engage

Engage Society for
Risk Awareness and Resilience

Deliverable D1.4 – Model for assessing and enhancing societal resilience

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Abstract: ENGAGE aims at linking the informal resilience naturally inherent in citizens with the formal work of authorities to prevent, prepare for, respond to, and recover from disasters. It brings together 14 partners from 8 countries aiming to show how individuals and local practices can interrelate effectively with planned preparedness and response, practitioners, and technology.

This deliverable proposes a theoretical framework of societal resilience that enables a model for assessing and enhancing societal resilience as a way to promote a better and more efficient integration of social actors in formal disaster management. Case study analyses of crises that occurred in different societies and varied periods of time, provide the necessary data to ground the different building blocks of the theoretical model.

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Executive summary

This deliverable is aimed to construct a theoretical framework presented as a model to both enhance and assess societal resilience. This model should enable the project to understand how ordinary people participate in disaster management by coping on an individual and a collective level. By being able to map and analyse citizen's coping actions, this model makes it possible to examine specific solutions to enhance the interactions between social actors and disaster professionals and thus make societies more resilient.

The theoretical approach is grounded in a series of case studies of past adverse events in which coping actions from social actors were identified by document analysis and interviews. This analysis notably showed the limited interactions between formal and informal disaster governance. This relative autonomy of informal actors corresponds to specific coping actions patterns.

First, what we found across the cases is that informal actors are focused on one main task, that once it is completed satisfactorily (e.g., fixate an assailant), another task may follow. Anticipation of the tasks is not centralised and comprehensively structured.

Second, there seems to be minimal coordination among informal actors immediately after or during the event.

Third, comparing cases that focus on the emergency phase, the informants report using a "tunnel vision" aspect that lets them focus on one particular task.

Fourth, there seems to be a commonality across the case studies of acting on reflex during sudden incidents.

Fifth, an interesting question of obeying (or not obeying) authorities during a crisis arises from the case studies, since in several cases informal actors acted against advice of official disaster managers.

Sixth, our findings, including also the case studies that cover the post-emergency phases, refine the conceptualisation of emerging groups. Our findings show that it is more a matter of reconfigured groups responding to a need that is outside their normal missions than new groups emerging.

Seventh, the case studies show how ordinary people use competencies acquired from their current or previous positions and experiences, which are translated into adapting to the exceptional situation they are facing.

Eighth, the case study analyses show that there is a need for linguistic categories that recognise the different roles people assume during various crises.

Ninth, rather than providing a definitive and universal list of what factors from a larger social context determine if people cope with a crisis successfully, the case studies enable us to isolate factors that show how social contexts impact on resilience in specific cases.

These elements helped us to test and refine our model for assessing and enhancing societal resilience.

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1 INTRODUCTION

1.1 GENERAL PURPOSE OF THE DELIVERABLE: FROM A FRAMEWORK TO A MODEL FOR ASSESSING AND ENHANCING SOCIETAL RESILIENCE

This deliverable provides a theoretical framework for understanding the conditions of "societal resilience" for the ENGAGE project by relying on an in-depth case study analysis of the context in which people act during a crisis and how they cope with it. To do so, the deliverable relies on historical case studies representing different types of crises.

The main purpose is to develop a model for enhancing and assessing societal resilience based on a theoretical framework that understands resilience as a socially embedded potential of societies to withstand disruption. Societal resilience and social context are closely linked because the social conditions society itself provides play a significant role in determining its ability to withstand and recover from disruptions. Social context refers to the cultural, economic, political, and social factors that shape the way a society functions and interacts with the world around it. Factors such as poverty, inequality, cultural diversity, political stability, and social cohesion can all affect a society's ability to be resilient.

For example, a society with high levels of poverty and inequality may be less able to withstand economic disruptions because its citizens lack the resources to weather such crises. In contrast, a society with a strong sense of social cohesion and high levels of social capital may be better able to mobilise and support its citizens during times of crisis. Similarly, a society with a stable political system, high levels of trust of the citizens in their governing bodies, and well-functioning institutions may be better able to respond effectively to disasters and other disruptions.

Overall, this deliverable aims to model contextual factors, social actions between crises and interactions between professional disaster managers and ordinary people referred to as informal disaster governance (Duda, Kelman, Glick 2020).

1.2 OBJECTIVES

The first objective of this deliverable is to make it transparent how a general theoretical framework led to a specific model for assessing and enhancing societal resilience. By dividing the model's different components in separate "building blocks", this deliverable will achieve this objective.

The second objective is to provide detailed context elements for the model. This is accomplished by laying out how these "building blocks" were informed by a grounded theory approach based on historical case studies of crises with a strong participation of non-professional actors.

The third objective is to show how this model can be used by professional disaster managers to develop context-sensitive solutions for improving interactions with non-professionals, volunteers, informal actors, or civil society organizations before, during and after a crisis. This deliverable will provide specific takeaways from the case studies and will also present its theoretical assumptions as takeaways for disaster managers.

1.3 INTENDED READERSHIP

The document has the following groups of intended readers:

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» First, it targets work package leaders. The goal of this model for assessing and enhancing societal resilience is to provide a coherent framework for the project's theoretical approach and to provide an operational model that can be adapted to the needs of each work package. It provides notably updated conceptual definitions and case-study findings that go beyond WP1's scope.

» Second, the whole consortium, independent of specific responsibilities, benefits from the findings and theoretical conclusion presented here. The deliverable provides the consolidated theoretical foundation of the project.

» Third, the project's Knowledge and Innovation Community of Practice (KI-CoP) is not only a relevant target group considering their operational expertise, but it functions as well as representation of the stakeholder groups of first responders, researchers, authorities and civil society that the project seeks to impact.

» Fourth, an academic readership interested in resilience approaches is targeted by this deliverable. Even though its writing style corresponds to the general public for targeting different readership groups, it provides, however, elements for a future scientific text and interested researchers.

» Fifth, stakeholders and end-users of the project can understand the projects rationale, methods, risks and outcome by reading this deliverable. The deliverable proposes takeaways for emergency organisations.

» Sixth, the general public and especially civil society leaders can profit from the insights of the deliverable, since it provides take-aways and experiences that can guide future action.

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2 CONCEPTUALISING SOCIETAL RESILIENCE

2.1 THEORETICAL ASSUMPTIONS

ENGAGE proposes a model as the focal point for its theoretical approach. A model, rather than a theoretical framework, can incorporate both the theoretical dimension of assessing societal resilience in a way that speaks to resilience research and the operational dimension of enhancing societal resilience that enables a dialogue with crisis professionals.

Nevertheless, this model, albeit being highly abstract and condensed, is built on empirical research, and relates to an overarching theoretical framework. For making this ambition and construction process visible, this deliverable shows the conceptual building blocks of the model and how they are informed by case study analysis. So, in a first step, the four central concepts that constitute the buildings blocks for the model are made explicit: Coping actions, social context, solutions, and societal resilience.

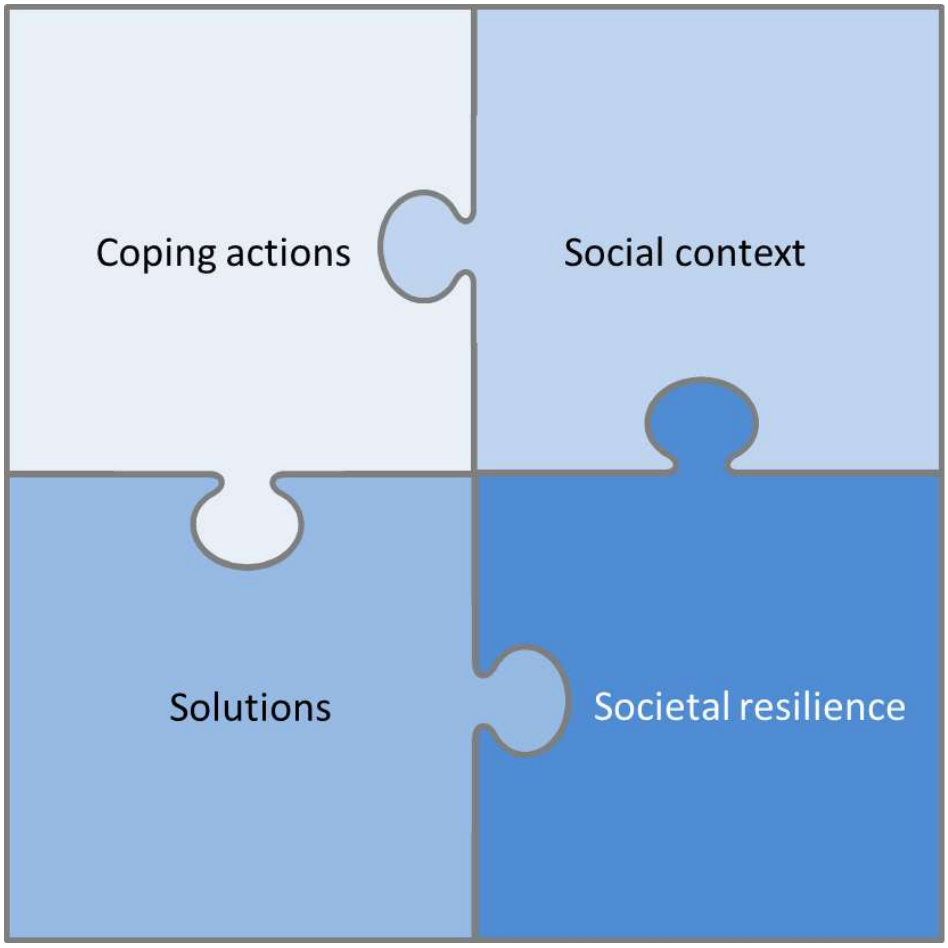

Figure 1 Building blocks for developing a model

By making these building blocks explicit, the project also ensures that the model for assessing and enhancing societal resilience is built systematically by incorporating the findings and perspectives of different tasks in ENGAGE. These building blocks notably entail a proper conceptualizing of societal resilience itself for enabling the model to clarify what it asses.

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2.1.1 RELATION TO THE PROJECT'S WORKING PACKAGES

Each building block was created by combining insights from different work packages through the means of deliverables analyses and dedicated work sessions.

Task 1 constructs the general theoretical framework of the model and provides contextual factors from its case studies (D1.1) and surveys (D1.2) as well as a way to model communications needs (1.3). It notably provided a definition of coping actions and used this concept to analyse the case studies. Task 2 gives input on the needs of emergency organisations and authorities concerning citizen participation as well as input on informal solutions. Task 3 informs the model on how to conceptualize solutions. Task 4 helps to evaluate the model's operational value and its validation exercises give further input on contextual factors.

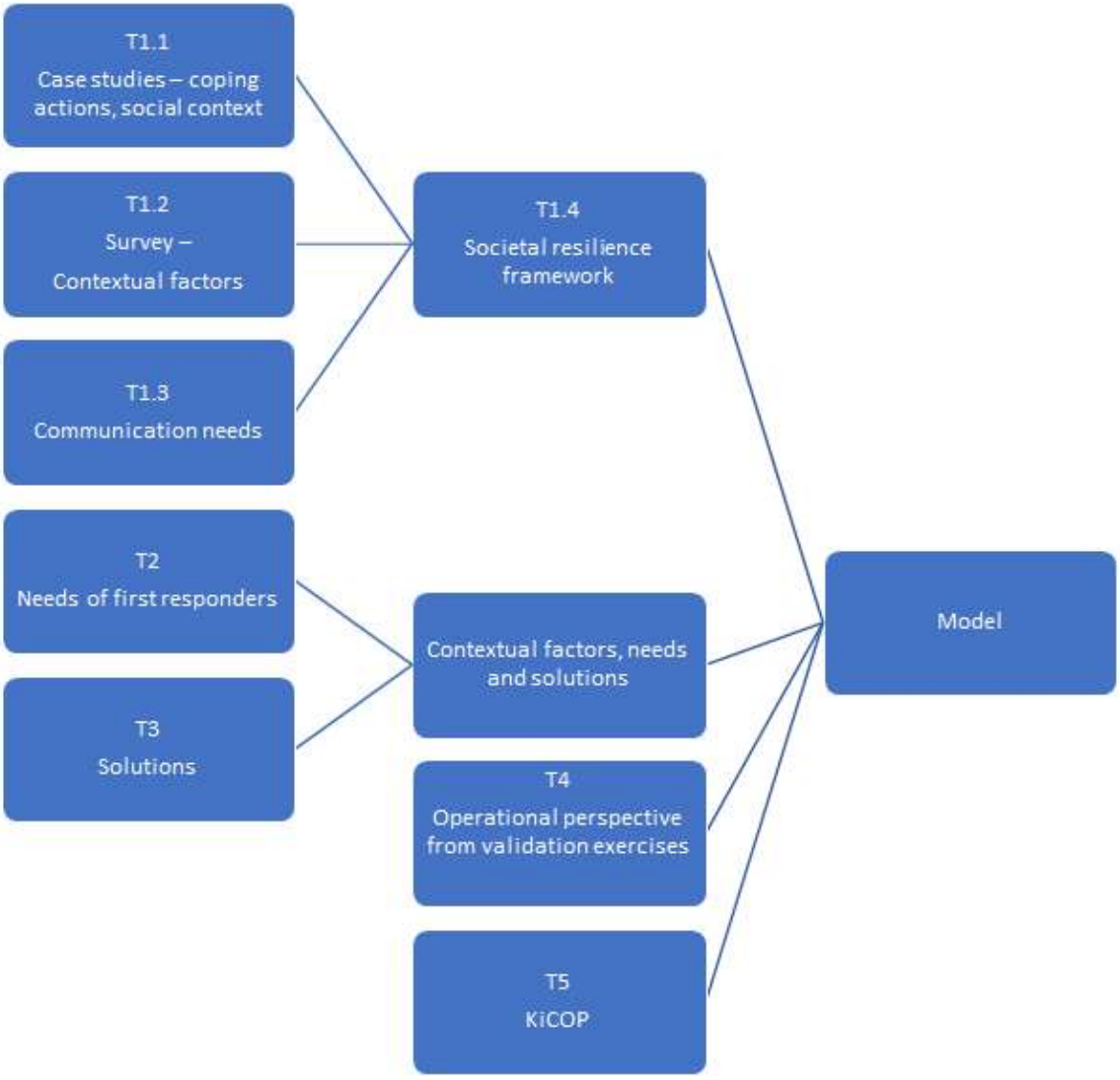

Figure 2 Contribution of project components

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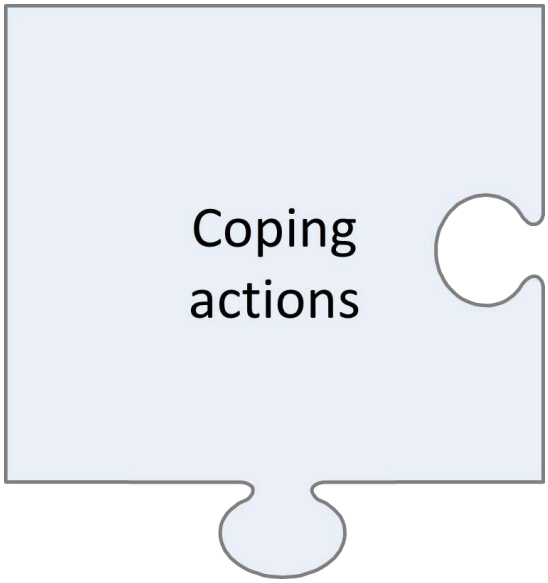
2.2 BUILDING BLOCKS FOR A MODEL FOR ENHANCING AND ASSESSING SOCIETAL RESILIENCE

2.2.1 MODELLING COPING ACTIONS FOR BETTER UNDERSTANDING SOCIETAL RESILIENCE

The first building block of the model for assessing and enhancing societal resilience is the concept of coping actions that enabled us to analyse case studies and to implement their results.



ENGAGE is interested in how citizens contribute to overall crisis management and how this relates back to societal resilience. Thinking of resilience as something that refers to the resilience of society as a whole, rather than specific individuals or groups, completely changes the way we analyse what people do during a crisis. That is why we need a new toolkit to grasp this social dimension of actions during a crisis. Speaking of "coping actions" helps us to link both individual and collective action to the overall social context in which they take place. "Coping actions" is thus central for developing a model for assessing and enhancing societal resilience.

Ordinary people often are, as our case studies exemplify, first on site during a crisis, and complement professional tasks during the unfolding event. They rely on the social and professional roles they occupy in their daily life (Landahl 2019). Whereas the question of role abandonment and role conflict has been discussed extensively (Trainor and Barsky 2011, Landahl 2019), its focus laid, however, on individuals. The parallel debate in disaster studies on emerging groups stresses the importance of spontaneous volunteering since the 1980s (Stallings, Quarantelli 1985). Nevertheless, these traditional approaches often lacked a deeper understanding for the link between individual and collective decision-making and a better understanding how emerging groups interact with professional disaster managers or are even advertently or inadvertently caused by them. In other words, an overall perspective on professional and ordinary contributions was missing in the literature on crises and disasters and is only recently entering debates under the label of informal disaster governance (Duda, Kelman, Glick 2020). These new approaches insist that social actors notably take decisions that affect the overall disaster management when they choose a site to care for the wounded or decide to engage a perpetrator.

Social actors work, however, as complex systems in disaster situations acting unpredictably, in a **non-linear and self-organised fashion**, whereas disaster professionals' actions are most frequently guided by planned norms, a division of labour, and predefined tasks. Understanding the link and interactions between both is no easy task, especially if one considers that informal crisis

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actors still follow and enact social roles and scripts while coping with crises. An engineer that is on site and contributes by repairing a motor, a nurse that comforts victims, both rely on their professional skills and act according to procedures.

The ENGAGE project's ambition is to improve the interactions between formalised and non-formalised actors coping with disaster needs. For this reason, a clearer understanding of how citizens act without seeing them only as "spontaneous volunteers" from a professional perspective is required, while considering that citizens may behave in an organised fashion relying on social scripts and improvised actions. In other terms, to understand better interactions between first responders, emergency organisations, authorities and citizens or the lack of such interactions, it is necessary to focus on social action first and on roles second. This means we counterintuitively do not always analytically distinguish between professionals and regular citizens to better understand how their interactions play out.

Therefore, in our case study analyses, we insist on including professionals that volunteer, victims that cope, and informal actors who rely on their professional skill sets. For this reason, we focus on "**coping actions**".

» This follows the basic finding of the ENGAGE project that social actors actively cope with disruptive events. They act in times of crisis. Our case studies show how they organise shelter, stop bleedings, organise evacuations, extinguish fires, or provide food.

» The second element enshrined in the term "coping action" is that social actors cope with the consequences of a disaster by collectively adapting to it. Even the "coping action" of an individual has a social character and relates to other actions. Somebody fixing an assailant to the floor – as was the case during the failed Thalys terror attack – does so, awaiting other social actors to take care of the attacker afterwards.

» Thirdly, by describing coping actions, it is possible to group them together according to functions inside a social system recovering from a shock. In other words, they relate to specific tasks. We can describe the actions of people getting victims out of the water during the Utøya terror attack as search and rescue.

» Fourth, by coping with a crisis, informal actors, even though their action does not necessarily involve anticipation, take key decisions that have structuring effects on disaster management overall. Continuing your own fire extinguishing management as a municipal worker, as has been the case during the Swedish wildfires, enabled firefighters to focus their attention on other places.

Both disaster managers and citizens perform specific tasks while coping before, during and after a crisis, albeit with different intentions. These tasks could for instance be described as care, transport, or rescue. Thinking in terms of tasks while analysing coping actions makes it notably easier to relate to formal disaster management that refers to a specific task as an organising principle that groups actions together according to needs (e.g., search and rescue for those in need to be saved, care providers for those who are wounded and traumatised). Focusing on actions first and professional and non-professional roles second also has the advantage of clarifying the role of contextual factors that condition those actions and understand their impact on both formal and informal ways to deal with the disaster. **ENGAGE defines coping actions in a broad manner as all actions intended to mitigate or adapt to an adverse event actively**.

Hence, actions that ensure mere survival, helping one's family and helping others to overcome an adversity can be analysed accordingly. This helps us to avoid the reification of the distinction between victims, volunteers and professionals and get a clearer view of the messy reality of

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disaster coping and the blurry lines between social roles, avoiding earlier debates about role conflicts.

This building block of our societal resilience model makes it possible to situate what people do during crises in space and time. Analysing coping actions, more than analysing a general social context or a generic social structure, leads us to focus on a specific place at a given time, while relating these actions to a task enables to generalise across cases. The contextual factors structuring these actions can nevertheless be considered in such a model as they are conditioning coping actions.

By "coping actions" we want to conceptualize "resilience" not as a passive, latent ability of a group to "bounce back" after a disruption, but as a set of actions actively transforming a disaster situation by influencing individuals, social groups or a given society as a whole. Those actions can be related to societal resilience because actors believe they contribute to overcome and cope with the crisis. Individuals or groups undertake such actions because they believe they contribute to cope with the crisis at hand. Hence, these actions are **socially situated –** they are motivated by the necessarily partial knowledge actors have at the moment and in the particular place as well as previous experiences and skills, trust in others, sense of the place they are acting on, local context and social capital. An individual's agency as it manifests itself while coping to the crisis is also determined by their access to resources. Coping actions represent a potential for resilience, but they might also be brittle, for instance when actions taken in one location end-up inadvertently going against actions taken in another location or by another set of actors (see Woods and Branlat, 2010, about maladaptive patterns).

ENGAGE's model needs to root these "coping actions" in society in the sense that in our perspective they are enabled not only by material conditions, but also by discourses and representations of the event itself and of the social roles that social actors identify with during crisis. Finally, by choosing actions as an entry point, our model and our analysis enable us to consider both the individual actions and the collective actions of a group of actors.

2.2.2 Modelling social context: From communities and societies to social context

This larger, but still specific social context is the second building block for our model. As a model for enhancing and assessing societal resilience such a model needs to entail a "society" wide perspective. This perspective is built on the double assumption that for overcoming disaster it is necessary to understand the way the "social" plays out when coping with it and that it also provides the resources to transform the disaster situation to a more resilient social condition. In linguistics, one of the few fields explicitly defining the term, context has been defined as "a frame that surrounds the event being examined and provides resources for its appropriate interpretation" (Goodwin & Duranti, 1992: 4). The term "frame" in the definition is borrowed from Goffman (1974), referring to culturally established conventions allowing people to organise their experience in a way that makes sense to them.

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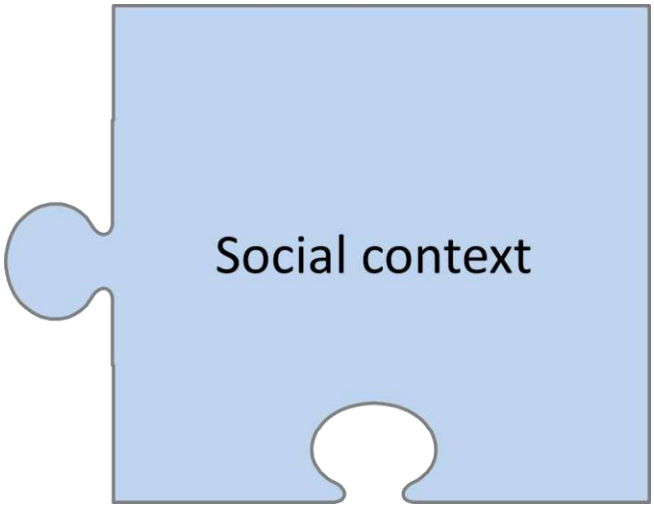

Identifying the impact of social conditions that help us to understand adverse events is foten done by referring to a specific scale of society often referring to the impact of communities, social structures, or networks on resilience, but what is understood as community is either preconstructed prior to data collection or is limited to a central community on a specific scale. For our purpose society needs to be first understood **as any social group that enables citizens to act individually and collectively to cope with a crisis.**

This means first that the analysis is interested in which scale citizens situate their community rather than how they approach a certain crisis event with a preconstructed community, be it a municipality, a region, or a national society.

Second, for the purposes of our case study, **a community can refer to any social group that enables coping with the crisis**. A camping site can be a community as well as a cultural or religious minority or socio-professional group if its roles and social norms are enabling coping actions during a crisis. The formal structure of the camping site illustrates well how a pre-existing context enables an emerging group that self-organises during a disaster.

Several communities or social groups can be relevant frameworks during a crisis depending on a specific comment. For example, being a soldier can be a framework that enables somebody to act but being an outsider in a rural community can simultaneously make it more difficult to engage with other citizens.

In other words, it is not the social group as such be it a specific community or society as a whole that is our building block, but rather the way seeing yourself being a member of a certain social group affects actors in the way they cope with disaster. Thus, the approach we propose here is based on both the various ways citizens contribute to societal resilience and the specific context they themselves and the literature on these events identify as enabling factors.

