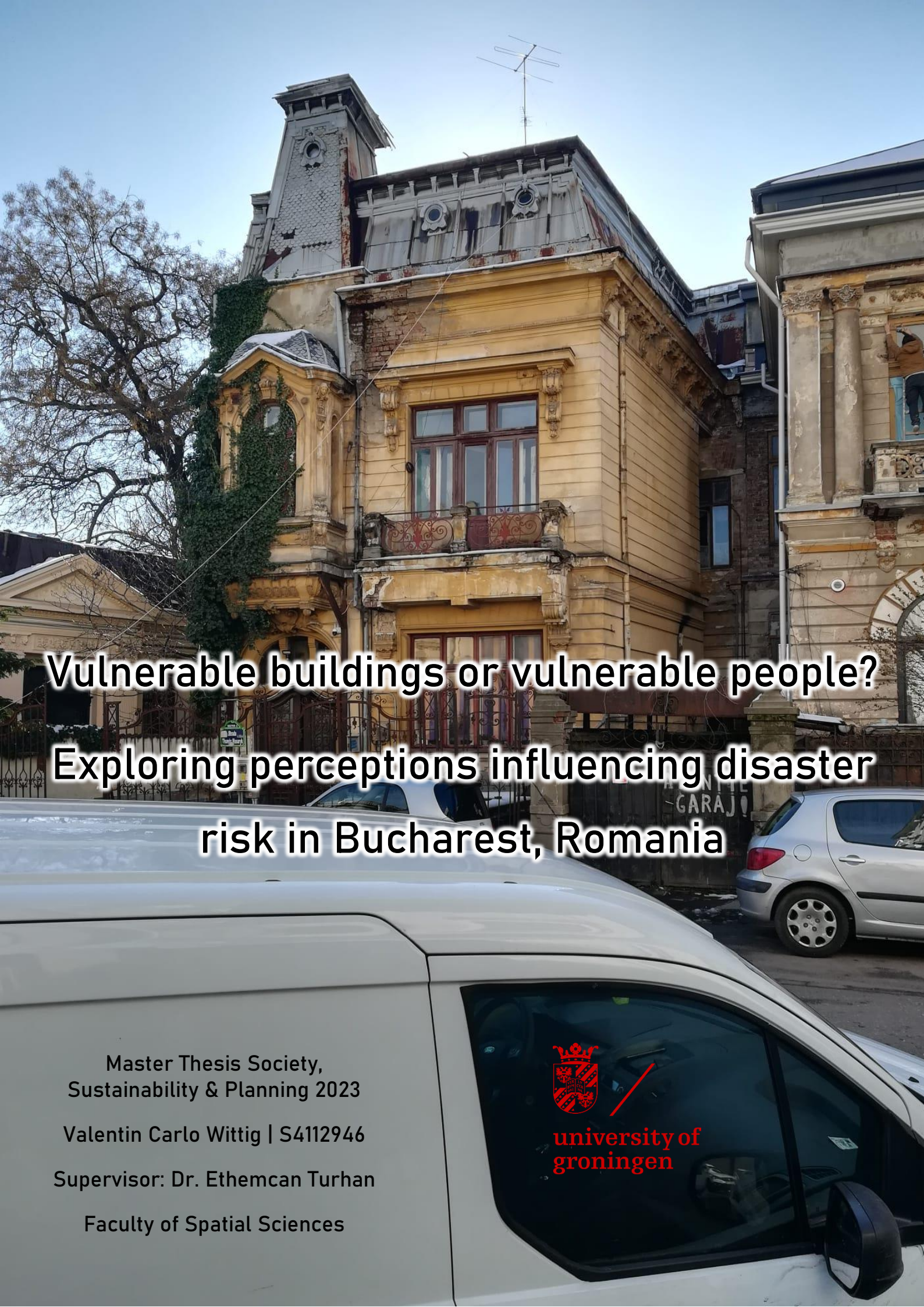

Vulnerable buildings or vulnerable people?

Exploring perceptions influencing disaster risk in Bucharest, Romania

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Summary

This research aims to explore the effects of different perceptions of vulnerability on risk management practices in Bucharest, Romania, a city that does not frequently experience earthquakes but nevertheless is vulnerable. The literature has so far paid little attention to how subjective views on vulnerability to natural hazards shape the actions taken and ultimately the preparedness of residents. Vulnerability of people is a question of power and resources, yet these root causes seem to play a secondary role in practice. In order to assess the roles of power, subjective views and culture in the management of risk, I analyzed how vulnerability is framed in policy documents and official reports and conducted interviews with civil servants, academics and representatives of non-governmental organizations. Bucharest emerges as a complex riskscape of interwoven expectations and responsibilities that hamper collaboration between civil society and government institutions, resulting in the earthquake issue staying on the margins of public debate. While the government is seemingly handling the issue well through constant legislative improvements in the past years, the tangible effect for the regular resident of Bucharest is negligible in terms of practical preparedness to be able to cope with the looming earthquake.

