However, that is not the common understanding of the scientific term “best practice”, which the Oxford Dictionary defines as “a way of doing something that is seen as a very good example of how it should be done and can be copied by other companies or organizations”. Using the term ’best practice‘ for something that is only ’very good‘ is not only counter-intuitive, but might mislead the recipient to stop looking for any other practices or questioning the ‘best practices’, as they are misunderstood as being perfect already.
2. Whenever practices are used in varying contexts or applications, e.g. by addressing target groups as most of the practices listed below are, they will inevitably not be the best for all these applications and might even not be very good for some. They are just good practices, as they do work particularly well for one or another target group (see also Freeman 2006).

For the above reasons and as the scope of this deliverable is precisely collecting multiple practices and bundling them in a repository, the term ‘best practices’ is avoided from here on. Instead, the term ‘good practices’ will be used.

2.2.2 Defining “Good Practices”

Good practices then can be understood in a very literal way. They should be practices that are good.

A practice, in general, is a way of doing something. In the context of RiskPACC, it usually does refer to some form of method or technological, non-technological, conceptual or methodological tool that is meant to close a clearly defined and thus addressed RPAG.

“A good practice in the RiskPACC Repository of good practices is a way of doing something that has at least once proven to narrow down an aspect of the RPAG. Applying the practice shall not imply a higher risk of negative impact according to respective assessment criteria.”

Exploring evaluation results of assessment criteria related to different good practices can help a user to identify a good practice that is most suitable to a specific case.

These assessment factors will be described in Chapter 2.3.3.

While this definition was specifically designed for this deliverable and thus the Repository at hand, it is not in contradiction to existing definitions. The European Commission (EC, n.d.), e.g., defines a good practice as a practice that “reliably lead[s] to a desired result[1]”. The working definition above will achieve this.

2.3 Building the Repository

The Repository described in the following is a collection of good practices identified within the RiskPACC project. Extensive research has been done to identify as many

[1] European Website on Integration > What are 'good practices'?

practices as possible that are qualified to potentially close the RPAG. Yet, it has no right to completeness by design. In its current initial stage, in contains first practices that can be complemented by further practices as developed and/or identified during the course of the project.

2.3.1 COLLECTION OF PRACTICES

Initially, the Repository is populated by the good practices identified within D1.2 and discussed during interviews in D2.2 and the solutions that were developed within RiskPACC, as explained more precisely in D5.1, D5.2 and D5.3:

Practice	Source	Country
EU Flood Directive	D1.2., p.33	Europe
Hellenic Rescue Team (HRT)	D1.2., p.41	Greece
New Building Code	D1.2., p.44	Greece
Hellenic Building Interventions Code	D1.2., p.44	Greece
National Accelerometric Network	D1.2., p.44	Greece
Building Code	D1.2., p.44	Italy
International Commissions for Operational Earthquake Forecasting	D1.2., p.45	Italy
Israeli Geological Survey	D1.2., p.45	Israel
Standard SI 413	D1.2., p.45	Israel
Machizukuri approach	D1.2., p.45	Japan
Water Discharge Tunnel Tokyo	D1.2., p.46	Japan
GITEC	D1.2., p.46	Europe
North-Easter Atlantic and Mediterranean Tsunami Warning and Mitigation System (NEAMTWS)	D1.2., p.47	IOC/UNESCO
IOC Tsunami Ready Program	D1.2., p.47	IOC/UNESCO
UN Valuing Water Principles	D1.2., p.48	UN
Dordrecht urban planning	D1.2., p.48	Netherlands
Centre for Monitoring and Early Warning of Natural Disasters	D1.2., p.48	Brazil
Copernicus / Emergency Management Service - Mapping of the EU	D1.2., p.49	Europe
DRIVER	D1.2., p.49/50	Europe
rescEU	D1.2., p.50	Europe
Fire Hazard Protection maps	D1.2., p.50	Greece
Sensor Technology	D1.2., p.51	USA
eMARS	D1.2., p.52	Europe
HSEES	D1.2., p.52	USA
PEC-SAFER	D1.2., p.52	Japan
Technical Rules for Installation Safety	D1.2., p.52	Germany
Major Accidents Ordinance Regulations	D1.2., p.52	Germany
Directive 2014/87	D1.2., p.52	Europe
Centre of Security Studies in Greece KEMEA	D1.2., p.53	Greece
Financial Action Task Force	D1.2., p.54	Global
FRONTEX	D1.2., p.53	Europe

Disease Outbreak Response System Condition	D1.2., p.55	Singapore
Israeli engagement of religious leaders as multipliers	D1.2., p.57	Israel
Contact Tracing Apps	D1.2., p.57	Global
Citizen tracking of social media	D2.2, p.21	Belgium
Amateur radio operator network	D2.2, p.22	Belgium
Training for school children	D2.2, p.22	Multiple countries
Workshops with citizens and civil protection	D2.2, p.22	Greece
AEOLIAN AR Mobile App	D5.1	Europe
HERMES web-based Application	D5.1	Europe
PublicSonar tool	D5.2	Europe
VGI Tool	D5.3	Europe

TABLE 2: PRACTICES

These practices are assessed and added to the Repository. The practices highlighted in green serve as examples, they will be assessed in detail later in this deliverable to demonstrate how the assessment shall look like. Each example is related to specific parts of the RiskPACC Collaborative Framework, as further explained in the following.

2.3.2 RISKPACC COLLABORATIVE FRAMEWORK

To make a repository user friendly and easy to navigate, it is important to organise it well and to categorize the items in a meaningful and useful way.

Task T4.3. of the RiskPACC project has worked hard to define a collaborative framework that helps to organise different activities, tools and processes required to close a respective existing and already identified RPAG in a more functional way. This framework is used to organize the Repository, i.e. each practice will be assigned to a respective category of the framework. The draft RiskPACC Collaborative Framework is presented in Figure 1. Additional categorization and thus filtering options in the technical realisation of the Repository can be, for example, by hazard type or phase in the disaster risk management cycle. However, the RiskPACC Collaborative Framework provides the main categories for the Repository.

While the draft of the Collaborative Framework will only be submitted in D4.3 following the present D4.2, the basic structure of the collaborative framework is already known at the time of development of this deliverable. The main idea of the Framework pictured in Figure 1, is an organisation of tools and methods that are qualified to close or narrow the RPAG. They can be grouped in four main categories: Understanding, Sharing, Relating and Building. Each of these categories can include tools and methods that help to close the RPAG in a very different way. Understanding, e.g., might refer to any analysis of the risk context or the social and political context of a potential disaster. What they have in common is that they help both CPAs and citizens to better understand the context of the possible disaster.

