D5.1: RESILIENCE POLICY RECOMMENDATIONS – first report

Project acronym: BuildERS

Project title: Building European Communities' Resilience and Social Capital

Call: H2020-SU-SEC-2018-2019-2020/H2020-SU-SEC-2018

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Executive Summary

This is the first in a series of deliverables which take the overall findings of BuildERS and distil them into actionable recommendations. This deliverable is a first step. It collects and collates findings and, in collaboration with BuildERS partners, identifies important policy and innovation opportunities. As such, each thematic section is structured in terms of: (a) a summary of *key findings*, (b) an outline of essential *new perspectives*, to encourage transformational change, and (c) a list of concrete *key actions* to be taken in that direction. Readers can jump to their preferred section.

This deliverable is formally labelled a 'first report' because not all the results of BuildERS are yet finalised. Deadlines for some case studies, for instance, occur after the submission of this deliverable. We have nevertheless attempted to account for as many findings as possible, even preliminary findings, to kick-start the reflection and refinement process. Any new or adjusted findings will be included in the final recommendations in 2022 (D5.2, D5.3) and coordinated with other recommendations stemming from the BuildERS project (D3.5, D4.5, D5.4, D5.5).

The current report includes a wide range of recommendations for BuildERS stakeholders. Later deliverables will narrow, sharpen, prioritise, and develop them using further consultations both within the consortium and with stakeholders. Moreover, future deliverables will include fewer findings *per se* and more pronounced recommendations. This process will result in a refined list of concrete change suggestions useful for practitioners and BuildERS key stakeholders (summarised for brevity here as 'practitioners').

Broadly put, the BuildERS project recommends three steps towards greater resilience:

- That **vulnerability** be reconsidered by practitioners as a dynamic characteristic shaped by a wide variety of shifting factors and changing situations. Preliminary findings confirm that what makes one person vulnerable in one crisis situation, for example, may empower them in another. Yet governments often treat vulnerability as a fixed feature. There are many potential sources of vulnerability (indicators) – ranging from individual characteristics to societal characteristics. But no single characteristic makes an individual permanently vulnerable.

  We recommend below that practitioners adopt a broad perspective of what makes people potentially vulnerable – rather than assume predefined categories – and consider how different situations may generate different vulnerabilities for different kinds of people. This is a challenging task, but below we suggest preparation *and* response activities that can help practitioners. These include considering a wider array of potential vulnerabilities, reflecting on unexpected forms of vulnerability or non-vulnerability in the moment, and drawing upon unique data sources to grasp vulnerability more thoroughly.

- That **social capital** building takes a more prominent place in crisis management planning, in a more refined way than currently exists. Our findings revealed little attention to social capital building in BuildERS countries, and more attention to some kinds of social capital than others. Social capital building is a long-term, incremental process shaped by society's broader characteristics. But shorter-term projects related to crises and disasters can help build social capital more effectively than previous.

  We recommend that practitioners consider activities that recognise three different dimensions of social capital: bonding (strong relations amongst emotionally-close

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individuals), bridging (strong connections between groups across society), and linking (strong connections between individuals and authorities in power). Each kind of social capital can be improved across European societies. We identify social network building as a way to enhance the *bonding* and *bridging* side of social capital, but that requires more concrete steps to engage with community groups and social media. We pinpoint volunteering as an important activity for *bridging* social capital, but practitioners must clarify, systematise, and support volunteer networks during crises. *Linking* social capital varies greatly across European societies and relates to broad societal structures -- and requires actions that go well beyond crisis and disaster management planning. Nevertheless, we attempt to make concrete recommendations to further social capital in its three main dimensions.

- That **risk awareness** efforts must take into account the message, the medium and the audience. BuildERS research shows governments focus mainly on the *message*, underestimating how the *medium*, especially social media, can warp the message. They also lack appreciation for the diversity of *audiences*, which can miss or misinterpret the message -- potentially making individuals even more vulnerable. Risk communicators must consider a diversity of individual characteristics (capabilities), individual motivations (attitudes, beliefs), traditions (cultural norms), and group behaviours that shape what information is received and acted upon. One-size-fits-all and top-down approach to risk awareness efforts must be more finely tailored.

  We encourage crisis communicators to consider diverse target groups in society (perhaps linking to our vulnerability indicators above) while engaging more with intermediaries – those close to and trusted by target groups. 'Crisis communication collaboration' networks could bring together authorities, caregivers, journalists, and social media to thoughtfully consider the message and its ethical downsides. Several tools are recommended in that respect. We urge attention to the perils of disinformation dynamics during crises, and cautiously recommend authorities engage more thoroughly and regularly with public information campaigns on an ongoing, not temporary, basis.

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List of Acronyms

AB	Advisory Board
BuildERS	Building European Communities Resilience and Social Capital project
ProCiv	DG ECHO's Civil Protection Network
D	Deliverable
DG	Directorate-General
DG COMM	Directorate-General for Communication
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations
DoA	Description of Action
EEAS	European External Action Service
EUCPM	EU Civil Protection Mechanism
GDPR	General Data Protection Regulation
IPCR	Integrated political crisis response
NGOs	Non-governmental organisations
NPOs	Non-profit organisations
WP	Work Package

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D5.1 RESILIENCE POLICY RECOMMENDATIONS – first report

1. Introduction

The overarching objective of the BuildERS project is to **increase the resilience of European communities against both natural- and man-induced disasters by enhancing the social capital and risk awareness of its citizens in the face of the increased use of new technologies and media.** A key ambition of BuildERS is to translate the scientific knowledge generated within the project to practical recommendations for actors engaged in crisis management. The present deliverable presents policy recommendations for enhancing resilience. Work Package Five (WP5) contains three additional deliverables, presented elsewhere: recommendations on innovation policy (D5.2), investment strategies for risk reduction (D5.4), and technologies and tools for risk reduction (D5.5). These recommendations should be seen as part of a series, and in relation to all of BuildERS previous work.

Government policies are needed to effectively address many of the issues identified in our research. Importantly, and as noted in the BuildERS 'Common Vision', BuildERS does not seek to eliminate vulnerabilities as such, but seeks to mitigate vulnerability caused by discrimination and neglect of essential needs, intrinsic potential, and special life contexts (BuildERS Common Vision, p. 2). The resilience policy recommendations target three levels of actors at the EU level (e.g., directorates-general and executive agencies), at the national level (e.g., prime ministers offices and national crisis authorities), and at the local level (e.g., local authorities, non-governmental organizations (NGOs, non-profit organizations (NPOs) and citizen organizations). Importantly, many of our recommendations must be taken forward by bottom-up initiatives and community action.

BuildERS aims to improve resilience within (especially) European societies and communities against crisis and disasters. The project aims to uncover who are the most vulnerable in European societies and for which reasons. This is done based on the assumption that risk awareness, social capital and preparedness are core aspects influencing vulnerability. As such, the overarching themes in the BuildERS model (Common Vision; Morsut et al., 2020) are vulnerability, social capital, and risk awareness.[1]

The recommendations herein are based on preliminary BuildERS findings, which are reviewed briefly in each section below, and encourage two levels of change:

1. The first are new perspectives, which we hope will transform thinking about the goals above. New perspectives offer alternative lenses that treat vulnerability, for instance, as a dynamic and intersectional characteristic.

[1] The underlying assumption is that individual, community, and societal resilience can be enhanced by addressing these three themes. Some recommendations, however, address resilience directly. While the recommendations are categorized under themes, it is important to note – and our findings confirm – that vulnerability, social capital, risk awareness, and resilience are interlinked. Hence, the recommendations should not be considered in isolation, but in their larger situational and systemic context.

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2. The second are concrete key actions and new ways of working towards those goals. For instance, improved vulnerability assessments, employing social networks to improve social capital and addressing communication-related vulnerabilities.

We aim not only to outline desirable changes but also offer suggestions for *how* things might change, using concrete tools and instruments. And we kept a close eye towards ethical considerations at every stage. Future recommendations deliverables (D5.2, D5.3, D5.4, D5.5) will further refine and cohere our messages.

Ethical considerations

The act of issuing recommendations is full of ethical pitfalls that require critical reflection. We are guided here by the ethical principles for analysing BuildERS research activities (D7.4) which considers six dimensions: justice and participation, responsibility and accountability, freedom of choice and autonomy, trust and transparency, non-maleficence and beneficence, and privacy and data protection. These dimensions helped us to design questions to reflect upon in the carrying out of research. Specifically, ethical considerations arise in two main areas (at least) of issuing recommendations.

The first is in making the recommendations per se. Process-related ethical considerations include transparency and reflection on: who was involved in formulating the recommendations, what process was used to identify relevant findings, which societal groups were engaged in making and validating the recommendations, and what broader interests were therefore represented – and which were not – in formulating recommendations.

The recommendations activities of BuildERS started early: at the first plenary meeting, reminders were given that recommendations were a whole-of-consortium responsibility to be considered as research started. WP5 (Stockholm University, SU) formally led the effort, with helpful assistance and reflection from other WP leaders. Participants in formulating recommendations can be seen in concentric circles of engagement: BuildERS members occupy the inner circle, engaged 'co-creators' (stakeholders) the next circle, and representatives of broader society as the third circle. Taking serious the idea of social diversity, no population can be perfectly represented. Nevertheless, BuildERS aimed for academics, technicians, first responders, and NGOs to be fairly well-represented in these circles. Business interests, religious groups, and vulnerable groups (to avoid overburdening) on the other hand are less represented in the formulation of recommendations but diverse groups from multiple countries were included as research subjects in all case studies.

The process of drawing out relevant findings was done in largely bilateral settings, with WP5 working closely with both WP leaders and case study leaders to identify any findings which were both high quality and relevant to the BuildERS 'Common Vision'. Importantly, some recommendations emerged from 'co-creation' activities in WP6 and others from BuildERS own research. These were cross-checked with each other and triangulated with independent research. For the sake of constant improvement, all reiterations of recommendations were repeatedly shared with BuildERS partners and any stakeholders who helped with their formulation. We recognize that while our recommendations are made in good-faith and based on high-quality research, they are

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inevitably biased by particular research designs and research methods (an issue of accountability and transparency) and directed towards some societal groups more than others – even if every effort is made to speak to pre-identified 'BuildERS stakeholder groups' (see BuildERS Common Vision, p. 3).

The second set of ethical concerns requires the potential impact of these recommendations. All recommendations imply value judgements. Our advice to stop one type of activity, for instance, in favour of another, may send a negative message to those practitioners participating in the former. While difficult to avoid, we emphasize here that our recommendations are precisely that: recommendations worth reflecting and interpreting upon in a specific context. Impact-related ethical considerations include the effects – intended and unintended, positive as well as negative – that these recommendations may have on certain communities or individuals.

Public authorities and NGO leaders, for instance, have busy agendas and many existing inputs to their work. Adding yet one more set of 'recommendations' can overwhelm actors by the diverse actions to perform. The values and tasks of everyday life might conflict with demands for appropriate preparedness for disasters. Therefore, the recommendations reflected upon the assumed distribution of responsibility. We only kept recommendations that were validated by our engaged stakeholders, and we kept recommendations as 'digestible' as possible. Recommendations will be made even more practitioner-friendly in a subsequent 'Handbook' (see T5.3).

The societal groups impacted by our recommendations require special consideration – a function of BuildERS' particular focus on the vulnerable. People who might be considered 'vulnerable' might be at risk of being singled-out by BuildERS' recommendations, something our group worked actively to avoid (indeed, a central BuildERS principle is to avoid stigmatizing the ostensibly 'vulnerable'). Nevertheless, to ask certain societal groups to be treated differently comes with risks of reproducing illegitimate inequalities. We avoided any suggestions that would lead to uprooting and unnecessary change to individuals' lives (non-maleficence), especially those without direct access to our process and message (a question of justice), beyond the strict confines of BuildERS' goals.

These are just some ethical reflections before the issuing of recommendations. We offer more specific ethical reflections in the individual sections below and refer to the more general ethical guidelines for practitioners considering implementation in Annex 1 (which is a copy of 'Ethics Guidelines for Policy Makers in Deliverable 7.4).

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2. Methods for deriving the policy recommendations

These recommendations were derived using a stepwise and iterative process. The first step consisted of reviewing and examining in what ways the WP1 and WP2 findings may inform practice. The second step entailed analysing the findings emerging from other WPs, including WP3 (surveys), WP4 (case studies) and WP6 (co-creation) to compare how that work aligned with and informed theoretical expectations. By contrasting the theoretical and empirical findings, and making cross-case comparisons, a nuanced and empirically grounded basis for developing the policy recommendations was established. The aim of comparisons was to explore if some of the findings were generalizable and to facilitate learning across cases. At each stage, the BuildERS consortium was consulted at-large (via plenary sessions and monthly coordination meetings), in 'mini-lateral' settings (with key WP leaders), and in bilateral sessions with individual case-study leaders. Several of the recommendations derived from our efforts to 'co-create' findings with stakeholders via a series of systematic discussions and feedback sessions (see WP6). These sessions also afforded the opportunity to get feedback on preliminary findings, regarding their relevance and practicality.

The third step consisted of stakeholder reviews of the proposed policy recommendations. The aim of these reviews was to capture stakeholder views on the relevance and feasibility of the policy recommendations in relation to their respective decision-making contexts. This was done in a variety of ways, including ongoing engagement with the BuildERS Advisory Board (workshops, presentations, and email exchanges), workshop and conference participation (both scholarly and practitioner-oriented events including the Crisis Management Innovation Network Europe, C-MINE), and 'validation' events with officials from each of the three levels of governance. The latter used the HowSpace platform to gather immediate feedback and to make real-time adjustments to the recommendations (see Appendix C).

The policy recommendations were revised accordingly. The source of each recommendation (e.g., project deliverables, scientific publications, and specific stakeholder consultation sessions) are noted in the text and can be found in Appendix A.

This description suggests a rather orderly process. While these steps accurately describe the workplan, the reality was rather 'messy' with constant dialogue and debate on the appropriateness of some recommendations over others. The general principle, keeping in mind ethical implications, was to consider recommendations in light of (a) their scientific grounding – are they solidly supported by our research, (b) their approval by public and private stakeholders – bearing in mind not all societal voices were represented, (c) their concreteness – can they be realistically implemented?

In that vein, the recommendations below target the three central questions of BuildERS – reducing vulnerability, building social capital, and improving risk awareness. In each section, we start with a recap of our main analytical findings. We then move quickly to a discussion of what those findings mean for changing meta-level perspectives on these three questions (this discussion corresponds with the need for transformational change, not easily captured in bite-size recommendations). We conclude each section with concrete key actions to be taken. Those actions are color-coded for audience: EU level, national level, and local levels.

Following feedback from our Advisory Board and stakeholders, we offer points to consider when applying the key actions in various contexts and situations. Here, guidance on how to tackle practical difficulties and advice on how to prioritize is also provided. This section will moreover provide critical issues relating to the new perspectives and key actions, and describe dilemmas, debates, ethical

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considerations and/or gaps in current knowledge. The final report of these recommendations (D5.3) will streamline and prioritise recommendations.

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3. Recommendations for reducing vulnerabilities

Vulnerability is a central theme of the BuildERS' project and was a central focus of research, analysis and innovation. Our recommendations here fall into two main categories: (i) changing the nature and quality of risk assessments; and (ii) enhancing strategies to reduce vulnerability. We first summarize the main findings of the BuildERS project before breaking down recommendations into need for new perspectives and key actions on each of these categories.

3.1. Main findings

BuildERS research showed that vulnerability is too often considered by authorities as a permanent, ontological characteristic of individuals and groups (see D1.2, p. 66; D1.3, p. 59f, 66f, 78f; D2.2, p. 27). Delving into national crisis management systems, for example, BuildERS found that several countries studied herein use crude and broad classifications of 'the vulnerable' (like age, gender, or income) without delving deeper into what makes one vulnerable and why (Orru et al, 2021). Vulnerability tends to be described as an ontological characteristic of certain groups in society due to certain characteristics (being young or old, having an impairment, being a migrant, belonging to a minority or being a migrant) that are understood as a general label. Moreover, vulnerability assessments tend to be ad hoc and unstructured (D4.4).