Keywords: *Political ecology, Disaster risk management & reduction, Vulnerability, Riskscapes, Disaster subculture*

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1. Introduction

Thinking about an earthquake that could potentially kill your loved ones, destroy your home and put you in a very precarious situation for years to come is not a pretty thought. It is scary, hence it is only natural that as humans we would rather ignore this eventuality. Nevertheless, preparing for it is a precondition for being able to cope with the impacts of a disaster. This is easier said than done because the management of risk has contact points with many different societal domains and demands actions from both government actors and civil society. Most importantly, they must collaborate to reduce vulnerability.

Being vulnerable means that your personal circumstances increase the chances of suffering and limit the capacity to deal with the impacts of disaster (Wisner et al., 2005; Intergovernmental Panel on Climate Change, 2019). This is closely related to the hazard as the physical event that becomes the source of the negative effects, and to risk as the concept combining vulnerability and hazard, describing the potential for negative effects on ecological and human systems (Intergovernmental Panel on Climate Change, 2019). The greater the vulnerability, the more devastating the impacts in terms of lives lost and destroyed critical infrastructure and private homes. As the societal factor of risk basically on the receiving end of the hazard, the term itself, the elements associated with it and the way it should be applied are highly contested. Vulnerability could be defined as a lack of agency to adapt to the consequences of a natural hazard. The concept, however, becomes much more complex once you think about the possible causes of this lack of agency that go far beyond a simple lack of resources and knowledge. This is when the temporal aspect comes into play not only in terms of adapting before, during and after a hazard hits, but more importantly for determining the root causes, dynamic pressures and unsafe conditions that put people in these vulnerable situations (Wisner et al., 2005). Increasing vulnerabilities might be the reason for the increasing number of disasters that we experience while natural hazards like earthquakes have not become more frequent or destructive (Wisner, 2005; O'Keefe et al., 1976).

This study deliberately chooses a political ecology perspective to show that viewing disasters as a simple matter of unlucky exposure to the forces of nature is an oversimplification. Disasters are not equal to the hazards that cause them (Wisner et al., 2005). On top of that, it is a simplification ignoring the inequality that enables some to exercise economic and structural power and push the public debate in a certain direction. In fact, risks are at least partly constructed through an assemblage of actors and practices that constantly redefine what the problem is and how to deal with it. This is emphasized by the *riskscape* concept, which brings the complex nature of risk-reduction and -production into

focus, expressed by overlapping, contradicting or dysfunctional actions that manifest themselves in space but are the result of wider societal processes (Müller-Mahn et al., 2018). Culture is one of these aspects that is not easily explained but directly affects how a society collectively prepares for a natural hazard.

Disaster risk management and reduction is still a field dominated by top-down government intervention, often ignoring not just the needs of the vulnerable population but also the local knowledge that could be helpful to adapt to natural threats (Wisner et al., 2012). Growing complexities in planning and societies make simple top-down measures ineffective, hence there is a need for interdisciplinary and multi-sector risk governance to make decision-making an open, collaborative process among various stakeholders (Ikeda & Nagasaka, 2011). The activation of civil society for improved adaptation and preparedness applies to disaster risk and equally to climate risk.

Assumptions, definitions and perceptions of vulnerability and how they influence the strategies and actions in disaster risk reduction and management are understudied in the literature (Orru et al., 2022; Williams & Webb, 2021). Hence, this study will explore how different perspectives on vulnerability shape the actions to reduce it and thereby enhance the overall preparedness of citizens confronting a natural hazard. This aim has two parts: identifying subjectivities related to the concept of vulnerability (1) and incorporating them in the wider political, social and economic processes (2). In order to realize this aim, this study uses the case study of Bucharest (Romania), a city at risk of being hit by an earthquake. This case study will serve as an example for approaches to disaster risk management in a post-socialist setting. Thus, the main research question this thesis seeks to answer is: *In what ways do definitions and perceptions of vulnerability in relation to earthquake risk (in)directly influence the preparedness of the residents of Bucharest?* In order to answer this central question, the following sub-questions will be addressed:

- SQ1: *What role does vulnerability play in the formal disaster risk reduction and management strategies for Bucharest?*
- SQ2: *How do subjective definitions and perceptions of vulnerability affect the measures taken and the strategies developed?*
- SQ3: *How can sociocultural and sociohistorical factors explain the difficulties faced in developing preparedness in society?*

This thesis will first dissect views in the literature concerning the relation between risk, vulnerability and hazard with a focus on approaches from the field of political ecology. As one of the main concepts guiding this paper, *riskscapes* will be introduced and followed by a discussion of disaster (sub)culture. The methodology section following the theoretical framework includes descriptions of the research approach, specifically the document analysis and semi-structured interviews. Subsequently, the result section addresses each

element of the riskscape separately, although there are overlaps and connections between all of the elements. The discussion and conclusion sections link the findings back to the disaster risk literature in order to be able to eventually offer the main takeaways of this study.