Those contextual aspects are situated in "society" in two ways. They refer to a specific social context which is enacted in a specific way depending on the crisis. Whereas formalised disaster management strives towards standardised, but adaptive actions, especially after the widespread distribution of an all-hazards approach (Paton, 2013), citizens contributions tend to be much more context dependent. The comparative design of our in-depth case studies enables us to highlight their specific contribution and its conditions.

2.2.2.1 From social context to contextual factors

Hence, a first step to understand how a more general social context influences coping action was to analyse in a comparative perspective seven cases of different types of crisis and different forms of coping actions. The findings of these case studies are analysed in detail in Chapter 3. Rather

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than providing a definitive and universal list of what factors from a larger social context determine if people cope with a crisis successfully, the case studies enabled us to isolate factors that show how social context matters in specific cases. Since the aim of our model is to improve interactions between crisis managers and citizens, a list of contextual factors allows us to highlight that these factors matter for enhancing this interface without excluding the relevance of other factors.

2.2.2.2 Use of contextual factors

Based on the work conducted in different tasks of ENGAGE, it is possible to get a better understanding of how the project approaches contextual factors. Whereas in WP1.1 contextual factors emerged from a preliminary case study analysis, WP1.2 established a list of relevant contextual factors from social science literature on preparedness, disaster psychology and crisis management. This deliverable (WP1.4) provides further contextual factors from case study analysis. Furthermore, validation activities from WP4.1 provided feedback on the contextual factors from WP1.

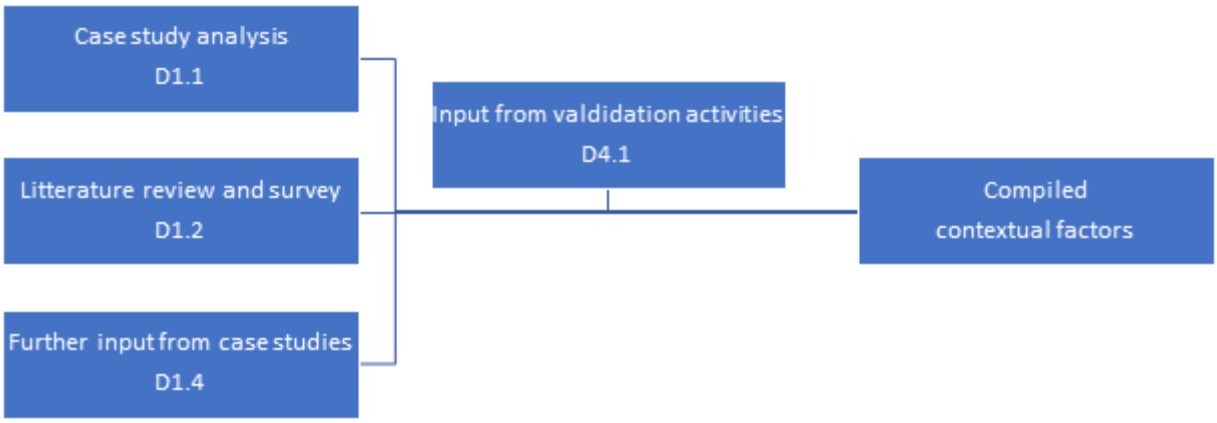

Figure 3 Sources of contextual factors

This deliverable provides a comprehensive, but not exhaustive, list of contextual factors in Chapter 4, section 4.1.1.

2.3 A NEW DEFINITION OF SOCIETAL RESILIENCE FOR DEVELOPING A MODEL

Our third building block is a better understanding of societal resilience as a guiding concept of our model. Since the model should enable an assessment of societal resilience for understanding how to enhance it, it needs a clear definition of societal resilience. As a normative concept, the focus on resilience is a highly political issue and organising principle. Deliverable 6.2 laid out several criteria for the project's societal resilience approach that should be considered when defining societal resilience before modelling it. These criteria are based on common criticisms of certain uses and implicit biases of the concept. The effort of recalling and systematising those biases enables us to define criteria that lead us to our definition.

The most often cited and most controversial aspect of resilience approaches is their potential to shift implicitly part of the responsibility for handling a disaster away from authorities and onto communities and individuals that are already affected by the disaster (Dunn Cavelty et al., 2015). It relies in that sense on the performance of affected communities and does not sufficiently consider contextual factors that explain why certain communities cope better with disasters than others. As such, by moving away from the idea that the responsibility for providing security lies with the authorities towards a focus on societal resilience, one risks making the victims of a disaster responsible for handling the effects of that disaster. This can include a movement away

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from preventive measures by authorities towards burdening societies and communities with providing their own safety.

A second type of criticism refers to resilience as a stretched concept with fuzzy content, being used as a buzzword to promote certain types of policies or being eclectic with contradictory roots in ecology, (disaster) psychology and crisis engineering. Whereas resilience has been analysed as a "boundary concept" enabling cooperation between academic disciplines and scientists and practitioners, conceptual incommensurability can lead to contradictory uses by different stakeholders of a common process.

Third, the criticism of a stretched concept also addresses an oversimplified use of resilience, especially when referring to communities and social groups. Weichselgartner and Kelman (2015) regret for instance that resilience approaches often do not grasp the complexity of cultural values and knowledge in a given community.

Fourth, the concept was also criticized for insufficiently tracing power relations and social inequalities (Cote and Nightingale, 2012). By focusing on the overall capacity of social systems to "bounce back" as analytical entry, discourses and practices of resilience can maintain unjust practices. By implicitly choosing who is addressed as a resilient actor, hierarchies can be reproduced, since one actor's resilience can be another actor's vulnerability.

Finally, resilience has been depicted in that sense as a conservative concept, promoting stability over social change. The insistence on dynamic adaptation in parts of the resilience literature, superficially hides in that sense that the main goal of resilience is the preservation of a community, instead of its radical transformation, even though this community might not be sustainable in its current form. This criticism has notably been put forward in terms of climate change.

ENGAGE's reference to societal resilience as a core concept addresses these criticisms.

2.3.1 Societal resilience as an alternative approach

The conceptualisation of societal resilience within the ENGAGE project is critically assessed and discussed in D.1.1, D1.2 and D1.3, where especially the dynamic, local and informal nature of societal resilience is emphasised. This as a part of a context-sensitive grounded theory approach based on case studies in D1.1, a comparative multi-dimensional approach to societal resilience in D1.2 and an analysis of crisis communication with special attention to gender and diversity in D1.3. By doing so, ENGAGE aims to appreciate local knowledge in its study of solutions for enhancing societal resilience, account for context and address all actors of society. D1.1 defines societal resilience based on four dimensions:

1. Society consists of different social units, including the individual citizen, formalised as organisational and spontaneous informal social groups, as well as national and transnational societies.
2. Resilience is understood as a potential that emerges from discourses and actions that are embedded in society, its structure, but also its values and bonds.
3. Thus, societal resilience is a relational approach to the way people cope with disruptive events and processes.
4. As embedded in society and consisting of social relations, societal resilience is context dependent. Understanding the discourses and actions that form societal resilience thus requires sensitivity to the social context in which they take place.

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By focusing on solutions for improving interactions between disaster managers and populations, ENGAGE is implicitly interested in the embeddedness of social actors during a disaster, since disaster management traditionally focuses more on response and recovery. Thus, the focus on societal resilience in this project tends to privilege short-term aspects of disaster management - how disaster management solution immediately improves the coping capacities of citizens while a crisis happens or shortly after a disaster took place. Nevertheless, in addition, the project wants to counteract this bias and promote solutions that are addressing long-term effects of disasters and preparing for crises.

Combined with the sensitivity to context, as well as the focus on both first responders as well as authorities, and the communication and cooperation between the two, makes the focus on resilience within the project holistic.

However, the focus on societies' ability to uphold its "functions" during and after a disaster, risks to avoid a critical engagement with what "society" is, as well as what its "functions" entail and whether ability to uphold societal stability is a measure suitable to capture whether a society is resilient or not.

2.3.2 Rooting the societal resilience in the state of the art

Besides persistent criticism (Brand & Jax, 2007; Cannon & Müller-Mahn, 2010; Dunn Cavelty et al., 2015; Walker & Cooper 2011), resilience is today a broadly used concept in academia. It's use by disaster managers to plan for crisis and to manage crisis situations has also steadily increased over the last thirty years both in terms of the number of public and private actors adopting the concept of resilience and in terms of integrating the concept in a wide variety of organisational planning tools for crises (Mayunga, 2007; Ireni-Saban 2012). The varying units of analysis and targets of disaster policies (individuals, social groups, organizations, communities, social systems) are today addressed by different frameworks. For ENGAGE, which seeks solutions for improving the interaction between disaster managers and society, this approach is notably interested in concepts like community resilience, social resilience, and societal resilience (see explanation of the difference between these below). It seeks to present a model for assessing resilience tailor-made for the analysis of in-depth case studies.

Even though detailed academic models of resilience with a focus on social dynamics already circulate today (Paton, 2019), disaster managers often use resilience in an abstract sense while interacting with populations during a crisis. Alternatively, their reference to resilience reduces the complexity of social dynamics to be able to integrate it in all-hazards standardised disaster management strategies.

At the same time, the fact that resilience is used by practitioners in various ways is sometimes met with scepticism by scholars (Klein et al., 2003, Olsson et al., 2015), but rarely addressed as an opportunity to reconnect holistic academic frameworks on societal resilience, practitioners' insights and experiences of resilient individuals, organisations, and communities.

Thus, we want to consider that resilience can be a "boundary concept" (Brand & Jax, 2007), connecting different actors during a crisis, but we argue that to do so its theoretical development needs to be rooted in empirical analysis to resonate with the actor's experiences. This also relates back to the origins of the concepts in the empirical analysis of ecological systems to withstand external shock (Adger, 2000).

For this reason, we are interested in how resilience is used to analyse (Buckle, 2006; Keck & Sackdapolrak, 2013), but also how it is used to manage a crisis (Lund-Petersen & Villumsen

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Berling, 2020) by working on seven historical case studies of disasters with varying units of analysis as part of a comparative approach. The model is thought to guide fieldwork comprised of interviews and focus groups and so it needs to be actor-centred and must be focused on people's own accounts of their actions during a disaster. The basic requirement for our model is to help us understand how people act in disasters situations and what makes them act.

That is also why we are not primarily focused on the literature that is interested in resilience as transformation or progression (Aradau, 2014), but first we want to understand resilience as adaptability (Holling, 1973) and persistability (Carpenter et al., 2001; Walker et al., 2002), in order to understand in what conditions all social actors can be resilient.

Our model should give us a better understanding of how people contribute spontaneously to societal coping processes and how they interact or not with formal disaster management.

Three conceptual offers enable us to do that, namely social resilience, societal resilience, and community resilience. Whereas definitions of social resilience tend to focus on the ability of "social systems" to withstand external shock (Braun & Asheuser, 2011) including individuals, organisations and communities, community resilience is more interested in the social coherence of specific communities that enable resilience (Partel et al., 2017). Societal resilience approaches, which are less used than the other two concepts, tend to have a more open conceptual framework that conceptualizes society not only by its structural components but is particularly interested in the interaction of social norms, values, and bonds.

2.3.2.1 Societal resilience vs. community resilience

Community resilience approaches are constructed around the notion that the resilience of a community is defined by the way a community is organised. Community resilience models often measure social cohesion as central variable, which is embedded in various other contextual variables (Berkes & Ross, 2013). Some models refer to social capital instead of cohesion (Aldrich & Meyer, 2015) or mixing analysis of social structure of a given group with analysis of threat representation by community members (Paton, 2008). Community resilience, on the other hand, refers to the ability of a specific community or neighbourhoods to withstand and recover from disruptions and adversity. It encompasses the ability of the community members to work together, adapt, maintain, or regain a sense of well-being and normalcy. Factors that are referenced in relation to community resilience are strong social connections, effective communication, and a sense of community ownership and participation.

Whereas social cohesion as social capital enters as well in our model of societal resilience, we centre more on the way social relations are represented by the actors by putting social bonds at the centre of our model. In contrast to a more structural social capital approach, we define social bonds broadly as a variety of attachments to specific social relations, norms, values, actions, beliefs or groups and institutions that are engaged in a disaster situation. In other words, our model focuses on representations of a disaster event and coping mechanisms of different societal actors rather than on a structural analysis of a community. We argue that social bonds as contextual aspects enabling risk awareness, needs or social expectations during or after a disaster are not yet sufficiently considered by community resilience approaches as is the contribution of citizens attached to different communities in general.

2.3.2.2 Societal resilience vs. social resilience

The concept of social resilience is not used entirely differently than community resilience. Kwok and colleagues (2016) speak for example of "social resilience on the community level". As Keck and Sakdapolrak (2013) state, "social resilience" is often more about discussing resilience attached to a certain number of dimensions than a systematic definition. They identify "power", "politics", "learning" and "adaptation" as such dimensions. What social resilience approaches have in

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common is often the insistence on dynamics between actors inside a social group or system or between those groups (Maclean et al., 2014). Hence, societal resilience and social resilience are related but distinct concepts.

Societal resilience refers to the ability of a society as a whole to withstand and recover from disruptions, such as natural disasters, economic crises, or terrorist attacks. It encompasses the ability to protect and sustain the well-being of individuals and communities, as well as the ability to maintain essential social and economic functions.

Social resilience, on the other hand, refers to the ability of individuals, families, and communities to withstand and recover from adversity (idem). It encompasses the ability to cope with and adapt to change, as well as the ability to maintain or regain a sense of social and emotional well-being. Factors that are highlighted as essential to social resilience are strong social support networks, effective coping mechanisms, and a sense of self-efficacy, however it insists less on the more functionalist perspective on how society as a whole relies on the active participation of its components and their agency for withstanding adverse events.

With our societal resilience concept, we share in that sense the actor-oriented approach of social resilience, but we want to insist on the social dynamics that are actively engaged in concrete disaster situations. This inductive approach to the model, based on our in-depth case studies, is in that sense open to social conditions that enable people to act spontaneously rather than measuring the overall preparedness of a society.

More recent approaches develop comprehensive frameworks to measure social resilience (Reuter & Spielhofer, 2017; Saja et al., 2018; Copeland et al., 2020). These frameworks, often intended for qualitative research, identify variables and indicators in a broad framework to measure if a community is resilient or not. Even though we share the holistic approach of these models, since we are particularly interested in the embeddedness of social actors while a disaster happens, we will stress particular dimensions that emerge from our findings.

2.3.2.3 Definition criteria for societal resilience

To make the difference between organised and formalised disaster actors visible, be it as first responders or as authority and spontaneous actors from "society", we use the term of societal resilience. Furthermore, our approach to resilience is "societal" for four reasons.

1. We want to include all types of social units, from the individual citizen to **formalised and informal social groups** to national and transnational societies. Those scales of actions are understood as social constructions that are always localized in a disaster situation. So even a global pandemic takes place in a concrete place at a given moment.
2. We understand resilience as something that emerges from discourses and actions that are embedded in society, its structure, but also its networks and the agency of each individual member of society. By focusing on **coping actions**, we can account for both the practices of citizens during a disaster, but also their intentions and the context in which the actors embed their practices. This opens the analysis to social values and social bonds.
3. Societal resilience is in that sense a relational approach to the way people copes with disruptive events and processes. It is always situated in a set of specific social relations and their representations. As such it is rather a **potential** for coping in the sense that specific relations between social actors make withstanding an adverse event possible.
4. Societal resilience is for that reason **context dependent**. Understanding discourses and actions that allow coping with a disaster implies sensitivity for the social context in which they take place. The way in which coping actions are contextualised, localised, and formalised by actors are its main research dimensions.

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While we argue that the term "societal resilience" is a useful concept for a comprehensive understanding of the context-dependent discourses and actions that can help societies withstand shocks and disasters, the concept is not altogether new. For instance, Haavik (2020) has argued that societal resilience is a "fourth age of safety" research, where the implications of global risks like climate change move into the core of safety science. This involves a break with existing approaches to societal security, which tends to be based on an instrumental orientation to societal functions and critical infrastructures, i.e., the state's responsibilities in providing security to its citizens. Haavik (2020, p. 7) argues for a reorientation of the research agenda "from robust infrastructures to the shaping of resilient societies through sustainable livelihood-, scientific- and political actions".

If we combine these different elements, we can construct the following definition of societal resilience.

Societal resilience is the potential (4) for all types of social actors, formal and informal (1), to effectively cope (2) with an adverse situation (3) and the social context (5) influencing this potential.

2.4 THE MODEL FOR ASSESSING AND ENHANCING SOCIETAL RESILIENCE

2.4.1 HOW THE MODEL RELATES TO EXISTING MODELS ON PREPAREDNESS OR RESILIENCE

Our model refers itself to existing models but also addresses limitations of these models for ENGAGE's purposes. Existing models of social or societal resilience are models that are process oriented. One of the first models that focuses on individual behaviour from Paton (2003) is also an example of how contextual factors are modelled on a time scale (see Figure 4 below). It suggests, however, a specific order for a decision process and does not necessarily relate to collective decision-making processes, nor to those that are not based on conscious intentions. As our case studies show, decisions are often not consciously taken but arise situationally as a reflex-like behaviour.

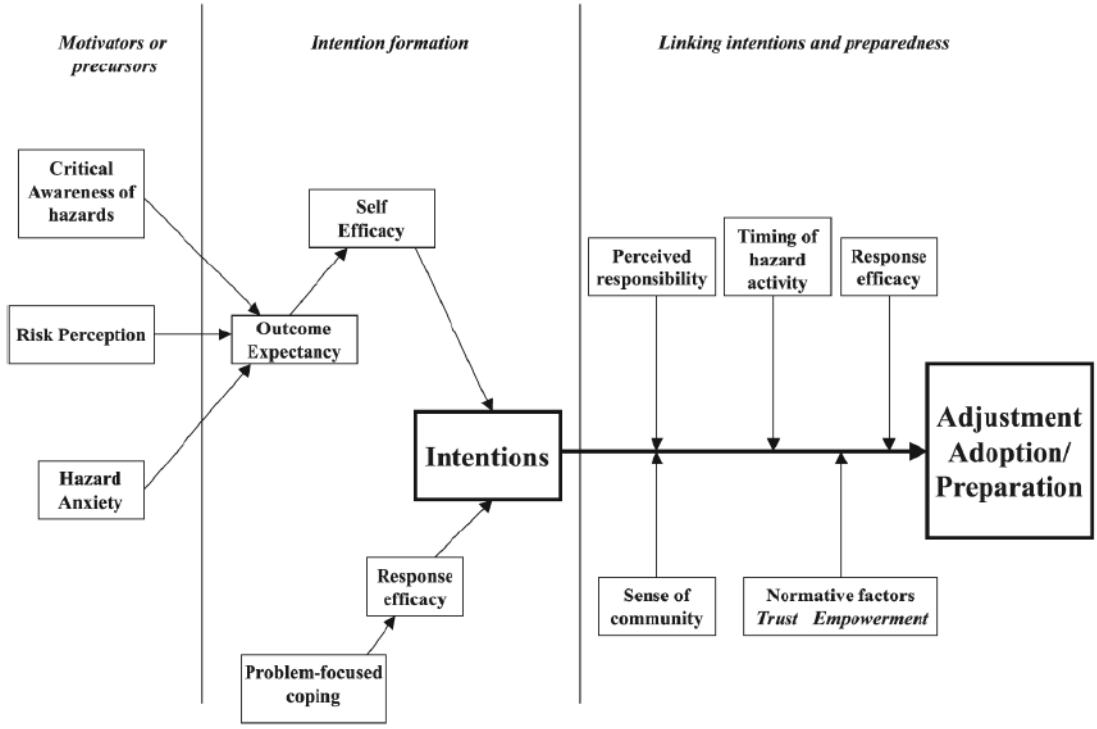

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Figure 4 A socio-cognitive model for explaining preparedness behaviour on the individual level. Adapted from Paton (2003)

On the contrary, the preparedness behaviour model from Becker et al. (2013) as seen in Figure 5, maps a rather exhaustive list of contextual factors and relates them to each other. It is however difficult to translate these into operational terms and the model does not allow for distinguishing between the weight of different contextual factors, nor does it point to ways one can influence such factors.

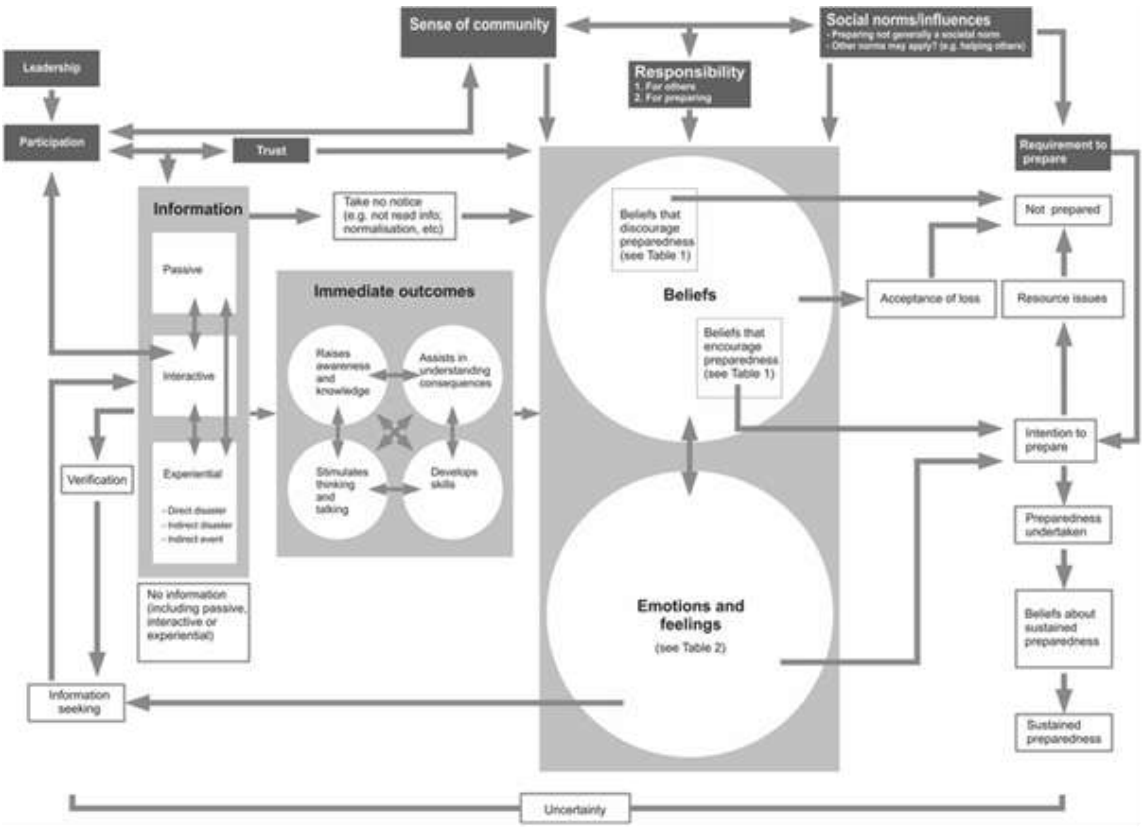

Figure 5 Development of the preparedness behaviour model. Adapted from Becker et al. (2013)

2.4.2 MODELISING SOCIETAL RESILIENCE

For translating our definition of societal resilience in a model, we use the matrix from the preliminary model (D1.4) that allowed us to position contextual factors in relation to their degree of modifiability and their degree of genericity. For instance, if a contextual factor was modifiable and at the same time dependent on the situation of the crisis, for example as "alertness" is dependent of a certain target population, it would be on the left upper corner of the model. A contextual factor that was not easily modifiable (for disaster managers) and part of social structures, as are socioeconomic resources, would be on the lower right corner.