Our surveys and case-studies, however, showed that when trying to determine who is vulnerable in a specific situation, it is not sufficient to account for single characteristics. If focusing on single characteristics (e.g., age), there is a risk of classifying broad and heterogenous groups as vulnerable (e.g., elderly) when they may not be.

BuildERS' findings thus support previous research that **vulnerabilities take different forms depending on different factors and operate at different timescales** (D1.2, p. 19; D4.2). Vulnerability is shaped by a complex set of elements – some of those elements related to individuals or groups while others stem from societal wide characteristics (D1.3, D4.4, D4.5). In any case, there are few static and permanent forms of vulnerability. What makes a person vulnerable in one crisis may make that person more resilient in another. BuildERS emphatically confirms the message, also outlined in the UN Sendai Framework, that vulnerability is dynamic, and that intersectionality should be a guiding theme to better integrate in theory and practice.

Specifically, BuildERS' research helped to disaggregate different sources of vulnerability, in different categories: individual, socio-structural, and situational. Again, none of these represent permanent sources of vulnerability; they interacted in complex ways, as an intersectional approach suggests.

Individual factors can be broken down into two sub-categories: primary and secondary. Primary factors are: (a) sensitivity: the extent to be affected by the crisis, (b) exposure: the extent of being subjected to a hazard, (c) coping: ability to adjust to changes caused by a crisis, and (d) anticipation: ability to reduce future risks. Secondary factors are an intersected mix of individual's characteristics (e.g., age, gender, spoken languages, impairments etc.), or the living conditions and everyday life situations (e.g., type of house, social contacts, access to information) (D1.3, p. 75-77). The constant interaction between these two categories makes vulnerability a dynamic phenomenon where secondary factors influence primary factors.

Yet individual characteristics alone do not determine who is vulnerable. *Socio-structural* factors need to be accounted for. Socio-structural factors include the socio-economic and political context of a

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group or individual. Socio-structural factors generating vulnerabilities are often the by-products of local strategies (e.g., segregation that occurs as a consequence of physical planning), procedures (e.g., poor crisis preparedness in care homes or hospitals) and structures (e.g., areas lacking alternatives to existing critical infrastructure) (D1.2; D1.3; D1.4; D2.5). Socio-structural factors link to broader features of society but are not completely resistant to improvements associated with crisis and disaster management reforms.

Lastly, *situational factors* explain vulnerability that arises when an individual or group is being exposed to a disaster or crisis (e.g., when an individual is located in an area suddenly struck by a disaster event) (D1.2; D1.3; D1.4; D2.5). Hence, vulnerability is an attribution of situations that render individuals vulnerable (D1.2, p. 18). Our case study analyses suggest that who is vulnerable is not due to one specific condition but the result of many factors on different levels. It is the individual condition, within a structural context which interacts with technological developments and environmental influences that creates situations in which individuals lack the capacities to deal with external threats (D4.2; D4.5). Even more, the way societies prevent, prepare, react, and recover from disasters and the accompanied measures themselves influence vulnerability. The different factors that influence vulnerability thereby not only have a certain impact, but they also influence each other allowing both for compensation of shortcomings in one regard or the aggravation of others (D4.5, p. 85).

In short, BuildERS' research supports arguments that a more systematic application of the intersectionality approach to assess vulnerability as a dynamic phenomenon is required. Such an approach can help to reveal kinds of vulnerability that lie outside official categories (D1.2, p. 80).

Our research also revealed the intricacies with which **crisis communication influences vulnerability** (D1.4; D2.3; D2.4; D2.5; D4.1). The crisis information landscape has dramatically changed due to the use of social media. This contributes to new ways for resilience building (e.g., dialogic communication between crisis managers and affected groups; organising support networks online), but also to greater forms of vulnerability (e.g., misinformation and disinformation issues; digital divide and possible discrimination of some disadvantaged groups) (D1.2, p. 80). This changing information landscape requires authorities' to not only consider communication as a factor that holds the potential to cause vulnerability, but also to develop a detailed understanding of the mechanisms by which individuals may become susceptible to communication-related vulnerabilities. Our results indicate that the role of communication is often overlooked and that the sources of communication-related vulnerabilities need to be better understood (D1.4; D2.4; D2.5; D4.1).

In short, acknowledging the diversity of sources of vulnerability and powerlessness, BuildERS scrutinizes existing approaches, strategies, technologies, and tools to measure and reduce vulnerability, in light of the social diversity of European societies, and in order to find out more about the shortcomings of different European crisis management systems (BuildERS Common Vision, p. 2). Our findings and associated recommendations cover issues such as how vulnerability can be understood and approached in vulnerability assessments and how to map who is vulnerable in different types and stages of crises. We also identify factors that can worsen or alleviate vulnerabilities. Further, the findings and recommendations address the topic of who should be responsible for reducing vulnerability. The aim is to inform strategies that may reduce vulnerability.

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3.2. Need for new perspectives

BuildERS' findings demand a shift in perspective regarding vulnerability. We strongly encourage actors responsible for identifying and addressing vulnerabilities at different levels of governance and community to rethink their current assessment methods and strategies.

As made clear above, **there is a need to approach vulnerability from a more nuanced, intersectional perspective.** This has several components.

First, authorities must appreciate that vulnerability is determined by the interactions of a complex set of individual characteristics and their interlinkages with societal structures. Such characteristics include, but are not limited to: age, race, class, gender, nationality, sexual orientation, and disabilities. By including additional characteristics in the assessment, it becomes possible to find combinations of factors that might alleviate or worsen vulnerability (e.g., you can be elderly but have excellent health, making you less vulnerable than an elderly person with poor health). By looking at the interactions of a complex set of individual characteristics, vulnerability assessments may become more precise. This, in turn, allows for the development of more nuanced measures to support vulnerable people. Further, it ensures that resources are allocated to those that need them the most. Finally, it avoids victimizing and stigmatizing broad and heterogenous groups (D1.2; D1.3; D2.2). It may also help to move away from the current tendency for unjustified stereotyping (possible stigmatization) stemming from the vulnerable groups-based thinking (D4.4, p. 11).

Second, assessment must consider, and reflect on, the interplay of individual, socio-structural, and situational factors in vulnerability assessments. Identifying which individuals are subject to vulnerability in which situations can help identify people who are exposed to a disaster or crisis (e.g., when an individual is located in an area suddenly struck by a disaster event) – thus making assessment more precise (D1.2; D1.3; D1.4; D2.5). To make vulnerability assessments more precise and create a better understanding of vulnerability factors and intersecting factors, we recommend using a **situation-centred** vulnerability assessment method. BuildERS has developed a **scenario-based tool**[2], which is set to support crisis managers to assess who are more vulnerable than others in relation to specific hazards or events (D4.4). Moreover, we recommend that those responsible for vulnerability assessments engage a diverse actor group in the process of mapping and analysing vulnerabilities. Involving diverse actors makes it easier to identify the multitude of factors (individual, socio-structural, and situational) that determine vulnerability in a given situation, as well as how these might change over time (the dynamic dimension). These actors include people that are in contact with different societal groups in their everyday work, such as social care providers. They also include decision- and policy makers in a broad range of areas, such as spatial planning and education. Hence, not only those who work directly with crisis management should be engaged in the task of assessing vulnerability (D2.2).

Third, we recommend understanding vulnerability as dynamic, i.e., changing over time, when conducting vulnerability assessments. This rather than considering vulnerability as a stable condition of specific social groups. Anyone could be vulnerable at a given point in time, in a given context.

[2] In D4.4, a vulnerability assessment tool was designed and tested it in Estonia with three crises scenarios: disruption of electricity supply, COVID-19 pandemic, and a cyber-attack against governmental information systems.

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Treating vulnerability as a dynamic condition aligns well with analyses that consider the interplay of individual characteristics, socio-structural, and situational factors (D1.2; D1.3; D2.2; D4.4).

In short, new practitioner perspectives would embrace a **wider array of indicators**, **better data**, and **process innovations** to uncover vulnerabilities that are not typically recognised. We recognise the challenging, even paradoxical, task facing practitioners: to *balancing the need to make preliminary vulnerability assessments, in advance of crises to assist with disaster preparation, against the need to assess changing vulnerability when a crisis hits.* Below we recommend ideas for obtaining better indicators (wider, more systematic), more diverse data (from unconventional sources), and process innovations (affording policymakers the opportunity to reflect on unexpected kinds of vulnerability which may lie outside official categories, when a crisis hits).

Such ideas should be viewed in conjunction with improved crisis communication tools, so that faulty communication efforts do not further impair vulnerability (see below, and section 5). **Vulnerabilities may stem from a variety of communication-related factors.** People may not receive or understand warnings or guidance, receive too much or conflicting information, believe false or misleading information, or refuse to act upon information. For example, inability to express oneself vocally may mean that the needs are overlooked or misunderstood. Reasons that prevent access, understanding or reacting to information may be individual, societal, or context specific. Furthermore, certain kinds of content or information sources (channel) may make people more or less vulnerable. For instance, stories may influence people' behavior more than statistics, and local channels be more trusted than national channels.

The challenge here is one of time and resources, considering the normal stresses facing practitioners at all levels and all organisations. BuildERS does not seek to propose a transformative change of current working methods without **supporting practitioners along the way**. We have tested and co-created several tools and innovations that may serve as support on the path towards more precise assessments. The BuildERS project has analysed several tools that may support the mapping of individuals subject to situational vulnerability. This includes a tool for innovative data fusion providing the methodological basis for analysis of situation-specific social vulnerabilities (D4.4). This also includes the BuildERS Dashboard – an application using historical mobile positioning data to better plan rescue operations (D4.3 and D4.7).

We additionally propose a set of scientific, social, and process innovations that we have co-created with practitioners and experts in the field (D5.2, D5.5, D6.6). In light of the intersecting factors identified in our case study research, we pinpointed, together with experts in the field, indicators that can be utilized for more nuanced vulnerability assessments. On this basis, we developed a framework for measuring vulnerability in crises. Beyond innovating new measurements and indicators for vulnerability, we also scrutinized the possibilities of supportive technologies for collecting and integrating data for vulnerability assessments. We propose ethical guidelines on data collection and integration of crisis related vulnerabilities.

The recommendations and associated actions below suggest new working methods that embed the new perspectives put forth by BuildERS. We also recommend when, along this path, our innovations, tools, strategies, and guidelines can support practitioners' work.

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3.3. Key actions to enhance vulnerability assessments

The first step towards addressing vulnerability in crises is to identify who is vulnerable and why. As showed above, BuildERS offers new perspectives on how to view vulnerability as nuanced and dynamic. These new perspectives increase the range of considerations that go into vulnerability assessments (scope), the data required to understand levels of vulnerability in an incident (levels), and ways to share this data safely and effectively (sharing). The last section here reviews in detail a few BuildERS' tools developed for these tasks.

3.3.1. Map and identify the intersections of vulnerability (scope)

- **EU:** DG ECHO should use its civil protection networks (ProCiv) to identify national instances where situational vulnerability is accounted for. BuildERS has innovated a set of indicators and a framework that can support decision makers in assessing vulnerabilities [forthcoming D6.6]. (D1.2; D1.3; D1.4; D2.5; D4.4).
- **EU/national:** DG RESEARCH and national research agencies should support research on intersectionality in different disaster situations (emphasizing situational specificities) (D1.2; D1.3; D2.2).
- **EU:** DG RESEARCH should continue support for Horizon programme theme H2020-EU.3.7.5 (including findings from the PROACTIVE and NO FEAR projects) with an emphasis on the link between communication and vulnerability (D1.4; D2.4; D2.5; D4.1).
- **EU:** DG RESEARCH should support research further exploring the link between accessible communication and mental health issues, neuropsychiatric disorders and cognitive impairments and individuals' vulnerability in crisis (D4.1).
- **EU/national:** Authorities should structure engagement between the research community, policy makers[3] and crisis managers (see process innovation in D5.2 forthcoming) to explore how analytical frameworks such as intersectionality can guide practice (D1.2; D1.3; D2.2). These frameworks could guide data collection on vulnerability (see below) (D1.3; D1.4; D2.3; D2.5).
- **EU/national/local:** Authorities can facilitate (EU) and encourage (national/local) knowledge exchange (see process innovation in D5.2 forthcoming) between different actors involved in policymaking, crisis management, and social service provision. This to ensure that the interplay of individual, socio-structural, and situational factors is better accounted for in assessments. A perceived lack of time, financial means, and personnel are examples of factors currently inhibiting such exchange (D1.2; D1.3; D1.4; D2.5).
- **National:** National agencies could integrate the BuildERS vulnerability heuristic into crisis management strategies. This framework considers the capacity to access, understand, and

[3] For the EU, this would include DG RESEARCH, DG ECHO, EU's IPCR coordinators. For national level, this includes research agencies, crisis management agencies, and Prime Minister's offices.

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react to information, as well as the individual, socio-structural and situational aspects of vulnerability (see Hansson et al. 2020).

- Actors responsible for vulnerability assessments should engage with and involve a diverse group of actors in the process of mapping and analysing vulnerabilities[4] (D2.2). Specifically:
  - **EU:** Develop guidelines including a framework of ethical principles for involving representatives of vulnerable people in vulnerability assessment and emergency preparedness (D4.4; D2.2).
  - **National:** Elaborate guidelines for engaging the members of diverse society, aiming at those who are often overlooked or neglected to be involved in vulnerability assessment at national and local levels (D4.4; D2.2).
  - **National:** Involve national level umbrella organizations of certain individual characteristics in vulnerability assessment (for instance, organizations related to specific impairments, age groups, socioeconomic conditions, family structures, social service users) (D4.4; D2.2).
  - **National:** Involve the managers of social databases in the process of conducting risk assessments to identify vulnerabilities. In this way, a better understanding of these databases may be established (D4.4, p. 68; D2.2).
  - **National/local:** Facilitate the involvement/engagement of NGOs/care organizations in vulnerability assessment and emergency planning process so that solutions to reduce vulnerability can be developed jointly. NGOs and care organizations should facilitate discussions among the participants and clients of their organizations on the vulnerabilities that may occur in crises (D4.4, p. 68; D2.2).
  - **Local:** Gather information about and strengthen cooperation with the representatives of a diverse society including organizations related to care, certain impairments, family arrangements, age groups, community organizations, cultural backgrounds to involve them in vulnerability assessment and emergency planning (D4.4, p. 68f; D2.2).
- **National:** National actors can facilitate, in support of local authorities, the creation of Vulnerability Reflection Teams' (VRT) when a crisis strikes. Akin to crisis management reflection teams designed to think 'outside the box' in the heat of the moment, a VRT can support crisis managers by considering the interplay of different vulnerabilities in different crises. This action should be funded by national governments. VRT members should be new actors, not existing ones already burdened with operational crisis management.
  - A list of critical questions could guide the work of a VRT. See Appendix D.

[4] Not only those working with crisis management should be engaged in the task of assessing vulnerability. To easier identify multitude of factors that determine vulnerability in a given situation, as well as how these may change over time, we recommend that actors from groups that are in contact with different societal groups in their everyday work are involved in the task of assessing vulnerability. These actors could be social service providers, but also decision- and policymakers in a broad range or areas, such as education and spatial planning.

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- **EU/national/local:** Initiate awareness raising activities emphasizing the need for crisis managers to account for communication-related vulnerabilities (D1.4; D2.4; D2.5; D4.1).
- **EU/national/local:** Actors responsible for vulnerability assessments need to ensure that vulnerability assessments are updated continuously (D1.2; D1.3; D2.2).
- **National**: Include the analysis of social vulnerabilities in the national risk assessments and take it into consideration in crisis management plans.