2. Dominant views of disaster risk in the literature and in practice

2.1 Hazard, risk and vulnerability

Disasters are not natural. Natural hazards may result in disasters with loss of life and great damage, however, the cause is not only the hazard itself but often the socioeconomic and political context (Hewitt, 2012). In the literature and mainstream media, disasters are usually seen as natural events that cannot be avoided, looking either at the inevitable forces of nature or emphasizing the human response (Wisner et al., 2005). Natural forces seem to cause natural disasters, hence managing risks focused on the physical aspects for a long time (Pelling, 2001). Political ecology, as the field connecting the sociopolitical to the material world, is concerned with the role of unequal power relations in affecting a "politicized environment" (Bryant, 1998, p.82). Since the 1970s, studies in political ecology oppose the *naturalness* of disasters (for example, O'Keefe et al., 1976). Some scholars did not simply reject the role of nature but instead extended this view to how understandings of the *natural* influence policies to reduce vulnerability (Gould et al., 2016). This section is structured as follows: First I introduce a comprehensive discussion of academic views on risk and vulnerability, then I turn to the *riskscape* concept as an analytical tool and lastly, I turn towards culture as a factor influencing disaster preparedness.

Risk has already been briefly defined as the potential for negative impacts on ecological and human systems. According to the Intergovernmental Panel on Climate Change (2019), these "adverse consequences" range from direct effects on a person's economic, social and cultural situation, to impacts on infrastructure, services and whole ecosystems that are felt indirectly. Pointing out that risks have always been a part of human societies, Beck (1992) coined the term risk societies to describe modern societies in more economically developed countries, in which citizens accept new risks as a byproduct of the prosperous society they live in. Through technological advancement and ecological destruction we shape and change the risks we are faced with (ibid., 1992). In the context of disasters, risk is often described by an equation connecting the elements of hazard, including the probability that the event will occur, and vulnerability, which contains the impacts. There is a scale ranging from recognizing risk as being measurable in isolation from social processes to viewing risks as exclusively embedded in the historical, social and political context (Wisner et al., 2005). Hence, a realist perspective on disaster risk would view natural factors separately from social ones while a constructivist perspective proposes that they are too interrelated to be measured independently (ibid., 2005). From a practical

perspective, risk is about anticipating the occurrence of a natural hazard event in the future, thereby shaping social practices in the present time (Ay & Demires Ozkul, 2021). From risk, we move on to the concept of vulnerability.

Wisner et al. (2005) define vulnerability as a person's characteristics that "influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard" (p.11). Hence, it not only describes being at risk of suffering negative effects but it acknowledges that the origins of these risks lie in the characteristics of a person's situation, including wealth and poverty, ethnicity, gender, health or age (Tierney, 2006; Wisner et al., 2005). One of the main debates in the disaster risk literature is concerned with who or what the term vulnerability should be applied to, ranging from individuals to organizations, locations and buildings (Orru et al., 2022). Wisner et al. (2005) stress that the concept of vulnerability should be applied to people only to maintain the significance of the term. For emphasis, the term *social vulnerability* is sometimes used (Armaş, 2008) whereas some authors like Singh (2014), in assessing industrial hazards in India, or Cutter's hazards of place model (1996), attribute *vulnerability* to physical conditions. Wisner et al. (2005) prefer describing the physical elements as hazardous or unsafe rather than vulnerable. Bankoff (2001) overall criticizes vulnerability in disaster risk reduction as a Western perspective that puts a large section of the Earth's population in the category "disaster-prone" (p.27). Although most vulnerable people live outside the world's centers of power and wealth (Hewitt, 2012), poverty is not equal to vulnerability. Pelling (2003) warns: "The poor are often vulnerable but the vulnerable are not always poor" (p.75). Labeling groups as vulnerable based on *expertise* can lead to a denial of citizen rights (Donovan, 2017), similar to the use of resilience as a label (Section 2.3). Three dimensions of vulnerability are distinguished by Gallopín (2006): (1) exposure relates to the hazard itself and to socioeconomic factors, (2) sensitivity includes building an awareness of the hazard and of possible ways to deal with it, and (3) capacity refers to the resources available to individuals to cope with and adapt to risks. The following two paragraphs look at two analytical models connected to vulnerability.