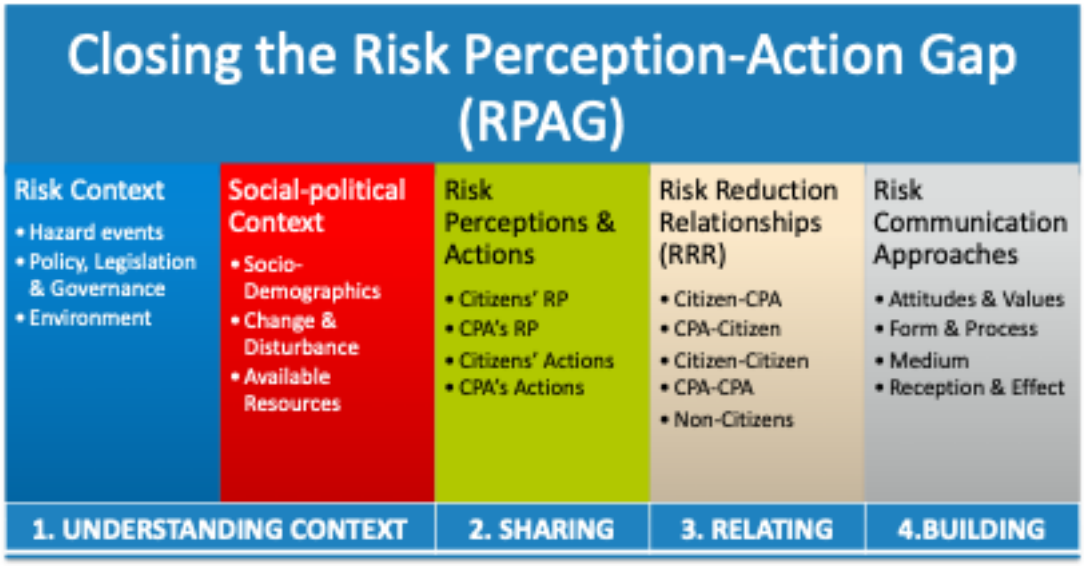

FIGURE 1: RISKPACC COLLABORATIVE FRAMEWORK, DRAFT VERSION

The RiskPACC Framework is now used to structure the Repository. In more detail, for every practice that enters the Repository, it will be assessed which part of the framework it predominantly addresses to close one or several gaps related to the RPAG. To demonstrate how this sorting might look like, a few examples of good practices in each category of the Framework are provided in the following, including a brief argument why they belong into that category.

2.3.2.1 UNDERSTANDING

This module highlights the importance of understanding the risk context and diversity of the needs within a community. Understanding the risk context applies to the hazards in a given location and understanding those impacts, while social-political context applies to the diversity of the people in a location and the opportunities and challenges presented with that diversity.

2.3.2.1.1 Risk Context

One practice that helps CPAs to better understand the risk context, is embedding **risk concerned legislation** into a wider context and periodically testing the **fitness of a system**. A good practice for this would be the EU Water Legislation, which does include an integrated flood risk management via the Flood Directive. As D1.2 highlights, the Flood Directive does call for the assessment of all river basin districts and maps different risks in that region. At the same time, the embedding of the flood risk management into the wider Water Legislation provides context for all these risks and thus helps CPAs to understand this context.

Other practices that further strengthen the understanding of the risk context could well establish the context based on practices other than legal frameworks and documents. For example, the **geospatial context** of a specific region or details regarding the **building materials** used in an area at risk could be provided. Anything that helps to better understand the risk-related context falls under this category.

2.3.2.1.2 Social-Political Context

The social-political context of a risk can have a major impact on building up and maintaining a high degree of resilience. In some circumstances, especially where trust in authorities might be lacking, this has proven to be non-trivial. In addition, for example socio-demographic factors, which can influence vulnerabilities or the availability of resources influence the social-political context.

2.3.2.2 SHARING

The sharing module of the framework relates to the co-creation principles of identifying different viewpoints and knowledge of different stakeholders. This includes understanding of risk perceptions among different groups, such as CPAs and citizens in the local context, as well as getting to know the different actions that are being taken by these various actors.

2.3.2.2.1 Risk Perceptions

A good practice for sharing risk perceptions can be found in the chemical industry, where companies in Europe, the US and Japan, respectively, share certain **data** and risk perceptions via common **databases** to protect the society as much as possible. One such a good practice listed in D1.2. is eMARS, the EU-wide system to share such information.

2.3.2.2.2 Actions

A functioning framework in which **CPAs and citizens collaborate** to act on fighting a specific disaster is the Greek act N3013/2002, which formalises the use of volunteers in civil protection. The HRT (Hellenic Rescue Team) focuses on earthquakes, e.g., and defines how volunteers do play a crucial role as part of the CPA (see D1.2, p. 40ff).

2.3.2.3 RELATING

The relating element of the framework refers to productive relationship building between different stakeholders. This includes examining the risk reduction relationships that highlight the interaction between different CPAs, CPAs and citizens, and different citizen groups.

2.3.2.3.1 Risk Reduction Relationships

One example for this category of the framework could be the use of contact tracing apps during the COVID-19 pandemic around the world. These apps, technically, **related the risk perceptions** of citizens **to each other** and often used an overarching risk assessment algorithm to assess the overall risk that each citizen was exposed to. Thus, the risk perceptions of citizens were related to each other and to the CPAs, who often had access to such data.

In other cases, the relationship will be of a less data exchanging technical nature, but rather a **human interaction** among CPAs and citizens. Often, any relationships between CPAs and citizens that can be and is used in case of disaster can contribute beneficiary to the disaster management process. Thus, tools and strategies that are capable of forging such **mutually beneficial relationships** shall be considered here,

whether these relations are ad-hoc and only on a data level, as for the contact tracing apps, or whether they are long-term bonds forged between people.

2.3.2.4 BUILDING

The building element addresses the selection of different methods and tools that can be used to improve disaster risk reduction. For the RiskPACC framework, this building element focuses on risk communication approaches, the medium that they take place in, their form and the reception of any methods and tools.

2.3.2.4.1 Risk Communication Approaches

At the local level in France, there is a document called the "Document d'Information Communal sur les Risques Majeurs (DICRIM)", which specifies the **content and form of information to be brought to the attention of the public**. Produced by the mayor, this document aims to inform the inhabitants of a local area about the risks to which they are subject and their consequences. It includes the prevention, protection and safeguard measures to be taken in response to major risks that are likely to affect the area.