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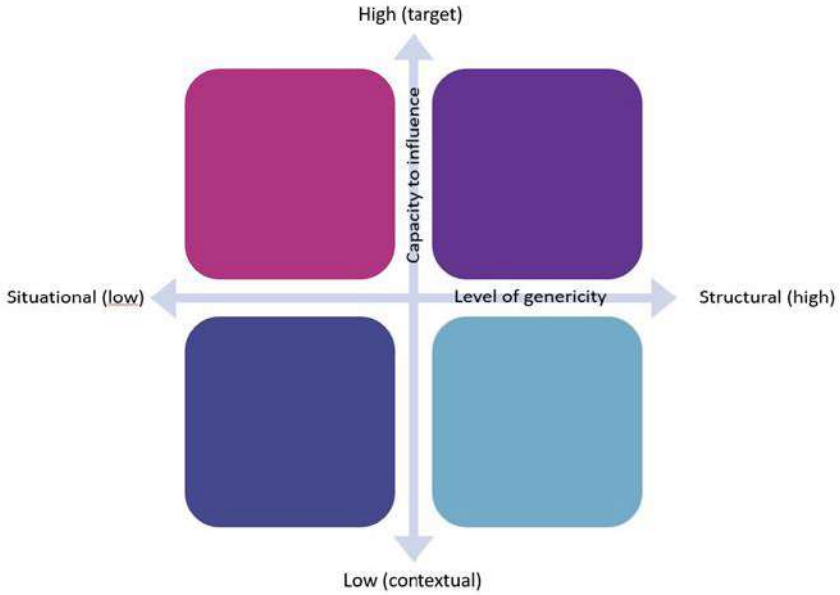

Figure 6 The preliminary model from D1.1

For the model presented in this deliverable, this two-axis approach is still relevant. We distinguish between contextual factors that should and can be modified and those that are modifiable for making the model useful for the project's interest in solutions that target specific context factors. We also use the "level of genericity" dimension since it enables us to consider it as a time continuum differentiating structural predetermined contextual factors and those that appear during the adverse situation. Depending on how actors cope with the crisis and how professional disaster managers and informal agents interact, alternative outcomes of a crisis are conceivable.

These two dimensions allow us to map contextual factors as being structural or situational and as being modifiable and non-modifiable. In Figure 6, the two-axis position, therefore, different contextual factors represented as clouds. The distinction between structural and situational as a continuum allows us also to represent time in this figure, since structural conditions produce the crisis that unfolds in a crisis situation. This unfolding event can be represented by a time error on the genericity axis.

If we add now the coping actions and the specific task to which they refer we can show how citizens action often takes place before professional arrive (for instance, getting somebody out of the water as a coping action and "search and rescue" as a corresponding task).

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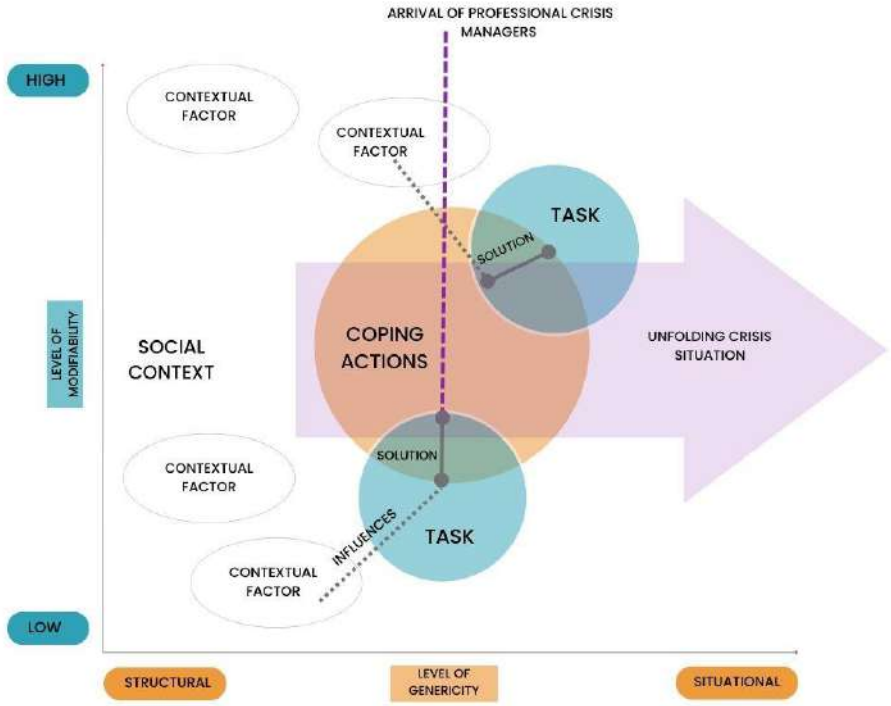

Figure 7 Combining the building blocks for a societal resilience model

Finally, this representation of our model shows that ENGAGE's solutions, presented in its catalogue of solutions bridge the gap between coping actions and specific tasks, since official disaster management is organized by tasks.

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3 INSIGHTS FROM CASE STUDIES FOR REFINING THE MODEL

3.1 STATUS OF CASE STUDIES

For obvious reasons, it is impossible to study society as a whole in empirical terms. Hence, the studies of actions, resources, and variables related to societal resilience, will need to be studied by constructing cases that are possible to approach empirically. Studying "small" cases does not, however, preclude the possibility of developing conceptual models or theorising around the "big" picture of societal resilience. Case studies are central in the theoretical canon of safety and resilience research (Antonsen & Haavik, 2021) and it is a misunderstanding that small N studies cannot be the basis of generalisation, although not in the statistical sense (Flyvbjerg, 2001). The generalisation is done in the form of concept and model development grounded in empirical data from strategically selected case studies. A case study is defined as

> an empirical inquiry that investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident. (Yin, 2014, p. 16)

A case in this respect would be any kind of setting where it is possible to study the phenomenon in question and, in comparative case studies, with the opportunity to have variation in the contexts the phenomenon occurs. From the perspective of ENGAGE, where it is an aim to be sensitive to differences in context, it is important to make note of Yin's emphasis on the links between the phenomenon and the context within which it is situated, and that the two are not always easily distinguishable.

The analysis of the cases follows a sequential strategy inspired by grounded theory (Glaser & Straus, 1967). Our analysis starts out with analysing rich data from the Thalys and Utøya cases. These cases are of extreme events, where it was possible to gather in-depth data, and where ordinary people made contributions that were vital for reducing the potential consequences. They are extreme in the sense that it involves ordinary people to take risk on their own behalf which contributes to preventing or reducing harm to others. We use these two cases to develop and refine the theoretical/analytical model. To "test" the relevance and limits of generalisation of this model, we applied the model to several other cases that differed from the Thalys and Utøya cases. The rationale was using five other cases to assess if the model's dimensions was applicable or not by confronting it with settings different than the two base cases. The cases thus differ in the sources of the crisis (e.g., natural disasters), and the onset and duration of the crisis (e.g., COVID-19 as a crisis that is creeping in its onset and slow-burning in its duration) as well as the scale of the crisis. Being "test" cases, these case studies are related more directly to the model, and thus they will not be described in the same empirical detail as the Thalys and Utøya cases.

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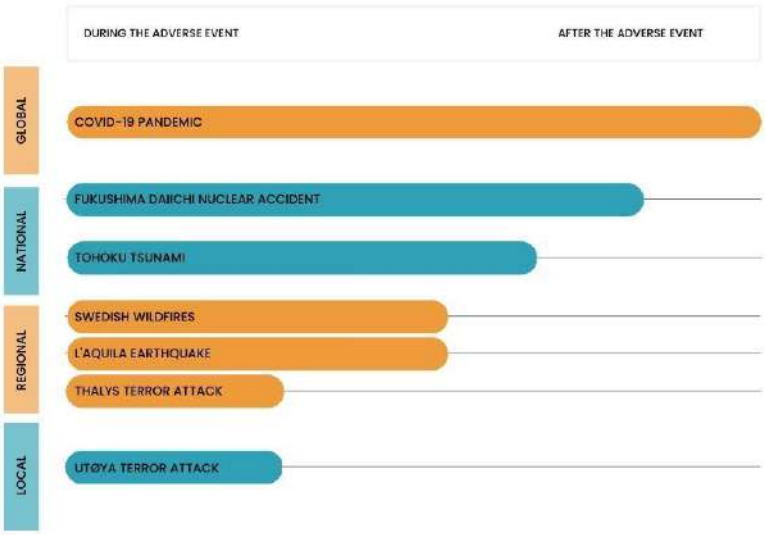

Figure 8 Case comparison - time and scale

The Thalys and Utøya cases are analysed during the adverse event and its immediate aftermath. The L'Aquila earthquake case analysis also entails coping actions from the immediate aftermath like shelter distribution, as do the case of the Swedish wildfires, the Fukushima Daiichi nuclear accident and the Tōhoku tsunami. However, in these cases coping actions are also followed on a larger timescale as they all share the characteristics of a prolonged crisis. We are documenting for instance the formalisation of certain spontaneous collective actions as associations. As both a "creeping" and "prolonged" crisis, the COVID-19 pandemic is analysed over its long duration and its consequences. In terms of scale, the seven cases are distinguished between those with an analysis of local coping actions like the Thalys (a train) and the Utøya case (Utøya island and its surroundings), to those with a regional scale (central rural Sweden and the Fukushima prefecture).

3.2 Methodology

The central research question to which our preliminary model gives some initial answers to is: What makes people act spontaneously when confronted by a disaster? This question targets conditions of societal resilience.

3.2.1 Case selection for case study analysis

Seven cases were selected for the analysis in WP1. The case studies vary in type of crisis, scale of the crisis and type of crisis management. They entail "natural" disasters like the earthquake of L'Aquila in central Italy from 2009, the Japan tsunami of 2011, the Swedish wildfires of 2018, the COVID-19 pandemic of 2020 and 2021 (even though it could be also classified as biological incident rather than a "natural" disaster), but also terrorist attacks like the Utøya attack in Norway in 2011 and the Thalys train attack in Belgium and France in 2015, as well as industrial accidents like the Fukushima Daiichi nuclear accident of 2011. They are localised on a local, regional, national, or even global scale. Some of the cases show a deployment of formal disaster management that is considered sufficient, and others are thought to be "failures" that enabled

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spontaneous reactions from citizens and organisations. The cases were therefore collected to vary the context in which coping actions take place. The case of flash floods in the Negev desert in Israel that was initially chosen as an eighth case study was not further explored in this second deliverable of WP1. Initial analysis in D1.4 showed that participation of informal actors did not play a major role in this case study as search and rescue operations were mainly conducted by professionals. For this reason, this case was not sufficiently relevant for the development of a societal resilience model.

Case study	Scale	Crisis type
L'Aquila earthquake of 2009	Regional	"Natural" disaster
Utøya terror attack of 2011	Local	Terror attack
Tōhoku Tsunami of 2011	Regional	"Natural" disaster
Fukushima Daiichi Nuclear accident of 2011	Regional	Industrial accident
Thalys train attack of 2015	Local	Terror attack
Swedish wildfires of 2018	National	"Natural" disaster
COVID-19 pandemic of 2020-2021	Global	"Natural" disaster

Table 1 Overview case studies

3.2.2 Data collection

The objective of all three data collection methods is to identify the relationship between contextual aspects of societal resilience and coping actions. Intentions of individual and collectively organized citizens and disaster managers for proposing solutions are analysed for this reason.

3.2.3 Document analysis

An extensive literature research on the seven case studies and on social, community and societal resilience was conducted for this deliverable by using Scopus, Web of Science and Google Scholar. Keywords were based on the denominators of the case studies (e.g., "L'Aquila", "earthquake"), and key words that indicate coping actions and disaster management ("resilience", "emerging groups", "solidarity", "grassroots", "social movement", "protest", "rescue", "recovery", "disaster management"," assistance"). If possible, the native language of the countries in which the case studies were situated was also used.

3.2.4 Expert interviews

To understand the specific context of the seven case studies, the present model also relies on expert interviews. For the original preliminary model, academic experts were favoured for getting to know the cases and for identifying relevant entry points to the cases. Once the entry point was chosen, no more experts interviews were conducted for the model presented in this deliverable.

Academic experts were notably used for the L'Aquila case studies relying on two Italian disaster psychologists familiar with the earthquake. In the case of the Swedish wildfires, two Swedish experts on crisis volunteers from a disaster studies perspective were interviewed. For the two

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Japanese case studies, expert interviews were conducted with two French sociologists working on evacuations after the disasters of 2011, and with a Japanese physicist who worked on the Fukushima Daiichi nuclear accident.

Since their purpose is to provide research dimensions for collecting data to the project's model D1.4., expert interviews could identify relevant groups or individual citizens that engaged in coping actions. Experts were selected for having academic knowledge of the case, having conducted fieldwork on the case, or for having indirectly participated in crisis management.

3.2.5 Semi-structured interviews and focus groups

For this deliverable, **semi-structured interviews** were used for the Utøya terror attack case study, the L'Aquila earthquake case study, and the Swedish wildfires case study. A total of 32 interviews were conducted. Due to the extensive documentation for the Thalys terror attack (court document, official reports, books published by the main actors themselves and media coverage), no semi-structured interviews were needed. The aim was to interview citizens that took spontaneous action to rescue others, to help communities to recover or to organize groups that interacted with formal disaster management.

Interviews were based on a guideline document detailing the topics on which questions were based (see ANNEX). The topics and the general procedure were clearly explained to informants before the interview started. A consent form, signed by respondents stated the objective of the interview, its topics, as well as included details on data protection measures.

When actors collectively helped to cope with the disaster and when people engaged with varying degrees of formalisation in spontaneous disaster management, focus groups also provided data to inform and test the preliminary model. **Focus groups** were also guided by the same structure used in the semi-structured interviews, but the interviewer encouraged interactions between respondents.

3.2.6 Ethical considerations

The informal character of a semi-structured interview and of a focus group based on open questions allowing for a discussion between interviewer and respondents, entails ethical risks for participants, since they are not always conscient about data collection during the interview situation. A formal framework helped to ensure data protection and the safety of respondents (see ANNEX).

ENGAGE's interest for resilience in crises can compromise the psychological safety of participants who are trauma victims, both in the case of citizens and first responders. The interviewer was aware of issues involving the respondent's safety when undertaking an interview. Thus, risks for the respondent's health were made explicit before the interview starts. A secure and confidential interview setting was provided. Respondents could end or interrupt the interview at any time. The interview could be conducted with support persons of the respondent.

The in-depth nature of the interview could also lead to exposure of personal data not relevant to the ENGAGE project. As part of data protection measures, which are detailed in deliverable 6.1, respondents were not named during the interview situation. The interviewer did also not mention personal information of respondents.

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Questions therefore focused on the immediate crisis situations in which citizens acted. Open questions identified chains of coping actions and interactions during the event and afterwards. A particular attention lied on the interaction between citizens, first responders and authorities.

Respondents were asked what posed problems in this situation and during these interactions. They were further asked to identify their needs and expectations and how they perceived risk during the crisis.

Respondents were then asked to reflect on conditions of engaging in coping actions. Interviewers' follow-up on geographical, socio-economical, cultural and gender aspects to understand the conditions of societal resilience.

3.3 THE UTØYA TERROR ATTACK OF 2011

On 22 July 2011, a right-wing Norwegian extremist conducted two coordinated terror attacks in and around Oslo. The first attack was a 950 kg car bomb which was set off at 15:25 outside the main entrance of the Government Complex in the city centre. Eight people were killed in the explosion, which also caused major damage to the building where the nation's top political leaders have their offices. While there was chaos in Oslo and all available police resources gravitated toward Oslo city centre, the perpetrator was moving in the other direction. He entered a car that he had previously parked a couple of blocks away from the Government Complex and started driving toward Tyrifjorden, a lake approximately 40 kilometres northwest of Oslo. His destination was Utøya, the island where the youth organisation of the National Labour Party held their annual summer camp.

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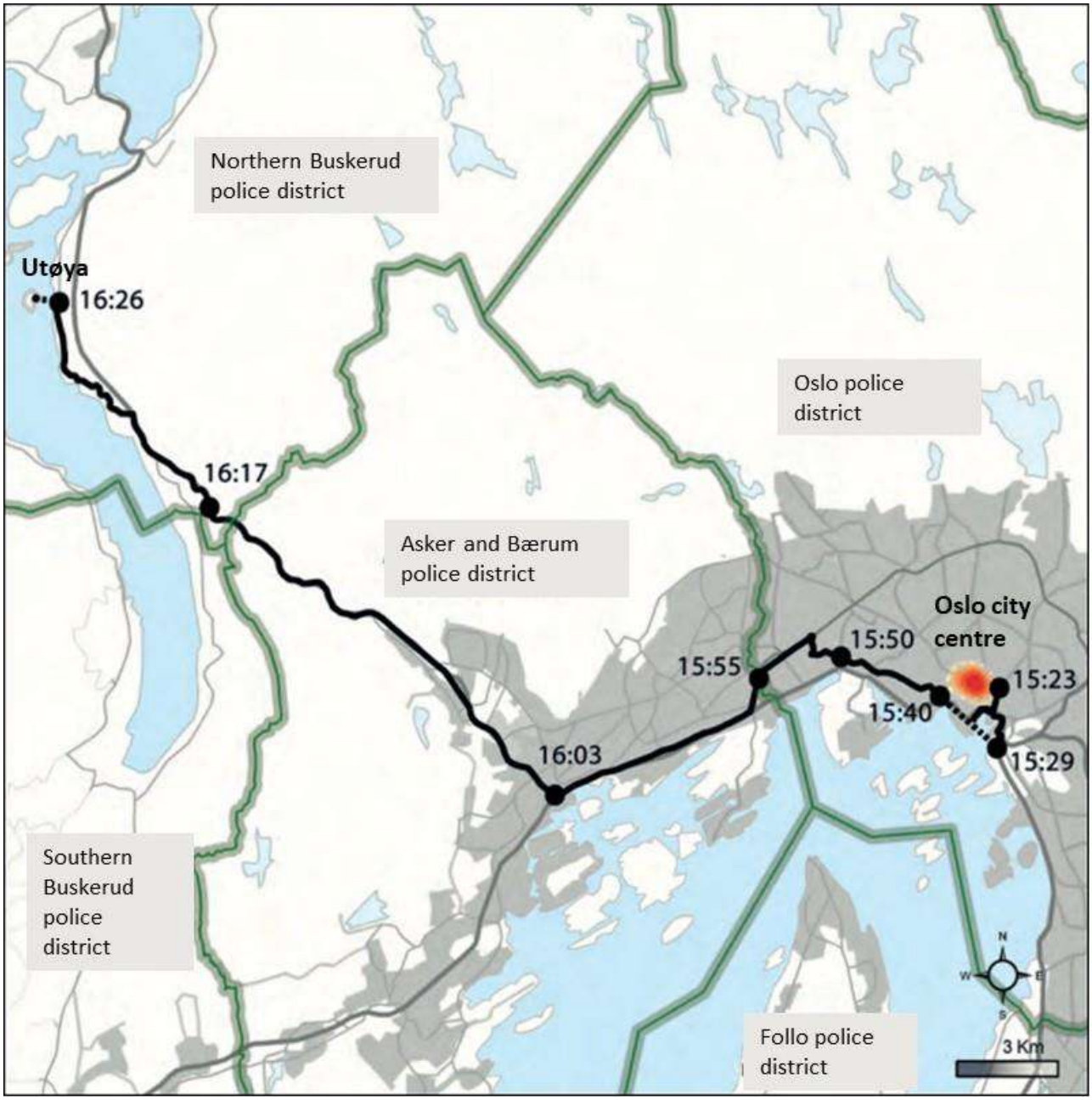

Figure 9 The terrorist's route from Oslo city centre to Utøya. Adapted from NOU 2012:14

A little over two hours after the bomb exploded in Oslo, the police started to receive several alarming messages about shootings at Utøya. Three different police operation centrals received calls from panicking youths about an armed man in a police uniform having entered the island and that several people had already been shot. As was later revealed by the public inquiry into the disaster (NOU 2012:14), the terrorist arrived at Utøya around 17:00, carrying a semi-automatic rifle and a handgun, in addition to a case of ammunition so heavy that he needed help to carry it on and off the ferry transporting him to the island. The first shots were fired around 17:20. This was the start of a massacre which ended with 69 fatalities, the youngest victim being only 14 years old. 33 people had life-threatening or serious physical injuries and hundreds of young people experienced a psychological trauma almost beyond comprehension (NOU 2012:14).

The police's emergency response to the Utøya attack was hampered by a lack of local knowledge, information and communication problems, and corresponding coordination difficulties. According to the public investigation, this led to the police spending too much time to reach the island, which

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resulted in ambulances being held back for a long time awaiting the police to declare the area safe enough to enter for health care personnel. This led to a conclusion in the public investigation that the official emergency response actions were the story of "the resources that did not find each other".

Paradoxically, while the police struggled with coordination and decision-making, and ambulances were left waiting, many civilians had already initiated a spontaneous rescue operation. The value of this engagement receives praise in the public investigation report, and there is no doubt that the contributions of spontaneous volunteers helped to save many lives. While the public commission mentions such contributions, it does not go into detail on what made them possible. The focus on formal emergency response actors is not uncommon in public investigations and is in many ways understandable given the mandates of such inquiries. However, it leaves many questions unanswered around the resources, motives, and rationales of the spontaneous volunteers.

This is the point of departure for the case study. The study focuses on the attack on Utøya, and the role of ordinary people in the immediate response to the disaster, by means of an in-depth qualitative study. Twelve of the people involved in the spontaneous rescue operation were interviewed by a research team of four interviewers, in pairs of two researchers per interview.

Psychological traumas from the event can cause both physical and psychological reactions in the aftermath. This can be triggered by things or events that remind of the trauma, what is called re-traumatisation. Considering the potential risk of re-traumatisation, the research team made careful preparations. This included having a preparation course with a psychologist with further specialisation beforehand to learn about what signs to look for and how to react/act. The team also developed a preparedness plan, which included having psychological expertise on call in case of re-traumatisation and the team needed someone to ask for advice. The various interview guides were developed keeping in mind the need to create a safe environment for the interview.

3.3.1 COPING ACTIONS

In the following, we will provide a detailed review of coping actions that are described in the empirical data and how they served to reduce the consequences of the disaster. We will highlight the specific citizen contributions that occur before the arrival of formal emergency actors or running in parallel with the tasks of formal actors.

3.3.1.1 Rescue

When the shooting started at Utøya, the volunteers heard the shooting, but explain that they did not recognise the sounds as gun fire. The sounds were by many interpreted as sounds of youth partying, and that the sounds could be from fireworks on Utøya. The neighbours were used to different types of loud sounds from the island during the summer gatherings by the Labour youth party. In addition, all the informants mention that they were following the news about the explosion that had happened in Oslo shortly before the shooting.

All the informants were at home, in their vacation houses or at the camping site at the shoreside of the Tyrifjord, some together with their partners. Several of the informants pointed to triggers that worked as keys for interpreting the situation as there were youth in danger at Utøya. Several of them refer to two key triggers, where one was a comment on live TV from a highly worried Prime Minister about "a situation at Utøya". The other was an unusual sailing pattern of the Utøya ferry. Normally, the ferry sails the same route from the quay at the shoreside to the same spot at the island. This time it sailed at unusually speed in a different and unfamiliar direction. Others heard news over the phone from contacts in Oslo, and one couple also had a youth who had been

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swimming from the island coming up on their balcony and describing the dire situation at the island.

When asked to describe their reasoning behind deciding to do something, the informants explained that they acted more on instinct than based on any kind of analytical approach. Several of the volunteers that were rescuing youth from boats acted in couples, either their partner or an acquaintance. Among those who were not alone, there were few, if any, explicit discussion on whether to act. When they realised the need for help, they acted quickly by going to their boats, only a few bringing other equipment, like floating vests.

When the volunteers were in the boats, they had little or no interaction with each other. They also described the situation as being in a bubble, or as having tunnel vision. They focused on the youth that were in the water, looking for people to rescue and not to hit anyone that was in the water.

Several of the volunteers described situations where they assess their own situation of danger while rescuing the youth form the lake. There is a general sense of "instinctual" danger when going into the situation, that it is a situation "beyond their control". Some also mention thinking "If I'm shot at, I'm shot at", and that this could be the consequence having made a choice to act.

Several of the volunteers are shot at or towards by the perpetrator. These were situations when they were close to the island, rescuing youth either in the lake or at shore on the island. The volunteers then had to make an assessment whether to leave or trying to rescue more youth. These were explained as the most difficult choices they had to make, when they had to leave behind victims to get both themselves, and victims they had already rescued, to safety due to being shot at.

Some volunteers tried to get in contact with the official emergency organisation by calling the emergency numbers. They called both to get information about the situation and to get advice on what they should do. They were told to stay away from the island due to the unknown situation, however they did not obey this and continued with the rescue. The same interaction and dynamic can be found when the volunteers were talking with the police that came to the site before the Delta operation. The volunteers were told not to approach the island in boats, but as they still saw youth in need of help in the lake, they continued the rescue.

Some of the volunteers with boats were asked to assist the police (Delta force) with transport to the island. This request came to them from police officers on site. They were asked to pick up the Delta force at an island close to Utøya but were not given a specific location of where to pick up the police. The volunteers drove in the direction of the island, and either met the overfilled policeboat on the way, or reasoned based on knowledge of the area where the police could be located.