The Pressure and Release Model (see Figure 1) brings together the two factors, with vulnerability and the hazard building up the pressure on people from either side. Vulnerability has three levels here: it is influenced by root causes such as political systems, dynamic pressures such as population growth and unsafe conditions such as unsafe buildings (Wisner et al., 2005). Another example of a root cause is the rise in global growth-oriented policies leading to an increase in precarious livelihoods (Mascarenhas & Wisner, 2012). Rauken & Kelman (2010) identify the political-economic system in Norway as a root cause for disastrous flooding events, due to a lack of incentives to leave flood-prone areas undeveloped. Similarly, Orru et al. (2022) differentiate between the following sources of vulnerability in line with the model: meta-level root causes including distribution of wealth,

macro-level dynamic pressures such as demographic change, and the micro-level including risk reduction and management policies. Understanding why a disaster unfolds is based as much on the macro-level as it is on individual life conditions (Tierney, 2006). Recognizing the significance of underlying conditions is emphasized by the Pressure Model.

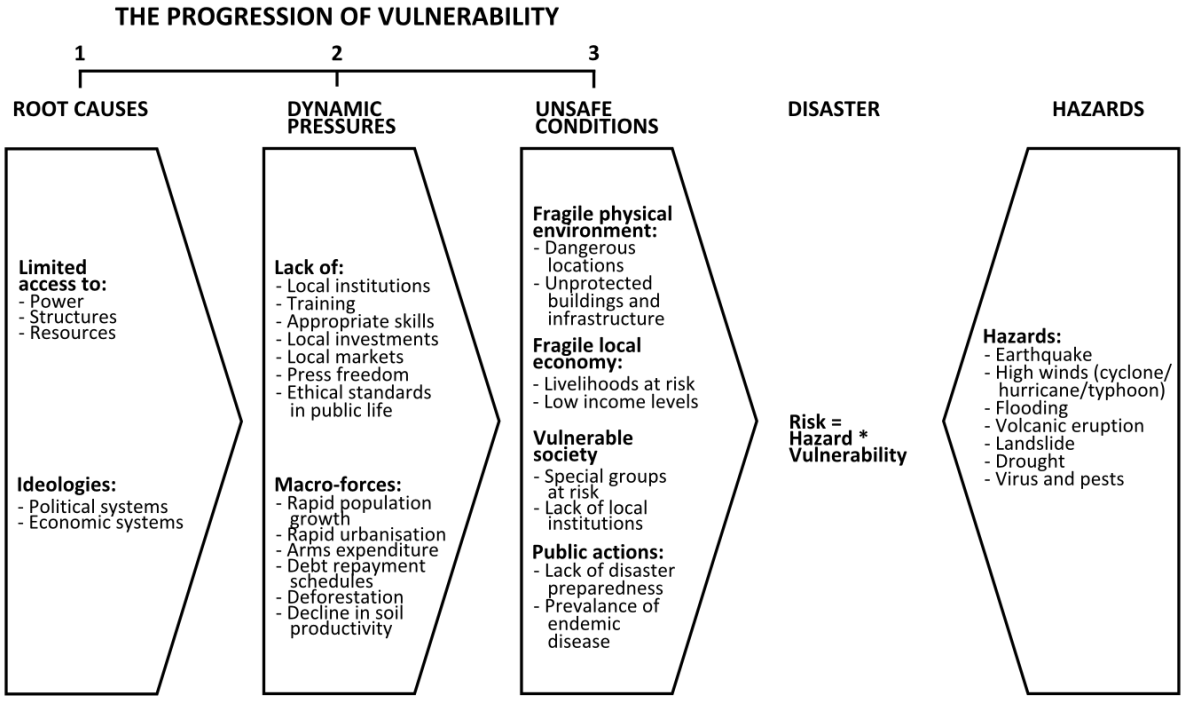

Figure 1: The Pressure (and Release) Model (Source: Wisner et al., 2005)

We can *release* the pressure by reducing the vulnerability as action concerning the natural hazard is less feasible. Releasing the pressure means reversing the Pressure and Release Model, which essentially contains the strategies and measures in disaster risk reduction and management. Wisner et al. (2005) offer seven objectives for dealing with vulnerability, namely spreading knowledge on vulnerability (1), assessing vulnerability (2), improving safety on various scales (3), sustainable development (4) as well as extending strategies to improve livelihoods (5), organize recovery (6) and consider cultural factors (7). While this emphasizes the agency of societies as a whole, the agency of individuals is described better by the Access Model (see Figure 2), which brings the strategies of vulnerable people to prepare for and cope with a hazard event into focus. It looks at disasters as a process during which an individual can secure a livelihood before the event and adapt to new conditions after the event (Wisner et al., 2005). A livelihood describes the ability to cope with and recover from stress factors and build assets, hence studies of livelihoods reveal how people obtain these assets, and how resources and power influence this process (Sanderson, 2000). A sustainable livelihood could be seen as the opposite of a

vulnerable situation as the former describes the ability to cope, resist, and recover and the latter the inability to perform those actions as influenced by socioeconomic forces. Although a useful approach to identify vulnerable communities and evaluate policy interventions and social practices of risk adaptation, Wisner et al. (2005) state that livelihood analysis needs to go beyond assuming preferences and choices of actors in risk reduction. Now that I have defined risk, hazard and vulnerability in-depth, I can present the wider trends in the literature concerning the use of these terms.