2.3.3 ASSESSMENT CRITERIA FOR THE PRACTICES

To define the criteria to be used to assess possible practices for the repository, two subsequent internal workshops were conducted in March 2023 with the task members of T4.2, which is the task that resulted in this deliverable. In the first workshop, conducted on 16th March 2023, a brainstorming was conducted to collect possible assessment criteria. The criteria were based on the gaps identified in WPs 1 and 2 (categorized into gaps between theory and practice; governance gaps; operational and implementation gaps; data and technology related gaps, see D1.3 and D2.3) and other lessons learned in previous RiskPACC work. In the second workshop, on 22nd March 2023, this longlist of possible criteria was then analysed and the criteria were grouped, where possible. The result is the following criteria (see Table 3), that will be the final criteria used to assess the quality of a practice in the Repository.

Category of assessment criteria	Sub-category
Technical criteria	Accessibility
	Usability
Socio-Ethical Criteria	Privacy
	Non-discrimination
Governance criteria	Governance structure – vertical
	Governance structure – horizontal
	Governance and the governed
Communication criteria	Multi-directionality
	Efficiency

	Uniformity
Operational criteria	Community Engagement
	Transparency
	Applicability

TABLE 3: ASSESSMENT CRITERIA

It is on the basis of these criteria that it is decided if a practice is 'good', and they will help a user of the Repository to evaluate if the practice is suitable for an envisaged purpose. They will be further explained in the following.

2.3.3.1 Technical Criteria

The aforementioned workshops identified a number of technical criteria that can be grouped in two sub-categories:

Accessibility

One major criterion to assess a practice technically is the accessibility. This is not a one-dimensional black and white criterion, but rather a set of considerations regarding the groups that do and do not have access to the practice at hand. This does include ethical considerations, such as a non-digital availability of the practice to bridge the existing digital divide. However, it also includes purely technical considerations, such as the need for a log-in, platform exclusivity, cybersecurity considerations and, given the context, the availability in the case of emergency. Practices that are highly dependent on accessing infrastructures such as the internet or even electric grids are naturally less recommended to be used in large-scale emergencies in which such infrastructures might be more dysfunctional than others.

Usability

A closely connected, yet different, criterion is usability. While a technical tool might be accessible in every possible situation, it might be barely usable. That is the case for touch-screen-only practices that won't function well for example in a heavy rain. Given the context of the Repository, namely collecting practices in disaster risk management, it is fundamental that the practices remain easy-to-use in such circumstances.

2.3.3.2 Socio-Ethical Criteria

The workshops showed that it is often hard to clearly define boundaries between socio-ethical criteria and others, as they are often closely linked to each other. One aspect of the technical criterion 'accessibility', e.g., is clearly being accessible by all, which would be an ethical consideration, rather than a technical one. This is covered by the category 'non-discriminatory' below. Likewise, practices ideally do offer a two-way communication to allow a wide participation of citizens. An aspect that is clearly socio-ethical, but will be covered more extensively in the communication criteria sub-chapter following.

Apart from the two mentioned aspects, the identified criteria could again be grouped into two sub-categories:

Privacy

The privacy of citizens is an important factor and a right that all practices should respect. In particular, it should be well documented and justified how any private information is collected, used and potentially shared.

Non-discrimination

Many of the socio-ethical criteria identified in the workshop could be answered by assessing whether the practice is truly non-discriminatory or which groups exactly it might discriminate, e.g. by being or making it unusable for certain groups. The assessment of the criteria shall consider non-discrimination regarding physical disabilities, such as deafness, (colour) blindness, or partly or complete immobility. It shall, however, also assess possible discriminations by age, gender, citizenship status, ethnicity, or linguistic discrimination, in particular considering minority languages, migrant communities, and people requiring a simplified language. In general, the assessment shall analyse if any specific target group, especially those defined within WPs 3 and 4, is somehow not targeted.

2.3.3.3 Governance Criteria

Both, D1.3 and D2.3, clearly defined existing governance gaps, among others (see D1.3, p. 22ff.; D2.3, p. 21ff.). The governance criteria on which basis practices are assessed derive directly from these gaps. As before, several, in this case three, main groups of assessment criteria can be defined:

Governance structure - vertical

On a governance level, the levels of jurisdiction as well as the division and leading role of different institutional authorities at different administrative levels should be clearly clarified. for all practices being critically assessed. It should be determined who has a mandate to use them, and if there is a potential overlap among authorities of jurisdictions or even a lack of power or authority to act during a crisis situation.

Governance structure - horizontal

Typically, practices are used by one CPA, while other CPAs, even in the same jurisdiction, may use different practices, even if they address similar disasters or risks. This often leads to a lack of interoperability, which could prove to be a major hurdle in case of disaster management activities. Thus, practices should be critically assessed regarding their potential to be understood and possibly even implemented by other actors, specifically other CPAs. This helps to assess their potential to foster interoperability.

Governance and the governed

The second assessment shall take a critical look at the relation between the governing authorities and the governed, namely the citizens. In particular, it should be assessed whether the practice has been developed following a bottom-up or top-down approach – or even a combined and two-way practice. Additionally, it should be established whether the practice facilitates bottom-up approaches in disaster management.

2.3.3.4 Communication Criteria

A lot of the work previously done in RiskPACC has been regarding the communication between CPAs, between citizens and between CPAs and citizens. All these communications were assessed as being problematic in the majority of the project's case studies in WPs 1, 2 and, partly, WP3. D1.3 and D2.3 specifically highlight the lack of communication channels between CPAs and citizens as a major gap in disaster risk management; the channels themselves as part of communication models are explained in D3.4.

As the focus of RiskPACC as a project lies on closing the RPAG, communication practices will be, apart from the efficiency of communication, assessed by:

Multi-directionality

A major factor for closing the RPAG is a bi- or even multi-directionality of any communication. Practices in the repository ideally do not simply allow CPAs to broadcast information to citizens, but likewise allow citizens to contact the competent CPAs and share information with them. Additionally, they might allow different CPAs, citizens and/or other stakeholders to communicate among each other.

Efficiency

Efficiency has very different meanings depending on the type of communication assessed. While informative communication is efficient in case the audience understands it, persuasive communication can be considered efficient in case the audience acts in the intended way or changes its attitude as intended. In both cases, the efficiency would ideally be assessed by studies that measure exactly this. In cases where no extensive study for the practice at hand exists, yet, a qualitative assessment of the expected efficiency has to be conducted instead.

Uniformity

A lack of uniform communication is a major contributor to the RPAG and, vice-versa, a uniform communication is crucial to close existing and avoid the emergence of a new (local) RPAG. It should be emphasized that 'uniformity' here does not mean that the content of the messages broadcasted via different channels has to be identical. Quite the contrary, as different groups might be targeted with different messages and different forms of content. However, all information should be non-contradictory and understood in the same way. Thus, practices that make uses of different communications channels will be critically assessed regarding their uniformity in communication.