There are several examples of volunteers providing information to the police or other authorities, for example information about where the shooter was last seen and what type of guns they had heard. In an instance, volunteers also urged ambulance drivers to get closer to the camping where the victims were brough ashore. The ambulances were at this point queued up at a distance to the camping following orders of keeping a distance, however after the volunteer showed the way to the camping an ambulance decided to approach the camping.

The volunteers that were out in boats brought the youth to shore, where they were received care by other volunteers who provided for them. Most of the youth were brought to the camping site, but also other locations both north and south of the camping was used. Some volunteers who were out in the boats also brought a group of youth to their cabin where they were cared for.

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3.3.1.2 Immediate care and first aid

The youth that were brought to the camping site were first received by spontaneous volunteers helping them ashore on the jetty. One of the first requests that were made by several youths was to borrow a phone to call home, and several volunteers lend out their phones. The many volunteers then brought the youth further up the jetty where other spontaneous volunteers gave them blankets or towels, and then helped them up to a small camping restaurant. Here volunteers cared for them and gave them food. It was not an explicit decision to form these "stations", and volunteers say that there was very little talking amongst them. However, everyone still knew what was needed. A group of youth that came ashore in a distance from the camping was also helped by volunteers in a private cabin that went out to help them out of the lake. The youth were here given the possibility to take warm showers, borrow clothes and blankets, and were also given food.

3.3.1.3 Transport

After the fleeing youngsters had received immediate care by camping residents and others at the shore side, new needs became present. The victims that were seriously injured needed professional first aid and transport to a hospital in Oslo. As long as the area near the lake had not been formally declared safe by the police, the paramedics in the many ambulances present were not allowed to approach the location where the victims were received. The ambulances were waiting in a long line on the road above the lake (see figure 11).

Figure 10 Ambulances waiting in line for the lakeside area to be declared safe enough to enter. Picture from NOU (2012:14, p. 179). Photo: Adrian Øhrn Johansen/Dagbladet

It is one of the great paradoxes of the Utøya disaster that the area near the lake was not considered safe enough for professional medical emergency personnel, at the same time as the spontaneous volunteers were already helping the kids despite the danger (NOU 2012: 14, p. 178). Due to misunderstandings between the police and the health services, the lakeside area was not cleared until almost half an hour after the perpetrator had been captured. Since the ambulances

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could not be brought to the victims, the victims had to be brought to the ambulances. Some of the volunteers therefore carried injured victims from the shoreside up to where the ambulances were waiting so that they could receive treatment and be taken to hospital.

Those who were not severely injured were still hypothermic and traumatized, involving the arising of a new need – the need to arrange for transportation to the evacuation centre at Sundvolden Hotel. This was also taken care of by spontaneous volunteers using their own cars and continued until the arrival of the health care service's emergency buses. In addition to the concrete coping action of transporting youths to someplace safe, it also involved a decision as to *which* specific location is the effective solution. Interestingly, both the spontaneous volunteers and the local municipality's crisis team, independently of each other, landed on the same location as the most meaningful location for a potential evacuation centre.

3.3.1.4 Trauma centre and centre for evacuees and next of kin

As it became clear that there was a shooting at the island with youth swimming, or being brought to shore by boat, a process was in motion to establish a place to cover basic needs such as food and shelter, as well as physical and psychological aid. The first gathering of people responsible for crisis coordination in the municipality was at the gas station close by Sundvolden Hotel. At the same time, the municipal chief medical officer was in contact with the owners of the Sundvolden hotel concerning establishing an evacuation centre. Once the hotel management heard about Utøya, they made initial preparations in case they would be asked to help. With a request for aid by the municipal chief medical officer, the Sundvolden Hotel had a mandate to act. Although this was outside formal or agreed plans, the hotel became the formal meeting place. As the event unfolded, Sundvolden hotel went from being a trauma centre to a centre for evacuees and next of kins.

Interestingly, the establishment and management of Sundvolden Hotel as an evacuation centre was organised yet improvised. In this regard, local knowledge and local social networks appear to have played a central role in making several actors gravitate towards the hotel as a focal meeting point. The hotel has a long history, beginning as a posting station/coaching inn, providing basic needs to travellers. Nowadays, it is a large hotel and conference centre, as well as an often-used place for weddings and gatherings after baptism, confirmation, and funerals in the local community. Based on what appears to be the jungle telegraph, "everyone" knew that Sundvolden hotel was the designated centre for evacuees and next of kins.

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Figure 11 Sundvolden Hotel became the designated centre for evacuees and next of kins. Picture taken from NOU (2012:14, p. 186). Photo: Håvard Bjelland/Bergens Tidende

As an evacuation centre, Sundvolden Hotel became the site for several coping actions. First, hotel management and staff provided basic needs, such as food and shelter, for the evacuated youth from the island who were not seriously injured physically. In addition, the hotel provided food for emergency responders and organised volunteers. A second coping action involved the registration of those evacuated from the island. Third, doctors were set up in a designated room to provide medical aid for those with minor physical injuries (major injuries were sent to hospitals). Fourth, a temporary psychiatric ward was set up in another part of the hotel with psychologist who could provide psychological aid. Fifth, as next of kins came to find their loved ones, the hotel also provided beds and food for them as well. Moreover, they answered calls from next of kins who were searching for their kids. Thus, there was a stream of people gathering at Sundvolden.

Another aspect mentioned in the interviews is the interaction between the organised efforts at Sundvolden and volunteers – both to local people wanting to help and organised volunteers. According to the commission report, around 250 helpers were involved at Sundvolden (NOU 2012: 14, p. 186). However, it is not specified whether all 250 were organised volunteers or if this also included spontaneous volunteers. For many of the volunteers in the local community, it seems that previous experiences were translated into the different roles required in the given situation and context. For example, the experience and competence in logistics were very useful in operating an evacuation centre, or experience with leadership and authority.

3.3.1.5 The aftermath

The role of the spontaneous volunteers did not end with the last victim having left the area. On the contrary, they were involved in the search for missing persons in the lake. The spontaneous volunteers involved in the in the initial rescue of youths swimming away from the island took part in this. It is not clear from our data if this was done at the request from any of the formal preparedness actors present.

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3.3.2 ANALYSIS

Coping actions forming interlinked tasks

In our description of coping actions, we have aimed at describing the concrete actions that were taken by the people which happened to be in the vicinity of the attack. The informants describe their actions as instinctive in terms of motivation, as extremely task-oriented in terms of execution, and as isolated and atomistic in their relationship to others' actions. The coping actions were described as responses to needs that were more or less self-evident and that the sequence of actions was to continue with the actions they had started doing, as long as there was an evident need to keep doing them. They generally describe an absence of overall management and coordination before the arrival of the formal actors.

Despite the actions being described as isolated, they can be categorised into interlinked tasks branching out to an interlinked chain which in sum constitutes an emergency preparedness function - from fleeing victims being rescued by boat, provision of immediate care, clothes and first aid on the shoreside, to transportation to the spontaneously organized evacuation centre at Sundvolden, a nearby conference hotel. In addition, they contributed to the search for bodies after the acute phase was over. This categorisation is displayed in Figure 9.

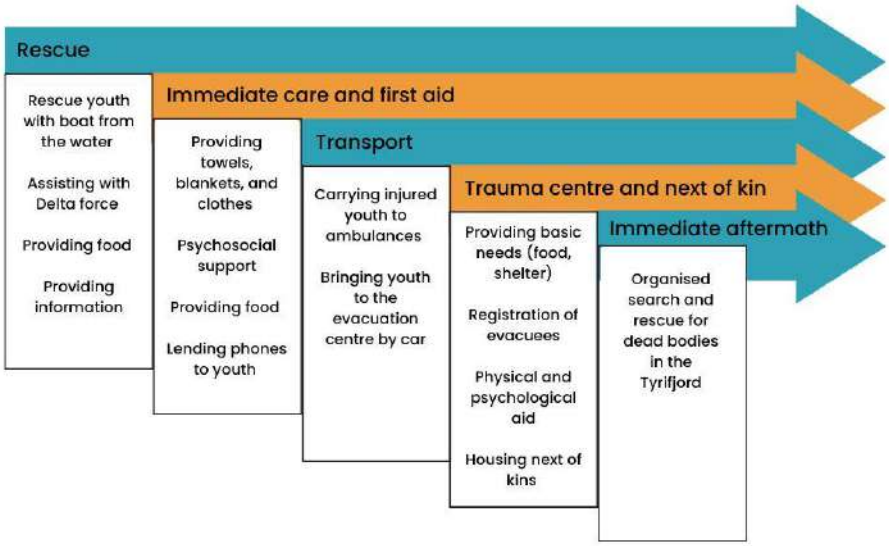

Figure 12 The contents of and connections between tasks performed by spontaneous volunteers

Interactions with formal and informal actors

Figure 12 emphasises the functional links between individual tasks and so far, we have not said anything about interactions. Importantly, the informants' descriptions of their actions as isolated and characterised by "tunnel vision", does not mean that there are no interactions between different forms of actors or social networks involved in enabling these actions. For the purposes of this report, we will highlight two forms of interaction. One is the meeting between the spontaneous volunteers, and the Delta force responsible for apprehending the perpetrator. The Delta force experienced severe obstacles in their efforts to cross the lake and enter the island. Due to a series of unfortunate decisions, the Delta force's boat broke down, meaning that they had to approach some of the spontaneous volunteers for help in order to get to the island (part of the

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"rescue" function described above). In this meeting, an important sequence of communication takes place:

> He asked me if I knew the island well, and I said that I did. Then he asked me if I knew where the perpetrator was. I said "no, I don't, but ten minutes ago someone was shot on the other side of the island". "Where do you want to land?", I asked. He said "you decide".

In this communication, the Delta force not only gain access to critical material resources in terms of being transported to the island – the officer also taps into the situational awareness of the spontaneous volunteer. First, the officer verifies the civilian's knowledge of the particular location, then gains operational information about the whereabouts of the perpetrator, and lastly, decentralizes the decision of where to land to the person with the best knowledge about location and situation. This meeting is likely to be of vital tactical importance for the Delta force's operation on the island.

The second form of interaction that needs to be highlighted is the activation of social networks to gain material resources enabling the coping actions. For instance, to be able to perform the rescue task over time there is a need for gasoline and the immediate care requires blankets, towels etc. Our data contains several examples of spontaneous volunteers contacting relatives, friends, and neighbours via mobile phones, asking them to get hold of as many resources they could find and get down to the lake. The activation of this network is based on both social capital (knowing who to contact for which resources) and knowledge of the local environment (knowing where to go).

Motivation

Another aspect of coping actions yet to be discussed, is the important question of *why* the involved people chose to do something in the first place, particularly the ones exposing themselves to considerable risk to help others.

First, the absence of formal actors is most likely a significant premise for the spontaneous volunteers' decisions to engage in the situation – if they did not act to help the victims, nobody else would. In this respect, the coping actions also need to be seen as *compensating* actions. The function of the actions "coping" towards some needs or ends, is the absence of actions from other (formal) actors. Still, the absence of formal actors is no guarantee that informal actors will act, for instance due to influence popularized under the term "bystander effect" (e.g., Darley & Latané, 1968).

Second, as has also already been indicated, many of the informants describe not thinking at all, primarily acting out of instinct. Still, this instinct could just as much be the opposite – to avoid entering a situation which might put their lives in danger. The question of why thus remains. Some of the informants taking the highest risk describe a form of reciprocity as part of the decision:

> Interviewer: What goes through your mind when you push the boat from the shore? Informant: You're thinking that someone needs help. No more thoughts than that. It's just that, you get that reaction. It's very individual, I think. Some get scared, some get paralyzed, we got the reaction that we needed to get out and help.
>
> […]
>
> Interviewer: You said you didn't think that much, but is there a sense of duty, or that this could have been your kids? Informant: Yes, or it could have been me, or her or it could have been you. It makes no difference when someone need help. Help that is a matter of life. That's what it is – someone is in need. You don't turn your back to that.

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The instinct to act described in this quote seems to be generalized to a fellow human being in need for help, rather than the recognition with the specific victims was brought into the conversation.

It should also be noted that there are significant differences regarding to which extent the engagement in the situation was an active choice. For instance, some of the ones involved on the shoreside just happened to be there when the first victims arrived. Thus, there might be nuances in the degree of voluntariness within the category of "spontaneous volunteers" which is often used to denote the efforts of civilians in crises.

The costs of resilience

The disaster's aftermath obviously extends beyond what we have labelled coping actions. Their role in the event meant that the spontaneous volunteers needed psychological follow-up in the days, months, and years after the disaster. This presented a challenge for the formal actors. Since the spontaneous volunteers are unorganized, they are not as easily identified for psychosocial follow-up than organised volunteers and formal actors. The local municipality, with the help of volunteer organizations, did a massive effort in tracking down the ones involved in the coping actions but still had a hard time identifying everyone.

The informants also describe a high personal cost of having been exposed to an extreme situation and witnessed extreme human suffering. In addition, the aftermath involved media attention which for some was seen as unwanted and which has been recurring every year around the 22nd of July.

This illustrates that terms like "coping actions" and "resilience", should not be viewed as being positive by definition. They might refer to something being functional on a higher level of abstraction, but still contains considerable costs for the actors involved.

Unpacking the notion of "context"

The term "contextual aspects" is an important one for ENGAGE. The Utøya case study shows several examples of something "contextual" influencing whether and how coping actions come about, e.g., access to material resources, situational interpretations, local knowledge, and social networks. The case study provides grounds for nuancing what is bundled together in a high-level concept such as context, and how this plays out in different constellations (situational and individual).

As we will discuss further in section 4, "context" can refer to factors influencing coping actions that are of different levels of analysis and abstraction. At the most immediate level, the characteristics of the situation matter. For instance, most of the spontaneous volunteers rescuing victims by boat, were scattered along a long shoreline when they became aware of the situation. Hence, the absence of formal actors and the fact that they did not see each other at first, can have contributed to the decision to take action. Also, in this particular situation, boats were the obvious resources that could make a difference and being the owner of a speed boat involves particular relevance to the specific scenario. Had the scenario been a wildfire, this resource would most likely be less relevant and so would the boat-owners repertoire of potential coping actions be. A second contextual factor is the individuals' roles and backgrounds. Being e.g., a reserve officer or having an occupation where training in first aid or logistics are included most likely matters for coping actions. Third, we see influence from the local environment as important for the coping actions. Being a neighbour to Utøya means knowing about the large number of vulnerable victims, and knowing people in the local community means having access to material resources like gasoline and blankets. Fourth, there is also a societal level where other variables come into play. The presence of speedboats is obviously related to socioeconomic variables, but so is a cultural

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tradition where it makes sense for many Norwegians not only to spend money on buying a cabin, but to do so near a lake and to buy a boat. One might also involve the context of Norway being a high-trust society with a potential for a high level of perceived reciprocity among inhabitants, although these types of influence will be impossible to demonstrate directly linked to the coping actions. We will return to the discussion of these levels of context in section 4.

3.4 The Thalys train attack of 2015

On Friday, 21 August 2015, at approximately 5:01 p.m., a 26-year-old individual, armed with a Kalashnikov assault rifle (AKM type) with nine full magazines, a Luger 9 mm automatic pistol, and a box cutter4, boarded the Thalys high-speed train No. 9364 from Amsterdam to Paris at the Brussels-Midi station. Shortly after the train passed through France at Oignies, he opened fire on the train.

Figure 13 The Thalys train line between Brussels and Paris

To begin his attack the assailants got up from his seat and entered the toilet with a large bag. As he came out of the toilet, a first passenger, a 28-year-old Frenchman, tried to disarm him. Another passenger, Mark Moogalian, a 51-year-old French American 7,8 came to the aid of the French passenger. He in turn grabbed the assailant assault rifle and managed to take it, while the assailant drew his Luger pistol and fires, hitting Moogalian in the upper back and taking back the assault rifle from him.

The shooter then entered car 12 of the train. As he attempts to open fire, his weapon appears to malfunction. Two American passengers on vacation, Alek Skarlatos (US National Guard Reserve) and Spencer Stone (US Air Force paramedic), throw themselves at the assailant and immobilise

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him. Then, with the help of the British Chris Norman and the American student Anthony Sadler, childhood friend of Stone and Skarlatos, they disarmed the attacker and subdued him. Another French passenger, an off-duty train driver, also joins the fight.

During the struggle, Stone is wounded with box cutters to his hand and neck, but he is still able to help Moogalian, who is hit by the gunshot. Once the situation is under control, Sadler ran to the last car to announce the end of the incident to the other passengers and to get a first aid kit. He also tried to enter the train cockpit twice but was unable to do so because the Thalys employees had locked themselves inside.

Between 6:00 p.m. and 6:30 p.m., the assailant was arrested at Arras station (Pas-de-Calais), to which the Thalys had been diverted. The 554 passengers on the train were taken to a nearby gymnasium and had their identities checked and their luggage searched before being transported to Paris during the night.

There is consensus that the assailant could have carried out a major terrorist attack with high casualties without interventions from civilians.

3.4.1 Coping actions

In the following, we provide a detailed review of coping actions of all involved actors and how they prevented a mass casualty event. Notably, the emphasis is on actions that occurred before the arrival of police forces and medical first responders. Actors are not anonymized in this case study, if their names are public knowledge as part of interviews, films and biographical book. The analysis relies on secondary sources, since the detailed coherent account actors gave in to multiple sources made supplementary interviews superflous.

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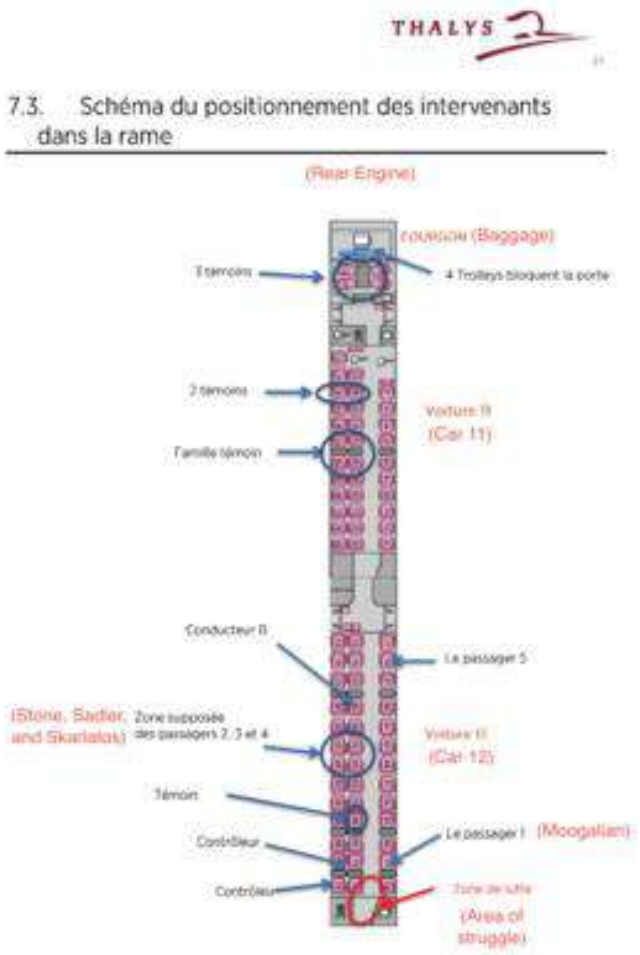

Figure 14 Mapping of informal actors in the train. Source: Official inquiry report, Martos 2015.

3.4.1.1 Encountering the assailant

Mark Moogalian, a 56-year-old French American teacher, is the first informal agent to act, located in car 11. "My wife and I got on the Thalys at Amsterdam station. She was in seat 74 and I was in front" (Chevillard 2020). He was worried, shortly after passing the Brussels station, not to see the person he saw entering the toilet "ten to fifteen minutes" earlier "with a small blue suitcase" coming out. "I thought it was strange because the toilets are so small". Mark Moogalian thought that the passenger in question may have been unwell. So, he got up and, on the platform, he came across another passenger, Damien A.

Then the assailant came out of the train toilet, "bare-chested, armed with a Kalashnikov, with a small backpack on his stomach" (idem), as the other passenger 33-year-old described him.

It is at this moment that the first coping action takes place. Moogalian described his actions as follows in the court document. "Then I grabbed him by the neck and pushed him into a corner. I almost huddled against him so he couldn't reach for his gun." (idem) Mark Moogalian, manages to grab the Kalashnikov of the attacker:

> I entered the airlock and I said 'I've got the gun'. And then he shot me in the back. The bullet went into my back, and it came out through my neck. (idem)

Mark Moogalian collapses, drops the gun after it does not work. Mooligan described this absence of action as following:

> I saw El-Khazzani coming. I was waiting, I thought he was going to put a bullet in my head and then nothing. (…) Because the gun didn't work … (idem)

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Moogalian described his intentions that lead up to this action as follows: "I did not understand what was going on. I thought it was a disguise." (idem) The second passenger, Damien A., too, thought "a joke, like a hoax." (idem) He describes the facial expression of the assailant clarifying the ambiguity of the situation and revealing the intentions of the assailant. A look "determined, with an air of defiance". Once both passengers realized the threat Moogalian notified his wife.

> I turned back and I saw Isabel, and I realized that if I didn't do anything, she would be the first victim. I went to her and quietly said: 'Get away, this is serious.' (Aurora 2020)

Two further actors arrive on the scene. The first one is one of two train controllers of the Thalys. Michel Bruet is a seasoned controller employed since 1982. He described being alerted by the noise. He described his coping action in the following way. "I put myself in the middle to separate them and then I saw that one of the two had a weapon in his hand. He pushed me, I fell into the luggage space" (Le Parisien 2015).

He stated his intentions as following: "At first, I didn't react too much, fights on the train happen. I figured it was a drug problem." (idem) He notably did not perceive the weapons at first and decided to separate the fighting passengers.

The assailant, Ayoub El-Khazzani took the opportunity to rush into car number 12, "all without saying a word" (Chevillard 2020) according to the three witnesses of the scene. The controller alerted the conductor on the internal train communication system by asking for police and medical first responders. The rest of the train's passengers are not informed. (Martos 2015)

3.4.1.2 Attacking the assailant

When the assailant entered car 12, three other informal actors, three American passengers intervened. They described how they coped with the event in the following way.

The first one, Spencer Stone, an American tourist and soldier sitting five seats from the door and facing it, woke from a short nap, perceived the assailant, and directly attacks him when he enters the car putting him into a chokehold. While struggling with the assailant, he is injured by a knife at his hand and neck. Alek Scarlattos, another tourist and soldier from the United States, sitting at the window seat, shouts in parallel "go get him."

The tree main actors gave an account detail of their coping actions in the book that they authored together, but that describes the scene in a third person perspective. The following quote is from this book; hence it is more detailed on the intentions than the official report, media interviews and court documents.

> Now he [Spencer Stone] is fully awake and crouched between the seats. A gate in his brain has lifted, and a tidal wave of adrenalin is crashing in; his muscles tighten, and times decelerates for him. He sees a glass door slide open, a skinny man with an angry face wearing a backpack the wrong way, strapped to his stomach and somehow Spencer knows without having to think that the bag is full of ammunition and swung to the front because that way it is easier to reload. (Sadler et al. 2016, pp. 31).

Stone is assisted by the third American tourist Sadler, who perceived Mooligan and his injuries at first. During the struggle Sadler grabed Ayoub El-Khazzani rifle and after Spencer Stone insists two times pulls the trigger while pointing at the assailant. Both manage to overwhelm and Ayoub El-Khazzani, who loses consciousness in the process. Sadler describes his intentions that built up to his coping actions as follows: "What he's [Anthony Sadler] doing doesn't feel like thinking at all really, it's more like reacting." (Idem, pp. 32)

Chris Normann a British businessman assists the two Americans in subduing the assailant, but he describes his intentions differently.

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> I saw someone running down the aisle to the front of the train. I stood up to see what was happening and saw a man with what I think was an AK-47. [...] My first reaction was to sit down and hide. Then I heard an American say, 'Go get him'. I decided it was really the only chance, to act as a team and try to take down the assailant [...] My thought was, I'm probably going to die anyway, so let's go. I'd rather die being active, trying to get him down, than simply sit in the corner and be shot. Either you sit down and you die, or you get up and you die. It was really nothing more than that. (France24 2015).

3.4.1.3 Fixating the attacker

Norman together with a train conductor, who is sitting off-duty without his uniform next to the struggle, holds the assailant down, which liberates both Stone, Skalatos and Sadler. The off-duty train conductor remained anonymous and did not testify.

3.4.1.4 Caring for the wounded

Stone, who is also trained as a combat medic, once the assailant is fixated by Norman and the train conductor, became aware of the wounded Mooligan in what he described as follows: "He'd been reacting a moment ago when they were all tying the terrorist up and he heard a noise behind him. A groan? He turned, registered three distinct things all at once; a man in a soaked t-shirt, he has been shot, blood geysering across the aisle, and the man's eyes moving toward the ceiling as if something important had gotten stuck there. Then the neck slackened, the chin collapsed into the chest, and the man rotated forward out of the seat." He begins to attend Mooligan's gunshot wound by blocking the bleeding with his finger. Their only interaction is Mooligan asking twice to change his position because of discomfort and Stone refusing for not exposing the bleeding a second time.

