
# D1.1: FIRST VERSION OF THE UNIFIED THEORETICAL FRAMEWORK ON THE CONCEPTS OF RISK AWARENESS, SOCIAL CAPITAL, VULNERABILITY, RESILIENCE AND THEIR INTERDEPENDENCIES

**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

The main objective of WP1 is to compare how vulnerable segments of the population within the countries of the BuildERS project's consortium differ in terms of risk awareness, social capital and use of social media to better understand how resilience is enhanced or impeded by these factors. In general, the output of WP1 serves both as a foundation for the following WPs, but also as a direct contribution to the existing knowledge-base on resilience planning directed at vulnerable segments of society.

D1.1 fulfils O1.1: To construct the BuildERS project's theoretical framework of how risk awareness and perception, social capital and the distribution of vulnerability among populations connect to the overall work of resilience building. This draft version provides the first attempt to unify the concepts that serve BuildERS' theoretical framework into a coherent and visually intuitive conceptual model by showing their interdependences. This attempt is based on an overview of the existing scientific literature on the concepts that will be extensively presented in the final Report D1.2. Both the overview of the concepts and the model will be subject to an on-going process of further elaboration and adjustment, which will then feed into the final Report D1.2 due in April 2020.

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# List of Acronyms

| | |
|---|---|
| BuildERS | Building European Communities Resilience and Social Capital project |
| D | Deliverable |
| DRR | Disaster risk reduction |
| EU | European Union |
| NGO | Non-governmental Organisation |
| T | Task |
| UN | United Nations |
| WP | Work Package |

# List of Figures



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# D1.1: FIRST VERSION OF THE UNIFIED THEORETICAL FRAMEWORK ON THE CONCEPTS OF RISK AWARENESS, SOCIAL CAPITAL, VULNERABILITY, RESILIENCE AND THEIR INTERDEPENDENCIES

## 1. Introduction

This document is the first attempt to establish how the concepts that serve BuildERS' theoretical framework - Risk awareness, Risk perception, Social capital and Vulnerability - are connected to the overall work of resilience by providing a coherent and visually intuitive conceptual structure or model that shows their interdependences within the crisis management cycle.

BuildERS' overall objective is to increase the resilience of European communities against both natural and man-made crises and disasters, by enhancing social capital and risk awareness in the face of the increased use of new technologies and media, starting from the vulnerable groups. Strengthening social capital and risk awareness of the vulnerable groups will increase understanding on what societal resilience comprises. Thus, the focus is to take into account these concepts and their definitions in the societal context. In general, human vulnerabilities in the face of natural and man-made crises and disasters not only raise questions on how responsibility is enacted within a particular society, but also questions about societal justice in general. Social capital, in turn, is not only about trust in institutions and among individuals, but also about the thin line between well founded and misplaced trust. Misplaced trust may cause at-risk populations to trust that the institutions will help them, when, in fact, they may not have the capacity to assist all of society at once. Misplaced trust can generate new forms of vulnerability among people who did not considered themselves or are not considered vulnerable. This is also why a proper identification of vulnerable populations will enable resources to be mobilised based on needs in the immediate aftermath of an event.

### 1.1. Background

Supporting societies to prevent, withstand and recover from any crisis or disaster is fundamental in minimizing potential human and material losses. Indeed, societal resilience heavily depends on how citizens behave individually and collectively and how governments and civil society organisations design and implement policies for mitigating risks, preparing for, reacting to, overcoming, and learning from crises and disasters. The pursuit of resilience is not only based on technical and administrative solutions, but it should primarily begin by empowering people, communities and societies. Understanding better risks and vulnerabilities, preventing and reducing risks and their impacts, prioritizing capacity building and risk awareness raising, and improving social capital are the cornerstones of societal resilience and the overall work of resilience building. This is underlined by the Sendai Framework for Disaster Risk Reduction, which states that *"there is a need for to address existing challenges and prepare for future ones by focusing on monitoring, assessing and understanding disaster risk and sharing such information and on how it is created; strengthening disaster risk governance and coordination across relevant institutions and sectors and the full and*

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*meaningful participation of relevant stakeholders at appropriate levels; investing in the economic, social, health, cultural and educational resilience of persons, communities and countries and the environment, as well as through technology and research; and enhancing multi-hazard early warning systems, preparedness, response, recovery, rehabilitation and reconstruction"* (UN-UNISDR, 2015: 11).

## 1.2. Aim of the first version of the unified theoretical framework

T1.1 aims to provide the unified theoretical framework of the BuildERS project by: 1) conducting a literature review on the recurring concepts applied through the project; 2) studying their interdependencies; 3) designing a coherent and visually intuitive conceptual structure or model that presents a synthesis of this framework. T1.1 foresees three deliverables: first, this first version as D1.1; then, a second final Report as D1.2 due in April 2020; finally two scientific publications as D1.5 due in April 2020. D1.1 mainly fulfils the second and third aim of T1.1 by offering a first version of the conceptual structure or model and a summary of the steps that led to the model. The final Report will contain the full literature review of the concepts and an updated version of the model. The scientific publications will give insights on the results from T1.1 to the academic community.