2.3.3.5 Operational Criteria

When it comes to operational criteria, these were derived primarily from the operational gaps described in D1.3 and D2.3 These gaps focused heavily on the lack of community engagement and the inadequate attention to prevention. As a result, the criteria on which practices shall subsequently be assessed should consider these gaps, namely by being positively assessed in regards to two factors:

Community Engagement

A core result of D1.3 and D2.3 is that citizens shall not be pure recipients of various disaster management activities, but rather be stakeholders in the process of creating, defining, reshaping, and assessing risks and practices. Only such an involvement of the community(ies) is capable of minimizing the existing RPAG and preventing the opening of new similar gaps. Thus, all practices should be evaluated with regard to the level of community involvement they facilitate and enable.

Transparency

Only if the citizens and the community as a whole understand the aim of the practice and are convinced that it has been properly tested and clearly identify the benefits deriving from its utilisation, will they consider engaging with. In contrast, practices that are not understood or that appear to have some incomprehensible functionalities will nurture mistrust in the practice and thus lead to even less community engagement. Likewise, citizens often are aware that they should store a certain amount of food and potable water, e.g., but rarely do so, as it is not transparently communicated why they should stockpile at all. Thus, assessing the transparency of a practice seems critical and of great importance.

Applicability

The last major criterion that practices shall be assessed on is their applicability by everyone interested and qualified to apply it. An easily understood handbook and an intuitive application are two factors on which the applicability shall be assessed.

2.3.4 ASSESSING THE PRACTICES

To demonstrate how the assessment process could look like, a few examples were chosen to be demonstrated in the following: (a) Floods directive – framework module "Understanding"; (b) eMARS – framework module "Sharing", (c) Hellenic Rescue Team (HRT) – framework module "Sharing", (d) Contact-Tracing Apps – framework module "Relating".

2.3.4.1 Floods Directive - UNDERSTANDING

The Floods Directive[2] calls for the assessment of all river basin districts and map different risks in that region to better understand the risk of floods for EU countries. At the same time, it calls to embed flood risk management into the wider Water Legislation to provide context for all these risks and thus helps CPAs to understand this context. The objective of the Floods Directive is to establish a framework for the assessment and management of flood risks to reduce the negative consequences of flooding on human health, economic activities, the environment and cultural heritage in the European Union. This directive is meant to ensure that countries follow a consistent approach to flood risk management. This section will assess this practice based on the criteria described above.

[2] Floods Directive (2007/60/EC): Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks

2.3.4.1.1 Technical Criteria

As this is not a technical tool, more a policy directive and framework, there are limited technical aspects to assess. That being said, the directive does mention the development of Flood Hazard Maps, which is an aspect that can be assessed.

According to Chapter III, article 6 of the directive[3] the Flood Hazard Maps must include flood extent, water depths, and water flow of an effected area as well as adverse consequences. These maps are to be shared with member states and made available to the public (Chapter V, Article 10). These directives mean that accessibility and usability are addressed, where maps should be available during all circumstances. The specifics of accessibility, such as necessity to log-in, cyber security and non-digital availability, are not addressed in the directive and are up to the Member states to implement accordingly.

2.3.4.1.2 Socio-Ethical Criteria

As this is a policy directive that is implemented differently in each country, it is hard to assess the socio-ethical criteria, privacy and non-discrimination, without an individual example of how it is implemented. In terms of considerations in the directive as a whole, when assessing flood risk, it is then up to the individual member states how they implement it to address the risk that pertains to vulnerable people such as the elderly, differently abled, homeless and lower income people that might be disproportionately impacted by floods. In terms of non-discrimination, it is essential that the management of the flood risk that results from the Floods Directive assessments does not discriminate against any group however, the Directive addresses a higher governance level to set broad policy expectations on reducing flood risk generally.

2.3.4.1.3 Governance Criteria

Governance structure - vertical

The Floods Directive has a very clear vertical governance structure. It is for EU countries to assess their flood risk, so the directive comes from the national government. It is then implemented on the local and regional level. According to the directive, “river basin authorities are to identify areas prone to potentially significant flood risks, and to develop flood risk management plans coordinated at the river-basin-district level” (Mysiak et al., 2013: 2885). Because it is an EU directive, and flood management is of vital importance to European countries, the power and authority to complete these activities is with the EU Member States, and the specific implementation is audited every 6 years from 2018. The 2018 audit noted for example that Member States carried out activities to raise flood awareness among citizens although it stated there were weaknesses in allocating funding (European Court of Auditors 2018).

[3] Floods Directive (2007/60/EC): Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, L288/30

Governance structure - horizontal

As the flood directive is a policy directive and not one general practice, there are fewer instances where interoperability becomes a challenge. Yet, horizontal governance is addressed within the practice, at the national level and when referring to international river basins, where communication and *'exchange of relevant information between different competent authorities concerned'* (Article 4 Paragraph 3) is required. Its implementation is reviewed by the European Court of Auditors every 6 years from 2018 (European Court of Auditors 2018).

Governance and the governed

This directive constitutes a top-down approach, as it is a directive that was developed at the EU level and implemented at the national, regional and local level by different CPAs, with limited input from citizens. That being said, public engagement is important in flood risk management, and can be used alongside the Floods Directive assessments to increase awareness of flood risk.

2.3.4.1.4 Communication Criteria

Multi-directionality

This is a Directive and thus not open to multi-directionality communication. This is a very top-down initiative that directs different Member States to conduct flood risk assessments. Local actors need to develop flood maps and flood risk management plans, but the directive does not include citizen participation.

Efficiency

Efficiency is difficult to determine for the Flood Directive, as it does not include communication directives due to the fact that it is meant to develop maps and management plans.

Uniformity

Again, as communication is not a part of the Flood Directive, it is difficult to assess this aspect.

2.3.4.1.5 Operational Criteria

Community Engagement

This practice does not involve any citizen engagement, merely the engagement of scientists and then local and regional authorities. There is a potential for some local authorities to involve citizens, but it is not mandated in the directive.

Transparency

While this practice is transparent, as it includes specific steps that need to be followed which can be determined easily, and there is the potential for areas where citizens can be involved and comment on information produced. While this is the case, very few citizens know that this directive is in place and may not engage with the provisions (Priest et al., 2016).

Applicability

As this is a policy directive, there are few people that are authorised to apply it. For those who are authorised to apply it, it is legislation on the one hand that creates the overall framework of action, but the translation and application of such legislation in different national contexts is of significant importance as well. This cannot be assessed at this level, as it would require adjustment to each member state standards, approval by local parliaments and implementation would differ based on existent administrational an operational structures in each country.