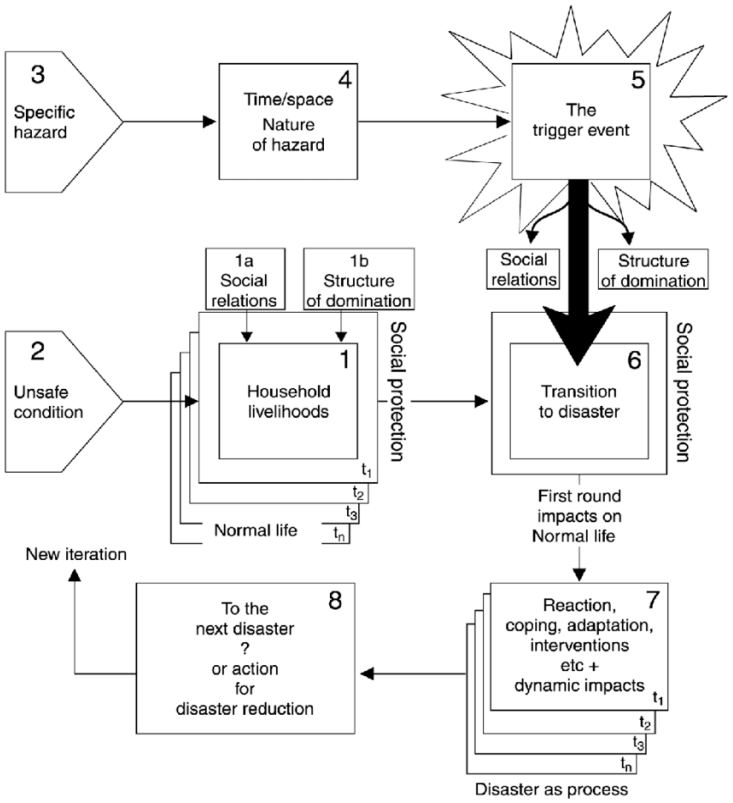

Figure 2: The Access Model (Wisner et al., 2005)

Gaillard & Mercer (2013) describe two major opposing paradigms in the literature: on the one hand, the *hazard paradigm* sees disasters as results of rare natural events that have the severest impacts on population groups with the least awareness and preparedness. On the other hand, the *vulnerability paradigm* sees differences in the impacts of hazards on population groups as a result of marginalization and power differences. Williams & Webb (2021) translate these paradigms to traditions, the hazard tradition being dominated by quantitative studies and the disaster tradition taking a qualitative perspective. Interestingly, the authors state that the hazard tradition views vulnerability as a dynamic phenomenon that people move into and out of over time while the disaster tradition attributes vulnerability as a static property to groups subject to social inequalities depending on ethnicity, gender or

social class (Williams & Webb, 2021). Eakin & Luers (2006) identify three conceptual lineages in vulnerability research: the first focuses on the hazard and physical exposure to risks in line with the hazard paradigm and the second is associated with political ecology and brings the root causes of differences in how people are affected by hazards into focus, in line with the vulnerability paradigm. The third lineage departs from the traditions and paradigms proposed and concentrates on adaptive capacity looking at communities through the lens of ecological resilience.

Although there are overlaps between the paradigms and traditions proposed, they cannot be exclusively matched to each other. Both the hazard and disaster traditions could be categorized under the vulnerability paradigm due to their acknowledgment of social factors in creating disasters (as opposed to only natural forces). Viewing vulnerability as dynamic instead of as a static characteristic of certain groups in society is reflected by the term *vulnerable situations*, coined by Wisner et al. (2005), taking into account a person's exposure and disadvantages (Orru et al., 2022). According to Gaillard & Mercer (2013) and Donovan (2017), national governments still largely follow the hazard paradigm, emphasizing the natural forces that ultimately put scientific knowledge and strong government guidance at the center of risk governance. For Donovan (2017), vulnerability is the result of an uneven power distribution between the government and communities due to the former's hegemony over scientific knowledge. Only at the international level some attention is paid to the vulnerability paradigm, as seen in the United Nations (UN) Sendai Framework for Disaster Risk Reduction 2015-2030, which uses the term *vulnerable situations* (Gaillard & Mercer, 2013; Orru et al., 2022). Due to its all-encompassing approach to risk reduction including all sectors, all government and societal levels as well as all types of hazards, man-made and natural, the product is unsurprisingly complex, leaving the work of practical implementation to governments. A positive aspect is the emphasis on citizen engagement and empowerment to reduce impacts on livelihoods, however, recurring phrases referring to investments to build back better point towards a neoliberal approach that eventually reinforces power differences between societal groups (UN, 2015). The next section will explore an analytical tool to evaluate social patterns of risk production and -reduction.