## 1.3. Structure of the first version of the unified theoretical framework

Chapter 2 summarises the methodologies and methods, while Chapter 3 presents the main results of the literature review that will be fully displayed in D1.2 and the concepts' definitions which suit BuildERS purposes best. Chapter 4 describes the interdependences among the concepts by introducing and explaining the coherent and visually intuitive conceptual structure/model. Chapter 5 provides the conclusion and the way forward. Chapter 6 lists the references. Appendix A provides a list of all the concepts and definitions used throughout the BuildERS project, thus encompassing a wider range of concepts, such as hazard, risk, and emergency management, and their definitions. Appendix B includes UN, EU and International Red Cross concepts and definitions.

## 1.4. Relationship to other Deliverables

This first version is based on an overview of the existing scientific literature on the concepts that will be extensively presented in D1.2, since both the overview and the model will be subject to an on-going process of further elaboration and adjustment, which will lead to the final Report D1.2 and two scientific publications D1.5 by April 2020. In general, D1.1 and the overall work within WP1 will serve as the basis for the subsequent WPs. The model will be used throughout BuildERS and is constructed to facilitate further and more specific work within the other WPs, in particular WPs 2, 3 and 4.

# 2. Methodology and methods

The overall methodology of D1.1 is a literature study in combination with an iterative simplified-delphi process (Fletcher and Marchildon, 2014). The participants of this process are the consortium's contributors for D1.1 and the Advisory Board.

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## 2.1. Research design

The research design was based on five stages that fed into each other and built an iterative writing/rewriting process. The stages were: planning, literature study, iterative writing, simplified-delphi process and finished deliverable. Phases 1-5 are visualised in the figure below.

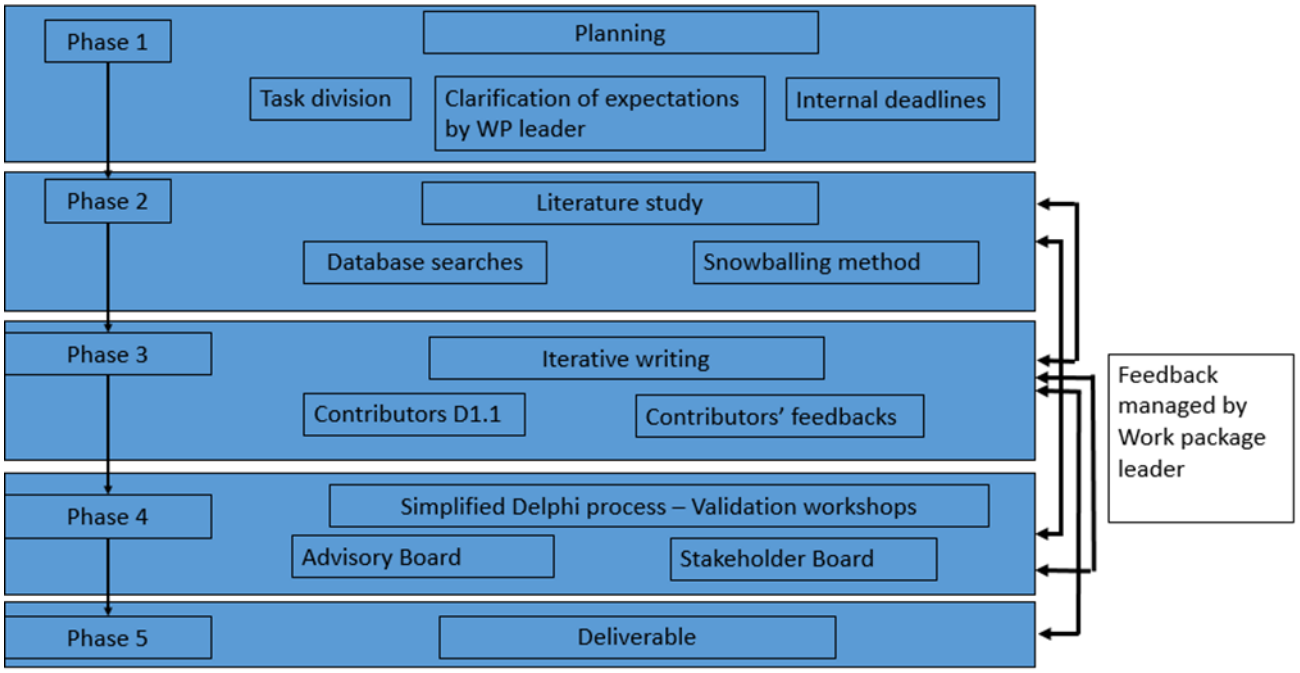


Figure 1: research design.

## 2.2. Literature study

### 2.2.1. Search and review process in databases

The overall purpose of the literature review was to identify and analyse theoretical and empirical studies focusing on the relationship between vulnerability, social capital, risk perception/risk awareness, and resilience within different phases of man-made or natural disasters. The results of parts of the review are recorded according to the guidelines of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (Moher et al., 2009).