2.3.4.2 eMARS - SHARING

The European Union maintains a common database of all chemical incidents in Europe, which is eMARS (see Figure 2). Whenever an incident that is defined as "major" occurs, the national civil protection authority has to enter an incident report into the eMARS system. Non-EU partners can also add incidents.

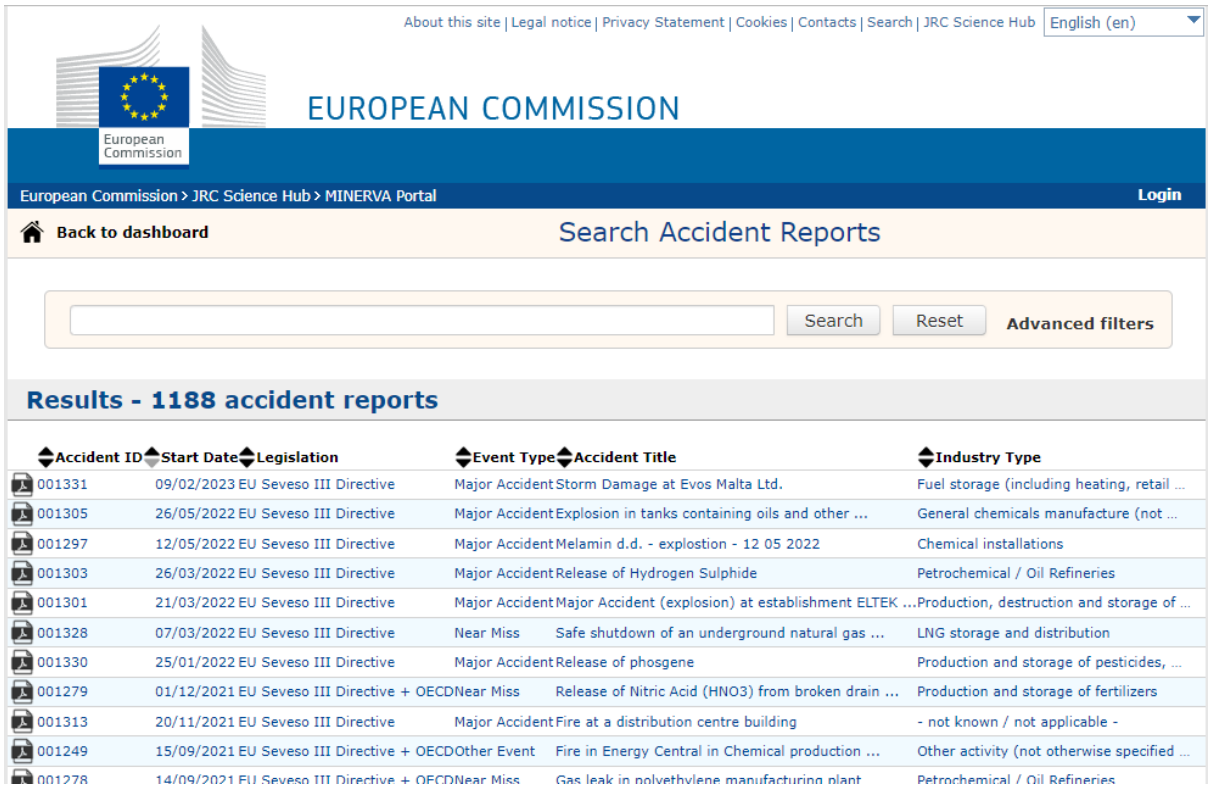

FIGURE 2: SCREENSHOT OF THE EMARS DATABASE HOSTED BY THE EUROPEAN COMMISSION'S JOINT RESEARCH CENTRE (JRC)[4]

2.3.4.2.1 Technical Criteria

Accessibility

All EU members are using eMARS and are legally obliged to enter their data into the system. This data is then made accessible freely to every interested citizen with access to the internet and digital literacy. In terms of accessibility, this practice is only

[4] https://emars.jrc.ec.europa.eu/EN/emars/content

accessible to those with access to the internet and those with digital literacy, i.e. in this sense there are gaps in its overall accessibility.

Usability

While it cannot be assessed how usable eMARS is for CPAs that have to enter the data, it is very straightforward to read the data and process all kind of statistical analysis via an embedded browser tool hosted by the European Commission.

2.3.4.2.2 Socio-Ethical Criteria

The system does anonymise a lot of the incident data, including the involved company or even the countries they happened in. This means that the privacy of those causing the incidents is definitely respected to avoid a negative outcome.

Likewise, the tool does not discriminate against any specific user group.

2.3.4.2.3 Governance Criteria

Governance structure - vertical

The system has a clearly vertical governance. The European Commission demands member states, bindingly, to enter all incidents of the severity “major” into the database. It is thus very clear where the mandate comes from (the European Commission) and who is responsible for implementing it (companies where the incidents happened/local CPAs aware of the incidents).

Governance structure – horizontal

The European Commission appreciates the issue of interoperability and thus, additionally to its own efforts in eMARS, links to a number of other incident databases around the world. It furthermore encourages non-EU stakeholders to enter their own incidents into eMARS regardless.

Governance and the governed

As stated above, eMARS is organised in a top-down fashion. Yet, the homepage does provide clear contact points and invites users to provide feedback or pose questions at any time. This gives institutional and private users of the platform a chance to communicate with the governing instance.

2.3.4.2.4 Communication Criteria

The eMARS system is not a communication practice and does not directly enable any form of communication. Thus, it cannot be assessed based on the quality or quantity of communication.

2.3.4.2.5 Operational Criteria

Community Engagement

As described above, eMARS does demand CPAs to enter data into the system and thus heavily relies on the CPA community in Europe. Beyond that, it invites individuals to comment or ask questions, but not engage beyond that.

Transparency

This is a transparent practice, as the whole legal basis, as well as functions and functionalities are all laid out and explained open-source.

Applicability

The practice seems to be easy-enough to apply and provides the information the user would expect: Simple information about previous chemical incidents.

2.3.4.3 Hellenic Rescue Team (HRT) - SHARING

The Hellenic Rescue Team (HRT) is a Greek NGO that consists of several branches, which are specialised on providing the whole range of humanitarian services for a specific form of incident. These are:

- Emergencies and national need
- Natural disaster
- Manmade disasters
- Manmade crisis
- Other exceptional situations comparable with a natural or manmade disaster.

Unlike similar NGOs in other parts of Europe, HRT is not just active during and after a disaster, but also long before. Especially in regards to earthquakes or wildfires, they engage heavily in awareness campaigns and help citizens to prepare. They maintain a steady network of volunteers across Greece that they can activate anytime to run a campaign.