After having assisted Spencer Stone to contain the assailant, Skalatos seeks help in the other cars. He enters the car and asks in English: "Do any of you speak English? Do any of you have a towel?" Passengers do not react.

3.4.1.5 Securing the area

As a last coping action before the arrival of medical and security professional in the Arras train station, Skalatos took the (non-functional) pistol and the rifle and checks the other cars for more attackers.

3.4.2 ANALYSIS

While describing coping actions we focused on two different configurations of actors. A first group of actors encountering the assailant when he steps out of the restroom in which he prepared the attack, and the decisive struggle in car 12. Collective action is motivated by propinquity to the event.

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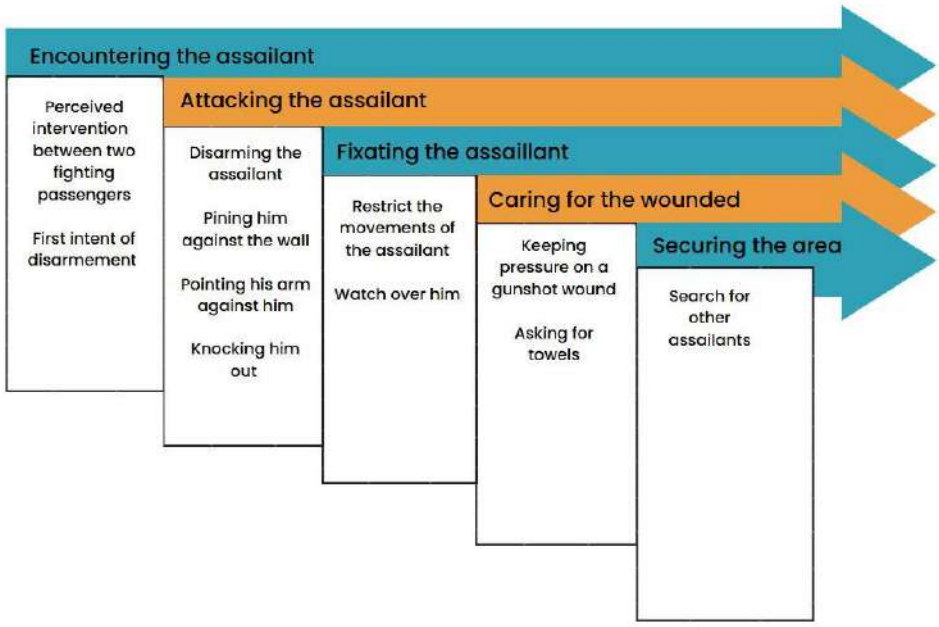

Figure 15 The contents of and connections between tasks performed by spontaneous volunteers

Spontaneous coping

First, in both configurations, almost all informants describe their actions as spontaneous. They insist in the absence of a cognitive process leading up to their actions describing them as reactive behaviour without thinking as it is for instance expressed by this description of Spencer's coping action. "He doesn't feel like thinking at all really, it's more like reacting". Spencer notably described a tunnel vision in which only the immediate next step and the immediate environment of the attacker is visible to him.

Scripted coping

Second, this reactive behaviour is also described as scripted. Notably the fighting of the three America soldiers is described as a re-enactment of a set of actions learned in extensive combat training. The same goes for the use of weapons as a series of specific actions. The American informants explain this scripted behaviour by their socialisation. Spencer for instance roots it in his gendered education stating that he "had free rein to play with whatever kind of toy he wanted, and his mother had given in to the fact that her boys loved guns-well boys love guns" (Sadler et al. 2016, pp. 35). As scripted behaviours, coping action tend to be carried on without interruption or reflection. The intervention of the train controller could also be categorised as scripted action. The controller mistakenly identified the first altercation with the assailant as a struggle between passengers and reacted immediately by trying to separate both parties as he has done before.

However, the British informant and Mark Moogalian are actors who described a reflective process leading up to his coping actions. Moogalian thought of the risk of his wife being killed if he does not act and the British informant described his first coping action as a flight behaviour, but he will join a collective coping action, once he is addressed by the American informants with the words "go, get him". He described a rational calculation about the cost of intervening and decides to join the collective effort to enhance his chances of survival.

Task orientation

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Third, all informants primary focus on specific tasks like disarming, fixating, attending the wounded. These tasks follow one after the other, but almost not happening simultaneously. No overall coordination is visible.

If there is coordinated action, it relies on quick team building through former male friendship between the American passengers, together with ritualised fight training since their childhood, and complemented by professional fight training as soldiers. There seems to be minimal interaction between the actors. The division of labour in the group emerges spontaneously and depending on the situation in the sense that Stone will look for resources to attend Mooligan's and Spencer's wound, because he is not actively fixating the assailant.

Social roles

Fourth, the case exemplifies the significance of roles in dealing with an adverse. When actors describe their single tasks as scripted and spontaneous behaviours, they refer to the social roles they play. The three Americans act as soldiers, the train controller as such. Different roles come into play during the event – personal traits, cultural aspects. Hence, ordinary people use skills they acquired from the current or previous positions, and they translate them to adapt to the exceptional situation The actors that described confusion (like Mooligan, a teacher) or a rational calculation (like Norman, a businessman) before acting, are the ones that do not act out of the scripts attached to their social roles.

We have also to consider the way culture can explain how these different roles are played out among the contextual elements of the situation. A (French) high-speed train is highly normed place. Loud interactions and sudden movements, for example, are seen as misplaced. The testimony of the American tourist reveal that they are not aware of the norms that are present. At least, they do not mention it in their extensive testimony. The absence of reaction of other passengers might, however, be partly explained by this normed environment and a bystander effect.

3.5 The L'Aquila earthquake of 2009

The earthquake that largely destroyed the historical city of L'Aquila in the Abruzzi region of central Italy occurred on April 6, 2009. With a strength of 5.9 on the Richter scale, 309 citizens were killed by collapsed buildings, injured 1500 and left more than 67.000 homeless. The earthquake not only heavily destroyed buildings in the city itself, but did so as well as in the surrounding villages.

Using state level emergency planning, Italian authorities prohibited access to the historical city centre (the so-called red zone) and highly damaged neighbourhoods. The civil protection agency relocated 32 000 citizens to hotels and non-affected houses as part of a mandatory process. 35 000 were placed in tent camps for up to eight months. The camps were organized and managed by the civil protection agency. Self-organized housing structures emerged parallel to the official camps.

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Figure 16 Damaged buildings after the earthquake in L'Aquila

In rural communities surrounding L'Aquila, municipalities collaborated with NGOs and other emergent organisations in organising recovery activities (housing, psychological, medical, and social assistance, cultural activities).

The reconstruction process was considered to be very slow and top-down. In a second part of the disaster management, citizens were again relocated to permanent new settlements (CASE) situated outside the historical city of L'Aquila. Reconstruction of the city continued until 2015, which led to the resettling of up to 80 per cent of residents in their former homes.

3.5.1 COPING ACTIONS

Both the literature and official reports on the Aquila earthquake from 2009 stress the importance of emergent organizations after the earthquake (Alexander 2013, Fois, Forino 2014, Forino 2014, Bock 2017, Ciccaglione 2019). Rehousing and reconstruction efforts, logistical support and political actions are highlighted (see also Twigg, Mosel on emergent organizations in urban settings (2017). However, the contribution of individual citizens is rarely mentioned by these sources. Expert interviews with two psychologists working on vulnerable groups in L'Aquila were first entry points for the analysis as part of the preliminary model (see D1.1).

We followed this entry and interviewed citizens that self-organized after the earthquake and whose emergent organizations were institutionalized afterwards. Relying on still existing organizations made them easily identifiable, but this entry excludes for the moment spontaneous, but temporary coping actions and reproduces the same bias visible in the literature on the event.

In a first step we interviewed actors that contributed to the formation of emergent organizations in the sense that they were present during the formation of such a group and coordinated with others in an informal way. None of our interview partners were affiliated with an emergency organization or integrated in another way in formal disaster management.

3.5.1.1 Organising a camp

We conducted three interviews on the grassroot experience of the camp for earthquake victims that was set up by the CIGIL labour union (Confederazione generale italiana del lavoro). This camp was the only camp after the earthquake that was not set up and managed by the Italian civil

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protection agency. We conducted interviews with two members in leadership positions that set up the camp.

Our first interview was with one of its organizers. This informant's house had not been damaged, notably because it had been renovated to make it more resilient to earthquakes. After having verified that his house was not affected, he was contacted by the national secretary of his labour union CGIL and subsequently received calls and messages from CGIL comrades in the L'Aquila area about their wellbeing, but also about possible actions. Some of them had previous experience about emergency management. The informant could not reach local institutions to get information and so he decided to move by bicycle to places that were difficult to access.

At first, he went to the Guardia di Finanza Barracks [literally Financial Guard. The Guardia di Finanza is one of Italy's military-organized police forces, with general competence in economic and financial matters], which served as an emergency coordination centre. He reached it five hours after the earthquake. He did not receive a favourable answer to his proposition to help. "They told us, "Let us work, we'll take care of it." Response we did not like."

Afterwards, when he was expelled from his house in the historic centre by the civil protection agency and he could not go the CIGIL headquarters, which also was in the city centre, he spontaneously cooperated with the University's chancellor who could also not go to his office. He described this decisive moment as follows:

"We became aware that the situation would last for a long time and after the expulsion from the city centre it appears necessary to find solutions. I spent the night immediately following the earthquake in my car, because I was not allowed back into my house, even though it was fully habitable. In the forecourt in which I was parked, I noticed that many military vehicles were arriving, while buses were leaving with displaced citizens, to reach places of shelter outside the city. L'Aquila was emptying out. The next day, partly because of what I had observed during the night, we decided to act. We confronted the Municipal Administration to open the Camp. The Camps run by the Civil Defence were organized in a very formal way, the CGIL had a more "open," less formalized approach. We also welcomed the community of Coppito (a hamlet of L'Aquila), whose inhabitants daily returned home "to feed the chickens." This, too, made it possible to keep the community "together."

Over the rest of the day and during the following, the informant contacted the territorial Chambers of Labour, the "Coppito" Community, the National and Regional CGIL, as well as other community stakeholders to set up a camp. Once the camp was set up, they could reach the National Secretary of labour union and he visited the CIGIL camp already on the Thursday after the earthquake [the earthquake occurred at 3:32 a.m. on the night between the Saturday and the Sunday]. So, five days after the event a formal structure, a so called "platform" [union's own concept] was created to coordinate coping actions.

On an informal level, a concept of an "open camp" was created in which every evening inhabitants would reunite and discuss. As a result, the camp organizers and inhabitants became aware of specific needs of other victims, notably in the rural countryside surrounding the city. A basic structure for distributing basic necessities was set up to meet these needs.

The camp used resources, building material and basic necessities of the national and regional CGIL organization. Chef apprentices at the Hotelier Institute of Chieti came to cook for the camp. Financial help was collected from unionized workers and companies on a voluntary basis and so did the companies. These funds were used for development programs and not for reconstructions. In a second stage, collaboration with the civil protection agency was established, which allowed the supply of goods.

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The camp lasted six months until October 2009. The arrival of permanent shelters and the beginning of the cold season made it necessary to dissolve the temporary shelters of the camp.

Two informants shared their experience in the CIGIL camp. The first informant grew up in L'Aquila, but at the time of the earthquake, she was in studying in Rome. This informant after being informed by TV about the earthquake contacted her parents. During the first hours after the disaster, reliable information was difficult to access from public and media sources and so she set up a small network with her university friends to better share the available information among them, but also to give this information to contacts in L'Aquila. The objective was notably to influence the University of Rome with local knowledge to bring aid to small towns surrounding L'Aquila that did not receive sufficient resources.

The informant was with her family in her house when the earthquake struck. The house remained undamaged and after informing friends and family that they were safe, the informant who is president of a social cooperative checked on her collaborators. This informant describes herself as personally and professionally well-prepared stating that "the Cooperative had a prevention plan, so we found ourselves in the square with operators and users, exactly as we had foreseen for a circumstance of that type. We had carried out simulations both with the operators and with the children hosted by the communities and with disabled minors. It was not an unexpected event and I had grown up with the teachings of my grandmother who had experienced the Avezzano earthquake of 1915."

When she had to leave their house because of the exclusion set up by the civil protection agency, she moved to relatives in a neighbouring region, while her husband stayed at the CIGIL camp, since he had responsibilities in the CIGIL union. The informant returned to L'Aquila on a daily basis to manage her cooperative, but experienced difficulties going back to her house or office, since an authorization of the Civil Protection Camps was required, the fire brigade went with the inhabitants and the waiting times were long. For that reason, the CIGIL camp became a "reference point" for non-profit associations to organize. The camp also facilitated contact with institutions and set up an information desk to share relevant information about procedures, actors and events and organized meetings and debates. The informant's cooperative finally relocated to preliminary shelter provided by *Legacoop*, whose actions are described below.

3.5.1.2 Distribution of basic goods and housing

The association *Legacoop* is an example how an existing association, directly affected by the earthquake, reconfigured its actions to cope with the crisis. The organization's office in L'Aquila was destroyed by the earthquake. The staff was transferred first to Avezzano (about 60 km away) and then permanently to Pescara, where many cooperatives operating on the coast are located.

Our informant described how *Legacoop* immediately acted during the emergency phase of the earthquake. The association first defined a specific role, a "commissioner", to respond to the immediate emergency. Under this person's guidance, the association's member contacted two cooperative supermarkets to provide necessary items like food or hygiene articles to the people affected by the earthquake. During a second phase, from days to weeks after the earthquake, the association restored its normal organizational routines, but continued to focus its action on coping with the earthquake. *Legacoop*, again by reactivating former partners, organized housing for university students to help them to continue their courses and complete their exams. In a third phase, months after the earthquake, the association collaborated with construction companies to reconstruct housing in L'Aquilla. The aim is notably to promote wooden constructions that withstand future earthquakes. This activity continues until the present day.

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3.5.1.3 Organizing sport in camps

On an individual level we also conducted an interview with an informant that spontaneously acted after the disaster to assist others and inserted her individual action in a collective action over time.

This informant described notably in detail how her professional role before the earthquake was translated into coping actions. The informant was heading the L'Aquila section of an organization that promotes sports for all social groups in Italian society. During the earthquake she was at home with her parents and after the initial shock the family decided to move to the house of the family's grandmother at the coast.

The informant described her motivations as follows:

"For me, earthquake has always been a concrete presence. In those moments I was not caught by panic, I remember tremors since I was a child (at night we were woken up to go to my grandmother's, for me it was a positive "thing", I liked to go to my grandmother's). I don't remember any prevention activities at school, but it was known to everyone that we live in an area of high seismic risk. (…) We did not have clarity of who were the contacts to turn to. We knew there was a machine that was being set in motion, but we had no official sources of information, only rumours that were circulating."

The informant returned to L'Aquila the following day and took contact with Camp Managers and the municipality officials for proposing some activities. These contacts were possible based on previous collaborations. The informant reported to a disaster centre that had been set up in a neighbouring coast town to collect data on disaster victims, but no information nor goods were provided at this place. The first days, the informant slept in her car and then moved to a temporary shelter provided by her association.

Following her social role, she co-organised sports activities within the Camps, in collaboration with the National Association for Public Assistance, one of the largest voluntary associations in Italy. The activities mainly targeted younger and older people because of their continuous presence in the camps.

The informant reported the difficulty to help others while having a nine-year-old daughter that needed to start attending school again. "Displaced Classes" were finally organized where the teachers were also earthquake victims. And so, the informant could focus on her coping actions. After this experience, the informant became an affiliated volunteer with the Italian civil protection agency.

3.5.1.4 Founding a local radio station to help to cope with trauma

Another example of how spontaneous coping action after the earthquake resulted in an emergent group that later became a formalized organization is the "Radio Stella 180". This radio enabled disaster victims to talk about the trauma experience. We conducted a focus group with its editorial staff.

Its foundation is described as a three-person initiative after the earthquake. A psychologist, who had previous experience with radio stations in Rome thought of creating a radio for an existing association, the so called "180amici L'Aquila" Association, an association that advocates the need for full implementation of Law 180 - Basaglia Law, which in 1978 started the process of closing asylums and began working on mental health in the territory. He collaborated with a user of the ASL Abruzzo (Local Health Authority) Psychiatric Day Centre to create the radio. They were assisted by a professional journalist for the first 3 years.

The creation of the radio is described by the informants as a by-product of the meetings of the 3e32 committee at the Piazza Duomo and the internship of one of the cofounders in the Globo

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camp, organized by the Italian civil protection. Informants refer to the lack of reliable information and trust as an enabling factor for inciting coping actions.

"Word of mouth was important, as was the City Assembly which met in the large tent set up in Piazza Duomo [commissioned by the "3.32" Committee]. Some of us were involved in journalism and helped generate information. The information was in fact often not clear, often collected by the fire brigade during inspections of buildings (houses, shops, etc.). The [national] government at the time established a "Command and Control Department" to manage the emergency and this model created difficulties in communication between people. (…) For my internship I had to look for people assisted by the ASL within the Camps. I could not declare the names of my patients for privacy reasons when I had to enter in the Camps and for this reason I was often hindered. It was a very limiting model because it was set on a militarized management. (…) The place of reference was the "Campo Globo" of Civic Protection where I started to carry out the internship and where we started a web radio ("Radio Stella 180") that dealt with the discomfort generated by the different forms of trauma."

The focus group insisted on the desire of the "180 amici association to collaborate with the operators and users of the Psychiatric Day Centre and Mental Health Centre of L'Aquila, to establish a radio station that could give voice to the users themselves and thus to their distress.

3.5.1.5 Sharing experiences and information

We conducted a focus group with two psychologists, a disaster victim from L'Aquila and a former inhabitant who volunteered in the 3e32 committee.

3.5.2 Analysis

In the Aquila case study, the extent and type of contributions from citizens were structured by three different phases of the event. We can distinguish between actions taken immediately after the seismic shock, actions during the relocation of citizens in camps (the day of the seismic shock and the following weeks), and in the aftermath of the event (months and years).

After the initial shock, citizens contributed by carrying out rescue operations by helping victims under the rubble, informing and guiding first responders, social support, first aid and logistical aid (providing blankets, water and food).

After camps were established and citizens were relocated by the civil protection agency, citizens self-organized to provide information, to improve the quality of service of formal disaster management, to deliver psychological support, reorganize temporary shelters, create civil protection structures in rural villages and provide cultural events.

In the months and years following the earthquake, self-organizations institutionalized as political, cultural and social associations.

Propinquity enabling coping actions

Some of the informal actors were acting because of their propinquity to the area heavily affected by the earthquake, but most of the actions we mapped are linked to the propinquity created by the civil protection camps. Pre-existing neighbourhoods were not considered for temporary housing and the lack of social proximity as well as the forced spatial proximity, enabled self-organization, facilitated by demographics and shared group membership (students, activists etc.).

Those who self-organized from a distance, identify family or friendships in the affected area as enabling contextual factors, but they also often reference the camps as an enabling site that helped them to organize.

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The fact that the city centre was declared an exclusion zone shortly after the earthquake displace the zone of self-organized action also towards rural villages affected by the earthquake, but less central to formal disaster managers.

The militarized organization of the Italian civil protection and the fact that volunteers are highly formalized made it difficult for citizens with professional skills to participate in rescue operations by declaring a formal role. Here again, the camp sites made it possible to formalize professional skills. Especially psychologists and social professionals used their skills informally or communicated them to NGOs and to civil protection agencies by using lists or platform tools.

Emergent organization as reconfiguration of civic engagement

Emergent organizations were typically created by a mix of citizens with professional skills, with political activism and those who do not reference prior experience as an enabling factor. Individual coping actions were quickly integrated in spontaneous self-organization often related to prior professional and political socialization.

Citizens spontaneously engaged in coping actions in the case of the L'Aquila earthquake before civil protection arrived in the city, opposing, and completing civil protection arrangements or organizing in rural communities, where civil protection was less present. They acted without or as in the case of CIGIL against guidance from authorities, but often in a semi-formalized arrangement with NGOs. Many of the coping actions we describe start on an individual single-task basis, rearrange social networks built on former voluntary work and preestablished relations of trust and intersect later on. For instance, the "180amici" as a pre-existing organisation developed a local radio after having assisted at the 32e3 assemblies, whereas the 32e3 assemblies were directly influenced by individuals that relied on the CIGIL camp.

The high degree of organization of formal disaster management and the deep penetration in pre-existing social arrangements (closure of the city centre, mixing of social groups in camps, detailed regulations for camp management, highly formalized disaster volunteers closing participatory possibilities to local groups) enabled the creation of emergent organizations. Propinquity on public places and in shelters allowed citizens to gather and self-organize without interactions with formal disaster management by authorities.

Over the first weeks, interactions with rescue NGOs and notably the Red Cross intensified and participatory spaces in formal disaster management by authorities opened.

Citizens that self-organized spontaneously after the earthquake in organizations that were institutionalized afterwards, notably the CGIL (Confederazione generale italiana del lavoro) camp, 3e32 Committee, 180amici L'Aquila, Psychologists for Peoples and Pico Fonticuliano, show the importance

3.6 The Swedish wildfires of 2018

In May and June 2018, a historical heatwave affected Sweden. First wildfires appeared in May mounting to 50 active hotspots in June. 250 km^2 of forest all over Sweden were affected leading to approximately 7000 rescue operations in terrain (SOU 2019:7, p. 13). Disposable barbecues in combination with the unusual climatic conditions facilitated the disaster. The largest wildfires were situated in central Sweden with one wildfire covering 85 km^2.

Whereas wildfires were initially under control, the situation overpowered Swedish firefighters in June. Accordingly, international assistance was requested via European civil protection, the Emergency Response Coordination Centre (ERCC), and led to an international disaster management integrating firefighters and material from Denmark, Finland, France, Germany,

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Lithuania, Norway, Poland, and Portugal (SOU 2019:7, pp. 233-243). In Mid-July, the ERCC was contacted again for renewed support in fighting the wildfires.

During June, large rural areas had to be evacuated due to the direct danger of the fire, but also due to the smoke production. To organise evacuation and logistics, NGOs and authorities coordinated with many volunteers at this stage. Overall, there were many volunteers participating, both spontaneous and organised volunteers (SOU 2019:7, p. 14). Among volunteer organisations, assistance was given by for example the Swedish Women's Voluntary Defence Organisation (Svenska Lottakåren), the Swedish Red Cross, the Swedish Aviation Industry Group (Svenska Flygbranschen), the Swedish Federation for Voluntary Defence Education and Training (Försvarsutbildarna), the Swedish Central Federation of Motor Transport Corps (Sveriges Bilkårers riksförbund), the Civil Defence Association (Civilförsvarsförbundet), and the Volunteer Fire Department Association (Sveriges frivilliga brandkårer). The Swedish Red Cross had a coordinating role (SOU 2019:7, chapter 14). In mid-July, the Swedish Red Cross was tasked to coordinate the effort of spontaneous volunteers, after which 6 120 individuals signed up for volunteering (Swedish Red Cross, 2018).

By mid-August, linked to disaster management and to rain, the international disaster management ended and most of the voluntary actions as well. Whereas voluntary participation to formal disaster management has evolved, few emerging organisations institutionalised over time. In the official investigation report, it is highlighted that the effort of the many volunteers, spontaneous and organised, contributed with a significant and invaluable support to the rescue operations. At the same time, it is underlined that the aid from volunteers could have been better prepared for and organised (SOU 2019: 7).

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Figure 17 The wildfires in Sweden, Situation July 17 2018. Source: Hela Hälsingland (https://twitter.com/b9AcE/status/1019232606855073794).

3.6.1 COPING ACTIONS

In the following, we provide a review of coping actions in four Swedish municipalities that experienced major wildfires in 2018. The municipalities were selected based on official reports that identified them as major hotspots of volunteering (SOU 2019:7), by media articles that described evacuations in these municipalities (e.g., Åhlström, 2018), and by selecting municipalities in different regions of Sweden to obtain a minimal level of representativity. Seven semi-structured interviews were conducted with people from the chosen municipalities. We do not name these municipalities here for maintaining anonymity of the informants in accordance with ENGAGEs data protection plan. In small rural communities, informants would be identifiable by their position only.