The literature study combines elements from both integrative and interpretive reviews, formal database searches as well as the snowballing method. In this way, the process is somewhat similar to a scoping study. The scoping approach is considered as a way of attaining preliminary overview of a research field to consider whether a systematic review should be performed. However, the scoping approach can also be a research strategy in its own right (Arksey and O'Malley, 2005). This was considered a suitable strategy in our approach to the four main concepts - social capital, vulnerability, resilience and risk perception and awareness by the WP leader. In addition to the scholarship, grey literature, such as EU and UN reports, was included. In both cases, the snowballing method of literature search was applied (Jalali and Wohlin, 2012). A collaborative effort of many researchers started out with some central articles and books and was further pursued by following references after references, using inclusion criteria (Greenhalgh and Peacock, 2005). This method fits with the

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purpose to carry out knowledge in research fields with strong ties to other literature producing bodies, such as the government or private sector.

Theoretical and empirical studies were identified in several stages, through searches in literature databases. We screened the “hits” that we obtained by combining search words. The initial screening of “hits” involved reading the titles of the publications to identify studies focusing on the role of social capital in resilience building, individuals or groups’ vulnerability before, during or after crises/disasters, resilience, risk awareness and risk perception. If it was difficult to judge the relevance of the documents only from titles, the abstracts were examined as well. In the second stage of the database searches, we focused on the publications’ abstracts. In this phase, we also looked at some full text publications. The numbers of search results and publication were screened, assessed and included in the review. In this phase, several publications that seemed relevant in the first screening did not present results from empirical studies. They were instead theoretical articles, reviews or essays arguing in favour of new analytical frameworks.

### 2.2.2. Search and review using snowballing methods

All contributors to D1.1 were asked to search after literature on social capital, vulnerability, resilience and risk perception and awareness within their expertise. The literature and the findings were uploaded in TEAMS or sent to the WP leader via email.

### 2.2.3. Analysis/synthesis of the main concepts

The analytical approach to the literature acquired was based on the iterative standard approach by Miles et al. (2014). Contributors to D1.1 were asked to organise their literature according to the following criteria:

- What are the main theoretical contributors and contributions of the concept?
- What is the conceptual development from a theoretical perspective?
- How is the concept applied in the crisis management cycle, also in relation to various types of crisis?
- What are the perspectives on the concept from an institutional point of view, governmental and non-governmental?

The literature and the findings were further elaborated by the UiS team, lead beneficiary of T1.1. They will be presented in D1.2.

## 2.3. Simplified Delphi method

Drafts of D1.1 were sent to the contributors of D1.1, the stakeholders of the consortium and the Advisory Board. The contributors were asked for feedbacks, which were later incorporated in the text. Reworked drafts of D1.1 were discussed in four online validation workshops together with the stakeholders of the consortium and the Advisory Board the third and fourth week of October 2019. The main focus of these workshops was to received feedbacks and comments on the draft model. Both the stakeholders and the Advisory Board represented a good variety of disciplines and expertise, which allowed interesting and useful discussions, which mainly fed the further development of the model.

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# 3. BuildERS' theoretical framework concepts and definitions

The literature review, which will be extensively presented in D1.2, allowed a better understanding of the concepts in use and a choice of which definitions of these concepts serve BuildERS' purposes best. In this chapter, we present our understanding of vulnerability, social capital, risk awareness, risk perception and resilience.

*Vulnerability*: vulnerability can be defined as the situational capacity of individuals or groups to access adequate resources and means of protection to anticipate, cope with, resist and recover from the impact of natural or man-made hazards.

*Social capital*: Social capital can be defined as the groups, networks, norms, and trust that people have available to them for productive purposes.

*Risk awareness*: Risk awareness is the subjective recognition of risks and the potential ability to reduce risks based on knowledge and information.

*Risk perception*: Risk perception is the subjective judgment that an individual makes about a risk. The way in which risks are perceived is crucial in the management of risks, since risk perception is a major determinant in whether a risk is judged as acceptable and in the consequent decisions and actions. Risk perception varies depending on the type of risk, individual's background, and social context.

*Resilience*: Resilience is the process of patterned adjustment and adaptation enacted in the face of risks, crises and disasters. Resilience needs to be built in all phases of the crisis management cycle to make individuals, groups and societies more robust in facing future risks, crises and disasters.

BuildERS studies and analyses these concepts and their definitions in a precise context, which is the crisis management cycle (also called disaster management or emergency management). The crisis management cycle is a process to cope with risk, crises and disasters and mitigate their consequences and consists of the following phases, often overlapping: preparedness, prevention/mitigation, response and recovery. For each phase, we present a concise explanation.