2.2 Riskscapes

Müller-Mahn et al. (2018) introduced the concept of *riskscapes* to relate the spatial and temporal dimensions of risk to overlapping practices and power differentials between social groups. The concept highlights the constructionist and complex nature of risk (Ay & Demires Ozkul, 2021). The name riskscape is derived from a *landscape*, hence great significance is attributed to the uneven distribution of risk in space. However, Müller-Mahn & Everts (2012) emphasize that riskscapes exist in people's perceptions and actions, hence they are not delimited by geographical boundaries. For instance, an expert riskscape differs from a locals' riskscape, thus there must be multiple riskscapes. Applying this concept to Ethiopia, Müller-Mahn & Everts (2012) find that experts only see continuous droughts and lack of food aid as the major drivers of famine, whereas local communities like the Afar people view famine as a complex problem based on food aid dependencies and land loss. Hence, riskscapes acknowledge the complexity and contingency of risk. Müller-Mahn et al. (2018) present six elements as part of their riskscape concept: temporalities, spatiality, practice, power relations, plurality, and subjectivities of different groups in society (see Figure 3). The riskscape concept provides a useful analytical framework to explore the process behind governance of risk, in particular the aspect of anticipation (Ay & Demires Ozkul, 2021).

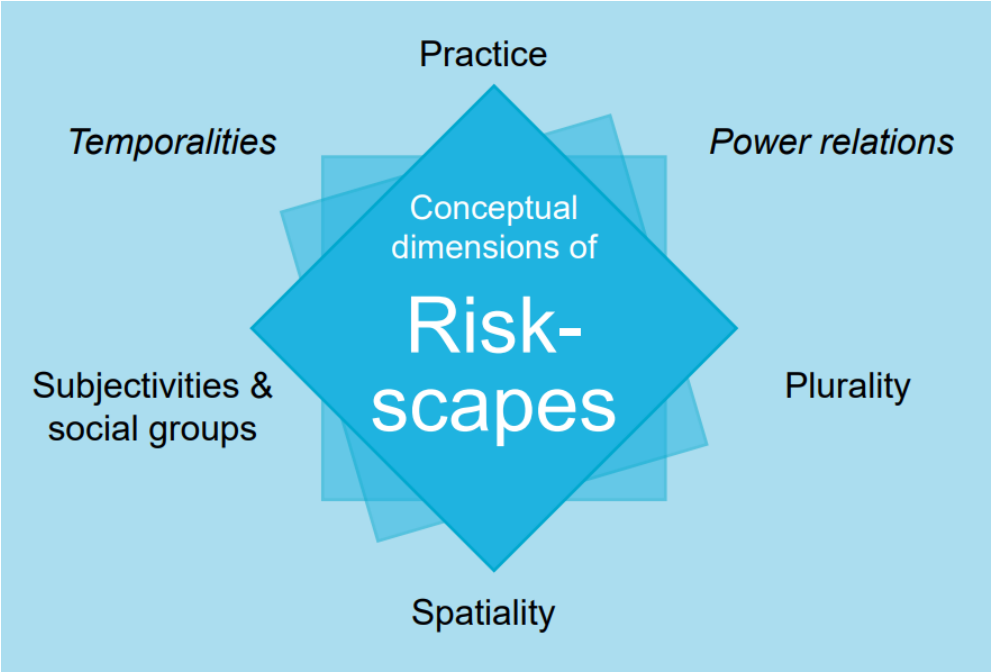

Figure 3: Dimensions of riskscapes (Müller-Mahn et al., 2018)

Earthquakes are a special type of hazard, which does not allow for mitigation and cannot be predicted in advance. Hence, vulnerability to earthquakes is influenced by *time* and *space*, the characteristics of buildings and the implementation of protective measures (Wisner et al., 2005). The spatial factor of earthquake vulnerability includes the location of a settlement in relation to the area of seismic activity as well as the characteristics of buildings such as maintenance and building quality, which together determine the damage suffered (Wisner et al., 2005). Apart from the precise date and time of an earthquake event influencing the impacts, the frequency and probability of such events and past experience contribute to an awareness of the hazard (see Section 2.3).