3.6.1.1 Fire extinction management

After professional firefighters extinguished wildfires in rural communities, a continuous observation and the extinction of small fires became necessary, so firefighters could move on to the next major wildfire. The sites of these burned forests were often in remote areas not easily accessible and needed interventions over a period of several weeks or even months. Municipal workers that were not trained nor formally responsible for crisis management often acted in these sites. One of our

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informants, who normally organised cultural and sports activities in his municipality, described his actions as follows:

> I was the one answering the phone. They [the firefighters] told me that they identified a fire in our town. Since I was the one answering the phone, I went there and helped them. […] Once they were finished, they told me how to continue and so I did this for two months, trying to find new sources of fire and putting them out.

Asked about why he continued his fire management over a longer period, he described that he "just kept going" and that "there was nobody else". He explicitly stated that no superior or any other person asked him to do this and that he did his activities mostly in his free time, including after hours and during entire weekends. He stated that he "learned a lot" as a rewarding element pushing him to do this, but he also mentioned that he would invest less time and organise his community to have a more collective response, should the situation occur again.

An informant from another rural community, in another region of Sweden, described similar coping actions. This person also worked with issues that were not connected directly neither to crisis management nor to affiliated areas like infrastructure management. He described driving on a regular basis to the forest affected by wildfires and assisting firefighters with logistical tasks. Once they left, he continued surveillance tasks over a period of several weeks. This informant and a second informant from a neighbouring hamlet in the same municipality, also described their actions as solitary and not motivated by colleagues or others. He described his actions both as being linked to his profession by stating that "I work for my community" and as being a form of volunteering by describing his intentions as "helping my neighbours". One of his colleagues intervening in another forest area, explained his actions as "duty", again describing it both as professional duty and as service to the community. Both informants insisted on the fact that most of their actions happened on weekends, since their normal professional activities continued during the week.

3.6.1.2 Providing logistics to professional firefighters

Another type of coping actions described in media articles, academic publications and official reports is citizen participation in assisting professional and volunteer firefighters by providing housing and food (SOU 2019:7). One informant mentioned that some of the firefighters were unexperienced with wildfires coming from urban areas and therefore ill equipped. Notably some of their boots did not withstand the continuous walking on burned forest floors. Another informant highlighted that the professional firefighters did not come with sufficient food and water, nor sleeping accommodations for several days or even weeks of firefighting.

Two of our informants in a small rural municipality that experienced a major wildfire, described a "very impressive" mobilisation of the local community in providing firefighters with everything they needed. "Right from the beginning, everything was taken care off. There were kitchens, beds, and water. Everybody helped." Informants insist on the absence of problems or forms of conflict and the fact that very little coordination was needed between different groups focusing on providing one of the elements needed. "Everybody brought something".

3.6.1.3 Firefighting as affiliated volunteerism

Informants also highlight the strong participation of voluntary firefighters that aided in the many rescue operations. In certain areas, the voluntary firefighters were first at the scene (SOU 2019:7). According to the informants, the voluntary firefighters stated their intentions as a result of wanting to help local firefighters in anticipation of needing their help for future wildfires that could hit other parts of Sweden. One informant said that voluntary firefighters from the south of Sweden had described their actions as a way to "pay back" the help they received by firefighters from the north of Sweden during earlier wildfires.

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3.6.2 Analysis

The coping actions in the case of the Swedish wildfires show a continuum from formal to informal actions in the case of municipal workers. They describe their actions as something that is part of their formal role in the municipality and as a form of volunteering. The case illustrates the importance of social roles in explaining citizen participation in dealing with adverse events. Social roles, namely being a city representative notably explain in this case why city officials start and continue to act during the crisis.

Coping as reactive behaviour

They describe their initial actions as reactive without social pressure, nor do they refer to a decision process leading up to their actions. Answering a phone or being notified by colleagues are cited as initial elements that lead them to go to the area. Then they followed instructions by professional firefighters – again without reflecting on their actions, but rather reacting to their environment. When the professional firefighters left, they continued to follow the given instructions, but without any other authority inciting them to continue or supervising their work. They notably continued their actions over a long period of time.

A sense of duty as well as individual curiosity are referenced in their narrative explaining their intentions to cope in the way they did. Learning new skills is also mentioned as a motivating factor.

Single-task oriented

Second, informal actors mostly focus on one specific task, be it the fire extinction management in the case of city officials or providing food or housing for professional firefighters. No coordination seems to happen in the case of the volunteering city officials. Rather, what is described is the solitary fulfilment of one specific task. In the case of providing logistics for firefighters, different groups focused on one task. Reports show us that pre-existing organisations and the municipality played an important role in organising these tasks on the long run, but initial initiatives seem to rely on minimal coordination.

The role of "spontaneous volunteers"

In the aftermath, the Swedish Red Cross has emphasised that the planning for, and organisation of, spontaneous volunteers is an area that should be developed. The involvement of spontaneous volunteers is seen as having the potential to anchor the population in crisis management and a way to channel public engagement, and provide invaluable resources when needed the most (SOU 2019:7, p. 206).

3.7 The Tōhoku tsunami of 2011

The 2011 Tōhoku earthquake occurred on March 11, 2011, at 14:46 off the coast of Miyagi Prefecture northeast of Tokyo triggering tsunamis that inundated an area of more than 500 km2.It was the largest known tsunami in Japanese history. 600,000 people were directly affected by the tsunami and 22.199 persons died.

470,000 people were evacuated by authorities or self-evacuated. They remained in temporary housing for several days, since up to 400,000 buildings were partially or entirely destroyed. Electricity was only restored in April and relocation and reconstruction effort took years. Japanese authorities estimated in March 2012 that another 1331 people died due to the secondary effects of the disaster. After the Tohoku earthquake and tsunami, more than 1.5 million volunteers came to the affected region via disaster volunteer centres set up in affected municipalities (JNCSW, 2018;

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Aldrich, 2019). This high turnout of volunteers is a common feature in Japanese disaster management since the 1994 Kobe earthquake, but there have been persistent problems in interactions between formal and informal disaster governance (Atsumi, Goltz 2014).

3.7.1 COPING ACTIONS

The Japan tsunami of 2011 is situated on an interregional scale, which makes it not feasible to map exhaustively coping actions. We therefore based our analysis on the abundant literature on the event. Citizens also organized communication tools to identify relatives or to inform about the disaster. Experts interviews with two French sociologists working on evacuation dynamics after the Tsunami confirmed these entry points.

3.7.1.1 Search and Rescue

In the immediate aftermath of the tsunami, citizens and local volunteers worked to search for survivors and recover bodies. They were often the first responders on the scene. They used their own equipment and tools to rescue people trapped in collapsed buildings and other debris. Citizens also formed ad-hoc search and rescue teams and worked alongside official responders to search for missing people and provide aid to survivors (Birmingham McNeill 2012). Volunteer turnout focuses on the areas with the heaviest losses (Iizuka, Aldrich 2022). There are notably examples of fishermen using their boats to rescue people trapped on rooftops.

3.7.1.2 Evacuations

When the earthquake hit the Tohoku region on 11 March 2011, the tsunami warning was issued by the Japan Meteorological Agency only three minutes after the earthquake, and immediately disseminated to the municipalities likely to be impacted. The warning was then transmitted through loudspeakers installed in these coastal towns for the purpose of public broadcasting. The disaster prevention mechanism was thus activated as planned. However, the system had many shortcomings. First, the estimated tsunami height announced in the warning was considerably different from the actual tsunami height. Second, many of these loudspeakers did not function either because the earthquake had knocked down the speaker poles or because transmission had been disrupted by the power cut following the earthquake. Third, the warning message issued did not transmit the gravity of the situation. Evacuations relied for this reason often on individual and collective coping actions that did not necessary rely on formal alert and evacuation mechanisms.

Thus, literature notably points to the importance of self-organized evacuation efforts, informal solidarity actions and traditional neighbourhood networks that covered areas where authorities were overwhelmed (Okada 2012, Shaw, Takeuchi, 2012, Nakaya 2018, Sun, Sun, 2020). Evacuations sites were underequipped with heating and food and water for several days and local communities self-organized to assist evacuated victims. The demographics of an aging population as well as personality factors have notably influenced evacuation behaviour (Sun, Sun 2019, Sugiura et al. 2019).

The difference in self-organized evacuation between the Sendai coast planes and the Sanriku coastal mountains has been highlighted by several sources and exemplifies how cultural scripts induce coping actions. In the Sanriku region, habitants focus on self-evacuation to higher ground without taking care of relatives or neighbours for assuring rapid and efficient evacuation (the tendeko system, see Yamori 2014). This area of the North-eastern coast contains narrow fjords that allow for rapid and high waves. Collective evacuation efforts are difficult to implant in the very short reaction time frame. Individual practices of self-evacuation are, however, possible, because it is easy to quickly gain higher ground in the mountainous area. This individual flight reaction is, therefore, encouraged by stories, rituals and exercises in this region by referring to the concept of

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"*tsunami tendenko*", which literally means "individually". However, habitants of the Sendai coastal planes cannot easily escape to higher ground, even though their reaction time is higher. Public exercises and disaster planning foresees for this reason to evacuate to public buildings with several stores such as schools or community centres.

3.7.1.3 Providing basic goods and shelter

Citizens and volunteers helped to provide food, shelter, and medical aid to survivors. There are notably many examples of citizens that opened up their homes to people who had lost theirs and set up temporary shelters on their ground. Older citizens from the affected areas often provided space to organize and shelter volunteers or gatherings with other citizens.

> I have been opening my house that had been repaired after the disaster, to the community to organizing a gathering of elderly from the neighbourhood. Through these gatherings, I hear about when the disaster hit and find myself learning something new for the first time. For example, how our cat was doing. I realized the importance of interaction with neighbours including checking on each other by saying something.

The use of private housing for collective reorganization is often referenced.

3.7.1.4 Clean-up and Reconstruction

Citizens and volunteers played a vital role in cleaning up the debris and rebuilding damaged infrastructure. They worked to clear roads and railways, remove debris from buildings, and rebuild homes and other structures. Ishinomaki city and Kesennuma city are cited as areas that relied on spontaneous and organized non-affiliated volunteers to clean the streets of the two cities (for instance volunteers coming together by bus to the area) (REF).

A relevant example for how cultural scripts guided clean-up efforts is the Kizuna concept. The concept of Kizuna encourages people to support one another and work together for the greater good. This led to many citizens volunteering their time and resources to assist in the clean-up efforts, as they felt a strong sense of duty and responsibility to their fellow neigbours.

The Kizuna concept encouraged communities to organize themselves and work together to clear debris, distribute supplies, and provide support to one another. This community-based approach to disaster response and recovery was critical in the immediate aftermath of the tsunami when official resources were overwhelmed.

On a more formal basis, "volunteer coordination centers" were created to channel spontaneous contributions from citizens and to enable coordination between oficials and the private sector and civil society. Notably university students could easily volunteer in the disaster affected area.

Two slogans "Ganbaro Nippon", "Ganbaro Tohoku" [Try your best, Japan, Tohoku], originally used by people from the affected area were used as a central slogan to incite further coping actions;

The same goes for the "Kizuna" concept that was referenced to in the nationwide organized "Kizuna Project" as a platform to link people and communities in the disaster zone.

3.7.1.5 Emotional Support

The concept of Kizuna also emphasizes the importance of emotional support and empathy for others. Many citizens provided emotional support to survivors, helping them to cope with the trauma and grief of losing loved ones and homes.

Several sources point to the participation of older residents, mostly older women, in providing emotional support. People living in affected areas took control of several initiatives in their communities. For instance, in Shichigahama older women organized a knitting circle called 'Yarn Alive' to provide support for themselves and others. The analysis of the Nuffield council of bioethics (2019) provides the following account:

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> It cheers me up so much that I don't even feel lonely at night, I just feel like knitting some more," reported one member whose home and store were washed away by the tsunami. Later, when the same resident missed a club meeting to attend an athletic event, her fellow knitters called to check up on her. Informal insurance means that network members provide necessary resources at a time when standard suppliers of those resources – such as the government, private sector companies, and so forth – are unable to do so. (Nuffield council of bioethics 2019, 22)

3.7.1.6 Donations

The concept of Kizuna was also often quoted with the high output of donations from citizens across Japan, who wanted to support the recovery efforts without being directly affected or being connected by family or friends to the Sendai prefecture. This included donations of money, goods, and services, which were critical in the initial stages of the clean-up and rebuilding process.

3.7.2 Analysis

The massive scope of citizen involvement after the Tohoku tsunami and earthquake makes it difficult to pinpoint specific coping actions. However, there are specific cultural contextual factors that enabled coping actions.

Cultural scripts enabling coping action

For the sake of refining the societal resilience model, we described notably coping actions that refer to cultural scripts like Kizuna or the tsunami tendenko for facilitating rapid self-organized evacuations. These cultural scripts were channelled by official disaster management after the disaster but emerge on grassroots level.

Gender roles as enablers for network creation

Several sources claim the importance of older citizens and notably older women in engaging in collective coping actions. Living alone and opening their residences allowed for communities to organize, but also enabled these persons to revitalize their social networks.

Large scale disasters and coping action

Overall, this case shows the necessity of coping actions of citizens during a large-scale disaster. The massive scale of the tsunami overwhelmed disaster planning and formal disaster managers. Participation of citizens is in that case not a complementary form of disaster governance or a temporal effect of being the first actors on site, but the central element of coping with the event. From self-evacuation to reconstruction, citizen's participation played a crucial role in coping with the event, since formal actors could not be available in all parts of the area to assist all those affected.

3.8 The Fukushima Daiichi nuclear accident of 2011

The earthquake of March 11 led to the loss of external power supplies to the Fukushima Daiichi reactor site and when the tsunami hit the site fifty minutes later, the internal power supply as well as the heat sink were destroyed. Without the possibility of cooling the reactors and the spent fuel rods experienced a temperature increase. Voluntary depressurization of the operator led to the release of radioactive material in the atmosphere as did onsite fires and release of cooling water contaminated soil and ocean water. Citizens started to spontaneously evacuate their homes. Official evacuation started with a 2 km radius around the site on March 11 that is enlarged during

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the day to 20. A 30km voluntary radius was added and later transformed to preparation for evacuation radius.

On Saturday, March 12 at 3:36 pm, a large hydrogen explosion occurred in Reactor no. 1. On Monday, March 14 at 11:01 a.m., a second explosion damaged reactor no. 3. Eleven people were injured. On Tuesday, March 15 at 6:10 a.m., a third explosion, this time at reactor 2 heavily damaged the building of reactor No. 4. From this point on, massive release of radioactive material occured.

The storage pols for fuel rods became also overheated over these days, which led to fires that also provoked the release of radioactive material.

On March 15, all but 50 workers will be evacuated, but the number increased again to up to 1000 workers until March 23. Until the end of March, electricity is re-established, and the cooling system was operative again. Inhabitants returned to their homes over the following years after large-scale decontamination efforts. Some zones are still uninhabited.

3.8.1 COPING ACTIONS

As with the case of the Toholu tsunami, it is not possible to list coping actions in a representative way, but rather focus on two specific coping actions that were stressed by scholars working on this case.

3.8.1.1 Self-evacuations

The Japanese government initially told residents within a 20-kilometer radius to evacuate, but as the situation worsened, the evacuation zone was expanded to a 30-kilometer radius.
Many citizens did not feel safe in their homes or in the areas surrounding the power plant, and so they decided to self-evacuate to other parts of Japan or overseas. This decision was often made out of concern for their health and the health of their families, as well as uncertainty about the long-term effects of radiation exposure.
Many reports and scholarly literature point to family ties as a decisive factor for self-evacuation. People who self-evacuated often quote the responsibility for family members and notably children as a reason for evacuation before the official announcement. The existence of family members in other regions of Japan that could shelter the families who left was another decisive factor to self-evacuate. Women disproportionally took the evacuation decision.
Finally, the evacuation behaviour in the area of residence also had an enabling effect for the decision to leave one's residence.

3.8.1.2 Measuring radiation

Several scholars point to "citizen science" initiatives that were organized by ordinary citizens as a way to complement or to oppose official narratives (Hultquist, Cervone 2018, Yasutaka et al. 2020, Plantin 2015, Brown et al. 2016, Kenens et al. 2022). Women played a central role in establishing many of these iniatives based on their family caretaker role in Japanese society (Kimura 2019).

The Citizens' Radioactivity Measuring Stations is an example of how Japanese citizens independently organized to measure and share radiation levels in their local communities after the Fukushima nuclear disaster. Different groups constructed a total of 26 measuring stations in the Fukushima prefecture. The initiative was created due to the lack of transparency and mistrust in the official radiation monitoring process. This network operates until today through a loose decentralized network of volunteers who use portable radiation monitoring devices to measure radiation levels in various locations as well as in fixed stations, and then share this data through a publicly accessible online platform. The data collected by this network of stations provided a

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valuable resource for understanding the ongoing impact of the disaster, and for monitoring the effectiveness of clean up and decontamination efforts in the affected areas.

The data gathered by this Citizen radiation measuring network provided a supplementary source of information to better understand the ongoing impact of the disaster and evaluate the success of clean-up efforts. The network was unique in its ability to offer a more comprehensive and localized understanding of radiation levels, compared to the limited official monitoring efforts. This information helped to identify areas with higher radiation levels that may have been missed by the official monitoring and provided more accurate information to local communities about the potential health risks associated with exposure.

The network also engaged citizens in the monitoring and response process. By providing access to tools and information, it empowers citizens to take an active role in addressing the consequences of the disaster. This not only helped build public trust in the data collected, but also ensured that the information is generated and verified by the citizens themselves rather than the government or other official sources (Fukushima on the globe 2015).

3.8.2 Analysis

As in the case of the interconnected crisis of the Tohoku tsunami, this case study suggests a gendered response pattern to the crisis linked to social networks. Care for family members, let to the self-evacuations as a coping action. Women more than men took the evacuation decision without waiting for official orders.

Mistrust as driver for coping action

The nature of the crisis as an industrial accident as well as strong community networks in Japan enabled the emergence of radiation measurement groups. Mistrust in official figures played an important role to engage in these actions.

Singe task orientation

Both examples, self-evacuation and radiation measurements, were single task oriented and often mutually exclusive. Radiation measurement was notably done by people that stayed in their area of residence and did not evacuate.

As in other case studies, the radiation initiatives are examples of coping actions that were institutionalized over time as associations.

3.9 The COVID-19 pandemic of 2020-2021

The COVID-19 pandemic was a prolonged crisis involving large parts of the world, and virtually all spheres of the societies hit by it. As such, it represents a natural experiment to study variations in contextual aspects between countries, and the link between formal strategies, plans and decisions on the one hand, and informal, improvised, and emergent response on the other. Compared to the other cases studied in ENGAGE, it differs in many respects. In addition to the differences in scale, it also differs in its slow-moving build-up (Boin et al., 2020) and its slow-burning duration involving a different temporality compared to sudden events with a shorter duration (e.g., Antonsen et al., forthcoming). This makes it an interesting contrast for "testing" the model of societal resilience developed in this report, which has been primarily based on events of the latter kind.

While it will be beyond this report to provide a full comparative study of the link between target aspects and contextual aspects involved in the countries studied by ENGAGE, the pandemic

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nevertheless provides a case to illuminate the role of informal actors and societal characteristics in dealing with crises. In the following, we will provide, admittedly selective, examples of coping actions that can be identified as part of informal responses to COVID-19.

3.9.1 COPING ACTIONS

3.9.1.1 A case of improvised public-private partnership

When the pandemic hit, it quickly became obvious that there was going to be a global shortage of basic medical protective equipment like facemasks and visors. The demand skyrocketed at the same time as supply went down as China, the origin of the SARS-CoV-2 virus, is among the world's largest producers of this equipment[1]. With the volume needed and the just-in-time principles involved in the supply chain, governments, municipalities, and hospitals were presented with a large logistical challenge.

In times of scarcity, improvisation and innovation tend to appear. This was the case in Sweden, where the shortage of medical protective equipment led the political-administrative leaders in the Stockholm Region to initiate a novel cooperation between Karolinska University Hospital and the truck and bus manufacturer Scania (Aftonbladet, 2020). The Region's need was to supply Karolinska with basic resources to uphold their critical functions in terms of treating COVID-19 patients in the early phase of the pandemic (late March 2020). Scania on the other hand was suffering from a market collapse in the auto industry, with an associated surplus of personnel resources. However, as an auto-manufacturing company Scania possessed expertise in purchasing and logistics, particularly from China, expertise which could significantly strengthen the resources both within the Region and at Karolinska.

This led to a somewhat unusual cooperation, where Scania offered their services to the region and was able to re-employ some of its purchase and supply chain experts. This resulted in the establishment of a joint purchasing command centre at Karolinska, resulting in the successful acquisition of large quantities of medical protective equipment (SVT, 2020) with the mandate to "vacuum the market for products of sufficient quality". Although the Stockholm Region's success means a loss for other, less resourceful countries, and perhaps even other Swedish regions, it provides an example of capabilities and contributions to crisis coping that lies well beyond the formal emergency preparedness actors, and that coping actions not only take the form of immediate improvisation but also longer-term innovation (Haavik et al., 2022).

3.9.1.2 A case of sharing economy

Apps for collaborative consumption are primarily used to reallocate idle resources within the sharing economy. Despite a growing literature documenting how digital platforms are efficient tools for communication and coordination in such situations (Sakurai & Murayama, 2019), there are still very few studies that discuss the role of the sharing economy in crisis situations (Seddighi & Baharmand, 2020). This section summarizes a case study related to an application of local sharing economy during the covid-19 pandemic conducted by the Norwegian collaboration project "Sharing Neighbourhoods" led by SINTEF. More details about the results can be found (Halvorsen, Floch, & Jakobsen, 2022). While some global for-profit sharing platforms, such as Uber and Airbnb, have reported large financial losses linked to the pandemic (Colley, 2020), the usage of the sharing app Nabohjelp (Eng: Neighbour help) increased considerably. Our study has investigated how citizens adopted the app. The knowledge acquired is relevant for policy makers, but also for application providers. While it is important that policy makers understand how and for

[1] https://www.statista.com/statistics/1269002/china-export-volume-of-medical-protective-equipment/

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what ends various platforms are useful in pandemic situations, application providers should foresee how such situations or other crisis may affect the use of their platforms.

Despite its popularity, the concept of "sharing economy" has proven hard to define. Several related terms are used: collaborative economy, peer economy, gig economy, on-demand economy, shared capitalism, access economy, and people economy. In our work, we follow Botsman and Rogers (2011) and define the sharing economy as "an economic model based on sharing underutilized assets for monetary and non-monetary benefits, largely focused on peer-to-peer transactions". These assets might be any shareable assets, such as services, material goods, spaces or knowledge. That sharing platforms generate both economic and social benefits is well known (Böcker & Meelen, 2017; Schor & Fitzmaurice, 2015). A study in "Sharing Neighbourhoods" previous to the COVID-19 pandemic also indicates that the social aspect of the sharing economy tends to be especially important in local communities (Akin, Jakobsen, Floch, & Hoff, 2021). People tend to select platforms that are locally oriented if social interaction is part of their motivation to participate. Additionally, when the parties of an exchange live close to each other, engaging in the local sharing economy potentially leads to repeat encounters on and outside the sharing platform.

During the covid-19 pandemic, before vaccines were developed and deployed, social distancing was among the primary strategies, along with testing and sanitary measures, to combat the spreading of the virus known as covid-19. Social distancing takes many forms, from avoiding physical contact to isolation in homes and travel restrictions. Social distancing creates many challenges to everyday life and is linked to negative experiences such as fear, anxiety, and loneliness. For this reason, it is not surprising that in the face of a national lockdown, people sought innovative solutions to solve their difficulties. Thousands of Norwegians went online to self-organize and either seek or offer help. Nabohjelp is one of the solutions that was used to overcome the difficulties inferred by social distancing.

Nabohjelp is a digital sharing platform owned and developed by OBOS, the largest housing co-operative in Norway[2]. The key objective of Nabohjelp was to facilitate contact between neighbours. The Nabohjelp app was first marketed through OBOS internal information channels and provided to a subset of residences. After an initial piloting phase in a context well-known by OBOS, access to the platform was extended to the whole country beyond OBOS residences. Using the app, one can post messages that become visible to other users living within an adjustable radius from their home. Messages are typically requests for help with practical issues, that require a quick response. Users can also post offers to share resources or general information. There is also an option for grassroot organisations to register places of interest or upcoming events through a web site. The mobile app was launched in 2017, but regrettably terminated in January 2023. It was free to download and use. It had about 125 000 registered users in March 2020 when the lockdown came into effect. See some screenshots on Figure 17: messages (left), a map of nearby places of interest (middle) and a list of local happenings arranged by NGOs (right).