- Preparedness: the set of actions aimed at building capacities to manage crises and disasters in terms of anticipation, response and recovery.
- Response: the set of activities out in place when the crises or the disaster occur to save lives, reduce impacts and help the population with relief and assistance.
- Mitigation: the set of activities aimed at eliminating or reducing the loss of life or property damage for events that cannot be prevented.
- Prevention: the set of activities aimed at reducing the likelihood that a crisis will occur.
- Recovery: the set of activities aimed at restoring, reconstructing and improving the livelihoods of the affected populations, also by implementing disaster risk reduction measures.

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# 4. Interdependences and model

BuildERS argues that the following processes are interlinked: protecting societies and building resilience requires (a) reducing vulnerability, (b) enhancing social capital, and (c) increasing risk awareness. Social capital increases individuals' capacity to act, thus increases resilience. At the same time, it reduces vulnerability. However, BuildERS argues that there is not a linear relationship between (a), (b) and (c). For instance, BuildERS raises the following questions: how can increased social capital lead to the strengthening of resilience, if the risk perception and risk awareness of the society in general and vulnerable groups in particular are hampered by insufficient knowledge of hazards and risks? How do pre-existing conditions related to varying socio-economic conditions, differing levels of social capital, and unequal access to societal services affect risk awareness?

Some authors (Cutter et al. 2008; Folke, 2003; Paton et al., 2000) argue that by improving risk awareness, resilience is improved. Or by assessing risk perception, it is possible to understand the resilience of a community, or by studying social capital, we can indicate the robustness of individuals, communities, and societies against adverse events. However, how can we accommodate BuildERS' concepts in a model that shows these interdependences?

The construction of the model started with an internal team discussion at UiS, which sketched on a blackboard all the possible interdependences between vulnerability, social capital and risk awareness that enhanced or hampered resilience. So, resilience (R) was considered the dependent variable, influenced by vulnerability (V), risk awareness (RA) and social capital (SC). The interdependences were not linear, since interactions are also multilevel across micro, meso- and macro levels, and mutual influences were taken into account. Most of these interdependences were discussed using past crises or disasters as cases.

The next step of the discussion was to list a set of so-called intervening issues that affect vulnerability, risk awareness and social capital and to group them according to levels:
1) Meta-level. Root causes of societal vulnerabilities. The root causes mostly relate to the vast spectrum of meta-level fundamental societal challenges that both enable and exacerbate crises and disasters. For instance, unbalanced wealth and power distribution, widespread corruption, lack of resources. They affect all societies in different degrees and provoke dynamic pressures.
2) Macro-level. Dynamic pressures on societies. Dynamic pressures relate to the lack or poor development of institutional and societal infrastructures and of responses to ecological and social-economic macro forces, such as rapid demographic changes, immigration, antibiotic resistance, poverty, rapid urbanisation, climate change consequences, and decline in soil productivity.
3) Micro-level. Unsafe conditions. Unsafe conditions at the local and national level consist of unsafe buildings, lack or poor policies addressing and lessening vulnerabilities, misinformation or disinformation on the social media about a crisis.
These intervening issues were examined to the extent that they increase vulnerability or effect social capital or risk awareness and ultimately resilience. For instance, being poor, living in a village in a drought region within a fragile state.

The UiS team sought to accommodate these steps in a model, borrowing from the progression of safety model (pressure and release PAR model) by Wisner et al. (2004). The PAR model was loosely adapted by placing the terms vulnerability, social capital, risk awareness under the aegis of resilience

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building, which covers various levels and stages, where societies in their institutional and individual integration expressions, bounce back and adapt to risks and hazards.
Within an adequate understanding of risk and hazards and the achievement of safe conditions, we consider society to be in a controlled situation, which is described according to the following criteria: no loss of life, limited infrastructural damage, few injuries etc.. To further build resilience and reduce vulnerability one should build social capital and work on to increase risk awareness and risk perception. At meta-level, risk awareness/perception is interpreted as addressing epistemic risks, such as risks generated by inequalities. At the macro level, social capital building strengthens civil society. For instance, the establishment of non-governmental organisations for traffic safety, mental health, or for specific issues such as suicide prevention and bereaved support. Schools and youth organizations also can play a vital part here. At the micro level, social capital enables social inclusion, since when a crisis occurs, networks that can be activated to move in the direction of support. Both at macro and micro-levels, individual and societal risk awareness/perception are central for the management of man-made and natural hazards. Societal, group and individual reaction in the various phases of the disasters management cycle is informed and affected by risk awareness. Greater risk awareness increases societies informed decision making, which can improve protective behaviour.