2.3.4.3.1 Technical Criteria

The HRT is not a technical solution and thus cannot be assessed along technical criteria.

2.3.4.3.2 Socio-Ethical Criteria

Privacy

The idea of the HRT is to be close to the people. That might, at times, mean that there is little privacy, as the HRT will wish to be present and get in exchange with every citizen, especially of certainly affected areas. This is not necessarily an issue, as there is also no obligation to share anything with the HRT on the other hand. Privacy is thus probably best described as barely sufficient.

Non-discrimination

The HRT is widely known and credited for being one of the few NGOs that uses previous disasters to maintain the networks built during the relief phase. Thus, there is a sustainable network of volunteers who are trained and experts in earthquake or wildfire preparations. There is no information how these volunteers are selected. Especially such a long-living network has the potential to discriminate against everyone who is not part of the local society for a longer time, such as (international and national) migrants.

2.3.4.3.3 Governance Criteria

Governance structure - vertical

The system has a clear vertical governance. HRT as an organisation is run by a board of directors, which in turn operates topical teams, e.g. on earthquakes. Within these teams, there are geographical sub-teams.

Governance structure – horizontal

It is part of the mission of the HRT to collaborate with public and private stakeholders at all times. That includes other NGOs engaged in humanitarian actions. Consequently, horizontal governance is at the very core of HRT.

Governance and the governed

As the HRT is an independent NGO, any interaction with citizens or CPAs alike is voluntary. It does not govern anyone and has no power over any citizens. This includes its own volunteers, who might at all times leave HRT. Thus, there is a huge transparency about the lack of governing power and an appreciation of the mutually beneficial character of its operations.

2.3.4.3.4 Communication Criteria

Multi-directionality

This practice allows for multi-directionality, as CPAs communicate with HRT, HRT communicates with citizens and then citizens can reach out to the CPAs that are partnering with HRT. It is part of the HRT mission to be accessible and listening at all times to strengthen this multi-directional communication.

Efficiency

Efficiency is difficult to assess the efficiency globally, as it highly depends on the local campaign itself (as of now, only in Greece).

Uniformity

Again, uniformity is difficult to assess, as the exact nature of the communication provided is unknown.

2.3.4.3.5 Operational Criteria

Community Engagement

Community engagement is where HRT seems to champion. It is precisely an organisation set up to engage the community as much as possible while preparing and fighting any major disaster.

Transparency

The organisation does provide a lot of information and data about itself online transparently. This includes how funds they received are used.

Applicability

Given the long-term training and building of networks, the HRT can be quickly deployed and activated and thus "be applied".

2.3.4.4 Contact-Tracing Apps - RELATING

Contact-tracing apps have been used in many countries during the COVID-19 crisis, as a measure to decrease the spread of the disease. For several countries, these contact-tracing apps are described in detail in D1.2, Annex 4.

2.3.4.4.1 Technical Criteria

As multiple contact-tracing apps were used around the world during the COVID-19 crisis, the accessibility and usability depends on the specific apps. In many countries, however, the app had to be in line with national accessibility laws or regulations, such as in Germany (https://www.coronawarn.app/de/accessibility/). A good usability, in most cases, was one of the core development goals, as only a widely used app is qualified to be an effective measure against a pandemic such as COVID-19.

2.3.4.4.2 Socio-Ethical Criteria

From a socio-ethical perspective, contact-tracing apps are, by default, tricky. While the knowledge about the movements and contacts of each citizen is helpful for a CPA to manage the health disaster at hand, it is obviously unethical to monitor every move every citizens makes. It is a dilemma between the need for data mining and the value of data privacy, predominantly.

Privacy

When it comes to privacy, in particular data privacy, most governments set high demands to the developers of apps during the development stage already. This resulted in a number of contact tracing apps that minimized the need to collect any data and thus maximize the privacy of the app users. Bardus et al. (2022) found that the few contact tracing apps that really violated privacy rights were all used outside Europe, in particular in the Middle East and South Asia.

However, also Norway was accused to use a contact tracing app lacking privacy[5]. For contact-tracing apps within the European Union, no privacy violation is known to the authors.

Non-discrimination

Contact-tracing apps are only really a powerful tool to tackle a pandemic, if almost every citizen uses it. Thus, but also as they were often used to broadcast current information or legislation changes to the citizens, they should be non-discriminatory. While the German COVID app, e.g., was indeed deemed barrier-free by the German Association of Blind and Visually Impaired[6], and was offered in 21 languages to address migrant communities[7], it was crucially not offered in any of the German

[5] https://www.amnesty.org/en/latest/news/2020/06/bahrain-kuwait-norway-contact-tracing-apps-danger-for-privacy/ (checked on 10/07/2023).
[6] https://www.dbsv.org/aktuell/barrierefreiheit-der-corona-warn-app.html
[7] https://www.leonberg.de/index.php?ModID=7&FID=2691.13323.1&object=tx%7C2691.13323.1

national minority languages Danish, Frisian, Sorbian or Romanes, who shall have an equal status to the German language at least regionally.

However, giving the small number of people that only speak any of the minority languages, but no German, the app arguably might have discriminated against a few people, but barely excluded anyone from using it entirely. Thus, it should be overall assessed positively for the case of the German app.

2.3.4.4.3 Governance Criteria

Governance structure - vertical

COVID contact-tracing apps fell under a very clear governance structure, at least in Europe. They were overwhelmingly state-funded and promoted on a national level.

Governance structure - horizontal

Interoperability was an issue throughout the pandemic. Until the very end of the pandemic and thus the use of COVID contact-tracing apps, apps did not collaborate with each other and, even more, tracing contacts while in another EU country often did not work at all. They were not designed for interoperability and, given the data are processed and used by the national health authority behind the national app, it is hard to see how a better interoperability could work in a mutually beneficial way.

Governance and the governed

Technically speaking, the usage of contact-tracing apps is a bottom-up approach, as citizens are feeding their data, en masse, to the CPA fur further processing. However, giving the centrality of the app and the strong advertisement from the authorities to use the app, it is probably more accurate to at least speak from a bi-directional practice, in which citizens upload data and receive information via the same tool.

2.3.4.4.4 Communication Criteria

Contact-tracing apps do not provide any meaningful way of communication to users or CPAs.

2.3.4.4.5 Operational Criteria

Community Engagement

The whole idea of a contact-tracing app is footed on the engagement of every single citizen. Yet, most of the existing tracing apps did not, in any way, try to actively engage citizens beyond providing their position. They were merely seen as data points that can be mined, rather than active community members.

Transparency

Without a doubt, the transparency of tracing apps played a main role during the pandemic. Bardus et al (2022) shows that citizens appreciated apps that were particularly transparent, often to the degree of publishing the source code. Vice-versa, most tracing apps within the EU were indeed very transparent (see ibid).