[2] OBOS own and manage residential buildings and supply housing to their members. OBOS's vision is to help people entering the housing market. At the end of 2021, OBOS had over 530 000 members (around 10% of the Norwegian population)

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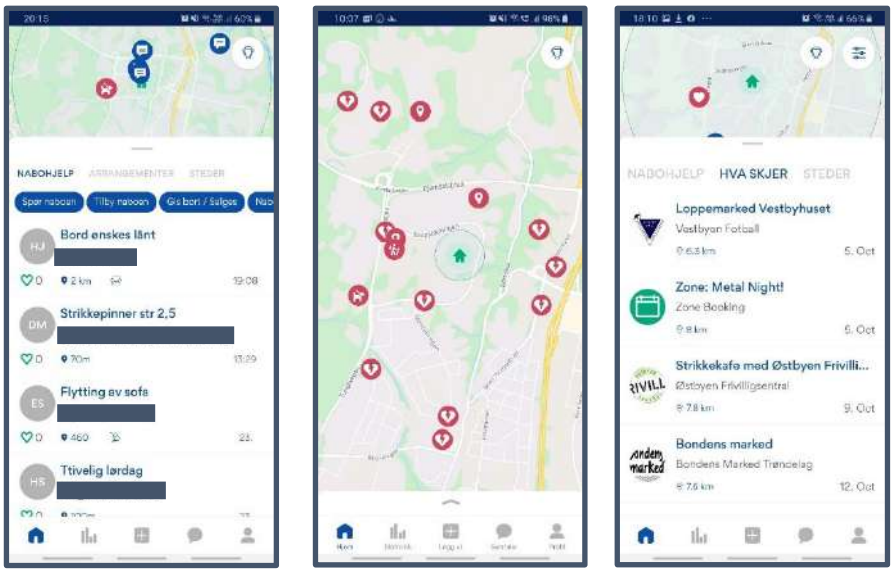

Figure 18 Screenshots from Nabohjelp

Through collaboration with the platform owner, we were given access to the full set of messages posted on the app for a period starting one month before lockdown measures were imposed to about ten weeks after (N = 14 997). Statistical analysis was applied to understand the impact of the lockdown on different types of platform activities, and text analysis was performed on a stratified random sample of messages (n=400). We found evidence of a rapid response to the lockdown and highly increased app usage, as well as increased technology adoption rates in the first five weeks of the lockdown. Before the lockdown, the messages were mainly related to specific needs with a short deadline, while messages during the lockdown were more open-ended and general in nature. We find an initial spike in the number of messages from people offering to help others, driven by both pre-existing and new users. Offers to help with shopping for groceries and walking dogs was among the most frequent. Some also used the platform to look for jobs while being on leave from their regular job. Overall, the messages are a clear expression of people's desire to help each other out in a time of large uncertainty. When society gradually opened up again after about two months, the daily number of posted messages remained about three times higher than before the lockdown. See an illustration of the development of activity by type of messages on Figure 18 (the user chooses among four types when posting a message: "offer" and "request" deals with respectively offering and asking for support, "commerce" deals with sharing items either for free or against payment, "information" with broadcasting an announcement to neighbours).

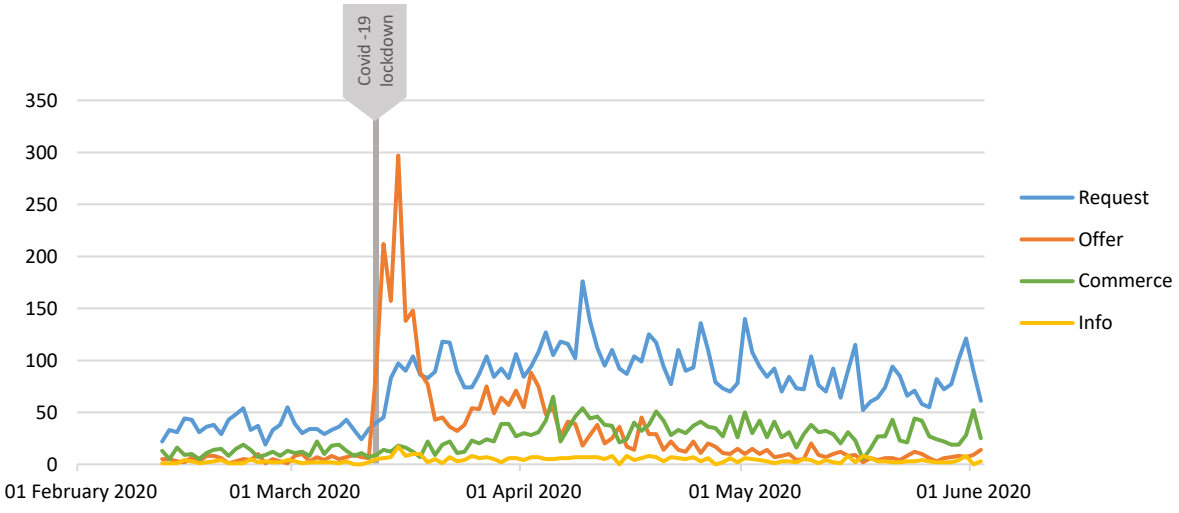

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Figure 19 Number of messages per day, sorted by message type

Crisis management is not the intended purpose of Nabohjelp, and the response happened without the involvement of public authorities. However, it is likely that Nabohjelp received indirect support from the rhetoric of the Norwegian government with reference to "dugnadsånd" (i.e., community spirit). While introducing the large-scale anti-contagion measures, the Norwegian Prime Minister urged citizens to be supportive of each other and stretch out a helping hand to friends, family and people in the local community. She appealed to people's "dugnadsånd", that is their sense of contributing to their local community by doing what was needed and expected. Participating in dugnad is a cultural tradition deeply embedded in the moral repertoire of what Nilsen and Skarpenes (2020) refer to as the socially responsible citizen in the Norwegian welfare model. Explicit references to dugnad were also found in the analysed sampled messages, for instance (quote translated from Norwegian):

> Shopping help for corona exposed - Are you in quarantine or isolation? Are you in the risk group, and want to limit leaving home? If you need help to shop, go to the pharmacy or other important errands, I gladly assist. I'm not in the risk group and wish to do a "dugnad" [Norwegian term not translated] contribution and to limit the extent of the contagion we are exposed to. We will take necessary precautions to avoid infection! This will not cost you anything of course, other than paying for your own goods [smiley emoticon]

Similar messages quickly appeared on other platforms such as Facebook, all responding to the basic needs following immediately from social distancing measures, and strongly related to the link between individual and collective action. The findings of our study indicate that peer-to-peer sharing platforms can play an important role in the robustness of local societies in times of a pandemic.

3.9.2 Analysis

The global scale of the COVID-19 pandemic and its prolonged nature gives this short case study another status than the other case study analyses. Our goal was here to focus on examples of civic participation in disaster governance.

Formal or informal actors

The COVID-19 pandemic shows notably for our purposes that there is continuum rather than a clear distinction between formal and informal actors. Our examples and many others show that non-emergency actors did emergency tasks, also within the public sector. Social roles were notably "reconfigured" to fulfil an emergency related task. Principles of schools were suddenly in the front line of the pandemic or building superintendents became responsible for providing elder citizens with food.

Formalization in prolonged crises

The long duration of the crisis led to a formalization of informal coping actions that would otherwise not have been formalized. The Nabohjelp example shows for instance how a cultural script enables informal coping action that are fomalized over time. Private mask production that became subsequently supported and normed by authorities would be another example for formalization.

Cultural scripts matter

Finally, different scholars have notably stressed the importance of national coping styles during the pandemic. The pandemic brought in the sense "society back in" illustrating how national

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differences can be explained by the importance of societal characteristics, such as contexts for crisis (e.g. wealth, welfare, governance capacity/legitimacy, trust…).

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4 REFINED MODEL FOR ASSESSING AND ENHANCING SOCIETAL RESILIENCE

In this final chapter, we come return to our model for assessing and enhancing societal resilience. First, we draw together central findings across the historical case studies, including reflecting og contextual factors specifically. Then we discuss some of the limitations of our model before we suggest how the model can be of practical use for different types of audiences. The two final sections reflect on academic takeaways regarding societal resilience, and practical takeaways for responders accordingly.

4.1 CENTRAL FINDINGS ACROSS THE HISTORICAL CASE STUDIES

The comparative design of our in-depth case studies enables us to highlight their specific contribution and its conditions. In this section, we provide an overview of important insights from the seven historical case studies analysed above.

As noted in section 3.1, the Thalys and Utøya cases constitute our base cases, from which we have rich data, and that have been used to develop and refine the model for assessing and enhancing societal resilience. Both are cases of extreme events, where ordinary people made significant contributions vital for mitigating potential harm to others. At the same time, while Utøya and Thalys might seem similar they are different in several respects. One obvious difference is the spatial surroundings, another is the temporal dimension (Thalys lasts for 30 minutes) and the possibility of a quick intervention from formal actors. In that respect, the situation on the Thalys train is more resembling the situation to that of the victims on the Utøya island than the spontaneous volunteers in boats and on the shoreside.

In addition to these two central cases, the purpose of the five other test cases was to assess whether the model's dimensions were applicable or not by confronting them with different settings. For example, in comparison to the Thalys and Utøya cases, the L'Aquila case is not as spatially and temporally fixed. The coping actions involved in the L'Aquila case took place in the context of existing (political) organisations and associations (prior socialisation in collectives). In turn, the COVID-19 pandemic case is one of a slow start and burning in its duration and with global implications.

Turning to the main takeaways from the case studies, they provide an empirical grounding of the concept of societal resilience. A basic requirement for our model is to help us to understand how people act in disaster situations and what makes them act.

First, what we find across the cases is that task orientation is to a large extent oriented to the needs presenting themselves. After one task is completed and one need satisfied (e.g., rescue from the water), another follows from it. Anticipation of the next step is not centralised and comprehensively structured, rather the next step arises at the end of the previous step.

Second, and connected with the first point, the engagement of spontaneous volunteers appears to be with minimal coordination. The empirics from the cases studies suggest that tasks were presenting themselves and that it was relatively easy to spot what was needed to be done.

Third, comparing the Thalys and Utøya cases, there is an interesting tunnel vision aspect. Informants from these two cases speak of being in a bubble, addressing the situation and the actions needed to be taken then and there, without necessarily registering the actions of others. Accordingly, there were also few interactions between the different spontaneous volunteers.

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Fourth, although we have examples of people considering not to do something, there seems to be a commonality across the case studies of acting on reflex in the hot phases of sudden incidents.

Fifth, an interesting question of obeying (or not obeying) authorities during a crisis arises from the case studies. The Utøya case exemplifies how informal actors decided to act and help despite instructions to keep away from the island due to the uncertainty of the situation. At the same time, when asked either to give up their boat or transport the police to the island, the volunteers obeyed without hesitation.

Sixth, as highlighted with the L'Aquila case, our findings refine Quarantelli's and Dynes' conceptualisation of emerging groups (1968). It is more a matter of reconfigured groups responding to a need that is outside their normal missions than new groups emerging.

Seventh, the case studies show how ordinary people use competencies acquired from their current or previous positions and experiences, which are translated into adapting to the exceptional situation they are facing. Examples are positions related to logistics, experience from military service, or management jobs enabling the ability to make tough decisions in dire situations.

Eighth, the case study analyses show that there is a need for linguistic categories that recognise the different roles people assume during various crises. This is important to address to be able to distinguish the social roles, which in turn is important prerequisite for both theorising, doing empirical research and finding normative improvements.

Ninth, rather than providing a definitive and universal list of what factors from a larger social context determine if people cope with a crisis successfully, the case studies enable us to isolate factors that show how social context matters in specific cases. A list of contextual factors allows us to highlight that these context factors matter for enhancing this interface without excluding the relevance of other factors. These contextual factors are addressed in the following.

4.1.1 CONTEXTUAL FACTORS

Existing research has identified several contextual factors important for preparedness and resilience, in which some are highlighted as more relevant for enhancing resilience than others. In this section we will review the contextual factors highlighted in the literature from social psychology (ref D1.2) and discuss how the empirics from the different cases relate to these. In this perspective, we are interested in the specific citizen contributions and their conditions.

4.1.1.1 Contextual factors from literature

In this first part we applied these contextual factors to our case studies to see if they generated data for these factors and if these factors useful descriptors for the model.

Threat perception,

Threat perception includes likelihood and severity assessments (Lindell & Hwang, 2008)

» Utøya terror attack: There are varying degrees of threat perception between the interviewees regarding threat perception. They all understood that it was a serious situation, but the perception of severity of the threat situation varied between the different persons.

» Thalys train attack: Actors report various levels of threat perception with cases of matching severity assessment, but others report initial confusion or false reading of the situation.

» L'Aquila earthquake: Informants report that they immediately knew that they were under the threat of collapsing buildings and acted accordingly.

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» Swedish wildfires: Interviewees were aware of the threat's likelihood and severity, but they were not aware of the threat, when it materialized. Professional firefighters notified them.

» Tohoku tsunami: The tsunami threat's likelihood was known by Japanese citizens. However, the severity of a tsunami was underestimated.

» Fukushima Daiichi nuclear accident: Both the likelihood and severity of the threat was not considered by citizens and authorities

Threat intrusiveness

Threat intrusiveness points to the extent to which a certain threat is prevalent in one's perception of personal risk (Lindel & Prater, 2002).

» Utøya terror attack: There are also varying degrees of threat perception between the interviewees regarding threat perception and personal risk.

» Thalys train attack: With one exception, actors report that they did not fear for their life.

» L'Aquila earthquake: Once the earthquake did stop, informants did not associate their personal risk with the threat of possible aftershocks.

» Swedish wildfires: Interviewees did not associate the wildfires with personal risk.

» Fukushima Daiichi nuclear accident: Citizen did associate the nuclear threat with their personal risk, which motivated self-evacuations.

Prior exposure to threats (Kapuchu, 2008) or experience with risks

» Utøya terror attack: Few of the interviewee's mention having experienced similar situations, but many of them talk about having relevant work experience and other previous training

» Thalys train attack: Some actors were part of combat operations, but others have never experienced a similar threat.

» L'Aquila earthquake: Even though personal exposure to a major earthquake was not reported, informants referred to family experiences with earthquakes.

» Swedish wildfires: Interviewees did participate for the first time in a major wildfire management, but some had experienced minor wildfires before.

» Tohoku tsunami: Tsunami are relative rare natural disasters. Nevertheless, cultural practices uphold memories of past tsunami catastrophes in the Sendai prefecture.

» Fukushima Daiichi nuclear accident: No prior exposure to nuclear threats is reported, even though several communities' response centred around nuclear engineers.

Response perception

Response perception refers to the attitudes one holds concerning the possible actions that could be done to avert the adverse effects of emergency, in terms of cost-effectiveness, adaptability and self-capacity (e.g., Paek et al., 2010).

» Utøya terror attack: Informants coped spontaneously without cost-effectiveness considerations. They believed in their capacity to be able to adapt to the situation.

» Thalys train attack: Informants were confident in their capacity to deal with the assailant.

» L'Aquila earthquake: Informants believed in their capacity to help others to cope.

» Swedish wildfires: Informants trusted in their trained skills to deal with the crisis.

» Tohoku tsunami: No systematic data on response perception is available for this case.

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» Fukushima Daiichi nuclear accident: No systematic data on response perception is available for this case.

Prior acquaintance with relevant preparedness knowledge (Lindell & Whitney, 2000)

Utøya: Many of the interviewees mention relevant knowledge and experience

Willingness to search actively for preparedness information (Lindell & Whitney 2000)

» Utøya: Many called emergency numbers but there is not much information to be had

» Thalys train attack: None of the actors searched information during the event.

» L'Aquila earthquke: Several informants reached out to official disaster management to ask for information and acted on their own networks after the information that was received was deemed insufficient.

» Swedish wildfires: Informants received initial information about fire extinction management, but did not search for additional information during the prolonged crisis.

» Tohoku tsunami: No available data.

» Fukushima Daiichi nuclear accident: No available data.

Socioeconomic status

» Utøya terror attack: There is low social inequality in Norway. However, informants relied on resources to engage in coping actions (e.g., boats)

» Thalys train attack: The Thalys train from Brussels to Paris regroups mostly passengers with a business background or tourist. Middle upper-class passengers seem likely, but no systematic data exists on this aspect.

» L'Aquila earthquake: The informants in this case study dispose of resources and are from a middle-class background, which enabled them to focus on collective coping actions, rather than mere individual economic survival.

» Swedish wildfires: There is low social inequality in the rural communities affected by the wildfires.

» Tohoku tsunami: The tsunami affected an entire region with all types of actors affected. There is strong data to indicate that social inequality effected the resilience of communities and individual actors (REF).

» Fukushima Daiichi nuclear accident: The same goes for the Fukushima Daiichi nuclear accident that also affected a large area with actors from different socio-economic positions.

Religiosity (affiliation to religion)

» Utøya terror attack: Not mentioned in the interviews, Norway is a secularised country.

» Thalys train attack: Not mentioned by actors.

» L'Aquila earthquake: Albeit Italy is a catholic country, respondent did not refer to religious motives

» Swedish wildfires: Interviewees did not refer to religious motives. Sweden is a secularised country.

» Tohoku tsunami: Concepts of community responsibility with shintoistic background are often quoted as enabling factors.

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» Fukushima Daiichi nuclear accident: Sources stress rationalistic scientific approaches as motivating factor for evacuations and radiation measurement but are not referring to religious elements.

Family status

Being in a relationship and especially having children was found to be associated with resilience, presumably due to the existence of social bonds that are important for individual sense of belonging and self-efficacy (e.g., Eisenman et al., 2006)

» Utøya terror attack: One informant reported guilt for having neglected his child during his coping actions.

» Thalys train attack: No actor mentioned his family ties as a decisive factor.

» L'Aquila earthquake: Family is very present in the narratives of several informants. The fact of having family in the city is mentioned as driver for coping actions. Having assured the families wellbeing is quited as necessary condition for engaging in coping actions.

» Swedish wildfires: One informant mentions a family tradition of volunteering in crises, but in the other case references to family are absent.

» Tohoku tsunami: There is no particular insistence on family ties in textes on the crisis.

» Fukushima Daiichi nuclear accident: Having to care for children is mentioned as driving factor for engaging in self-evacuation as is the fact of having family in other part of Japan and also appears as reference for citizen organized radiation measurement.

Level of education

Higher levels of education are associated with higher resilience (e.g., Eisenman et al., 2006)

No systematic data is available on these elements.

» **Personal traits**

Research finds that optimistic people are more resilient than people tending to be depressed or anxious (e.g., Bodas et al., 2017)

No data is available on these elements. Informants did not report depression nor anxiety.

Coping style

Rational thinking is more associated with preparedness (e.g., Bodas et al., 2017)

» Utøya terror attack: Informants rather insist on intuitive behaviour than rational considerations.

» Thalys train attack: Informants rather insist on intuitive behaviour than rational considerations.

» L'Aquila earthquake: Informants report cost-benefits reflections in some cases, but also insist on emotional motivations.

» Swedish wildfires: Interviewees did refer to both rational behaviour and emotional motivations.

» Tohoku tsunami: No data on individual coping styles is available.

» Fukushima Daiichi nuclear accident: No data on individual coping styles is available.

Communality in place of residence

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The greater the social network in a certain community, the greater the chances of that society to be resilient in face of adversity (e.g., Mathbor, 2007; Koh & Cadigan, 2008; Bihari & Ryan, 2012)

» Utøya terror attack: The camping site could be cited as an example of a temporary community that acted after the attack.

» Thalys train attack: This factor does not necessary apply in the way it is commonly defined. The train passengers do not form a specific community during the attack.

» L'Aquila earthquake: Communality played a central role in the L'Aquila case study. Strong pre-existing social networks are reconfigured to answer to the needs of a community after the disaster.

» Swedish wildfires: Communality in rural towns played a central role in organising logistics and relief for firefighters and evacuated persons during the wildfire.

» Tohoku tsunami: Pre-existing networks and social norms played a central role in organising relief and reconstruction efforts after the earthquake.

» Fukushima Daiichi nuclear accident: Sources show that radiation measurement efforts were embedded and targeted to specific communities.

Social norms in place of residence (Paton, 2019)

» Utøya terror attack: National norms rather than local norms are stressed by scholars.

» Thalys train attack: The case shows that the social norms in the affected area should also be considered, since the attack takes place in a train. Social norms from the residences of the persons involved, however, played an important role as the biographical elements provided by the American actors show.

» L'Aquila earthquake: Informants respond that social norms linked to specific organizations and the city of L'Aquila itself played a role in inciting them to engage in coping actions.

» Swedish wildfires: The norm of mutual assistance in rural areas are quoted as an enabling factor for local businesses and individuals to assist firefighters and evacuees with food, basic goods and shelter.

» Tohoku tsunami: Concepts of community responsibility with shintoistic background are often quoted as enabling factors.

» Fukushima Daiichi nuclear accident: Cultural norms of mutual help and duty played an important role in enabling collective evacuations. However, self-evacuation based on individual risk assessment challenge this narrative.

»

4.1.1.2 Compiled contextual factors

Based on this evaluation of contextual factors of socio-psychological literature, we concluded that their focus on or an individual response or structurally related context factors, makes them less suitable to explain contextual factors in our case studies. In this second part we, thus, used those that corresponded well to the societal resilience perspective and the data we gathered from the case study. Furthermore, we introduced contextual factors generated by WP3 while characterizing solutions for enhancing societal resilience. We used the circular model in figure 19 constructed from case study analyses to understand how they relate to each other. In this perspective, the context that enhances societal resilience in a given crisis situation relies on local actions, that constitute a situational context in which the individual background of each actor causes coping actions in a specific local environment. All of these elements are determined by societal structural

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conditions. If we apply this model now to contextual factors of WP3, we can regroup them in the following way.

Figure 20 Context of societal resilience

Situational contextual factors

Coping actions are facilitated by a group of interconnected situational contextual factors.

» **Propinquity**, as proximity in time and space and as closeness, emotional affinity to the event is a determining situational contextual factor.

» **Threat perception** understood in a broad manner as perception of likelihood, severity and intrusiveness is a second situational

» **Level of alert and preparedness** thought here as a form of situational response perception and situational risk awareness

Individual background

» **Beliefs and religiosity** this includes perception of responsibility

» **Coping skills** as all the relevant skill for engaging in efficient coping actions, this includes notably digital literacy

» Level of trust in others

» **Family status** defined by size of household and number of children

» **Socio-economic status** defined as a combination of individual level of education, income, and occupation.

» Gender

» Disabilities

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Local environment

» **Communality** defined as the strength of social bonds and the extend of social networks in a community

» **Topography** as the physical access or possibility to evacuate the crisis affect area

Society

» **Socio-economic conditions** defined as a combination of collective level of education, wealth and access to resources

» **Demographic conditions** as the age of the affected population

» **Cultural conditions** as the norms and beliefs in a wider social group. This includes gender roles

»

» These contextual factors make it possible to refine the model accordingly. The model allows for the different contextual factor to be repositioned in terms of low and high modifiability and/or situational and structural contextual factors depending on the specific context of a case. How a specific contextual factor influences the interaction between professional crisis managers and informal actors and a solution that tries to enhance or create this interaction may also vary from case to case.

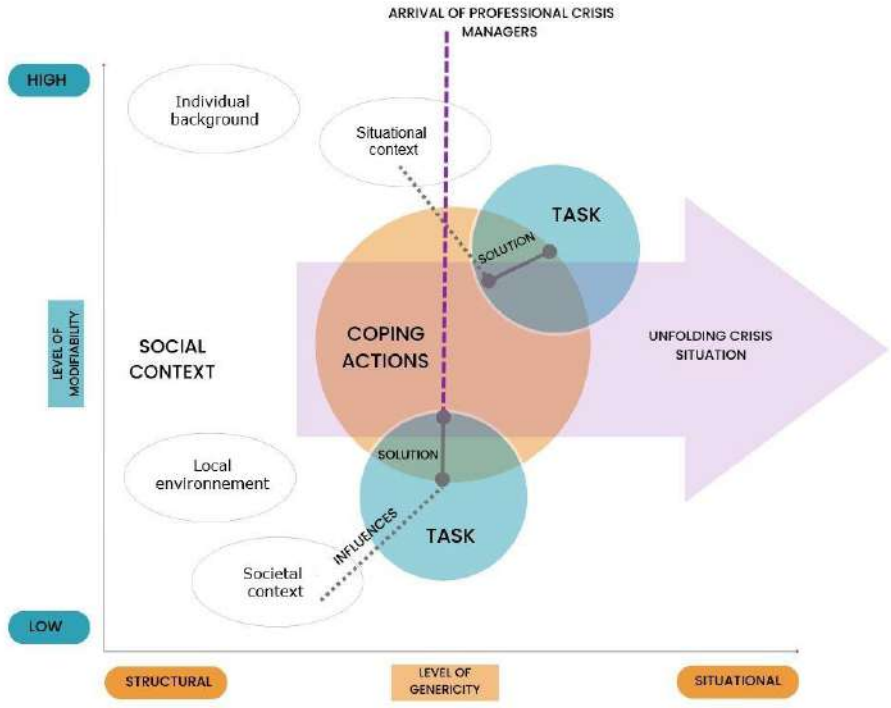

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Figure 21 Combining the building blocks for a societal resilience model

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4.2 BEYOND THE MODEL – LIMITATIONS OF OUR APPROACH

The model we propose here has descriptive, analytical, and theoretical elements while presenting also clear limits. Our objective was to make a comprehensive model that addresses different audiences, but that also allows for complexity. Logically, this ambition has produced a series of drawbacks.