3.3.2. Obtain better indicators and measures of vulnerability (levels)

- With BuildERS results, authorities should include vulnerability measurements capturing both quantitative and relative/situational aspects of vulnerability. BuildERS' findings show how vulnerability is measured differently across countries (D2.2 and Orru et al., 2021). Some focus on quantitative measures of vulnerability (e.g., the Hazard-of-Place-Model and the Social Vulnerability Index, SoVI, see D4.4, p. 16), while others focus on assessing relative and situational aspects. These different approaches have their strengths and weaknesses (D1.3; D2.5; D2.3). BuildERS case studies highlight the value of both quantitative and qualitative approaches of vulnerability as basis of assessment (D4.4, p. 70). Specifically:
  - **EU:** Provide a catalogue of options for measuring a variety of different kinds of vulnerability, including methodologies which are GDPR compliant.
  - **National:** In practice, we recommend combining these measures, using them to check the accuracy of the other.
- **EU/national/local:** Facilitate a critical discussion on existing approaches for measuring vulnerability, to get a thorough understanding of their strengths and weaknesses. For quantitative assessments and indicators (indices), a key question is how accurate, interpretable, and thus usable for tailoring mitigation measures they are. For qualitative approaches, a central question is if these are transferable across hazard cases, across areas in country or across national contexts. The EU is well-positioned to facilitate such discussion (D1.3; D2.5).
- **National/local:** Use BuildERS indicators for vulnerability assessments. Building on the theoretical framework of BuildERS (D1.2; D1.3)[5] and findings of the theory-contributing case studies (D4.5; D4.2), the project has identified a set of indicators that can be used to assess vulnerability. However, depending on the indicators you choose to look at, different results will emerge. It is thus necessary to develop a framework to identify which indicators are important in different situations. With the help of experts in various fields, the project has thus innovated a set of indicators and a framework that can support decision makers in assessing vulnerabilities [D6.6 forthcoming].
- **EU/national/local:** Utilize existing and emerging technologies and tools that may support the mapping of individuals and groups subject to situational vulnerability (D1.2; D1.3; D1.4; D2.5). The BuildERS project has analysed a number of such tools, including applications using

[5] BuildERS proposes a matrix or tool stemming from intersectionality which can help further research on vulnerability, in addition to provide more practical considerations (see D1.3, pp. 74-78)

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mobile positioning data to better plan rescue operations [see D4.3 and D4.7] and a tool for innovative data fusion providing the methodological basis for analysis of situation-specific social vulnerabilities. This tool for innovative data fusion has developed conceptual underpinnings, data search and scanning procedures as a diagnostic tool that practitioners can use to better understand drivers and symptoms of human vulnerability [see D4.4]. Recommendations address challenges connected to the utilization of the technologies and tools developed and analysed in the project can be found below under 'Tools to support your work'.

- **EU/national/local:** Actors responsible for collecting and structuring data should work towards the following: (D1.3; D1.4; D2.3; D2.5):
  - Greater disaggregation of data to better capture social diversity. The intersectionality framework (D1.2 and 1.3) could guide data collection.
  - Data collection that captures *self-perceived* vulnerability to a larger extent.
  - Improved the timeliness of data collection to avoid stale information.
  - An extended collection of location-specific data, to better account for the situational aspects of vulnerability.
  - A minimal data policy, under which only the least amount of data needed is collected.
  - A reduction of noise. While greater disaggregation is needed, more data is not always better. The selection of what data to collect needs careful consideration.
- **EU/national/local:** BuildERS has reviewed and applied a number of innovative tools and procedures that can support decision makers in addressing these limitations (e.g., crowdsourcing, using positioning data and location-based solutions, and data sharing between authorities) [see D5.5 forthcoming].
- **EU/national/local:** BuildERS has developed innovations that can support decision makers in improving procedures for collecting vulnerability data (e.g. guidelines for authorities on how to assess crises-related vulnerabilities, and guidelines how to gather and merge data of vulnerabilities, so that the ethical issues are considered) [see D5.2, D5.4 and D5.5 forthcoming].
- **EU/national:** BuildERS' case studies (D4.4) provide a comprehensive overview of datasets in various countries. DG ECHO could include such overviews in its 'Vade Mecum' of civil protection authorities in all EU countries, for the Civil Protection Mechanism. National authorities should consider establishing similar overviews in their respective countries (D4.4, p. 70). Such an overview improves understanding of:
  - the indicators of situation-specific vulnerabilities
  - the sources of information (e.g., datasets) on these indicators
  - the ethical, judicial, and institutional conditions for using these information sources and data for vulnerability analysis.

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- **National:** Establish a better understanding of the various social databases as one source of information on vulnerabilities. Involve the managers of these databases in the process of conducting risk assessments to identify vulnerabilities (D4.4, p. 68).
- **National:** Develop the substantive and technical readiness of the necessary databases for their deployment and integration in order to obtain high-quality information on potentially vulnerable individuals (D4.4, p. 68).
- **National:** Establish a corrective structure which allows to scrutinize included data against those data, which might be overlooked and to learn from previous and future shortcomings. (D4.4, p. 68).

3.3.3. Share data safely and effectively (sharing)

- BuildERS has reviewed a number of innovative tools and procedures on data sharing between authorities, for safety and effectiveness [see D5.4 and D5.5 forthcoming].
- Create solutions that improve the transferability of data across platforms and solutions (D2.4).
- One potential reason for why sharing across organizations is limited is that personal data related to vulnerability are sensitive. Attention must be given to key challenges surrounding: (a) the technical incompatibility of different datasets; (b) data access must be limited and based on certain legal grounds; (c) an independent auditor of data protection must be in place; and, (d) data must be up-to-date and accurate.
- **EU:** Address the need to align national legislation with the GDPR, ensuring the possibility and legal basis for the use of personal data to protect lives and health in emergencies. (D4.4, p. 68)
- **EU/national:** Provide an overview and guidance on where to find existing data on vulnerabilities (D2.4).
- **National:** Establish and implement ethical principles and legal bases for the processing of personal data (synthesized from different datasets) by the authorities preparing for or resolving the crisis, including specifying measures to safeguard the rights and freedoms of the data subjects, the purposes of legitimate data use, access and sharing conditions, user accountability and monitoring criteria. (D4.4, p. 68)
- Beyond determining the legal and ethical requirements for data use and protection, the analysis in BuildERS case studies reveals 5 key preconditions for the employment of (merged) databases in determining persons in vulnerable situation prior and/or during crisis (D4.4, p. 70):
    - Good situation awareness for well-targeted data inquiries;
    - Availability of data on vulnerability factors;
    - Accuracy of the datasets;
    - Safety of databases; and,
    - Administrative and technical capacities to manage and share data.

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3.3.4. Examples of BuildERS' tools to support practitioners' work

Note that technologies alone are not sufficient to reduce vulnerability and increase resilience. Technologies must rather be linked back to social strategies (D4.5, p. 87). Below some practical tools developed by BuildERS.

Table 1. BuildERS' vulnerability assessment tool (D4.4)

BuildERS' D1.2 and D1.3 divide factors of vulnerability between **primary and secondary, see above** (D1.2, pp. 21 – 25). This vulnerability assessment tool is meant to operationalize these categories following specific crisis circumstances. The tool helps to map out the interaction of individual characteristics, social structures, existing crisis management strategies, and the ways in which they affect the individual capacity to cope with hazards and crises. To systematically consider the multiplicity of factors that may affect the vulnerability, **the tool applies the framework proposed in BuildERS D2.5** (Orru et al., 2021). By mapping risks and opportunities of using various information sources for assessing social vulnerabilities, it may serve as a basis for identifying the best combination of sources where authorities responsible for emergency response should get information about most vulnerable (D4.4, p. 70).

EU:

- Provide guidance to link the vulnerability assessment, and the elaborated tool to the risk assessment process in national regulations, and to complement the emergency plans accordingly (D4.4, p. 68).
- Address the need to align national legislation with the GDPR, ensuring the possibility and legal basis for the use of personal data to protect lives and health in emergencies (D4.4, p. 68).
- Underline the need to develop the digital databases with the high standards of cyber protection, with the opportunity to use and integrate them to support the identification of vulnerable target groups in emergencies (D4.4, p. 68).

National:

- Authorities responsible for crisis management should include the analysis of social vulnerabilities in the national risk assessments and take it into consideration in crisis management plans. The elaborated vulnerability assessment tool provides the methodological basis for such analysis of situation-specific social vulnerabilities (D4.4, p. 68).
- As a supplement to the elaborated vulnerability assessment tool, establish support prioritization guidelines which are based on ethical evaluation and criteria as well as clearly defined with regard to their use scenarios for the various vulnerable people (e.g. permanent social care clients) (D4.4, p. 68).
- Establish guidelines and ensure resources for local authorities to use the vulnerability assessment tool. The guidelines should specify how to assess the number of people with greater needs living in their area and the potential need for assistance in different crisis situations (D4.4, p. 68).

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Local:

- Consider applying the vulnerability assessment tool (D4.4) in municipal emergency planning to identify people with greater need for assistance to support their independent coping or prepare for the provision of information and assistance in a crisis (D4.4, p. 68).

Table 2. BuildERS' Dashboards using mobile positioning data (MPD) (D4.3 and D4.7)

The dashboards enable the collection of information about different population groups, distinguished on their past mobility behaviour. They show presence of people living in the area, workers, regular visitors, domestic and foreign tourist in spatial units. It also gives some additional information based on their previous mobility: how many people have a second place to go and in what kind of connection people have with distinct geographical areas, how many are regular visitors (like workers), how many live there or how many are tourists. The dashboard not only presents rescue workers knowledge of society's ordinary mobility behaviour, but it can also be used to study effects of disaster situations which can help rescue workers to prepare for future crises (D4.3, p. 54).

Currently, the use of mobile positioning data (MPD) is differently regulated in various countries and there are insecurities in future accessibility to data. This restricts the use of the dashboard geographically and puts rescue workers in a doubtful situation: should they make investments to start using such a tool, if, at some point, they cannot add new data into it (D4.7, p. 39). For actors considering using MPD, we recommend:

EU:

- Develop clear laws about passive usage for dashboards similar to the one developed in BuildERS (D4.3, p.55; D4.7, p. 39).
- Standardized MPD usage, including having unified definitions. This speeds up scientific and technological advancements in the use of MPD in disaster management. (D4.3, 55; D4.7, p. 39)
- Consider adding main indicators of MPD to the composition of official statistics so that simpler indicators could be used to solve everyday problems (D4.3, p. 55). Many of the institutions would not necessarily need access to all using opportunities of the dashboard but only some (perhaps more aggregated) statistics, but if they had all the knowledge of the main indicators, all institutions would have a more unified overview of the situation D4.7, p. 39).
- Allow MPD to be used for scientific researchers so that new dashboards, applications, and solutions could be developed. This would allow for scientific and technological advancements in the use of MPD in disaster management (D4.3, p.51f). Restricted data access risks to drastically slow or even stop scientific and technological advancements in the use of MPD in disaster management.

National:

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- At times of widespread power outages there are issues in mobile phone coverage. This could be resolved by setting a minimal timespan for mobile phone towers. Hazard of cell coverage loss can be integrated into risk analyses. (D4.3, p.51)

National/local:

- Facilitate cooperation between rescue workers and scientific community to identify new vulnerabilities in disaster situations. The dashboard we have presented distinguishes between population groups that are common in regular situations - residents, workers, tourists etc. Methodologies to distinguish people with multiple homes, people who move between two or more places very often etc. should be developed. With the information of these additional groups, rescue planning with these dashboards could get even more exact.

Further issues to consider for final recommendations (D5.3):

- Points to consider when applying these in different situations and contexts.
- Guidance on how to tackle practical difficulties and how to prioritize

3.4. Key actions for helping persons in vulnerable situations

After identifying who is vulnerable and why, the next crucial step is to address the vulnerabilities and build capacities. This can be done by developing policies aimed at increasing preparedness, tackle vulnerabilities, and ultimately build resilience.

BuildERS' results show how many governments pursue strategies where the responsibility for resilience-building is largely placed on the individual (D2.2 and Orru et al., 2021). At the same time, unequal capabilities of marginalized individuals and groups to prepare for and cope with crises are often overlooked. A lack of centralized responsibility for resilience-building may accelerate vulnerability and inequality over time. We thus recommend that governments avoid placing individual responsibilities at the centre of resilience-building, and instead increase their efforts to provide necessary support structures and functions. While citizens can take responsibility for their own crisis preparedness and support each other to a certain extent, such support cannot substitute institutional responsibility (D2.2; D2.5)

BuildERS' case studies look closely at three categories of groups and individuals (1) specific groups who are currently assumed to be vulnerable (WP3; T4.1; T4.6), (2) those who are currently not described as vulnerable (T4.2; T4.3; T4.7), and lastly, (3) takes an open approach not focusing on specific vulnerable groups, but rather builds on the perspective that every citizen can become vulnerable (T4.4 and T4.5). BuildERS has scrutinized and identified the various drivers of vulnerability for these different groups of individuals in various crises and phases of crises. We may thus offer recommendations to address the identified challenges for various societal groups in different crises, as well as ways to overcome shortcomings in current disaster management procedures.

In this section, we propose a set of recommendations aimed at improving strategies to reduce vulnerabilities. One crucial part of this is the proposal of actions aimed at enhancing institutional responsibility for resilience building. Given that BuildERS has scrutinized and analysed various drivers of vulnerability for different people in various crises and phases of crises, we can propose targeted strategies, pointing at concrete support structures and functions that governments can provide to

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address different drivers of vulnerability, in different crises and in different phases of a disaster (pre-, during, post-). This, to tackle vulnerabilities, increase preparedness and capacities, and ultimately build resilience.

We divide our points here between *processes* for improved policy, *content* for improved policy, and ideas for enhancing *public support* especially in the long-term.

Ethical considerations

- When acting to reduce vulnerabilities and enhance preparedness, ethical considerations must be kept in mind. It should be ensured that unjustified unequal treatment of different groups does not follow from the policy or associated action. If unequal treatment follows, this should be justified according to an articulated set of values. Policymakers should moreover bear in mind who could be discriminated or stigmatized by the policy or associated action. Questions to consider include: Does the action discriminate or stigmatize those who are underreported and do not engage with authorities in order to prevent a worsening of their situation? For more information on ethical considerations to consider when implementation these recommendations and action points, see Appendix B (also in D7.4).

3.4.1. Processes for improving policy

- Ensure an active involvement of representatives of marginalized people when developing strategies for tackling vulnerability. Such involvement could result in a shared understanding of the sources of vulnerability, new knowledge, a common language to discuss issues related to vulnerability, and ownership of the process and resulting policies and interventions. Such outcomes support the effectiveness and uptake of proposed strategies (D2.2; D1.3)
    - Reflect on who to include and to what extent. Take active measures to avoid participation or involvement without the ability to influence the process and outcomes (D2.2).
    - Document who was included, ensure continuous reflection on potential exclusions, and remain open for adjusting the engagement strategy as the process evolves (D2.2).
- **National/local:** Facilitate debates on what responsibilities governments, authorities, communities and individuals have in terms of building resilience and reducing vulnerability. These debates could be held at, for example, public political gatherings (e.g. Almedalen in Sweden and Arvamusfestival in Estonia), at civil protection related stakeholder forums, or as foresight exercises for preparedness planning. Such events could be complemented by public media campaigns, opinion pieces in local newspapers, and discussion programs at the local broadcasting (D2.2; D2.5).
- **National/local:** We recommend a closer collaboration between social service providing and emergency management institutional actors, and the latter and the social policy makers. This might increase the scope of understanding of the risk-enhancing factors and facilitate channelling of public resources to where the deficiencies are the most alarming (D4.5, p. 46).
- **Local:** Enhance collaboration between disaster management and social services. The success of social support structures to become active and help citizens during crises is based

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on financial support and knowledge of who needs help and of what nature. A close collaboration with disaster management is thus needed (D4.5, p. 46).