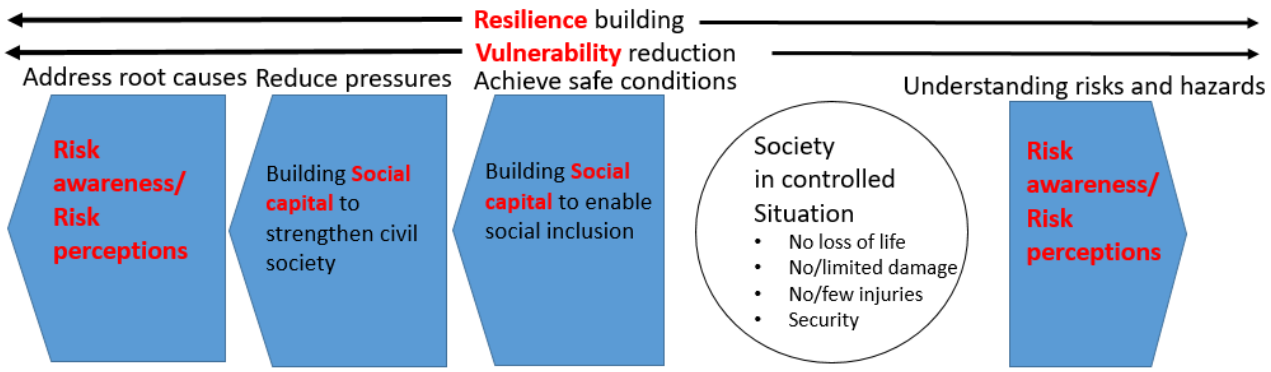


Figure 2: First sketch of BuildERS model.

Figure 2 was extensively discussed during the validations workshops in the third week of October and received feedbacks from some contributors of D1.1, as well. The main critiques were related to: 1) the levels, which seemed unclear and complicated the understanding of the model: 2) the lack of measurements or ways to operationalise vulnerability; 3) the direction of the arrows in the blue boxes, which suggested the idea of a continuum rather than of a circular process, which was suggested to be better to show interdependences; 4) the need to provide a long description, since the figure was not intuitively comprehensible.

The remarks were taken into account and the UiS team summoned to improve the draft model of figure 2. However, the decision was to abandon the draft model and to provide a new draft model without the levels and including the crisis management cycle.

Figure 3 below resonates the bow-tie model (de Ruijter and Guldenmund, 2016), which is used to visualise the barriers and mitigation techniques put in place to prevent unwanted events and to recover after them. There is no established consensus on how the model is used, except the general

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layout of the modes “two fans”, one before and one after an event. In the BuildERS version, we included the crisis management cycle and showed where social capital and risk awareness building is relevant within the disaster management cycle. The advantage with a bow-tie model is that its parts can be replicated to include several multiple plausible scenarios.

On the extreme left, we placed hazards, threats and risks, which can trigger an unwanted event, in our case a crisis. Social capital and risk awareness are control measures (or barriers or layers of protection in the bow-tie jargon) that prevent them to escalate. In the circle, we placed the unwanted event or the crisis, which unfolds if our layers of protection do not work properly. For instance, lack of trust or misplaced trust, or poor risk awareness. A crisis, is, to some extent, a test for our layers of protection. The right side of the bowtie is made relevant when the control over a situation is lost: the message we aim to convey here is that social capital and risk awareness act as barriers that make sure that if a crisis occurs, the scenarios’ possible consequences do not escalate and are mitigated. Thus, they are relevant measures than enable and enhance response and recovery measures, when the crisis unfolds. On the extreme right, consequences are the results from the crisis.

On the top of the model we listed various elements of vulnerability within individuals and groups. Vulnerability is not externally determined, since we need to recognise the role played by human agency, whether people are seen to resist, cope with or succumb to unwanted events. These various elements have been grouped according to the individual, the group and the governance level. This division recalls the micro, meso and macro level of the previous model, since we added also a governance level, but seeks to be more concrete in addressing personal vulnerabilities (cognitive and physical, for instance), economic vulnerabilities (being poor), or social vulnerabilities (being part of a group that is deemed vulnerable) and how the governance of certain phenomena (the quality of institutions, for instance) affects vulnerability. At the same time, vulnerability changes according to the kind of hazard, threats or risks and increases the likelihood of a crisis and its consequences. In addition, social capital and risk awareness can be worsened by vulnerability. Higher levels of vulnerability due to poverty or marginalisation can induce individuals to withdraw to be part of a network or a group and to miss important pieces of information and knowledge about a risk.

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| Elements of Vulnerability | | |
|---|---|---|
| Individual level | Group level | Governance level |
| • *Geographical exposure to hazards*<br>• *Locational displacement*<br>• *Cognitive challenges (low/non-education; mentally impaired)*<br>• *Limited mobility*<br>• *Social marginalization (e.g. excluded; homeless)*<br>• *Limited access to information (technology, education)*<br>• *etc.* | • *Geographical exposure to hazards*<br>• *Economic marginalisation of groups (poor; homeless)*<br>• *Limited community cohesion*<br>• *Demographic (elderly, children)*<br>• *etc.* | • *Low Institutional quality*<br>• *Macro-economic disparity (GDP, income-distribution)*<br>• *Poor political decision making*<br>• *Civil society oppression*<br>• *Lack of legitimacy*<br>• *etc.* |