Power should be a central element of riskscapes as it conditions how, where and for whom risks are defined and appropriate action taken. According to Frick (2016), power relations are insufficiently addressed in the riskscape concept by overemphasizing social practices and omitting how they relate to the responsible institutions. In addition, power is essential for organizing effective social practices (Müller-Mahn et al., 2018). In many situations, there are practices of various actors that interfere and thereby produce surprising or "paradoxical effects" (ibid., 2018, p.209). Svarstad et al. (2018) identify three relevant types of power in political ecology: structural, economic and discursive. Structural power is exercised by actors of institutions, who have more capacity to affect practices of others, influenced by the duality of structure and agency (Giddens, 1984). Actors exercising structural power can be government authorities and companies as well as non-governmental organizations, all affecting marginalized people through their efforts (Svarstad et al., 2018). Knowledge is one of the sources of authority and therefore of power (Mascarenhas & Wisner, 2012), which often legitimizes the position of governments as central actors in disaster risk reduction. Marginalization also happens through unequal economic exchange, leading to disempowerment for some due to root causes like neoliberalist agendas (economic power). Lastly, discursive power is a way for elites to influence (or dictate) public debates by constructing certain views based on their perspective, obscuring other ways of thinking in society (Svarstad et al., 2018). Institutions in control of this discourse adjudicate the "legitimacy and prioritizing of development policy options" (Pelling, 2003, p.75).

As Wisner et al. (2005) point out, risk may be increased by inaction of those in power, including practitioners, policy-makers and politicians. In addition, building quality may be negatively influenced by the local government's inability to enforce building codes due to a lack of capacity or the distortion of regulations by corruption (Pelling, 2012). At the same time, a lack of sensitivity of government policies can fuel mistrust as in the case of mass evictions. This poses difficulties for the implementation of risk mitigation planning (Johnson, 2012). In her analysis of vulnerability to Hurricane Katrina, Tierney (2006) uncovers the unfair, racialized treatment of affected communities in command-and-control policies leading

to mistrust in the authority's ability to manage the situation. A similar risk lies in the use of terms like *nature* and *state* to justify expert-led, top-down, undemocratic governance as was the case in Chile after the 2010 earthquake (Gould et al., 2016). In an ethnography of the disaster management authority of Jamaica, which aimed to increase resilience in the poor neighborhoods - Garrisons - of Kingston, Grove (2013) finds neoliberal participatory risk management only reinforces the power relations at play and contributes to keeping those that are usually left to adapt in the same position.

Social practices can be understood broadly as any human activity related to the material world (Müller-Mahn et al., 2018). Risk reduction measures consist of the package of policies taken by the local government in risk reduction, emergency management and planning as a whole (Wisner et al., 2005; Pelling, 2010). Social injustice is not fully explained by the unequal distribution of resources but has to take into account dynamics of political recognition and procedural justice: typically, marginalized groups are not part of consultation processes (Menton et al., 2020; Mascarenhas & Wisner, 2012). Unfair treatment might prompt citizen initiatives to claim or create spaces to define acceptable risks for themselves, going beyond the closed spaces reserved for governments, experts and international organizations (Mascarenhas & Wisner, 2012). Community-based and non-governmental organizations are often at the forefront of local risk reduction and awareness building (Pelling, 2012; Johnson, 2012). Studying the Marmara earthquakes of 1999, Pelling & Dill (2010) find that civil society groups claiming spaces of recovery and demanding rights can lead to political change, showing that disasters can develop political momentum by causing a heightened awareness of unequal power relations (Cretney, 2019).

Subjectivities create "communities of practice" formed by diverse actors, each taking measures based on their perception of risk, resulting in a plurality of different riskscapes (Müller-Mahn et al., 2018, p.204). In their study of risk mitigation planning in Istanbul, Ay & Demires Ozkul (2021) reveal a market-based approach and "megaproject mentality" (p.77) behind government-driven risk reduction, thereby excluding and further aggravating vulnerabilities of citizens. Kayaalp & Arslan (2022) use the term ontological multiplicity to describe how every scientific community has its own standards and is embedded in a wider network of institutions and ideas. They apply this finding to the North Anatolian Fault, which over time has been shaped by scientific views, representing different realities of the physical formation. For instance, the 1999 earthquakes in Turkey revealed new knowledge but also new gaps and doubts (Kayaalp & Arslan, 2022). Taking a wider perspective, Donovan (2017) proposes looking at disasters and how they are managed as historically contingent, value-laden, dynamic assemblages of power and knowledge. This is because power and knowledge determine the answers to the following two questions according to Angell (2014): assuming nature is the cause of the earthquake and people are responsible for the disaster,

which nature and which people are we actually talking about? In line with the hazard and vulnerability paradigms (Section 2.1), there is a duality in disaster risk management separating the technocratic approach from social practices (Neisser, 2014). In order to understand the interactions between the two, Neisser (2014) uses actor-network theory[1], showing that every actor embodies a certain perspective on risk while being dependent on others. This subjective element ultimately has a spatial manifestation.