- **EU:** To avoid overlaps in the assistance delivered by NGOs and care organizations, the EU should strive towards enhancing coordination of these organizations. We propose the EU to implement a disaster management plan that allocates different tasks to different types of NGOs. Such plan could be inspired by the UN cluster system for humanitarian aid and international development: https://www.humanitarianresponse.info/en/coordination/clusters/what-cluster-approach

3.4.2. Content for improving strategies

- **EU:** Explore possibilities to use the EU Civil Protection Mechanism (EUCPM) to disseminate and coordinate new approaches to handling vulnerable groups (D2.2, pp. 51-52 and Orru et al. 2021)
- **EU/national:** Ensure that vulnerable populations are not only included in disaster planning but are also explicitly mentioned with funding set aside for each segment of the population
- **EU:** During the times of crisis, enforce stricter implementation of the European pillar of social rights, and the principles of non-discrimination and equality as outlined in the EU Charter of Fundamental Rights, the Racial Equality Directive, and the Council Framework Decision on Racism and Xenophobia.
- **EU:** Initiate training activities emphasizing the need for crisis managers to account for communication-related vulnerabilities, particularly the individual, social-structural as well as situational challenges in accessing, understanding, or reacting upon risk or crisis information. (D1.4; D2.4; D2.5; D4.1)
- **EU/national:** Allocate specific funding and draft/implement an action plan to address mental health outcomes for different segments of the population following a disaster.
- **National/local:** Recognize and focus especially on groups that BuildERS identified (WP3 forthcoming) to have a higher risk of becoming vulnerable to negative mental impacts e.g.:
    - Women;
    - Migrants, asylum seekers, and individuals without documentation;
    - People who are more exposed to the hazard (cf. Portugal in the case of Covid-19);
    - Individuals who have been exposed to previous hazards (cf. wildfires);
    - People who experience negative material impacts of disasters (cf. the pandemic has had a negative effect on my income, access to shelter, food, hygiene/health facilities);
    - People living in their home who have a high risk of becoming vulnerable;
    - People with psychological diseases (depression, schizophrenia, personality disorder)
- **National/local:** Formulate strategies and create an action plan to address mental health outcomes for different segments of the population following a disaster.

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- **National/local:** In strategies, consider formulating countermeasures to countermeasures. For instance, Covid-19 induced loneliness due to social distancing requires countermeasures of combating mental health related issues (D4.5, p. 78).
- **National/local:** Allocate resources to increase the capacity of local/national authorities and other crisis management actors to address communication-related vulnerability (D1.4; D2.4; D2.5; D4.1).
- **National/local:** Close the gap between disaster management and social services risk to induce communication-related vulnerabilities. Improve communication between different bodies such as disaster management teams and social service providers so the two can utilize their capacities more efficiently and be more readily available for those who are in greater need. Shortcomings with regard to accessibility not only link to shortcomings in disaster, but also how a lack of exchange and interaction between crisis management and social politics tends to amplify these shortcomings rather than addressing them as long-term strategies they could benefit both (D4.5, p. 74).
- **National:** Develop clear standards for equal rights to communication (D1.4; D2.4; D2.5; D4.1).
- **Local:** BuildERS' findings show how vulnerabilities are context-specific and need to be handled at the local level. We recommend that crisis managers at the local level account for individual vulnerabilities to a larger extent than what is currently done (D2.2; D2.5).
- **National:** Develop dedicated strategies to support individuals in building individual preparedness and self-help capabilities. Increase the efforts to provide the necessary support structures and functions to support individuals in this effort (D2.2; D2.5; D4.5, p. 44).
- **National/local:** Provide greater education related to crises and disasters. Digital tools and physical trainings should be widely available and accessible (D4.5, p. 73).
- **National/local:** Use awareness-raising campaigns to foster a positive discourse towards accepting help from authorities and different bodies who help during crises (D4.5, p. 49, 78).
- Allocate resources to improve individual trait resilience capability. This has been shown to be a major protective factor against the stressful event of being displaced. This is a difficult task, given that trait resilience capabilities are generally linked to personality traits and higher age. Among young adults, one possibility could be to increase the availability of social support (D4.2, p. 58).
- Allocate resources to improve place attachment before a disaster. BuildERS case studies revealed that individuals who were more attached to the place and to the community they lived in before the disaster were better capable of reducing the negative effect of the displacement (see D4.2). Place attachment is created by the interconnection between the environment and the individual through its social behaviour (Low and Altman, 1992). Here are some suggestions on how to improve place attachment:
    - Encourage city planners to design environments and create spaces that afford different opportunities for 'meaning-making' (shared understanding) by diverse users. Municipalities could motivate citizens to populate those places (Raymond et al., 2017).

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- **National/local:** Improve and implement displacement plans prior to an emergency. BuildERS case studies (see D4.2) identified the environment as a crucial factor influencing the wellbeing of displaced individuals.
    - Pay close attention to the quality of the environment surrounding the temporary housing and the place where the temporary housing is located when planning displacement sites.
    - Displacement sites should seek to replicate the lost community environment or be located in such a way that the original community environment is preserved and easily accessible to residents (D4.2, p. 58).
- **National/local:** Carry out interventions that reduces the risk of having to displace individuals for longer periods (more than one month) following an emergency. BuildERS case studies found that displacement of individuals following an emergency produces vulnerability (D4.2, p. 58)
    - Structural interventions to make buildings more resistant to natural disasters of all kinds (seismic events, but also floods, tornadoes, landslides, and volcanic eruptions). For this purpose, all traditional policies (laws and incentives) can be used as well as more innovative policies, such as behavioural interventions (nudges) (D4.2, p. 58).
- **National/local:** Allocate resources that make resilience-building activities affordable and accessible to all individuals and groups (e.g., earthquake securing housing in earth-quake prone areas, purchasing disaster-related insurance) (D2.2; D2.5).
- **National:** Consider using applications utilizing mobile positioning data (e.g., the BuildERS Dashboard innovated in the project, D4.3 and D4.7) in the planning of evacuations. This could be useful as it surpasses traditional sources of population statistics (D4.3, p. 55).
- **National:** Dashboards using mobile positioning data can be used for risk analyses, urban and regional planning, and disaster management strategies in general, especially in areas where there are heightened risks for disaster (threat of floods, storms, or man-made disasters) (D4.3, p. 55).
- **Local:** Historical data from the dashboards using mobile positioning data could be included into local disaster plans. It holds a potential of being a highly valuable asset to practitioners in the pre-crisis phase as they may learn from past crises and events [see D4.3 and D4.7].

3.4.3. Enhancing public support structures

- **EU/National/local:** Public funding should follow the enhanced assessment of vulnerability set out in BuildERS. Our research showed that certain groups, like migrants and newly unemployed, were denied funding (WP3 forthcoming).
- **National/local:** Local authorities and national governments should acknowledge that existing marginalized and disadvantaged groups are usually hit the hardest in crises. This points to the importance of reducing inequalities generally, e.g., by ensuring equal access to education, housing, and health care (D2.2; D2.5).

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- **EU:** Make better use of the European Pillar of Social Rights - particularly regarding enhancing the social safety net and support (i.e., unemployment) especially during cries.
- **EU/national:** Increase funds for integration to reduce language and cultural barriers.
- **National:** Consider psychological support not only as an issue for social services but also as a 'disaster management' related issue[6] (D4.5, p. 48, 79-80).
- **Local:** Improve provision of psychological support to maintain and strengthen resilience and coping capabilities (D4.5, p. 46).
- **Local:** Allocate resources to boost the capacity and build quality of mental health services (D4.1, p. 16).
- **Local:** If the crisis requires isolation, authorities should consider offering a combination of digital counselling and should be able to tailor physical solutions to keep individuals in isolation supported. Social services providers were less able to physically help those in need of counselling or day-time care (D4.5, p.51) e.g., individuals turning to day centres (homeless people, disabled, mentally fragile). During the Covid-19, residential organizations put in investments to keep their clients entertained through offering alternatives to meeting in person (WP3 forthcoming). We thus recommend addressing the following key concerns:
    - How to give consultations without meeting in person;
    - How to physically accommodate and feed the increased numbers of service users (lack of space, lack of resources);
    - What messages to present to the clients, how to argument for restrictions and safety needs;
    - Organizing digital counselling.
- **National:** Consider extending the social support system to allow social service personnel and volunteers to leave their children at day care centres (D4.5, p. 83-84). This could be facilitated if social service personnel are defined/considered as part of "critical personnel" during crises (WP3 forthcoming).
- **Local:** Provide more adjusted means for the elderly (who are less willing to use digital tools) and for the mentally and physically disabled (who are less able to use digital tools) in order for them to be well-informed of updated information, receiving help during a crisis. (e.g., inclusion of sign language, wheel-chair accessible means for evacuation etc.) (D4.5, 41).
- **Local:** Allocate resources to ensure ongoing funding for social services in order to be more active and readily available during crises rather than crisis management taking the entire workload (D4.5, p.75).

[6] During Covid-19, there was a lack of psychological services as it was viewed as a 'social service' issue not a 'disaster management' related issue during Covid-19 and the public complained that there was a lack of government initiative in this regard as psychological help was much needed during Covid-19 as opposed to the flooding crises where people handled the situation relatively well.

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- **National/local:** Identify and support those who go ‘unseen’.
    - Enhanced collaboration between social service providers and crisis management may help identify and support these people. Social services may be more proactive than crisis management teams who offer support to those who voice their need for help rather than looking for individuals who may or may not need support thus, vulnerable people can go ‘unseen’ (D4.5, p. 77)
    - Representatives and advocacy groups can push for greater inclusiveness whereby vulnerable individuals do not go unseen and are assisted by disaster management teams and are included in the measures rolled out during crises (D4.5, p. 82-83). Thereby, as part of the bonding, bridging, and linking strategy, people in power can help link resources to institutions/organizations thus linking them to those who need assistance.

Further issues to consider for final recommendations (D5.3):

- Points to consider when applying these in different situations and contexts.
- Guidance on how to tackle practical difficulties and how to prioritize

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4. Recommendations for building social capital

BuildERS conceives of social capital as a core component of our other goals – lowering vulnerability and raising risk awareness – while directly impacting upon our central mission of increasing resilience. However, social capital is perhaps the least 'engineerable' of our goals. It cannot always be directly improved through governmental intervention. It often relates to broad -- even historical -- structures in society. And even high levels of social capital do not guarantee optimum outcomes. For example, crises demanding social isolation (e.g., pandemics) can undermine individuals with high levels of social capital and can leave them more vulnerable, not least in psychological terms. Acting to improve social capital – like lowering vulnerability and raising risk awareness – requires a greater understanding of the phenomenon in question and the individuals we aim to help. This call for action based on thorough and subtle understandings is a hallmark of BuildERS' research.

This section focuses on two core aspects of social capital examined by BuildERS: (a) the presence and role of social support networks and (b) the role of volunteers in building social capital. We provide suggestions on how to systematically work with informal support groups in crisis and disaster situations. While social support networks cannot substitute institutional responsibilities, there is large potential for resilience-building in identifying, supporting, and collaborating with the informal support networks that exist in a society and emerge during crises. We also highlight that the benefits (and sometimes drawbacks) of high social capital is highly contextual and situational (D1.2, p. 46; D3.2, p. 54; Morsut et al. 2021, forthcoming; D4.2 and WP3 forthcoming), and give recommendations on how to avoid negative effects of high social capital.

As previously, we begin by outlining findings before (a) encouraging new perspectives, and (b) outlining concrete, key actions.

4.1. Main findings

BuildERS defines social capital as the networks, norms, values and trust that entities (individuals, groups, society) have available, and which may offer resources for mutual advantage and support and for facilitating coordination and cooperation in crises and disasters. We distinguish between **bonding** capital (family, closest friends), **bridging** capital (neighbourhood, local community), and **linking** capital (e.g., trust/relationship to authorities and institutions) (D1.2, p. 36). BuildERS' analysis focused on the different kinds of social capital available to individuals in different contexts. We studied the availability and quality of social networks, for instance, the extent to which volunteering was encouraged or discouraged. We have also studied how different kinds of government tackle these dimensions.

Our research includes general and specific findings. Generally, we confirm that high levels of bonding social capital will enable people to cope better before, during and after disasters, as this can provide them social support, access to information, etc. High levels of linking social capital will enable people to cope better before, during and after disasters, as this can provide them social support, access to information. Bridging capital was difficult to detect. Specifically, our research shows that the impact of different dimensions of social capital on disaster resilience is highly contextual. We see that outcomes vary depending on the situation in question and the interaction between specific aspects of social capital with other important socio-economic factors (D1.2, p. 46; D3.2, p. 54; Morsut et al. 2021, forthcoming). For instance, vulnerable people may have deep reservoirs of bonding capital, allowing them to survive crises, while lacking linking social capital that allows them not only to survive but to do so optimally ('to thrive') (D1.2, p. 37).

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One of our main findings is **the inadequate attention to, and use of, social support networks** by governments. This despite the fact that, as BuildERS shows, pre-crisis social networks can provide critical support during an actual crisis. Social support networks are one way to raise informal support structures in society. Maintaining and using these social networks is also key to crisis preparedness. This is highly relevant in remote areas which may be difficult to reach, for instance, but also in urban areas, where it is easier to remain anonymous and to be left out (willingly or not) of social networks (D2.2., p. 43). BuildERS' research has shown that in countries where the volunteer system is very weak, or where informal volunteers are not dealt with at all (no existing volunteer system), social support networks tend to be weak (and vice-versa). In some countries, we observed that community-based activities of social support networks (Estonia, Germany) took place as something extra – beyond municipal voluntary service groups and institutions. In the crisis preparedness guidelines issued by the authorities in many of the analysed countries, the role of the citizen is generally reduced to self-preparedness. The idea that individuals could offer support to other people living in their community, particularly those who may lack the capacities to cope on their own, is rarely featured in preparedness guidelines and must be better integrated (D2.2, p. 43-44).

Indeed, BuildERS research has shown that social support networks are handled in different ways in European countries. It was found that there is **no systematic approach to building social support networks as part of resilience building**. Authorities tend to have poor knowledge of which informal support groups exist and how to work with them- practically in crisis situations (D2.2, p. 5, 44). With a few exceptions, systematic approaches to strengthen the ability of social support networks to help individuals and groups in crises are not common in BuildERS' case study analyses. Social support networks are sometimes mentioned in strategies for crisis management. While citizens are sometimes encouraged to 'support each other' in times of crisis, little guidance is offered on how this support should be organized (D1.4; D2.2). Thus, opportunities to build social capital go unexploited

Builders research also confirms that **volunteering is an untapped resource**. Volunteer networks can enhance opportunities for harnessing social capital during a crisis. Volunteering can be formal or informal. Formal volunteers are often recognized in countries' crisis management strategies. In parallel, informal volunteering is becoming increasingly common in crisis situations. Indeed, we believe that informal volunteer networks may play an increasingly important role in crisis management in the future.

BuildERS confirms that volunteering, both formal and informal, comes with a number of opportunities and challenges (D1.2). Our results show that formal and informal volunteers operating in parallel may create tension. Informal volunteers, by definition, are often the first to come to peoples' aid but lack training and competence. Conflicts have resulted from unclear division of responsibilities, misaligned expectations, and a general lack of coordination. Similarly, conflicts can emerge when paid volunteers (a practice in some European countries) receive the same compensation for their work, despite having significantly different qualifications and levels of experience, as regular first responders (D1.2; D6.2).

Informal volunteers, especially, are seldom recognized as a crisis management resource. As a result, they lack training, integration with existing structures, and ultimately, accountability. They self-organize, oftentimes using social media to mobilize. This can create problems that must be addressed. To make the most out of this resource, authorities must consider the pros and cons of volunteer activity. Below we offer a checklist of questions for authorities to consider when integrating volunteers in existing disaster and crisis management plans. A caveat is in order, however: one of our case studies, on Germany, revealed that while informal, un-institutionalised support networks are an important (in many cases, the main) source of support, those networks can disintegrate quickly

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(BuildERS Report 2 May 2021, p. 57-58). As such, another BuildERS message surfaces again: volunteerism, self-organised networks, self-reliance can never replace an engaged and dedicated state apparatus in crisis and disaster management.