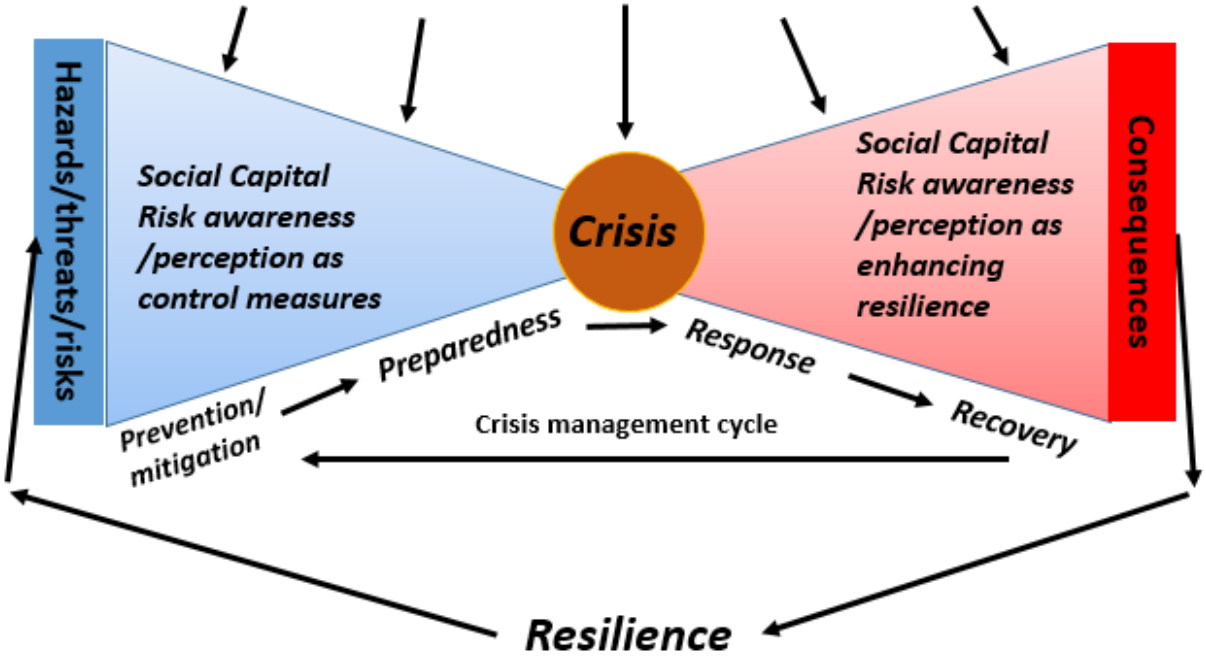


Figure 3: Second sketch of the BuildERS model: the BuildERS' butterfly.

# 5. Conclusions and way forward

This chapter summarises the results and the limitations encounter during the preparation of D1.1 as well as the work ahead.

## 5.1. Main findings

D1.1 is based on a wide cross-domain and cross-research-disciplines literature review of the main concepts sustaining the theoretical framework of the BuildERS project: vulnerability, social capital, risk awareness, risk perception, and resilience. The literature review will be presented in D1.2 and will show the variety of ways to define these concepts, based on the referent object, the context, or the level of governance. Differences were noticeable even within the same disciplines. At the same

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time, there are common denominators in each of the analysed concepts that helped formulating general characteristics useful for BuildERS and moving towards the drawing of our model.
The substantial body of knowledge of the literature review shows the importance to build more stable and durable linkages between vulnerability, social capital, risk awareness and risk perception within the overall work for resilience building to better cope with the multitude of needs of different societal groups, especially the most vulnerable ones. The interplays and interdependences of these concepts need to be translated into durable and sustainable policy actions that are beneficial for the whole society, but in particular for vulnerable groups. Policies and strategies at all levels of governance need to be better targeted according to which groups they are meant to. Aspects such as family ties, social and institutional trust, culture and religion tend to be overlooked and differences within society levelled towards the needs of who is actually most robust.

The conceptual model proposed here seeks to capture the nuances and complexity of crises and to underline how the diversity within and between societies needs to be understood and the specific needs of its components recognised.

## 5.2. Limitations

D1.1 is the result of an extensive collaborative effort among scholars and stakeholders/practitioners within the BuildERS consortium. To build a conceptual model with concepts that the scholarship seldom relates to each other in the way D1.1 aimed has been an ambitious endeavour. One of the main challenges was to accommodate the different perspectives deriving from the variety of scientific and professional backgrounds of the contributors. This has led to the choice to run the literature review according to a very broad approach, with few, but clear indications of what each contributor was supposed to achieve. This very broad approach may have contributed to a rather generic exploration of the concepts, but, at the same time, the material selected will offer a reliable overview of the state-of-the-art for D1.2 and has allowed to prepare the model.

Only literature published in English was scrutinised. This may be a bias. However, in the context of EU project, this preference is quite challenging to rule out completely.

## 5.3. The work ahead

T1.1 main goal was to construct BuildERS theoretical framework of how vulnerability, social capital risk awareness and risk perceptions are connect to the overall work of resilience building. This was achieved through the literature review of the concepts and their synthesis into a coherent and visually intuitive conceptual structure/model. This work is a crucial resource for the fulfilment of the full Report as D1.2 due in April 2020 and for WPs 2-4.