Applicability

This depends on the specific tracing app in question, of course, but throughout the EU, contact-tracing apps were often designed not only very quickly, but also very carefully to be as applicable as possible. That said, handbooks that are extensive and detailed can be found easily for all major COVID apps in the EU.

2.4 Filtering the repository

A user of the repository will be able to filter the good practices by specific modules of the RiskPACC Collaborative Framework (Understanding, Sharing, Relating and Building). In addition, as further explained in chapter 2.5, the use of hashtags allows additional categorization of practices such as hazard type or phase of the disaster risk management cycle. Users will then be able to explore evaluation results of different practices, in order to identify a good practice that is most suitable to a specific case. The repository also allows to include “user experience”, i.e. users can explore as well as add own experiences with a specific practice.

As mentioned in previous chapters, the Repository currently contains first practices, which are expected to be complemented by further practices as identified and/or developed during the project. CPAs will have the opportunity to add additional practices, too. Citizens (especially those connected already to the Case Study partners and those connected to the EFUS cities in WP6) will be able to propose new possible practices to the organisers of the repository, who will then provide a qualitative assessment for these newly submitted practices and add them, too, if they are considered a good practice as defined above. D4.3 Draft RiskPACC Collaborative Framework is also collecting useful resources which can be drawn upon to populate the Repository. However, the sequencing of deliverable dates does not allow their inclusion at this stage. In the final period of RiskPACC these other resources can be evaluated as per the Repository good practice selection process.

2.5 Repository realisation

2.5.1 IMPLEMENTATION

The visualisation of the good practices is possible thanks to the repository already developed for HERMES (see also D5.1). Even though it is integrated in HERMES, it can be accessed directly from the RiskPACC platform (developed in WP7) As elaborated in detail in the previous chapters, the Repository is a place where users can share good practices, accompanied by relevant information related to the specific practices, experiences, and especially an analysis of the assessment criteria. The good practices shared by users are collected and catalogued in the Repository, making them easily accessible to other users. The Repository can be used as a tool to promote the sharing of knowledge and experiences among platform users. Additionally, the information contained in the Repository can be used to improve disaster risk prevention and management activities at the local level. To ensure that the Repository is useful, it is necessary to encourage users to share and keep frequently updated the documentation.

2.5.2 REPOSITORY MANAGEMENT

The Repository of good practices as part of the RiskPACC platform can be an essential feature for users (such as CPAs, representatives of cities, municipalities, citizens) to share their expertise and knowledge with the wider community. Users that are granted writing rights (RiskPACC partners, CPAs) have the ability to create, edit, and delete the resources available in this section. This allows for a collaborative approach to managing the Repository of good practices, where users can share information, experiences, and lessons learned in the context of disaster prevention and management. To create and upload new good practices, users with writing rights can access the Repository from the RiskPACC platform (or navigate to the Knowledge Base section of the HERMES platform) and click on the "add Knowledge Base" button (Figure 3). This action will direct them to a page where they can enter a new entry. On this page, the users can enter the content they deem most appropriate, including descriptive parts, relevant links, and attach resources that can be useful. Moreover, the users can establish relationships between other resources, or for example communities already on the platform (Figure 4). By doing so, the user can better organise and categorise the good practices material, making it easier for other users to find the information they need. One important feature is the option to filter the practices by the different RiskPACC Framework modules (see chapter 2.3.2). In addition, if for instance the good practice relates to a specific phase in the emergency management process, the user can categorise it with the relevant hashtag, such as #evacuation. This feature allows users to filter and search content quickly and easily.

This functionality empowers users to share their expertise and knowledge within a wider community, helping to improve overall emergency preparedness and response. It is important to note that the Repository of good practices is a constantly evolving resource that requires active participation and engagement from all users to ensure it remains useful and up-to-date.