Lastly, BuildERS research uncovered a curious finding: **that high social capital is not always a pure benefit**. Different forms of capital (outlined above) matter to different kinds of people in different kinds of situations. For instance, in the Covid-19 pandemic, BuildERS shows that individuals with higher level of linking social capital responded well to government edicts (i.e., social isolation, washing hands etc.), but struggling the most with mental health issues that can be alleviated with bonding capital. Individuals living on the street and under temporary conditions have the lowest level of both linking (trust in authorities) and bonding (family, close friends) capital and suffered accordingly (WP3 forthcoming). Similarly, social capital can be a double-edged sword, helping in-groups recover more effectively but at the same time slowing or halting rebuilding for those with fewer social resources (D1.2, p. 46; Morsut et al., 2021 forthcoming). We also found that high social capital is not a guarantee of effective coping. Individuals who lived in a large network, with many friends to count on, were not better off when they were displaced compared to others. Instead, we found that the individual resilience capability (personality trait), the place attachment (identification with community etc.), and satisfaction with the environment (surrounding the temporary housing) serve as protective factors in post disaster displacement (D4.2). Perceptions matter, too: an individual's impression of low social capital does not always correlate with reality, and vice versa. This makes it difficult for practitioners to build trust.

These findings are consistent with BuildERS' view of vulnerability – it is intersectional and situational– the different kinds of social capital (bridging, bonding, linking) play different roles in different phases of disasters (pre, during, post-disaster) (D3.2, p. 45). This highlights the need to build social cohesion in order to foster solidarity during crises. It moreover emphasizes the need to focus on the structure and functionality of social networks to build resilience.

4.2. Need for new perspectives

Social capital building requires a more nuanced understanding of what social capital is, who benefits from which types, and what actions can be taken to build it in the short- to-medium term. The sources of social capital are diverse, ranging from family to society writ large. Such sources cannot be easily bolstered through government action. But steps can be taken.

One is to change ones' mindsets about what social capital is. By disaggregating social capital into its bonding, linking, and bridging variants, specific actions can be targeted to improve each. Bonding and bridging social capital can be concretely enhanced through a more systematic approach to social support networks available, or not, to different individuals. This does not require atomised analysis of each individual, since even a general understanding of different groups' different forms of social capital is a great improvement from what currently exists. Social support network-building requires greater government involvement in supporting interaction and collaboration of care givers, first responders, and local authorities (for example).

This collaboration can (a) first help to map patterns of low vs. high social capital in certain groups and (b) then help to build networks to overcome deficiencies in bonding vs. bridging capital. On the first point, national level authorities should consider commissioning research on existing social support networks and how they function in crisis. Not only the size and structure of social support networks

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need to be mapped, but also the 'quality' and diversity of social relations need more attention (including both physical and online contacts). Important, but often overlooked, factors to consider include family ties, trust (both in other people and in institutions), culture, religion, motivations, skills, and resources. This research can inform strategies on how to better integrate these networks in crisis management strategies (D1.2). A nuanced understanding is required here, too. For instance, social capital stemming from family sources (bonding) means nothing if the home is an unsafe place to be because of abuse. In short, the drive to overcome social capital deficiencies requires hands-on, sustained work from public authorities – a new perspective not always included in crisis management planning.

Linking capital refers to trust in authorities, and the perception that support will be forthcoming in a disaster or crisis situations. BuildERS' research on vulnerable populations in different countries confirm that past experience (e.g. police brutality) can inhibit trust, and lead to individuals choosing to remain vulnerable – a reality that must be accepted (D4.5). However, thoughtful approaches to social capital building – mainly before but also during a crisis – along with an effort to thoroughly understand different vulnerabilities – can go a long way towards this task. We must also admit that broader societal practices and conditions, such as discrimination and inequality, undermine solidarity and impair social capital (D1.2, p. 46). Governments interested in effective disaster and crisis management, must consider the broader structure of society and what can be done to build bridges across different groups and reduce inequality. We are under no illusions as to the magnitude of this task.

More practically, the complexities of social capital requires practitioners to embrace a paradox: social capital building takes place at the individual and group level, and is not easily engineered from above. But that does not absolve governments from acting. **Direct and active engagement in helping to build social support networks** (see key actions for this below) are required. Disaggregating crisis management activities, into ones that build or undermine bonding, bridging, and linking forms of social capital, would help achieve multiple goals – increasing risk awareness collaboratively, through close-knit social networking, for instance – which would also enhance preparedness *and* build bonding capital in vulnerable groups.

The role of volunteers requires a rethink in government perspectives. Volunteering during crises has the advantage of boosting resources during a crisis, building social bonds, and educating citizenry for the next crisis. But it also comes with drawbacks. As mentioned, formal and informal volunteers operating in parallel may create tension. Untrained volunteers may cause more trouble than good (indeed, Italy actively discourages them, while in Norway to not assist may mean breaking the law). But BuildERS sees ignoring the potential benefits of volunteers as a missed opportunity in a world of increasing crises and fraying social fabric. Practitioners could **begin taking the role of volunteers seriously but carefully, across Europe.** This involves systematising and structuring protocols for the role of volunteers in crisis situations. A clear division of tasks and responsibilities is needed (D1.2; D6.2). Educational campaigns could improve volunteers' readiness while simultaneously improving their own preparedness. BuildERS offers further ideas below, including state assistance for work on volunteer selection, training, and management in collaboration with public and non-profit sectors (D1.2; D2.2; D6.2). The use of social media to identify, coordinate, train, and inform volunteers in all stages of the crisis cycle is possible (D1.4; D2.2). BuildERS research also provides examples of regulated and highly formalized ways of collaborating with volunteers: including the Estonian, Finish, Norwegian, and Hungarian country cases of institutional arrangements of resilience management (D1.2; D2.2). Moreover, non-profit organisations like the Red Cross have ample experience in working

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with volunteers. We see lesson-learning across countries and organisations as a task that can be facilitated by EU authorities in civil protection (DG ECHO).

4.3. Key actions to strengthen and encourage informal support

Our recommendations focus on how governments can build social capital through enhanced social support networks and systematized volunteering. Our recommendations strongly encourage more research attention to this poorly understood phenomenon. Since social support networks are so context specific, we direct most of our recommendations here to the local and national level.

Ethical considerations

- ❖ When acting to strengthen and encourage informal support and volunteering to build social capital, ethical considerations must be kept in mind. It should be ensured that, if informal and formal volunteers are included and exposed to traumatic events, adequate stress management support should be provided. In this way, negative side-effects, such as stress reactions such as PTSD can be avoided. Furthermore, considerations on insurance have to be included. For more information on ethical considerations to consider when implementation these recommendations and action points, see appendix B (also in D7.4)

4.3.1. Map and strengthen existing support networks

- ➢ **National/local:** Authorities should commission research on existing social support networks and how they function in crisis. This research can inform strategies on how to better integrate these networks in crisis management strategies (D1.2).
- ➢ **National/local:** Authorities should elaborate strategies to strengthen local social support networks' capacity in crisis prevention, preparedness, response, and recovery. Marginalized groups need to be included in such efforts (D1.4; D2.2).
- ➢ **Local:** Local level authorities should encourage and facilitate volunteer organisations (i.e., the Home Guard) to collect information regarding the capacities of their community. Such mapping could consist of mapping people's contacts, what they have in terms of resources and preparedness, and what they would need in crises. This would not only allow for a mapping of social networks but would also strengthen existing networks.
- ➢ **National/local:** Strategic level crisis managers should team up with local level authorities to develop systematic approaches as needed to encourage volunteerism through the establishment of social support networks. That includes, for example, investing means to support the work of community organizations to strengthen social networks that can be used in crises (D2.2, pp. 5, 47).
- ➢ **National/local:** Authorities should give specific guidance to private persons (civic preparedness guidelines) on what kind of informal voluntary help could be offered during crises (e.g., how to identify persons in vulnerable situation during crisis; offering to charge phones or batteries) (D2.2, p. 5).

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- **Local:** Community organizations and networks should be encouraged to increase the 'everyday' quality and quantity of social networks through, for example, community events to boost resilience (D2.2, p. 47).
- **Local:** Community organizations and networks should be encouraged to invest in social support network building in activities and events specific to crisis and coping (D2.2, p. 47).
- **Local:** Community organizations and networks should be encouraged to engage with the community emergency plan including collaboration with vulnerable people, and how you can contact each other in case of crisis (D2.2, p. 47).
- **National/local:** Allocate resources to expand the activities of existing community organizations (e.g., apartment unions, village movements, and sport clubs) to also include crisis preparedness and response activities (D1.4; D2.2).
- **National/local:** National/local governments should allocate resources to the provision of training for community leaders, to increase their ability to lead their communities during crises. Such training should span across sectors and geographical areas, to build social support networks with wide reach (D1.4; D2.2).

4.3.2. Coordinate, collaborate and support

- **EU:** Agencies and DGs should take a more active role in coordinating volunteers (both formal and informal) across borders, e.g. like the *EU Aid Volunteers initiative* funded by DG ECHO and managed by the EU Executive Agency for Education, Audiovisual and Culture (EACEA) [https://www.aidvolunteers.org/en/eu-aid-volunteers/] (D1.2; D2.2; D6.2). Guidelines and good practice in coordinating volunteers. Training local authorities to work with volunteers more effectively should be encouraged.
- **EU:** DG REGIO should continue to support the volunteer sector and promote cross-border volunteering through EU funding programs in different policy areas and through EU cohesion policy programs. The EU currently offer several funding opportunities for volunteers and volunteering activities within various programs, e.g., the European Voluntary Service (EVS) or the Youth in Action program. Cluster 3 of the upcoming Horizon 2020 programs could specify funding opportunities in this area.
- Enhance collaboration between authorities and formal volunteers. In this way, coordination of volunteer networks can be improved, and efficient resource allocation ensured (D1.2; D2.2).
    - **National/local:** From the side of national/local authorities, collaboration can be enhanced by inviting formal volunteer organizations to take an active role in crisis management, information sharing, and training events (D1.2; D2.2).
    - **National/local:** BuildERS' findings emphasize that must understand how volunteers organize in order for collaboration to work well. Formal volunteer networks can promote collaboration by, for example, using the same language as authorities working with crisis management and by participating in events and conferences that provide space for knowledge exchange (D1.2; D2.2).

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- BuildERS' results show that formal and informal volunteers operating in parallel may create tension. Conflicts have resulted from unclear division of responsibilities, misaligned expectations, and a general lack of coordination (D1.2; D6.2). Coordination between formal and informal volunteers should thus be facilitated (D1.2; D6.2).
    - **National/local:** Allocate resources to ensure better coordination and a clear division of tasks and responsibilities between informal and formal volunteers. Moreover, expectations should be outlined (D1.2; D6.2).
    - **National/local:** Facilitate dialogue between the official crisis managers and the volunteer organisations to enable common understanding of the rules and processes (D2.2, p. 47).
    - **National/local:** Establish channels of communication between formal and informal volunteer groups (D1.2; D6.2). Through better communication with self-organized volunteers, misunderstandings and conflicts that might otherwise occur may be avoided (D2.2, p. 42).
- **National:** Provide additional formal support to involve and coordinate with informal volunteers. This includes allocating more resources to enhance their capacities (as some nations refuse to involve untrained volunteers) (D2.2, p. 52f).
- **National:** A differentiation must be made between formal and informal volunteers in state regulations and guidelines (D2.2, p. 42).
- **National:** Allocate resources to ensure better coordination and a clear division of tasks and responsibilities for formal and informal volunteers. Additionally, manage expectations and establish clear ways of communication between formal and informal volunteer groups.
- **Local:** Local authorities should find structured ways to instruct informal volunteers about the crisis situation and possible auxiliary measures and tasks. BuildERS' findings indicate the informal volunteers support the 'formal' responders the best when they have adequately been instructed about these issues (D2.2, p. 42).
- **National/local:** Encourage citizens to support social services or subscribe to neighbourhood support services. Strategies and tools to strengthen support networks and encourage volunteering and civic engagement are outlined below.

4.3.3. Tools to engage informal volunteers

- **EU:** Carry out awareness raising activities regarding the different forms of volunteering that exist (D1.2).
- **EU**: BuildERS has co-created a catalogue of good practices in informal volunteer action that can be the source of training and lesson-learning by the Commission's DG ECHO [see D6.6 forthcoming].
- **National/local**: Yet authorities must answer some tough questions regarding the role of informal volunteers and learn from the non-profit sectors' experience in working with volunteers. One of our deliverables offers a checklist, reproduced here (D1.2; D2.2; D6.2):

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- To what extent should training or professional skills be required for informal volunteers?
- To what extent should informal volunteering be institutionalized and regulated in the future?
- Can we actually plan with their capacities?
- If we plan with the capacities of the informal volunteers, could that be used as an argument to reduce professional capacities and thereby save resources?
- How can informal and formal volunteer networks be mutually supporting?
- How can informal volunteer networks best be reached? What type of information do informal volunteer networks need to work effectively?
- What can be expected from them?
- How can the supply and demand for volunteering services be matched?
- How can informal volunteers be coordinated across national borders?

- **EU/national:** Allocate resources to coordinate the engagement of informal volunteers in crisis management system, including across country borders. EUCPM should offer training to help with informal volunteers.

- **National/local:** Crisis management institutions, local authorities, NGOs/NPOs and citizen organizations should better prepare to receive help from informal volunteers. For example, structures for handling volunteers should be established (online or in person), and resources should be set aside for volunteer selection, training, and management (D1.2; D2.2; D6.2).

- **Local:** Official responders should implement trainings and exercises that focus on quick recognition of emergent volunteer capacities, assigning appropriate tasks, quick instructions, and target-oriented coordination (D2.2, p. 47).

- **Local:** Official responders should encourage debates over the role of citizens and volunteers as potential resources to organising crisis preparedness, response, and recovery activities (D2.2, p. 47).

- **Local:** Official responders should develop regulations and operational principles for engagement of informal volunteers, i.e., additional liaison officers, system to pre-register, greet and note to avoid immediate rejection (D2.2, p. 47), as well as principles for stress management following exposure to traumatic events.

- **National/local:** Authorities should carry out awareness-building activities that encourages informal volunteerism and solidarity (should focus on also supporting one another) (D2.2, p. 41f). Such campaigns should not only focus on self-help and enhancing individual capacity, but also advising citizens on how they can support others if need be (neighbours, individuals with impairments, individuals who do not speak language etc.) (D2.2, pp. 41-43). Examples of such initiatives can be found in BuildERS research of country cases:

  - Belgium: Has a webpage (“info-risques.be”) on which citizens are informed of actions and recommendations to help themselves and others (a greater sense of solidarity).

  - Norway: Municipalities are actively involved in advising individuals and raising awareness including emphasis on those who have impairments or do not speak English or Norwegian.

  - Estonia: Crisis preparedness focuses on communal help along with guidelines and advise on their app “Be Ready!”

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- **National/local:** Invest in training to increase practical skills (D2.2, p. 41f). BuildERS' findings from country cases highlight that such trainings could consist of
    - First aid training, including first aid lessons to pupils in secondary schools.
    - Skills to cope and help in extreme conditions
    - The need to acknowledge certain groups, such as the elderly, refugees etc.
    - Offer support to the individuals considered most vulnerable (elderly with impairments).