The choice to first elaborate a first version of the theoretical framework and a full Report on a second stage allows a further exploration of the concepts, with updates of the scholarship in the next months, and a further adjustment of the model through second validation workshops, which will be more inclusive than the first ones. They will be run in spring 2020.

A key challenge in the BuildERS project is to test the model through the work from WPs 2-4 and we cannot rule out that possibility the findings in WPs 2-4 will not totally adhere to the model.
In the next months, the work will continued on the following issues:

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1. Carry on the literature review according a wide cross-domain and cross-research-disciplines, since this allowed to spot out the variety and richness of each concept. This approach can be a strength, but, at the same time, it keeps the overview at a quite generic level. The fact that D1.1 will be followed by a final Report will help redefining and fine-tuning the content. The leader of WP1 will organise the work accordingly.

2. In D1.2, the literature review will not only contribute to a better understanding of the concepts as such, but will serve to open a discussion and to reach several conclusions about the interdependences. The figure 3 is important since it is a first step towards a deeper reflection among the members of the consortium about the phenomena behind the concepts.

3. The first validation workshops were run in October with the Advisory Board and the stakeholders within the consortium. The discussions revolve mainly around the model and the good and relevant feedbacks fed D1.1. However, the group involved in the workshops was rather limited in number. Thus, a second round of validation workshops is foreseen and it will be more inclusive. Here, there is the need to better target the participants and seek feedbacks from a wider audience. The leader of WP1, in coordination with the leader of WP6, will organise a second round of workshops in spring 2020.

4. The feedbacks and validation workshops showed that there is the need to discuss more and better how the theoretical framework of BuildERS can serve the practical and daily work the stakeholder of the consortium do in addressing vulnerabilities, in particular. D1.2 will include reflections on how to build bridges between theory and practice.

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# 6. References

(Including references from Appendix A and B as well).

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# Appendix A

Appendix A is a concise list of concepts used throughout the project, including those from D1.1. The definitions of concepts (either in the form of a quotation or of our own elaboration) are taken mainly from the disaster risk reduction (DRR), risk analysis and the crisis management literature and from international organisations, such the UN and EU, working with DRR and crisis management.

*Accident*
"Unintended damage to people or objects that affect the functioning of the system we choose to analyse" (Perrow 1999: 64).

*Capacity*
"The combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience.

Annotation: Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.

**Coping capacity** is the ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during disasters or adverse conditions. Coping capacities contribute to the reduction of disaster risks.
**Capacity assessment** is the process by which the capacity of a group, organization or society is reviewed against desired goals, where existing capacities are identified for maintenance or strengthening and capacity gaps are identified for further action.
**Capacity development** is the process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals. It is a concept that extends the term of capacity-building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems and the wider enabling environment" (UN-UNISDR 2019a).

*Civil protection*
Protection for people, their environment, property and cultural heritage in the event of natural or manmade crises and disasters (Morsut, 2014).

*Civil protection according to the EU* (Source: Hellenberg 2006: 5).

| *Subjects of protection* | *Risk source* | *Risk type* | *Subjects of civil protection planning and training* |
|---|---|---|---|
| People<br>Environment<br>Critical infrastructure<br>Property | Man-made<br>Technological<br>Natural<br>Complex | Crises<br>Emergencies<br>Disasters<br>Accidents | Prevention<br>Preparedness<br>Response<br>Restoration |

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*Civil society*
Civil society refers to both the networks of actors and groups that are non-state, formally and informally constituted, and to the networks of trust and reciprocity among citizens in a society (McIlwaine, 2009; Aldrich and Crook, 2008).

*Crisis*
"Period of upheaval and collective stress, disturbing everyday patterns and threatening core values and structures of a social system in unexpected, often unconceivable, ways" (Rosenthal et al., 2001:6).

*Crisis management*
"Crisis management is the shorthand phrase for management practices concerning non-routine phenomena and developments" (Rosenthal et al., 2001:14).

*Crisis management cycle*
It is a multiple-phase chronological process, during which an organisation deals with a crisis or a disaster. There have been developed several models, but the most widely accepted foresees four phases: prevention/mitigation, preparedness, response and recovery.
It is also referred to by other names, such as "the emergency management cycle or crisis life cycle" (Pursiainen, 2018: 4).

*Disaster*
"A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts" (UN-UNISDR, 2019a).

*Disaster risk management*
"Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses" (UN-UNISDR, 2019a).

*Disaster Risk Reduction (DRR)*
"Disaster Risk Reduction (DRR) aims to reduce the damage caused by natural hazards like earthquakes, floods, droughts and cyclones, through an ethic of prevention" (UN-UNISDR, 2019).

*Emergency management*
"The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps" (UN-UNISDR, 2009: 13).