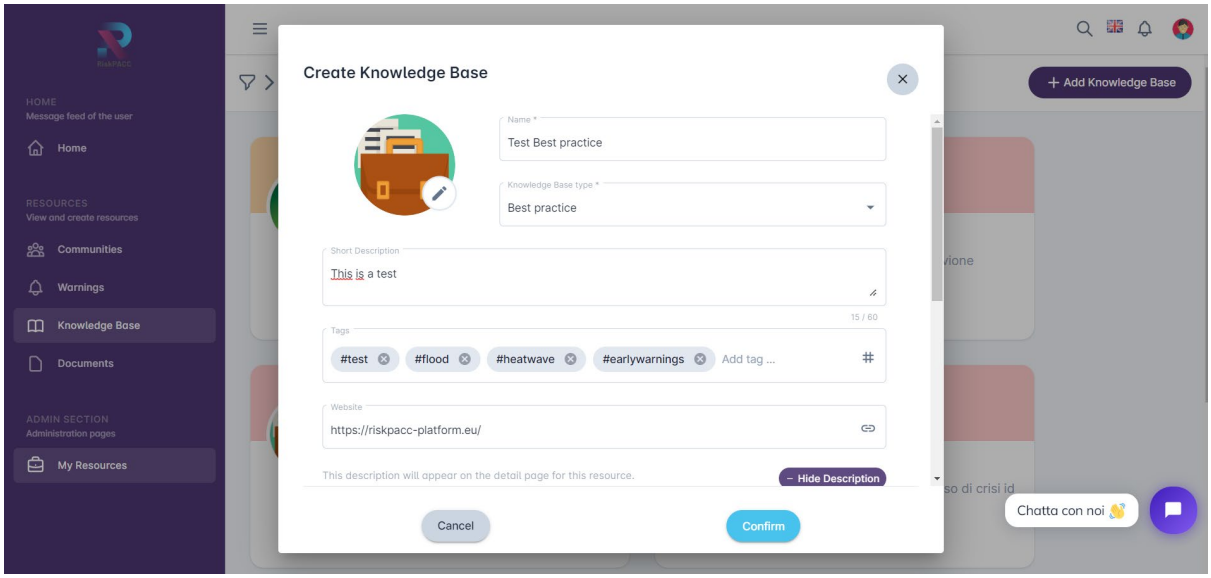

FIGURE 3: NEW KNOWLEDGE BASE

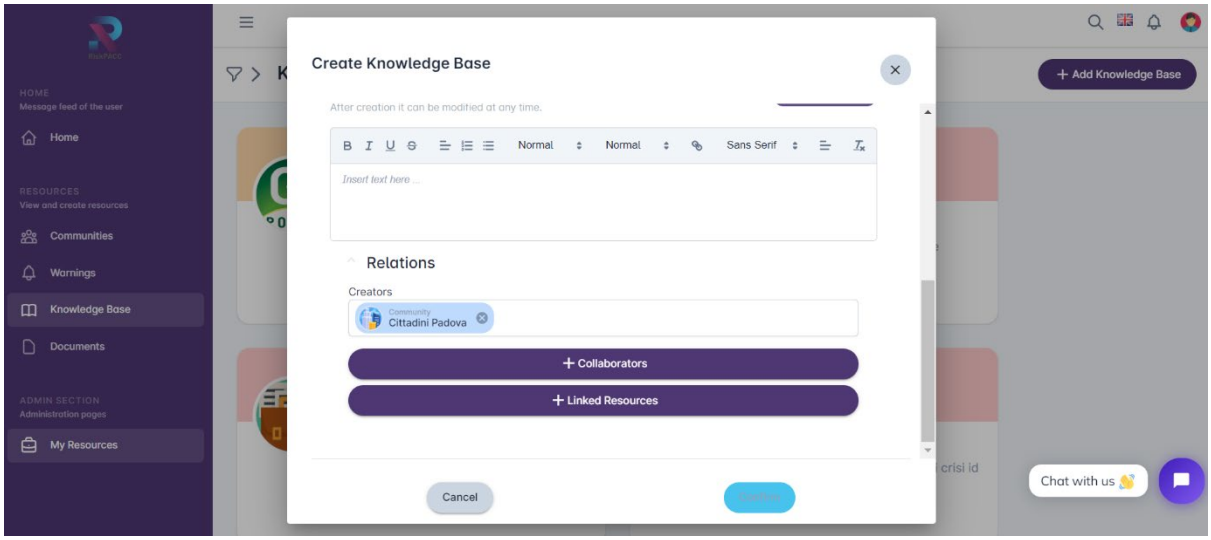

FIGURE 4: KNOWLEDGE BASE DETAILS

After the creation and publication of a new resource in the Repository, it is recommended to share it as a post to increase its visibility and promote the sharing of knowledge among users. This can be easily done by clicking on the "Share as Post" button, which will automatically create a new post with the title and description of the resource. The new good practice created and published will have a standardised format as shown in Figure 5. The description field is divided into several sections, including General Assessment, Socio-Ethical Assessment, Technical Assessment, and User Experience. Each section is designed to provide specific information related to the good practice and its implementation.

By providing detailed information in each of these sections, users can easily understand the scope and potential impact of the good practice, and determine if it is relevant to their needs. Additionally, this standardised format helps to ensure consistency and clarity across all resources in the Knowledge Base section, making it easier for users to search and find relevant information.

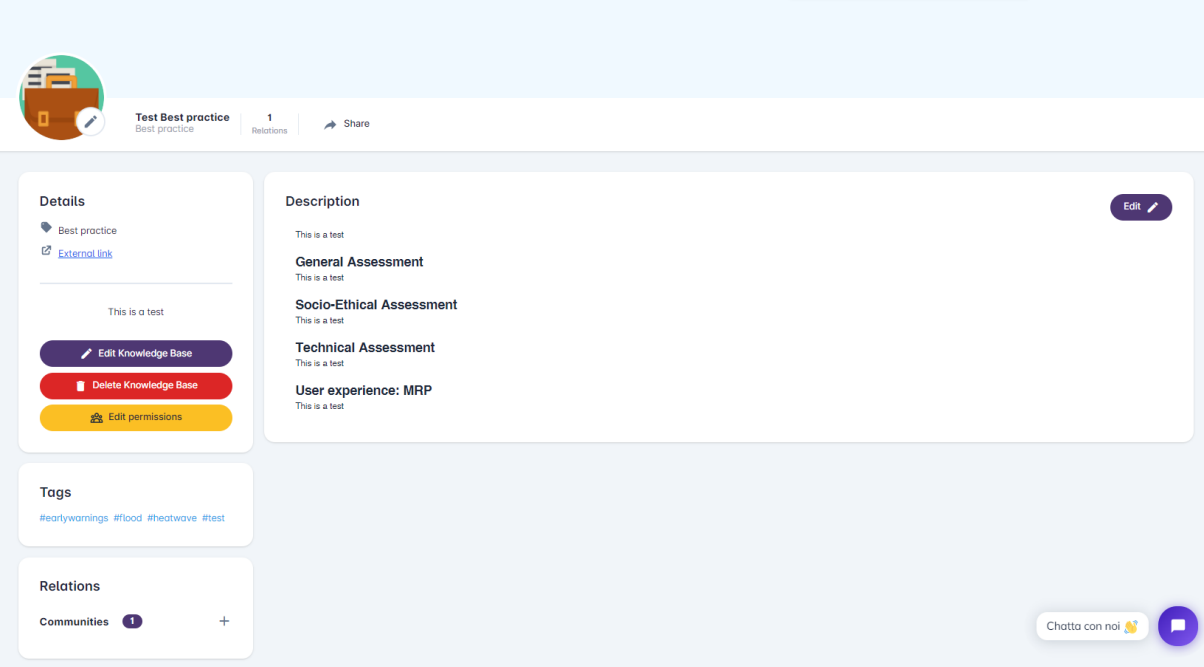

FIGURE 5: GOOD PRACTICE PUBLISHED

3 CONCLUSION

The Repository of good practices is a valuable tool for sharing knowledge and experiences related to disaster risk prevention and management practices, since it presents existing practices along with an overall evaluation as well as descriptions on specific user experiences.

However, it does have some limitations. One major limitation is that due to the nature of EU projects and the lack of sustainable funding for the platform, it has to be clarified if the Repository has to remain static after the project, or if it can be continuously updated. This means that possibly outdated or ineffective practices may still be included in the repository, while new and potentially effective practices will not be added. Additionally, some practices may no longer be available online, resulting in broken links within the repository. Overall, while the good practice repository is a helpful resource, its limitations should be considered when using it for decision-making or planning purposes.

Further, to improve the functionality of the Repository, it may be useful to consider implementing a review process for practices stored in the Repository. This would allow for outdated or ineffective practices to be removed from the Repository, while also ensuring that new and potentially effective practices are added. Moreover, it may be worthwhile to explore partnerships with other organisations or platforms to increase the visibility and accessibility of the Repository, which could also support keeping it alive after the end of the project. This could involve linking to relevant resources or even collaborating on the creation and curation of good practices. Finally, to address the issue of broken links, regular maintenance and updates to the repository should be conducted to ensure that all resources are still accessible and relevant. These

improvements could enhance the overall usefulness and impact of the RiskPACC Repository of good practices. Respective options are elaborated as part of the exploitation approaches (WP8) of the project.

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The RiskPACC Consortium

FIGURE 7: THE RISKPACC CONSORTIUM