- **National/local:** We recommend training to be free and open to everyone. If applicable, consider also targeting individuals in school, thus providing trainings also to younger groups. One BuildERS country case (Estonia) also provides training for school children and encourages training with families, with communities etc. (D2.2, pp. 42-43).
- **National/local:** The practices for engaging local support networks vary between European countries. Some country cases have very minimal or hardly any evidence of encouraging local support networks (Belgium, Sweden, and Norway), whereas other employ some activities to encourage local community members joint coping in crisis. Some examples on how to engage local support networks:
    - Estonia: has several initiatives such as funding and short-term programs to encourage local community preparedness and resilience. The nation also has rescue board training volunteering to teach local communities about crisis preparedness.
    - Hungary: encourages local support systems with teams of professionals who can help locally when needed. However, they do not welcome untrained volunteers which limits the number of individuals who can build up the local support network (D2.2, pp. 44-45).
- **Local:** Local authorities, including first responders should be trained on how to make better use of social media and IT tools to engage and collaborate with informal volunteers (D2.2, p. 47). Utilize social media to disseminating information and create coordination among volunteers.
- **Local:** Local authorities, including first responders utilize social media and other IT tools to task informal volunteers when needed.
- **Local:** Utilize social media as means for informing, registering and/or directing informal volunteers (D2.2, pp. 41-42).
- **Local:** BuildERS' country cases (Germany) have shown that *target-oriented coordination* and steering of both the requests and offers for assistance during the disaster response operation would be very helpful (see D2.2, p. 42).
- **Local**: Local governments could consider establishing an official social media group. This could be a bottom-up initiative but should be supported top-down (D2.2, p. 42).
- **Local**: Monitor social media information, trends, and mobilization efforts (D2.2, p. 42).

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- **National/local**: Utilize social media to engage with volunteers. Authorities should work towards engaging with the content produced by volunteer networks on social media. This may improve volunteer efforts in a crisis situation. Such engagement may entail providing up-to-date and verified information, monitoring, and mitigating the spread of mis- and disinformation, and taking a coordinating role to guide resources to where they are needed the most (D1.4; D2.2).

- **Local:** Local authorities, including first responders should allocate resources to be able to monitor social media information and mobilization efforts to avoid the spread of misinformation (D2.2, p. 47). Social media can also facilitate a spread of rumours and information that may impede crisis relief.

- Allocate resources to monitor social media mobilization efforts of informal volunteers.

Further issues to consider for final recommendations (D5.3):
- Points to consider when applying these in different situations and contexts.
- Guidance on how to tackle practical difficulties and how to prioritize

4.4. Key actions to combat the effects of poor social capital

A key BuildERS contribution is to uncover some negative aspects of social capital and to warn against a vague, over-reliance on social capital as a crisis and disaster management solution. While we offer some concrete recommendations for overcoming the negative impacts social capital, many of the 'solutions' require long-term, societal wide initiatives beyond crisis and disaster management per se.

- **EU/National:** Long-term social capital building is difficult and must be societal wide. Anti-discrimination programmes and efforts to reduce inequality are needed, but so is recognition of societal diversity, improved spatial planning to avoid segregation, and better funding of community events (D1.2, p. 46).

- **EU/National:** Authorities should consider discrimination and inequality in actions and programmes aimed at increasing social capital and build bridges across groups in communities. Discrimination and inequality make access to and generating of social capital more difficult. Therefore, discrimination and inequality must be addressed in the context of social capital.

- **National/local:** Social capital is often the lowest for those not having their own home. Efforts to address homeless and temporary housing problems must be prioritised.

- **Local:** Local authorities must identify and reach out to intermediaries, in areas and communities where linking social capital are low and the need to build trust is high. (People living on the street have lowest levels of linking capital and least protective behaviour). These groups tend to trust intermediaries more so than authorities (WP3 forthcoming).

- Volunteering is a creator of social capital and a key factor for improving social cohesion. We outline tools and strategies to encourage volunteerism in the next section.

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- Implement measures to strengthen bonding (family, friends) and linking (trust in authorities) among people living on the street and in temporary conditions (WP3 forthcoming)
- Implement measures to strengthen social support to individuals living in the street or under temporary conditions during a crisis (WP3 forthcoming).

Further issues to consider for final recommendations (D5.3):

- Points to consider when applying these in different situations and contexts.
- Guidance on how to tackle practical difficulties and how to prioritize.

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5. Recommendations for increasing risk awareness

Risk awareness is a key component of the BuildERS model. The project employs a broad definition of risk awareness as **collective (groups and communities) acknowledgment of a risk, and potential risk prevention and mitigation actions, fostered by risk communication.** The recommendations for building risk awareness draw primarily on BuildERS' research on current institutional aspects of risk awareness in Europe, as well as research communication in crises and disasters. The recommendations focus specifically on how to address communication-related challenges and how to communicate risk in a rapidly changing communication landscape.

5.1. Main findings

BuildERS research confirmed that to reach vulnerable people, authorities must develop communication strategies better tailored to different audiences, their preferences, and their needs. A diversity of individual capabilities, motivations (attitudes, belief), traditions (norms), and habitual behaviour shape how information is received and acted on. These factors need to be captured by crisis management communication strategies. Further, communication strategies should be adapted to different disaster types (e.g., natural, or man-made disasters; fast or slowly emerging crises). Additionally, the communication landscape is becoming increasingly scattered. Out of the many communication tools available, the most appropriate mediums to reach vulnerable people must be identified. For example, social media is increasingly used in crisis communication, considered an effective tool to reach diverse groups. At the same time, not all people have access to or are active on social media, hence this medium can complement but not replace other communication tools. There are no 'one-size-fits-all' solutions. Our research confirmed the importance of multi-channel communication (D1.4; D2.3; D2.4; D4.1).

Indeed, there are many tools that could be used for communicating risk to various groups. While traditional information sources (e.g., print media, radio, TV) remain relevant for risk communication, social media has transformed the communication landscape. Increasingly complex and interconnected crises require clear and effective risk communication in social media. Whilst these new digital platforms pose challenges to actors engaged in risk communication, they also offer new arenas for risk communication. Our studies of EU member states show that all countries must prioritize developing their capacity to use social media as a risk communication tool. We found great variation in national social media strategies for risk communication, despite the fact that increasingly complex and interconnected crises require clear and effective risk communication in social media. We found that guidelines were sometimes lacking, and many countries had few resources (D1.4; D2.3; D2.5; D6.2). Part of the work of BuildERS focuses specifically on the increasing use of social media in society, and the resulting opportunities and challenges for risk communication. The following recommendations address some of these opportunities and challenges.

However, all these challenges are more complex in an age of *information disorder* (the spread and consumption of misinformation, disinformation, and harmful information). BuildERS' results show how social media has allowed for instant and broad diffusion of misinformation and disinformation that has resulted in, for example, undocumented migrants refusing help in disaster situations (due to rumors linked to their legal status), people relying on ineffective measures to protect themselves from crises, and crisis managers being unable to identify who is most at risk in a crisis situation (owing to false help requests in social media, for example). Thus, BuildERS findings reaffirm the importance of

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understanding and addressing various forms of harmful information as part of broader efforts to reduce vulnerability (D1.4; D2.3; D2.5)

5.2. Need for new perspectives

BuildERS research has identified individuals and groups prone to becoming vulnerable due to communicative aspects – either due to their difficulties in understanding and acting upon information, or due to them being prone to believing mis- and disinformation. At the same time, authorities in the countries under study tend to take rather blunt and basic steps to communicate risk (when they do at all). The way authorities communicate, and which means they use to communicate about risks to people, must acknowledge the diversity of the population they want to inform (D1.4; D2.3; D2.4; D4.1). A vicious cycle exists, in which governments may communicate poorly – and that generates increased vulnerabilities amongst individuals with communication-related challenges. New perspectives are thus required in regard to what is communicated, how it is communicated, and to what kind of individual.

BuildERS identifies vulnerable people prone to believe misleading and/or false information. Our findings showed that individuals with mental health conditions and/or brain disorders can be prone to believe misleading and/or false information (misinformation) (D4.1). The same is true for individuals living on the street or in care facilities or those attending soup kitchens, drug and alcohol rehabilitation centres (WP3 forthcoming). Social workers and care organizations thus needed to cope with misperceptions about the virus and vaccination in the Covid-19 pandemic.

In addition to identifying which people are susceptible to communication-related vulnerabilities, BuildERS also **identified the main sources of information for vulnerable individuals**. Our categories (e.g. television, social media, social workers, close family, therapists, day centre staff) confirm the multi-channel communication avenues that governments must acknowledge. Most governments tend to use few channels, and to offer general messages to a faceless population. Our key actions below show a two-track strategy. Governments must utilize multiple channels but also target risk communication toward the most vulnerable – and these findings can give you some pointers on which channels to prioritize. (This of course comes with some ethical implications, e.g., the policy should ensure that information is communicated in an accessible non-stigmatizing way through various channels to make sure that most people are reached.) An untapped resource are the *intermediaries* of persons with communication difficulties. Governments must support those intermediaries – including care workers, NGOs, and first responders – in order to communicate effectively. Those intermediaries also know much about vulnerable groups and potential challenges, in general, which is why building closer relationships (and not only in a top-down style) between them and authorities is a central BuildERS recommendation.

BuildERS has developed a number of innovations that seek to contribute to more effective risk communication, including tools that can help practitioners in handling information disorder. The project has developed, for instance, a blueprint for training social services providers and emergency responders who must reach those with weak societal support networks or lack trust in authorities (D6.6 forthcoming). We have developed an empirical typology of COVID-19 pandemic-related harmful information that could be used for improving risk and crisis communication during pandemics (Hansson et al., 2021). Moreover, we offer guidance on the use of plain and/or easy-to-read languages in risk and crisis communication. BuildERS also developed a tool to engage representatives from vulnerable segments of society in the planning of communication initiatives. We

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explored the possibilities to collaborate with social media influencers (both macro- and micro-) for the purpose of creating a targeted and wide-reaching risk and crisis communication.

These new perspectives – and the key actions and innovations that follow – encourage practitioners to draft targeted strategies towards different vulnerabilities. The goal must be to enhance risk communication, better manage information disorder, and ultimately increase risk awareness and build resilience.

We group our key actions below in two categories: first, those related to improving *risk communication* generally; and, second those related to combatting the spread of *false or misleading information* during crises.

5.3. Key actions for improving risk and crisis communication

Effective risk communication may be achieved in multiple ways. In a rapidly changing communication landscape, our findings highlight the need to focus on **establishing new collaboration networks and on building public trust**. Today, an increasingly diverse group of actors are engaged in risk communication, including crisis managers, journalists, community leaders, volunteers, and care organizations. To coordinate multiple risk communication efforts, when they exist, we recommend establishing new collaboration networks between these actors. This will avoid the spread of conflicting messages. Such collaborative networks can have the added benefit of shared learning, building of trust, and mitigation of the spread of mis- and disinformation (D2.3; D2.4; D2.5; D6.2).

Ethical considerations

- ❖ When implementing the policies or associated actions we recommend for enhancing risk and crisis communication, bear in mind ethical considerations. The actions should consider that practitioners and first responders have the capacities to be able to fulfil attributed responsibilities. Conflicting responsibilities and insufficient capacities may inhibit such fulfilment. For being said to be responsible, an entity has to have the necessary capacities. For more information on ethical considerations to consider when implementation these recommendations and action points, see appendix B (also in D7.4)

5.3.1. Target strategies to reach the most vulnerable

- ➢ **EU:** Use the existing networks developed in DG ECHO as part of the Civil Protection Mechanism (EUCPM) to help member states collect, present, and employ good practices for inclusive communication (D1.4; D2.4; D2.5; D4.1). The European External Action Service (EEAS) in increasingly engaged in public communication and could be included in this effort.

- ➢ **EU/national:** Those responsible for crisis communication at the EU and national level need to base their strategies on a thorough understanding of the communication needs and preferences of the most vulnerable (D1.4; D2.3; D2.4; D4.1). BuildERS' case studies indicate some communication needs and preferences of the most vulnerable, can found in the table below.

- ➢ **EU/national/local:** Facilitate learning about the communication needs and preferences of the most vulnerable by increasingly collaborating with actors that hold knowledge about these

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groups, including key *intermediaries*: care workers, NGOs, first responders and leaders in these communities.

- **National:** National authorities (crisis agency staff or prime ministers' offices) should make every effort to uphold transparency, accuracy, and goodwill in their public communication. Further, messages should be considered as to how they may be misinterpreted by different populations (D1.4; D6.2). BuildERS' vulnerability perspective above can help with that consideration (or 'reflection') process.

- **EU/national/local:** In acute situations, BuildERS findings suggests the following actions to be central to effective external communication (D4.1, p. 41):

  - Be present in social media channels to monitor sentiments and prevalence of false and/or harmful information, collect situational pictures and share trustworthy information.

  - Collaborate with journalists. With their help, a more humane dialogue with citizens to calm them down may be established.

  - Publish official information, instructions, and guidance on official websites in easy-to-access ways.

- **EU/national/local:** Consideration must be made of the needs and preferences of individuals depending on the crisis type (e.g., man-made or natural; slowly or rapidly emerging) and crisis phase (pre, during and post-crisis) (D1.4; D2.3; D2.4; D4.1). A 'one-size-fits-all' approach does not work.

- **EU/national/local:** Risk and crisis communicators should utilize diverse channels and tools, as applicable and appropriate (e.g., traditional media, social media, text messages, and apps). Generally, multi-channel communication is advised (D1.4; D2.3; D2.4; D4.1). BuildERS' findings indicate main sources of information for various vulnerable individuals in different crises. These are outlined in the table below and offer pointers on which channels to prioritize.

Table 3. Main sources of information for vulnerable individuals and groups identified in BuildERS (intermediaries)

- **Television** was shown to be the most prevalent source of information for **all groups of social care clients** analyzed in the project (WP3 forthcoming).
- Individuals (**social care clients) living in their own home** receive high share of information through **social media** (WP3 forthcoming).
- Especially for **individuals living on the street**, **social workers** are an important source of information (WP3 forthcoming).
- **Older people with memory disorder** often rely on "old-school" authorities such as doctors, lawyers, police, and the priest. (D4.1, p. 45).

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- **Individuals with a memory disorder** often know that an authority should be contacted -- but may not be able act upon this knowledge. The **trusted close circle** includes of these individuals are family and friends, while they may not trust people outside the circle.
- **Individuals with some mental health conditions** do not trust most strangers, including any social and health care authority who is not their own. The police are highly trusted by some individuals with such conditions, while deeply distrusted by others (D4.1, p. 45). Such nuances must be considered.
- Individuals on the **autism spectrum** may only be open to messages from **familiar people (family and group home/day centre staff)**. They may not react in any way to strangers (authorities or others). They may not respond, listen, or follow instructions.
- The main source of information for individuals with **intellectual disability** are **family**, **therapists**, **personnel** (at day centres, housing facilities, or in hobbies) (D4.1, p. 45).

- **EU/national/local:** Allocate resources to increase the ability of those most vulnerable to access, understand, and react to information over time (D1.4; D2.3; D2.4; D4.1). The points above help pinpoint which groups can be targeted with information, to increase possibilities for vulnerable individuals to access information.

- **Local:** First responders should focus on building (in advance, as part of preparedness activities) cooperative relationships with the intermediaries of persons who have difficulties to communicate and/or interact, so that the understanding of risk and crisis related information is better reached, understood and acted upon (D4.1, p. 63). The table above can help to identify effective intermediaries for these persons.

- To reach individuals with difficulties in communication and social interaction, clear and concise language is essential (so called easy-to-read and plain language). BuildERS' case studies (see D4.1) have innovated a training concept, handbook and guidelines for risk/crisis communication that can help increase first responders' knowledge in alternative communication means (plain and easy-to-read language). Moreover, it has innovated a simulation training tool (Trasim by Insta Digital) that can be used in trainings to address special needs related to interaction and communication.

- BuildERS has developed a blueprint for training for providers of social services and emergency assistance with the aim to reach those who have weak or non-existing societal support networks or lack trust in authorities [see D6.6 forthcoming].

- **Local:** Allocate resources for training of first responders in risk communication:

    - First responders need competence in how to make risk and crisis communication accessible to persons with difficulties in communication and social interaction (D4.1, p. 63).

    - First responder organisations should train their staff to handle challenging social interactions (like communicating with people with mental health conditions, neuropsychiatric disorders and/or intellectual disabilities) (D4.1, p. 63).