*Hazard*
"A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Annotations: Hazards may be natural, anthropogenic or socionatural in origin. **Natural hazards** are predominantly associated with natural processes and phenomena. **Anthropogenic hazards**, or human-induced hazards, are induced entirely or predominantly by human activities and choices. This term does not include the occurrence or risk of armed conflicts and other situations of social instability or tension which are subject to international humanitarian law and national legislation. Several hazards are **socionatural**, in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change" (UN-UNISDR, 2019a).

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*Resilience*
"the ability of an individual, a community or a country to cope, adapt and recover quickly from stress and shocks caused by a disaster, violence or conflict. Resilience covers all stages of a disaster, from prevention (when possible) to adaptation (when necessary), and includes positive transformation that strengthens the ability of current and future generations to meet their needs" (ECHO, 2019).

*Resilience management*
"Resilience management is about the resilience of professional actors involved in handling crisis, e.g., first responders, employees in crisis management organizations, air traffic controllers" (DARWIN, 2015).

*Risk*
Risk results from the interaction of hazard(s), exposure and vulnerability.

*Risk assessment*
"Risk assessment (…) is part of the broader risk management process. Risk assessment in turn consist of three tasks: risk identification, risk analysis, and risk evaluation. Risk identification is the initial process of finding, recognising and recording risks. Risk analysis is about developing an understanding of the risk by developing the consequences and their probabilities for the identified risks. Risk evaluation delineates the significance of the level and type of risk" (Pursiainen, 2018:14).

*Risk awareness*
"The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards" (UN-UNISDR, 2009: 22-23).

*Risk governance*
"Requires consideration of the legal, institutional, social and economic contexts in which a risk is evaluated, and involvement of the actors and stakeholders who represent them. Risk governance looks at the complex web of actors, rules, conventions, processes and mechanisms concerned with how relevant risk information is collected, analysed and communicated, and how management decisions are taken" (Renn, 2008: 9).

*Risk management*
"The process involved in managing risks in order to achieve objectives, by maximizing potential opportunities and minimizing potential adverse effects" (Drennan et al., 2015: 2).

Risk perception
Risk perception is the subjective judgment people make about the severity and probability of a risk, and may vary person to person.

*Social capital*
Social capital can be defined as the groups, networks, norms, and trust that people have available to them for productive purposes.

Society
Society refers a group of people living in particular territory, sharing a political system of authority and with a distinctive culture.

*Vulnerability*
Ability of individuals to access adequate resources and means of protection.

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# Appendix B

This table presents the definitions used by the UN, the EU and the IFRC as for vulnerability, social capital, risk perception, risk awareness and resilience.

| | UN | EU | IFRC |
|---|---|---|---|
| **Vulnerability** | "The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards" (UN-UNISDR, 2019a). | "Life circumstances (e.g. poverty, education) and/or discrimination based on physical or social characteristics (sex, disability, age, ethnicity, religion, sexual orientation, etc.) reducing the ability of primary stakeholders (for example, individuals/households/community) to withstand adverse impact from external stressors. Vulnerability is not a fixed criterion attached to specific categories of people, and no one is born vulnerable per se" (ECHO, 2016: 10). | "Vulnerability in this context can be defined as the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard. The concept is relative and dynamic. Vulnerability is most often associated with poverty, but it can also arise when people are isolated, insecure and defenceless in the face of risk, shock or stress. People differ in their exposure to risk as a result of their social group, gender, ethnic or other identity, age and other factors. Vulnerability may also vary in its forms: poverty, for example, may mean that housing is unable to withstand an earthquake or a hurricane, or lack of preparedness may result in a slower response to a disaster, leading to greater loss of life or prolonged suffering" (IFRC, 2019). |
| **Social capital** | "The value that people draw from being connected in particular groups or networks" (UN-UNDP, 2016:37). | "Those stocks of social trust, norms and networks that people can draw upon to solve common problems" (European Commission, 2004: 3). | "Features of social organisation such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit" (IFRC, 2012: ii, quoted from Putnam 1995:67). |
| **Risk awareness** | (Public) awareness "The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards" (UN-UNISDR, 2009: 22, 23). | | |
| **Risk perception** | | "Risk perception involves people's beliefs, attitudes, judgements and feelings, as well as the wider social or cultural values that people adopt towards hazards and their benefits. The way in which people perceive risk is vital in the process of assessing and managing risk. Risk perception will be a major determinant in whether a risk is deemed to be "acceptable" and whether the risk management measures imposed are seen to resolve the problem" (EEA, 2019). | |

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| | | | |
|---|---|---|---|
| **Resilience** | "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk anagement" (UN-UNISDR, 2019). | "The ability of an individual, a community or a country to cope, adapt and recover quickly from stress and shocks caused by a disaster, violence or conflict. Resilience covers all stages of a disaster, from prevention (when possible) to adaptation (when necessary), and includes positive transformation that strengthens the ability of current and future generations to meet their needs" (ECHO, 2019). | "the ability of individuals, communities, organizations or countries exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without compromising their long-term prospects" (IFRC, 2014: 6). |

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