To be both appealing to crisis professionals, scholar, and policy makers, we notably limited contextual elements to isolated factors and made it possible to situate them in a larger social context. However, strong and weak contextual factors, were determined considering the influence on task orientation and coping actions in our case studies. Our case studies have, however, only limited representativity and analyse cases of successful citizen participation. This model has for this reason only an analytical research value for the case studies presented in this deliverable, but it can function as a descriptive model for other case studies.

As a theoretical model for assessing societal resilience, it must be tested on more case studies, to prove its value to assess societal resilience.

In the analysis of the case studies, we used several central concepts – how these are linked to the model requires further research and in-depth case studies. This is particularly necessary for notions like social roles or cultural scripts – embodied as part of a history (e.g., training). If one of the strengths of our model is its capacity to highlight different contextual factors, detailed analyses of how people in a community are learned to handle events differently, is one way to test its relevance further.

Concerning operational uses of this model and its potential to enhance societal resilience, there are also trade-offs. Notably, some contextual factors are enabling in the sense that they increase the likelihood of intervention, others may be inhibiting in the sense that they decrease this likelihood. Describing societal resilience as a potential for action was one way to capture this complexity, but this approach limits the model's applicability in operational terms.

Finally, our case studies show that the concept "volunteer" needs to be nuanced. During the immediate crisis, informal actors do not always show clear intent, but often act out of self-preservation or trained behaviour. Coordination seems minimal. Rather than active actors, these informal actors behave in a reactive way, so the term volunteer does not seem fitting. The same goes for the common distinctions between unorganized and organized or affiliated and non-affiliated volunteers. Informal actors appear to be switching between different social roles and different degrees of organization while coping with the disasters. Further research in to the roles of scripts, roles and individual behaviour could explore what determines adherence to scripts and when coping action become improvised.

4.3 FROM MODEL TO SOLUTIONS

As noted in Chapter 2, ENGAGE focuses on solutions that may improve interactions between disaster managers and citizens, with the aim of enhancing the potential of resilience inherent in societies. Therefore, to make the model more operational, we will in the following address different audiences and how the model can pinpoint areas of improvements to enhance societal resilience.

In addition to various audiences, the project seeks to target both solutions for short-term aspects of disaster management, as well as solutions addressing long-term effects of disasters and solutions aiming to prepare for crises.

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4.3.1 POLICY MAKERS AND AUTHORITIES

A central group of audiences targeted by the model is policy makers and authorities. What the model shows is that the highest level of contextual factors may seem static but in fact are not. Rather, they change over time as part of societal development. For instance, if the level of inequality and social trust matters, this will change over time. Some of these contextual factors may be influenced deliberately by policies. For instance, risk awareness can be influenced by campaigns (as has been done in several countries). Another example is the general level of people's first aid competence, which can be improved by making first aid training a yearly activity in schools and workplaces. That of having done military or civilian services increases the number of people with relevant skills and roles like the ones we have seen in the case studies.

4.3.2 FIRST RESPONDERS

First responders are another group of audiences targeted by the model. In this regard, it is the ongoing coping actions taking place and the tasks to be performed that is the central target for enhancing societal resilience. As stated, ordinary people, often without a formal role in emergency preparedness, are first on site in a disaster. Thus, first responders are in most cases bound to meet civilians in unfolding crisis events. One aspect to target is to include the role of ordinary citizens in emergency preparedness plans, with concrete efforts to make use of available resources. While non-formal actors often are seen as a liability, there are crises and disaster situations, as shown in the case studies analysed in this deliverable, in which spontaneous volunteers can make a significant difference in the overall disaster management. Another target may be solutions that improve the coping capacities of citizens while a crisis unfolds.

4.3.3 LOCAL COMMUNITIES

Related to local communities as a target audience of the model, a recurring finding is that local knowledge and networks matters. Depending on the situation and crisis at hand, various resources are needed – both in terms of information, skills and material. Thus, for local communities it is a matter of activating local networks. One central point in this respect is that social capital must come from somewhere to rephrase Putnam's Bowling Alone argument (2000) on the weakening of social bonds in modern societies. Putnam shows that social capital understood as social bonds need to be actively constructed in individual consumer societies with smaller family structures. Cultural values about civic engagement in local communities can be an important driver for that.

4.4 ACADEMIC TAKEAWAYS AND FURTHER RESEARCH

The empirical cases studies and our theorizing around them presents several academic takeaways, of which three will be highlighted here. The first basic takeaway has to do with the notion of "context" as the elements that enables us to interpret events and actions (see definition in section 2.2.2). In our case studies we see a direct parallel to this interpretative definition, for instance in the informal actors' situational assessments in the Utøya and Thalys cases. However, the term context contains more than the interpretation and construction of social reality. Depending on its use, it can refer to structures and relationships on different levels of analysis and abstraction, for example referring to aspects of situations, communities and societies and invoking both material and immaterial aspects. There is hence a need for precision both in terms of theorizing on the role

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of context, as well as in empirical studies, particularly when the lines are blurry between the phenomena under study and the context in which the phenomena appear (Yin 2014).

A second, and strongly related takeaway pertains to the term resilience. It is already ubiquitously described as fuzzy and ill-defined (e.g., Matyas & Pelling, 2015). Being a concept caught between the abstract and the operational (ibid.) it is used in wide variety of disciplines studying prevention, preparation or disasters. Putting the term "societal" in front of "resilience" does not make this any easier. On the contrary, it comes with a whole new ballgame of theorising, touching core sociological topics like the actor-structure debate, the links between social phenomena on the micro and macro levels, as well as the relationship between integration and conflict. While this adds complexity to an already confusing concept, it opens for new ways of looking at the different meanings of resilience in abstract terms, and the different forms of resilience that are in play in disasters. In this way, the case studies and theorising in this report can serve as an invitation to new and different theoretical explorations of resilience.

The third takeaway is the dilemmas and paradoxes of resilience we have touched upon in our case studies. All the cases are of *successful* actions or adaptations, serving to highlight *positive* contributions to disasters. While this is a legitimate strategy to complement existing investigations into the failures involved in disasters, it requires consideration of the basis for theorizing around resilience. When an action is viewed as a *coping* action, it points as much to the outcome as to the action itself. In the Utøya case, for instance, spontaneous volunteers were shot directly at with bullets missing only by a few meters. Seen in hindsight, the boat drivers at Utøya were also vital in providing transport of the Delta force to the island. However, under marginally different circumstances one could easily imagine the citizens being more in the way than a resource for formal actors. As has already been indicated in the resilience engineering literature (Hollnagel 20xx) successful adaptation and maladaptation are flipsides of the same coin, meaning that we should base our evaluation of actions more based on intent than outcome. This is why ENGAGE's definition of resilience is of resilience as a *potential*. We do not know "what will work" in advance, we do not know what resilience will look like in specific scenarios. What can be reducing consequences in one instance, may be increasing consequences under only slightly different circumstances. An important theoretical takeaway is thus that there is every reason to avoid reifying the concept of resilience, i.e., turning it into static inventories of characteristics constituting the "hallmarks" of resilience irrespective of context.

4.5 So what? Practical takeaways for responders

A first basic takeaway from our case analysis and the "societal" perspective on resilience is the lesson that informal actors always actively cope with a crisis. They are first on site, and they are not passive victims. Crisis professionals need **to recognise their presence and agency on site**. Professionals' situational awareness should not only focus on victims or "bystanders", but also on coping actions of informal actors. Enhancing the perception of crisis professionals to recognise informal coping actions could be done in a systematic way by adapting manuals, protocols and trainings. Notably, first responders could integrate and formally recognise an already ongoing rescue operation and should not only "take over".

Second, recognising the agency of informal actors entails interacting with them. People on site **should always be addressed and if necessary, given a role** in the transition from informal to formal crisis management and while the formal crisis management is ongoing. Our case studies show that a societal resilience perspective highlights how formal and informal coping action often coexist without interacting. This is often complementary and formal crisis management should ensure that informal actors could continue their initiatives.

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Resource distribution in an emergency should not only focus on formal actors or victims, but collective and individual coping actions should, once recognized, be **receiving resources and knowledge to continue their complementary coping actions**. Understanding societal resilience as a potential for action gives spaces for unintended creative actions. So, disaster managers should not necessarily expect a direct output after allocating resources, since informal social networks and their effect are not always visible from their point of view.

This also goes the other way round. Collective and individual coping actions provide formal disaster managers with information and resources. All disaster management should assess the **societal resources that are already on site**. Protocols, training, and manuals should systematically invite disaster managers to verify if there are unplanned resources on site that could be utilised. This entails notably tapping into local knowledge and the situation assessment of the ones that were on site before you.

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6 ANNEX

The research leading to these results has received funding from Horizon 2020, the European Union's Framework Programme for Research and Innovation (H2020/2014-2020) under grant agreement n° 882850.

How to do responsible research on disaster experiences?

Conducting an interview with survivors, victims or volunteers will have to take extra precautions to not contribute to psychological harm for the interviewee. Here is what we do in ENGAGE to protect the best interests of those providing invaluable real-life experiences to the project.

The background

In ENGAGE's WP1, one of our tasks was to conduct interviews with the spontaneous volunteers that helped rescue a large number of victims during the 2011 terror attacks at Utøya in Norway. While the response from police was delayed due to misunderstandings and the ambulances were obliged to wait for the police to declare the area safe enough for entrance, ordinary people were already involved in an improvised rescue operation. Several of those who merely happened to find themselves in the vicinity of the disaster, rushed to their boats to pick up wounded and desperate kids trying to swim to shore. Onshore, the guests of a nearby campsite took care of the kids while waiting for professional help to arrive.

The challenge

For a project aiming to understand societal resilience, it is of great value to gain insight into what goes on in the minds of individuals in the seconds they decide to put themselves at great risk to save others. The big question is – how do we do this form of data collection? This is lightyears away from your average interview. The interview will take people back to what is probably the worst day of their lives, potentially reviving traumas in the process. How can we gain this important knowledge while at the same time maintaining the interests of our informants?

The precautionary measures

Needless to say, we approach this task with the utmost care and respect. The first decision we made, was that such interviews are not something to be done digitally, they should be made in person at a place where the informant can feel both safe and at home. Therefore, the interviews have yet to be conducted due to the COVID situation but will be done within the spring of 2022. On the upside, the delay provided additional time for preparation. Here is what we do to make sure that we take good care of the people providing invaluable real-life experiences about spontaneous volunteering in the disaster:

- We expanded our dialogue with the Norwegian Centre for Research Data (NSD) to have an extra set of competent eyes on research ethics, as well as experience from projects carried out in the past.
- We engaged in meetings with the national support group for victims and next of kin from the disaster. This was an important source of learning, not only on how to do the data collection could be carried out in the most tactful manner, but also to prepare us for speaking with people with first-hand experience with the disaster.
- All interviewers obliged to complete special training for this kind of interviews
- The description of interview topics given to the informant beforehand is more elaborated than what is normally required, to enable informants' ability to make an informed consent
- Agreement with a trauma psychologist to be available for the informants after the interviews. We considered this to be the most important arrangement to make sure that the informants can access professional competence to help process any reactions set off by reactivating memories from the terror attacks. In addition, we will inform participants about the specific support systems available to them, such as those through the Support group after the 22nd of July.

- Debrief among the interviewers to process our own reactions.

What are our reflections?
It is a demanding and scary task to be the ones stirring up memories about the 22nd of July terror attacks among people who were present on the site. It is demanding in terms of the requirements for preparation. It is scary in terms of the potential for an interview situation becoming a situation outside the boundaries of our competence as researchers, where an informant may experience a need for therapeutical assistance which we are able to give.

The preparation for the Utøya interviews was a reminder of the very concrete and hands-on nature of research ethics. We are not only dealing with information and data, when researching societal resilience, we are also dealing with *people,* and it is our responsibility to maintain their interests at all times in the research process.

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WP1/WP2 - Methodological approach

WP1 Understanding individual and collective contributions to societal resilience

Task 1.1 Preliminary model for assessing and methods for improving societal resilience

The task will survey the aspects that provided societal resilience in seven case studies, by means of document studies, focus groups and interviews.

Semi-structured interviews and focus groups

This section will outline

- Proposed general guidelines
- Proposed interview and focus group questions

1. General guidelines

Interviews and focus groups for T1.1 are based on a guideline document detailing the topics on which questions will be based. The topics and the general procedures are clearly explained to respondents before the interview starts.

A consent form, signed by respondents explains the objective of the interview, it states its topics and it details data protection measures. ENGAGE's interest for resilience in crisis situations can compromise the physical safety of participants who are trauma victims, both in the case of citizens and first responders.

The interviewer should be aware of issues involving respondent's safety when undertaking an interview. Thus, risks for respondent's health are made explicit before the interview starts. A secure and confidential interview setting will be provided. Respondents can end or interrupt the interview at any time. The interview can be conducted with support persons of the respondent.

In particular, the in-depth nature of semi-structured interviews and the interactive dynamic of focus groups can lead to exposure of personal data not relevant to the ENGAGE project.

A part of data protection measures, which are detailed in another document, respondents should normally not be named during the interview situation and personal information of third parties should neither be mentioned by the interviewer.

2. Interview questions

Opening questions	Objective	Rationale
1. How did you experience the crisis?	Understanding the way social bonds are enacted in a crisis situation to enable societal resilience.	The opening question has the objective to immerse respondents in the crisis event. Respondents should highlight both chains of resilient action (1) as the constitution and enactment of social networks as well as the construction of meaning of the event itself (2) as discourses on the value attributed to objects, practices and communities.
2. What made your reaction possible at this moment?	This second question invites respondents to think of the condition of their resilient actions.	Answers could enable a deeper understanding of contextual aspects of societal resilience (1). Hints to community bonds, social-economic positions, gender roles and identity as well as cultural conditions could appear in the respondent's narratives. The self-reflective component of the question gives respondents the opportunity to make tacit knowledge and resources explicit (2).

Follow-up questions	Objective	Rationale
3. How did you know what to do/where to find/ who to ask in this given moment?	Respondents are invited to reflect on decision making processes.	At this point of the interview the objective is to delve further into the topic of societal resilience by connecting the enabling contextual aspect of resilience (1) to needs (2).
4. What interactions did you have during the crisis?	Respondents are asked to narrate networks and chains of interactions	This second follow-up questions points more explicit in the direction of needs for societal resilience (1). It allows also to speak about possible interactions with first responders (2) and authorities (3)
5. Where did you get the information/the resources you needed?	This third follow-up questions is interested in information sources (1) and solidarity actions (2). Again the role of grassroot networks could appear.	This questions enables a dialogue on communication and resources.
6. What problems appeared in the crisis situation?	Respondents could speak about expectations also focus on limitations in interacting with others	At this point of the interview the objective is focus on expectations (1), failed interactions (2) or missing information (3).

Key question	Objective	Rationale
7. How did your community help you to withstand the crisis?	This question focuses directly on societal resilience.	•The question invites respondents to define their community (1), to make their individual bonds to it explicit (2), and to reflect on what makes them resilient during the crisis (3).

Exit question	Objective	Rationale
8. What would you do different in your community in times of crisis? What should be done differently?	This question enables a normative answer to improve disaster management for a specific community.	The question lets respondents speak again about their community (1) and its values (2) and develop a last reflection on needs (3) and expectations (4).

Task 1.2 Local perceptions, risk awareness, needs and expectations about societal resilience

The task will carry out a survey conducted by an Internet probability-based panel to map public perceptions, awareness, needs and expectations for societal resilience throughout the complete crisis cycle.

Survey guidelines

This section will outline:

- Proposed variables and constructs to be assessed to meet the requirements of the deliverable;
- Proposed tools to be used in the survey to assess said variables and constructs.

1. Proposed variables and constructs

The proposed survey should draw conclusions about the relationship between risk awareness and actual resilience and the relationship between citizens and local authorities. This will in turn form the basis for making recommendations about improving societal resilience by improving risk awareness. It will measure culturally determined dimensions of risk perception and awareness (combining contextual and target aspects) using social media

As an initial step, relevant variables should be extracted from the aforementioned aims of D1.2. It is proposed to focus on four major constructs: Awareness, Needs, Expectations, and Resilience.

- Awareness – a construct depicting the existing knowledge and current perceptions of individuals with regards to risks;
- Needs – a construct depicting the gap between existing and required resources (cognitive, social, physical, emotional, and others);
- Expectations – a construct depicting the beliefs and hopes individuals hold concerning the capacity of local and national authorities to cope and maintain resilience;
- Resilience – a construct depicting the ability of a system to be flexible in face of hardship and to bounce back from it, rather than break.

2. Proposed tools

As is the case with other studies, existing validated tools are preferable to tools developed *ad hoc* for the proposed survey. Therefore, it is proposed to draw from prior experience to include tools that have been validated in previous studies. The proposed tools address the assessment of the four constructs by addressing the following components:

1. Awareness – Using the PRISM tool by Büchi and Sensky, 1999
2. Needs –
   2.1. Communality – an abbreviated (5-item) version of a validated scale adapted from Authors [unpublished]

2.2. Coping skills, styles, and resources - a validated Brief Resilient Coping Scale (4-item) by Sinclair & Wallston, 2004 - Link
2.3. Actual preparedness – validated scale (12-item in total) adapted from Authors [unpublished] and Bodas et al. 2015

3. Expectations –
3.1. Perception of trust – a validated 6-item scale from Kimhi et al., 2019
3.2. Perception of responsibility – a validated 5-item scale from Bodas et al., 2015

4. Resilience –
4.1. Individual resilience – an abbreviated validated (2-item) scale by Connor-Davidson, 2003
4.2. National resilience – an abbreviated (8-item) version of a validated scale adapted Kimhi et al., 2019

Task 1.3 Communication, social media and societal resilience among citizens

The task will carry out an empirical study of what citizens and social groups need and expect from first responders/authorities, to improve communication (including social media) and societal resilience. Deliverable 1.3 will document and analyse social media and electronic communication between disaster management agencies and citizens, and among citizens; it also aims to clarify the relationship between these two forms of communication and actual societal resilience, considering cultural and gender diversity. Its conclusions will build on answers from a questionnaire (included in the survey from Task 1.2) that seeks to gather data on communication needs and digital literacy.

Construct – Communication Needs						
Communication needs during disaster Source: Adapted from U&G Theory & Chang, 2017						
	In case of a disaster (e.g., flood, earthquake, pandemic), how important are each of the following information needs to you?	Not important at all	Not Important	Somewhat important	Important	Very important
1	To receive information that can help me talk about the situation with others.	1	2	3	4	5
2	To receive information that can help me feel as part of the community/ nation.	1	2	3	4	5
3	To receive information that can distract my thoughts from the situation.	1	2	3	4	5
4	To receive credible information.	1	2	3	4	5

5	To be able to actively share information with the authorities/ relevant organizations acting on the situation.	1	2	3	4	5
6	To receive information that can make me feel positive emotions (e.g., happiness, amusement, joy).	1	2	3	4	5
7	To receive information as fast as possible.	1	2	3	4	5

Construct – Digital Literacy
Subset of Technology Acceptance Model/Theory Source: Sipior, Ward & Connoly, 2017 - Link * Note: Sorting variable according to the requirements of WP 1.3

	To what extent do you agree or disagree with the following statements:	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	Learning to use new mobile apps or websites is easy for me	1	2	3	4	5
2	Using mobile apps or websites to find information is easy for me	1	2	3	4	5

Task 1.4 Revision of preliminary model for assessing and methods for improving societal resilience

The task will combine results from revisiting data gathered from surveys, interviews and focus group with the results of the initial validation exercices.

WP2 Identifying existing practices, approaches, tools and guidelines of first responders and authorities

Task 2.1 Identification of expectations and needs of first responders and authorities to improve societal resilience

Through survey conducted by an Internet probability-based panel of authorities and first responders complemented with semi-structured interviews with the whole KI-COP, we will identify what authorities and first responders expect and need from society to respond effectively. This questionnaire will complete the public survey led as part of Task 1.2 (see above) and will take the form of multiple-choice questions.

Expectations and needs before disaster	
	Expect communities to have the following resources to report an emergency:
1	Phone/Internet access to warn 911
2	Siren
3	Flags
4	Whistles
5	Shelter
6	Smoke detector
7	Community team for emergencies
8	Other possible resource that might come to mind: …
	Need communities to be aware of the existence and functioning of:
1	First Aid
2	Evacuation exercices
3	Emergency plans
4	Community maps
5	Other possible resource that might come to mind: …

Expectations and needs during disaster	
	Expect communities to have the following resources to face the emergency:
1	Fire extinguisher
2	Flashlight
3	Evacuation maps
4	Other possible resource that might come to mind: …
	Expect communities to have identified vulnerable areas/households
1	Yes
2	No

Expectations and needs after disaster	
	Expect to work with community groups (NGOs, volunteers) to facilitate recovery
1	Mostly volunteers
2	Mostly local NGOs

Expectations and needs after disaster	
3	Both volunteers and NGOs
4	Indifferent
	Expect to learn about the disaster and incorporate better practices
1	Yes, on a daily basis
2	Only for some practices
3	Only regarding minor issues
4	No change

What are the perceived commonalities and differences concerning risk awareness

Location, intensity, frequency and probability				
	Based on your location, please indicate the exposure, frequency and intensity of the following hazards:	Exposure	Frequency	Intensity
1	Earthquake	yes/no	high/medium/low	high/medium/low
2	Tsunami	yes/no	high/medium/low	high/medium/low
3	Mass movement	yes/no	high/medium/low	high/medium/low
4	Cyclones/Storms	yes/no	high/medium/low	high/medium/low
5	Flooding	yes/no	high/medium/low	high/medium/low
6	Drought	yes/no	high/medium/low	high/medium/low
7	Desertification	yes/no	high/medium/low	high/medium/low
8	Extreme temperatures	yes/no	high/medium/low	high/medium/low
9	Wildfire	yes/no	high/medium/low	high/medium/low
10	Snow/Hail/Frost/Ice-related hazards	yes/no	high/medium/low	high/medium/low
11	Blizzard	yes/no	high/medium/low	high/medium/low

Physical, social, health, economic and environmental dimensions	
Is there a disaster management plan?	yes/no

Society awareness	
	To what extent does society need to know about the possible risks in the area?

Society awareness	
1	A full knowledge of the risks in the area is needed
2	Only knowledge about the risks that society is most vulnerable to is needed
3	No specific knowledge is needed

What and how are authorities are first responders willing to share with citizens to improve societal resilience and risk awareness?

Receiving information	
	What kind of information is expected/needed to be gathered from communities to build societal resilience?
	Is the expected information what is usually gathered?
	Which communication channel should communities use to send information about societal resilience?
	When is it expected/needed for communities to share the relevant information?

Disseminating information	
	What kind of information should be shared with communities to build societal resilience?
	Which communication channel is used to share this information?
	When is the information shared with the communities?
	Is the shared information used by the communities?

Task 2.2 Identification of formal solutions

Based on literature review, case studies, and previous research projetcs, Task 2.2 aims at identifying already existing solutions such as methods, mechanisms and guidelines that first responders and authorities can implement to improve societal resilience

Task 2.3 Identification of informal solutions for the first responders and authorities to improve societal resilience

Through the same semi-structured interviews developed in Task 2.1 and the analysis of the case studies, we will identify "informal" solutions such as mechanisms, best practices and tools that first responders and authorities in each city, region or nation use to make people aware of the need to improve resilience and communicate about different prevention, preparation and response measures.

Interview guidelines

N. B. A minimum duration of one hour is set for these interviews. A protocol will be developed in case problems arise during the interviews with trauma victims.

The following questions seek to prompt victims to narrate the crisis	
1	How did you experience the crisis?

The following questions seek to prompt victims to narrate the crisis	
2	What made your reaction possible at this moment?
3	How did you know what to do/who to ask/where to find what you needed at this given moment?
4	What interactions did you have during the crisis?
5	Where did you get the information/resources you needed?
6	What problems arose in the crisis situation?
7	How did your community help you to withstand the crisis?
8	What would you do differently in your community? What should be done differently?