- **EU/national/local:** BuildERS' case studies have drafted learning objectives and outcomes of a training concept for first responders. The completed concept will be tested on the EU's CEPOL e-learning platform LEEd with international law enforcement organizations [see D4.1].

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- **National/local:** Since risk and crisis communication is not a one-way street, care organizations could help identify which communicative materials are most useful to vulnerable persons in their care. The Covid-19 pandemic offers many lessons in how to inform people effectively, in ways easy to understand and memorize. Examples include “2+2” rule, symbols indicating the mask requirement etc (WP3 forthcoming).

- **National/local:** Authorities responsible for risk communication may be informed by tools applying historical mobile positioning data (see D4.3 and D4.7) to pinpoint as to how, for whom, and through which media the communication and the imminent crisis risks need to be conveyed. If mobile positioning data is utilized for the purpose of targeting strategies, bear in mind the ethical considerations related to data protection and privacy. See appendix B for questions to consider when implementing the recommendations.

5.3.2. Establishing new collaboration networks

- **EU:** Cross-border training on effective risk and crisis communication is already taking place in the EU (EUCPM) but could focus on the BuildERS’ promotion of collaborative crisis communication. Suggestive guidelines could not only help create more coherent risk communication across scales of governance, but also be developed after the creation of new ‘crisis communication collaboration’ networks (D2.3; D2.4; D2.5; D6.2).

- **National/local:** We identified how a lack of trust in authorities and exposure to targeted and unverified information on social media inhibit the uptake of official communication (D1.4; D2.3; D2.5). National/local authorities – namely, actors responsible for risk communication – must work closely with key stakeholders (e.g., community leaders and volunteer groups). Such collaboration can help identify why trust is lacking in a given situation and inform action to address the underlying causes (D1.4; D6.2).

- **National/local:** BuildERS emphasises the importance of communication strategies across organisations, which must be a priority in risk and crisis management, generally. A tool has been developed to support communication strategies in a multi-organizational setting. This tool can support the establishment of new collaboration networks and can be accessed through (TBC) (D2.3; D2.4; D2.5; D6.2).

- Another cross-cutting recommendation of BuildERS, developed in each section of this deliverable, concerns process innovations: methods and tools for including stakeholders (especially representatives of vulnerable segments of society) in the planning of risk and crisis communication. The tools being developed in WP6 can help with this purpose.

- BuildERS research confirmed the ‘digital divide’ in European societies. Not all individuals can be reached through new technology. We recommend multi-channel communication and creative multi-professional collaboration (D4.1).

- The role of journalists in helping to provide essential risk and crisis information is recognized by governments (D2.3) but relationships between authorities and journalists is not always strong (for obvious reasons). Open discussions, however, can identify areas of shared concerns and collaborative opportunities that do not undercut journalists’ independence. Such initiatives to collaborate may offer a more humane way to communicate with a broader swathe of the population (D4.1, p. 41).

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- BuildERS' findings reveal several lessons-learned from the Covid-19 outbreak. One was the resourceful way that social workers had to pull together different kinds of information (often on their own) to tailor guidelines suitable for the situation during Covid-19. Authorities should recognize such resourcefulness and support it: facilitate collaboration with representatives from care organizations and/or social workers to formulate communication guidelines tailormade for different situations. This collaboration should ideally take place in the preparedness phase but may also be crucial during a crisis. It is crucial that this process is bottom-up since social workers and care organizations know the needs of their clients best (WP3 forthcoming).

- **National/local:** BuildERS encourages the promotion of more structured relationships between local/national level authorities and representatives of care organizations/NGOs. This should ideally not occur *ad hoc*, but rather in an ongoing manner supported financially by governments. Through structured cooperation, bottom-up needs could be identified (WP3 forthcoming).

- **Local:** Strengthen cooperation between different care organizations/NGOs. In this way, competition for funding may be avoided. Through enhanced coordination, activities of NGOs may be synchronized (e.g., food distribution) (WP3 forthcoming).

5.3.3. Using social media for risk communication

- **EU/national/local:** Engage more meaningful with social media. Efforts should not stop at using social media as an advertising platform, but rather include partnerships with trusted social media personalities (D1.4; D2.3; D2.5; D6.2). The EU, via its ProCiv networks of civil protection authorities (EUCPM) could take a lead in European wide efforts in this area.

- **EU/national/local:** Provide training for crisis communicators in social media. Develop guidelines for risk communication using social media, and doing so collaboratively (a) across government, and (b) with the non-profit sector. Such guidelines need to account for different types of crises and the associated requirements for effective social media communication (D1.4; D2.3; D2.5; D6.2).

- **EU/national/local:** Ensure that skilled personnel are available at all times, so that timely information gets transmitted without interruptions (e.g., during holidays) (D1.4; D2.3; D2.5; D6.2).

- **National/local:** Ensure presence on social media in all stages of the crisis management cycle, i.e., not only during its acute phases. This to build trust and a following that reaches beyond those already engaged with the topic (e.g., professionals in the field of crisis management) (D1.4; D2.3; D6.2).

- Build engagement from the public. BuildERS' findings suggest that the public rarely engages with the content provided by official risk communicators. Building engagement from the public is crucial if social media should serve as an effective communication tool. Ways to do so include developing a social media presence in all stages of the crisis management cycle, to use a broader range of social media platforms and the tools they provide, and to build local and community-focused social media pages (D1.4; D2.3; D6.2).

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- **National/local:** BuildERS encourages authorities to explore the use social media for two-way communication. While there are challenges to two-way communication (including heavy time investment and opportunities for miscommunication), dialogue can be highly useful for preserving a trustworthy narrative and gaining new information. This offers opportunities for answering questions from the public, addressing common concerns, collective problem solving and for being accessible and transparent (D1.4; D2.3; D6.2).

- **National/local:** To increase reach, visibility, and public engagement linked to risk communication, we recommend using multiple social media platforms[7] (e.g., Twitter, YouTube, Instagram and Facebook), as well as tools (e.g., videos, hashtags, and games) and methods (e.g., storyfication) (D1.4; D2.3; D6.2).

- **National/local:** Authorities should consider engaging social media personalities, or 'influencers' in risk communication. This can help broaden the reach of risk communication (e.g., by reaching and engaging younger audiences or those not following traditional media channels). However, this is a new phenomenon. Potential opportunities and risk factors need to be further explored and guidelines developed (D1.4; D2.3; D6.2). BuildERS has developed guidelines for risk and crisis communication in collaboration with social media influencers [see D6.6, D5.2 and D.5.4 forthcoming]

- **Local:** Local authorities and other actors engaged in risk communication should build local and community-focused social media pages. The impacts of crises differ between local contexts, hence members of the public want information from local sources in response (D1.4; D2.3; D6.2).

- **EU/national/local:** Evaluate and adapt social media strategies over time. Ensure proper follow-up and impact evaluation (D2.3). For example:

    - Observe the behaviour of groups after a warning or behavioural guideline has been sent to them, to see what effects take place.

    - Analyse data from the channels used for spreading the message, to assess reach and uptake.

    - Survey or interview target audiences. Analysis of public social media engagement should be used as a basis for adapting future communication.

- Use social media engagement from the public, such as public responses to official risk awareness campaigns and debates on social media in a post-crisis situation, to evaluate and adapt communication strategies over time. Public engagement, be it positive or negative, constructive, or non-constructive, on social media can be used to learn about the views of the public. Thereby, data drawing on public engagement can be used to shape the message, tone, presentation, and choice of medium to reach different audiences (D2.3).

Further issues to consider for final recommendations (D5.3):
- Points to consider when applying these in different situations and contexts.

[7] Our findings suggest that some social media platforms (e.g., Facebook) are more commonly used by crisis managers than others.

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- Guidance on how to tackle practical difficulties and how to prioritize

5.4. Key actions for addressing the risks posed by information disorder

Information disorder includes the spread and consumption of various forms of misinformation, disinformation, and harmful information. The BuildERS project advocates for a stronger focus on understanding the mechanisms of information disorder. First, there is a need to understand how people who are exposed to false and/or harmful information may become more vulnerable in the face of various hazards and disasters. Second, there is a need to analyse actual incidents to identify more specific causes and impacts. Such analysis can serve as the basis for strategies to reduce threats to people's lives, health, and wellbeing caused by various forms of information disorder (D1.4; D2.5). Novel strategies to address communication-related challenges related to accessing, understanding, and reacting upon risk and crisis information need to be developed. It is known that false and harmful information is often spread and consumed in situations characterized by uncertainty and complexity.

Ethical considerations

- ❖ When implementing the policies or associated actions we recommend for managing information disorder, bear in mind ethical considerations. Considering the rather recent development of social media, disinformation strategies, etc., it should be ensured that we are not asking authorities to engage in an 'impossible job'. Here our recommendations encourage incremental steps followed by assessment and evaluation of the effectiveness of those steps – rather than massive change. Questions to consider include: may this recommendation lead to more harm than good? Is such engagement of social media a proper use of governmental or organizational resources? For more information on ethical considerations to consider when implementation these recommendations and action points, see appendix B (also in D7.4)

5.4.1. The need for new knowledge

- ➢ **National:** BuildERS' research results confirm that national governments and authorities need to recognize the need to tackle the spread of various forms of false and harmful information to a larger extent. Resources should be allocated to establishing new international collaboration networks and to promoting dialogue (D1.4; D2.3; D2.5).
- ➢ **EU/national/local:** All levels of governance can devote resources to create a better understanding the causes, forms and effects of information disorder that may increase social vulnerability and affect crisis management. The European External Action Service (EEAS) is engaged in a wide variety of efforts to combat misinformation – its expertise should be harnessed by other EU agencies and the European Commission (namely, DG COMM and DG ECHO).

5.4.2. Strategies to manage the information disorder

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- BuildERS created an empirical typology of COVID-19 pandemic-related harmful information that could be used for improving risk and crisis communication during pandemics (Hansson et al., 2021).
- BuildERS have developed a framework for understanding the triggers of communication-related vulnerability to disasters/crises (Hansson et al., 2020). This could be used as a practical guide for improving people's capacities to access, understand, and react to risk and crisis communication.
- **National/local:** Develop dedicated strategies to mitigate the spread of false and harmful information among individuals and groups prone to believe misleading and/or false information (see table below with BuildERS case study findings).
- **EU/national/local:** Develop dedicated strategies to mitigate the spread of false and harmful information through social media (D1.4; D2.3; D2.5). BuildERS' case studies provide examples of potential strategies to tackle mis- and disinformation (Torpan et al., 2021):
    - Establish specific units within official authorities to monitor social media use. These could offer fact checking help lines, develop and promote official narratives, and be available for dialogue with the public (D1.4; D2.3; D2.5).
    - Initiate specialized communication support teams to monitor social media, operating independently from official authorities. These support teams can be called into action regardless of disaster type and geographic location (D1.4; D2.3; D2.5).
- **National/local:** Interviewees in BuildERS' research pointed to the importance of pre-crisis planning. We recommend implementing preparations to disseminate correct information into crisis preparation. This should be supported by government institutions responsible for crisis management and communication (D2.2).

Table 4. Vulnerable people prone to believe misleading and/or false information

- **Homeless individuals**. Social workers had to deal with misperceptions amongst individuals living on the street during Covid-19. Much time was spent on bunking and correcting misinformation (like misunderstandings and rumours) (WP3 forthcoming).
- **Individuals living in their home** who receive most information on social media where disinformation circulate (WP3 forthcoming).
- **Substance abusers**. BuildERS' findings indicate this group was prone to believing false information and/or ignoring official information since they felt as if they had nothing to lose ('I am going to die anyway').
- **Migrant communities.** BuildERS' findings indicate some groups were sceptical to vaccines, to testing, and to reality of disease. For example, Polish and Roma communities were sceptical to information and hidden purposes behind it, partly because of past negative and traumatic experiences. NGOs felt a pressure from authorities, which led to difficulties for them to stay neutral in regard to the vaccine (WP3 forthcoming).
- Individuals with mental health conditions, neuropsychiatric disorders, and/or intellectual disabilities are more susceptible to believe misleading and/or false information (see D4.1).

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- **EU/national/local:** Implement information and media literacy training for the public (D1.4; D2.3; D2.5). While a daunting task, our research points to a number of priority areas for such training. We have identified patterns of unconstructive social media use among the public, including individuals creating rumours, sharing misinformation, and actively spurring social and political tension. We have also identified how a lack of trust in authorities and exposure to targeted and unverified information on social media inhibit the uptake of official communication. Public service campaigns could be used to combat such dynamics.

- **EU:** EU authorities could initiate and promote information- and media-literacy training covering the abovementioned topics. An example of an EU level initiative is the European Media Literacy Week, initiated by the European Commission to promote media literacy skills and projects across the EU (D1.4; D2.3; D2.5). Such initiatives should continue, albeit with a risks and crisis communication component.

- **National:** Authorities and other actors responsible for risk communication on the national level should develop education- and training programs addressing the abovementioned topics (D1.4; D2.3; D2.5).

- **Local:** Local authorities (e.g., schools), NGOs, and citizen organizations are well positioned to develop and carry out information- and media literacy training, with the support of national level government institutions (D1.4; D2.3; D2.5).

Further issues to consider for final recommendations (D5.3):
- Points to consider when applying these in different situations and contexts.
- Guidance on how to tackle practical difficulties and how to prioritize

6. Conclusions

This deliverable, formally labelled 'Resilience Policy Recommendations – first report', begins the process of distilling BuildERS work into practical suggestions for policy change. Later deliverables will refine these recommendations and add 'innovations' – tools for change. They will also be further refined and road-tested through WP6's stakeholder events. Together these deliverables will transform the BuildERS Common Vision of improving the resilience within (especially) European societies into practice.

Our assumption is that a) risk awareness, b) social capital and c) preparedness are core aspects influencing to vulnerability. We thus structure this report in terms of preparatory action that can be taken to lower vulnerability, with a close look at tips for improving social capital and raising risk awareness as a preceding goal.

Some common themes run through this deliverable. One concerns the nature of BuildERS' research findings, which show that governments tend to take rather crude approaches to all three tasks. Vulnerability approaches tend to be static and based on stereotypes, and actions to reduce vulnerability focused on pre-identified categories. Approaches to improving social capital are rare indeed, although they can be found under other names, in other parts of government (health, social care, urban planning) rather than crisis management. Risk awareness initiatives also leave much to

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be desired. They tend to embrace traditional messages using traditional forms of one-way communication.

A common theme to our new perspectives is that an appreciation of society's diversity is crucial. Almost all our studies show the multifaceted nature of vulnerability, for instance. Governments must recognize that vulnerability is a shifting and intersectional property of individuals, and changes based on different situations. Similarly, and given this diversity, social capital building must take into account that social capital has multiple meanings and can be improved through multiple actions. While some social capital building is a long-term endeavour, linked to anti-discrimination and anti-poverty for instance, others can go hand-in-hand with crisis management preparedness. Building social support networks, enhancing relationships between local officials and caregivers, and working to build risk knowledge within diverse groups, for example, also contributes to social capital. By the same token, risk awareness efforts must be more finely tailored to a diverse society, and one in which the message, medium and audience interact in complex ways.

BuildERS' key actions offer suggestions, ideas and tools for authorities and practitioners to cope with these complexities. We not only aim to address the 'what' must change question, but also the 'how' question: what can be used, concretely, by practitioners to improve matters. And what is most likely to help individuals prepare for crises and disasters in a transparent, just, and thoughtful fashion. We look forward to continuing to pursue that goal.

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7. References

***The references include also authors from the sources in Appendix A*.**

Aldrich, D. P. (2011). The Externalities of Strong Social Capital: Post-Tsunami Recovery in Southeast India. Journal of Civil Society, 7(1), 81–99. https://doi.org/10.1080/17448689.2011.553441

Aldrich, D. P., & Meyer, M. A. (2014). Social Capital and Community Resilience. American Behavioral Scientist, 59(2), 254–269. https://doi.org/10.1177/0002764214550299

Hansson, S., Orru, K., Torpan, S., Bäck, A., Kazemekaityte, A., Meyer, S. F., Ludvigsen, J., Savadori, L., Galvagni, A., & Pigrée, A. (2021). COVID-19 information disorder: Six types of harmful information during the pandemic in Europe. *Journal of Risk Research 24*(3-4), 380-393. https://doi.org/10.1080/13669877.2020.1871058

Hansson, S., Orru, K., Siibak, A., Bäck, A., Krüger, M., Gabel, F., & Morsut, C. (2020). Communication-related vulnerability to disasters: A heuristic framework. *International Journal of Disaster Risk Reduction, 51,* 101931. https://www.sciencedirect.com/science/article/pii/S2212420920314333

Low, S. M., & Altman, I. (1992). Place Attachment. In *Place Attachment* (pp. 1–12). Springer US. https://doi.org/10.1007/978-1-4684-8753-4_1

MacGillivray, B. H. (2018). Beyond social capital: The norms, belief systems, and agency embedded in social networks shape resilience to climatic and geophysical hazards. *Environmental science & policy 89*, 116-125.

Morsut, C., Kuran, C., Kruke, B.I., Schobert, M., Gabel, F., Krüger, M., Orru, K., Hansson, S., Nahkur, O., Rhinard, M., Molarius, R., Schmersal, E., Savadori, L., Nævestad, T.-O., Bairampa, E., 2020. D1.2: Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies (Public Project Deliverable D1.2). BuildERS.

Orru, K., Hansson, S., Gabel, F., Tammpuu, P., Krüger, M., Savadori, L., Meyer, S.F., Torpan, S., Jukarainen, P., Schieffelers, A. and Lovasz, G., (2021). Approaches to 'vulnerability'in eight European disaster management systems. *Disasters*. https://doi.org/10.1111/disa.12481

Raymond, C. M., Kyttä, M., & Stedman, R. (2017). Sense of Place, Fast and Slow: The Potential Contributions of Affordance Theory to Sense of Place. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.01674

Woolcock, M., and Narayan, D. (2000). Social Capital: Implications for Development Theory, Research, and Policy. *The World Bank Research Observer 15(2)*, 225-249.

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Appendix A. Sources for resilience policy recommendations

D1.2. Final report of the unified theoretical framework on the concepts of risk awareness, social, capital, vulnerability, resilience and their interdependencies

D1.3. Report on segments of vulnerability country by country basis – inside and outside the official data

D1.4. Communication behaviour in Europe and vulnerabilities - understanding communication-related vulnerability and resilience in crises

D2.2. Case country analyses and a cross-country comparative analysis of the functioning of disaster resilience systems D4.4 Reducing social vulnerability by innovative data fusion for more informed rescue prioritization

D2.3. Social media campaign analysis and governments' responses to disinformation

D2.4. Catalogue of tools, technologies and media opportunities for disaster management

D2.5. Institutional arrangements in resilience and disaster management

D3.2. Pre-test report

D4.1. Managing chemical spill emergency and mis-/disinformation through simulated responses

D4.2. Vulnerability in post-disaster temporary housing

D4.3. Applying mobile positioning data for more precise rescue planning and emergency management under cyber-hazard in Estonia

D4.4. Reducing social vulnerability by innovative data fusion for more informed rescue prioritization

D4.5. Impacts of Elbe flooding disasters on socially underprivileged groups and lessons for resilience improvement

D4.6. Reducing the vulnerability of homeless people in Washington D.C. through more-informed humanitarian

policy, first respondent operations protocols and communication measures, and higher social allocations

D4.7. Using mobile operators' data to locate, protect and evacuate tourists and other vulnerable groups in disasters

D6.2: Report on stakeholders' views of risk awareness, social capital and vulnerabilities

Forthcoming deliverables

(will serve the revision of D5.1 into D5.3 Final report on Resilience policy recommendations, due M36)

D3.5. Observations for Draft Policy and Other Measures in Building Resilience for the Severely Vulnerable Populations

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D4.8. The policy and practice innovations reducing vulnerability of European population to natural and man-made hazards

D5.2 Innovation policy recommendations (M34)

D5.4 Recommendations on resource allocation for addressing risks (M34)

D5.5 Recommendations on ethically acceptable technologies & tools to improve risk awareness & resilience in vulnerable circumstances (M34)

D6.6 Stakeholder validation of research findings and co-creation of innovations (M33)

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Appendix B. Ethical considerations

Recommendation	
… **Addressee of the recommendation:** …	
	Justice and Participation
PROCESS-RELATED: Who was not included in the development of the recommendation and on what reasons?	*e.g. Was the recommendation only discussed with representatives of XYZ from one specific national context?*
Who could be discriminated by this recommendation or the targeted actions?	*e.g. Does the recommendation for instance relate to those who are unreported and do not engage with authorities in order to prevent a worsening of their situation?*
How is it ensured that those affected by the recommendation are able to participate or are represented in decisions on or about them?	*e.g. Does the recommendation outline any guidelines on who has to be included in decision processes to which extent?*
If unequal treatment follows from this recommendation or the associated action, how are they legitimise?	*e.g. Does the recommendation focus on and promote only the needs of a certain group only? How is this justified?*
	Responsibility and Accountability
Based on which arguments are responsibilities shifted or attributed?	*e.g. Is the recommendation vulnerable regarding misuse due to power hierarchies, ignorance or arbitrariness)?*
Through which measures are people informed about their responsibilities?	*e.g. Does the recommendation include any measures about ensuring affected people being informed about the responsibilities they have to fulfil?*
How does the recommendation or the associated actions ensure that people are able to fulfil responsibilities that are attributed to them (conflicting responsibilities, insufficient capacities)?	*e.g. Does the recommendation take into account that people have to have the capacities to be able to fulfil attributed responsibilities?*
	Freedom of Choice and Autonomy
How are people informed about the consequences of their actions (what does "misbehaviour" lead to)?	*e.g. Does the recommendation structures on the information of affected persons in order to allow them conscious and reflected decisions?*
How does the recommendation ensure a certain freedom from external (including structural, systemic, peer) pressures?	*e.g. Does the recommendation take into account that structural pressures might hinder people from acting in their own interest?*
How does the recommendation support people in taking autonomous decisions (in their own interests) if they are not capable of taking decisions on their own?	*e.g. Does the recommendation take into account those citizens that might not be able to take decision in their interest on their own?*
	Trustworthiness and Transparency

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How are rules of processes and power hierarchies made transparent?	*e.g. How does the recommendation consider that strategies and actions are made transparent and open for criticism?*
How does the recommendation support that mistakes or shortcomings are made transparent?	*e.g. How does the recommendation support self-reflection of the taken actions and a public involvement in the adjustment? If it doesn't why?*
How does the recommendation support the development of trustworthy actions?	*e.g. Are there any supervision strategies or corrective mechanisms included in the processes and actions that stem from the recommendation?*
	Privacy and Data Protection
How are personal data protected?	*e.g. If the recommendation recommends the use of personal data, which standards and limitations are provided for their use?*
Does the recommendation refer to measures to prevent misuse of data?	*e.g. If the recommendation recommends the use of personal data, does it outline measures to be taken to prevent misuse by thirds e.g. access regulation?*
What effect might the recommendation have on the privacy of individuals?	*e.g. In how far might the recommendation and the associated actions lead to limitations of individual privacy and how are they justified?*

Ethics guideline for Policy Makers

… **Addressee of the recommendation:** …	
	Justice and Participation
PROCESS-RELATED: Who was not included in the development of the recommendation and on what reasons?	*e.g. Was the recommendation only discussed with representatives of XYZ from one specific national context?*
Who could be discriminated or stigmatized by this policy?	*e.g. Does the policy for instance discriminate/stigmatize those who are unreported and do not engage with authorities in order to prevent a worsening of their situation?*
How is it ensured that those affected by the policy are able to participate or are represented in decisions on or about them?	*e.g. Does the policy outline any guidelines on who has to be included in decision processes and to which extent?*
If unequal treatment follows from this policy or the associated action, how are they legitimised?	*e.g. Does the policy focus on and promote only the needs of a certain group only? How is this justified?*
Does the policy ensure that information is communicated in an accessible non-stigmatizing way through various channels to make sure that most people are reached?	*e.g. Information is spread via TV, Newspapers, Radio, Social Media etc.*
	Responsibility and Accountability

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Based on which arguments are responsibilities shifted or attributed?	*e.g. Is the policy vulnerable regarding misuse due to power hierarchies, ignorance or arbitrariness)?*
Through which measures are people informed about their responsibilities?	*e.g. Does the policy include any measures about ensuring that affected people are informed about the responsibilities they have to fulfil?*
How does the policy or the associated actions ensure that people are able fulfil responsibilities that are attributed to them (conflicting responsibilities, insufficient capacities)?	*e.g. Does the policy consider that people have to have the capacities to be able to fulfil attributed responsibilities?*
Does the policy avoid placing individual responsibility at the center of resilience-building?	*e.g. Does the policy contribute responsibility between state and citizen? Who has more responsibility?*
	Freedom of Choice and Autonomy
How are people informed about the consequences of their actions (what does "misbehaviour" lead to)?	*e.g. Does the policy structures on the information of affected persons in order to allow them conscious and reflected decisions?*
How does the policy ensure a certain freedom from external (including structural, systemic, peer) pressures?	*e.g. Does the policy consider that structural pressures might hinder people from acting in their own interest?*
How does the policy support people in taking autonomous decisions (in their own interests) if they are not capable of taking decisions on their own?	*e.g. Does the policy take into account those citizens that might not be able to take decision in their interest on their own?*
	Trustworthiness and Transparency
How are rules of processes and power hierarchies made transparent?	*e.g. How does the policy consider that strategies and actions are made transparent and open for criticism?*
How does the policy support that mistakes or shortcomings are made transparent?	*e.g. How does the policy support self-reflection of the taken actions and a public involvement in the adjustment? If it doesn't why?*
How does the policy support the development of trustworthy actions?	*e.g. Are there any supervision strategies or corrective mechanisms included in the processes and actions that stem from the policy?*
	Privacy and Data Protection
How are personal data protected?	*e.g. If the policy recommends the use of personal data, which standards and limitations are provided for their use?*
Does the policy refer to measures to prevent misuse of data?	*e.g. If the policy recommends the use of personal data, does it outline measures to be taken to prevent misuse by thirds e.g. access regulation?*
What effect might the policy have on the privacy of individuals?	*e.g. In how far might the policy and the associated actions lead to limitations of individual privacy and how are they justified?*
	Vulnerability
Is the policy based on knowledge about vulnerability and risks?	*e.g. Is it based on vulnerability assessments?*

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If the policy is based on vulnerability assessments or risk assessments, what did these consider?	*e.g. Did the assessment approach vulnerability from an intersectional perspective? Does it include quantitative and qualitative data?*
Does the policy account for the interplay of individual, socio-structural and situational factors of vulnerability?	*e.g. What is its influence on societal inequalities? Or does it target the situational vulnerability (e.g. exposure) only? Does it consider vulnerability as a dynamic condition?*
Does the policy include guidelines for how to address vulnerability?	*e.g. Guidelines for those who implement the policies on how to prevent stigmatization and ensure accessibility.*
	Social support networks
Does the policy promote cooperation between disaster management and social service providers?	*e.g. Knowledge exchange on who is vulnerable and how they best be reached*
Does the policy place most responsibility on social support networks? Are there alternatives for those who don't have a strong social support network?	

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Appendix C. Deliverable history

Step 1. Review of WP1 and WP2 findings, September – November 2020
Review of final deliverables from WP1 and WP2. The review aimed to identify policy suggestions and interventions proposed by the authors of these deliverables. Additionally, the review identified findings that could be further explored in terms of their policy implications. Finally, the review aimed to identify inconsistencies or areas in need of clarification. *Outcomes: Initial draft of the resilience policy recommendations, containing a set of potential policy suggestions, findings, and questions to be further explored.*
Step 2. Internal feedback and revision, November 2020 – February 2021
Iterative rounds of internal feedback (collected from the project participants and partners) and revision of the first set of resilience policy recommendations. Feedback was collected through: a) A survey sent to contributing authors, November 2020. b) Individual meetings with the WP leaders and some of the contributing authors, November and December 2020. c) Presentation and discussion during BuildERS plenary meeting, 16 – 17th of February, 2021 d) Presentation and discussion during BuildERS advisory board meeting, 23rd of February, 2021 e) Workshop with the members of the WP6 team, focusing on the recommendations related to communication (e.g., social media, mis- and disinformation, and communication-related vulnerabilities), 22nd and 26th of February.
Step 3. Internal feedback and revision, March – July 2021
Review of final deliverables from case studies from WP4. The review aimed to identify policy suggestions and interventions proposed by the authors of these deliverables. Moreover, iterative rounds of internal feedback (collected from the project participants and partners) and restructuring of the first set of resilience policy recommendations. a) Workshop with the members of WP1, WP2 and WP6, focusing on the recommendations related to social support networks and volunteering, 18 of May. b) Bilateral meetings and discussions with members of WP7 on the ethical implications of the resilience policy recommendations. c) Presentation by members of WP3 of preliminary results from the survey followed by discussions of recommendations related to the preliminary results, April - July. d) internal feedback from WP leaders and contributing authors of WP1, WP2, WP3, and WP4 on final draft D5.1 resilience policy recommendations. e) Discussions with WP leaders and contributing authors of WP2, WP3, and WP4, WP7
Step 4. Verification of results and devising the recommendations: ensuring society-relevant scientific outputs (T6.5) [in planning]
Rounds of 'validation' events with officials from each of the three levels of governance. Feedback from these events will be used to improve the write-up of WP5 results and to formulate the final report of resilience policy recommendations (D5.3, due M36)

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Appendix D. Questions for Vulnerability Reflection Teams (VRT) *(under development)*

This innovation will be further developed in D5.2 'Innovation Policy Recommendations' and D5.3 'Final report on Resilience Policy Recommendations'. It is inspired by the work of D4.4.

Assessing vulnerability is a task to do in preparation for a crisis, as well as when a crisis hits, since vulnerability is a dynamic phenomenon. In such situations, a VRT could use the following questions for reflecting on who might be vulnerable, and why, when a crisis hits. The outputs of a VRT would inform the work of crisis managers.

Vulnerabilities reflection

- From a wide variety of potential vulnerability indicators, which ones in this crisis are likely to be:
    - Highly relevant.
    - Moderately relevant.
    - Irrelevant.
- Does the group agree on that? If not, why not?
- What unique or non-traditional vulnerabilities may be at play here? Focus on:
    - Individual
        - Primary
            - *Sensitivity*: the extent to which individuals, groups and communities are affected by the exposure to risks
            - *Exposure*: the extent to which individuals, groups and communities are subjected to a hazard. Exposure is a necessary condition for a hazard to become a risk
            - *Coping, Adaptive Capacities or Response Capacities*: abilities to adjust to changes caused by a crisis or a disaster
            - *Anticipation, Resistance and Recovery Capacities*: abilities to reducing existing or future possible risks
        - Secondary factors
            - Gender, age, race, ethnicity, culture, disabilities, income, education
            - Religious belief, spoken languages, insurances, money deposits,
            - Availability of/access to social contacts, availability of/access to information, type of house, temporary conditions such as illness or family struggles etc.
        - How might primary and secondary factors interact?
    - Socio-structural
        - What broader trends and features of society (inequality, discrimination, past grievances) has this event exacerbated?
    - Situation-related vulnerabilities
        - How has this particular event influenced traditional notions of vulnerability?
- What existing support structures may have disappeared in this crisis?
- What new support structures may have appeared in this crisis?
- How might government action increase vulnerability? Consider:
    - Communication strategies.
    - Operational demands.
    - Requests and assumptions on caregivers and first-responders;
    - Etc.
- How might the three major kinds of vulnerability interact?
- How might vulnerability change as a crisis changes form, or cascades into new forms?
- What information sources could be used to identify those in vulnerable situation?

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