In their assessment of how vulnerability is approached in the disaster risk strategies of European countries, Orru et al. (2022) emphasize that definitions of vulnerability shape how it is addressed in policies and practice. Agreeing with Orru et al. (2022), Williams & Webb (2021) indicate practitioners' definitions of vulnerability as a knowledge gap. Most importantly, how vulnerability reduction is ultimately approached depends on the conceptualization of the term, which includes considerations regarding the assessment of vulnerability, the actors responsible to alleviate it and the tools and strategies applied in the end (Orru et al., 2022). Williams & Webb (2021) identify four perceptions of emergency management practitioners in Texas, USA: vulnerability can be connected to poverty and culture, conceptualized as a lack of security, as a moral imperative for action or as a lack of awareness and knowledge of affected groups. Perceptions and awareness of vulnerability could lead to the adoption of routines to reduce risk, a possibility explored in the next section.

[1] Actor-network theory proposes an analytical framework for today's heterogeneous society, often called *risk society,* to determine patterns and dependencies between entities (Neisser, 2014; Beck, 1992)

2.3 Disaster risk reduction as a *subculture*

Culture is a broad concept and difficult to define but it connects to disaster risk in various ways: it could be used to describe behaviors and local knowledge of those that are particularly vulnerable while it becomes complicated to apply in the multicultural context of most contemporary cities (Hewitt, 2012). While it may seem straightforward to separate the culture of disaster adaptation from other local traditions and behaviors, the two are undoubtedly related. Acceptance of risk is influenced by sociocultural factors and personal experiences leading to a specific response to the hazard, state Williams & Webb (2021). In addition, culture could be the missing link between disaster risk perception and disaster preparedness, describing the cognitive journey from accepting a threat to taking measures (Appleby-Arnold et al., 2021). Culture is also relevant post-disaster as it can be lost completely during a hazard event, creating painful identity crises for individuals (Dugan, 2007).

One of the starting points for adapting to a possible hazard is awareness, which is closely linked to capacity (Ikeda & Nagasaka, 2011). However, capacity also depends on trust between government authorities and communities (Wisner et al., 2005), which can be created through public engagement to decrease subjectivities concerning the risks faced (Peters-Guarin et al., 2012). For instance, networks of government and community actors can be built through tools such as participatory geographic information systems (PGIS; Peters-Guarin et al., 2012; Lee, 2020). Another example is community-based vulnerability assessment using the Pressure and Release Model (see Section 2.1), in which residents themselves define their capacity to be resilient (Wisner et al., 2005).

Resilience describes collective action facing a natural hazard enabling a community to adapt to new conditions (Engel et al., 2022). As such, resilience could be the outcome of self-organization (Boonstra, 2016) as an “adaptive response to citizens’ aims and needs” (Silva, 2016, p.1041). The verb *coping* from Wisner et al.'s definition of vulnerability (2005) is closely linked to resilience as it is about managing resources in abnormal situations, which is again influenced by wealth and poverty, ethnicity, gender, health or age (Wisner et al., 2005; Tierney, 2006). Resilience can be categorized as *inherent*, describing the ability to resist a hazard, and *adaptive*, which highlights the capacity to live under new conditions (Tierney, 2006; Pelling, 2001). However, resilience is often used as a label (just like the term *vulnerable*, see Section 2.1 and Donovan, 2017) to describe communities that are able to adapt to new conditions quickly, but are not targeted by any government policy and stay marginalized and excluded from political processes (Kaika, 2017). In those cases, the use of the term resilience reproduces a hegemonic discourse instead of actually driving change (Cretney & Bond, 2014). A central concept for disaster risk, resilience should not be a static

condition that legitimizes inaction on the government's side but instead describe agency from the bottom up.

Engel et al. (2022) apply a framework of disaster *subculture* from Wenger & Weller (1973) to explore how cultural capital enhances efforts to increase resilience in communities frequently battling with the impacts of natural hazards, such as the area of Greater Concepción in Chile. Such a subculture includes a resilient attitude to cope with and recover from constant danger, which results in expectations and experiences being internalized in 'normal' cultural practices (Engel et al., 2022). The accumulation of local knowledge due to frequent confrontations with natural hazards is an element of manageability mentioned by Peters-Guarin et al. (2012) in the context of flood hazards in the Philippines, and helps to recognize and cope with a hazard due to a learning process stemming from the repeated threat (Granot, 1996). Specifically, this could entail taking preventive measures by avoiding dangerous locations, ensuring basic needs are met to minimize the impacts and forming social support networks (Wisner et al., 2005). There are three requirements for the development of a subculture: first, an awareness of the natural hazard as a recurring threat, second, the natural hazard must allow for warning in advance, and third, the hazard must have impacts across all societal groups (Wenger & Weller, 1973). However, the term subculture has not been used frequently in relation to disasters since its emergence in the 1970s, which might have good reasons. Without proposing an alternative, according to Granot (1996), a subculture - cultural practices that differ from the wider social norms and behaviors - is not the right term for community-led disaster adaptation because these actions are part of the dominant culture and only manifest themselves during situations triggered by the hazard. Making risk reduction a part of mainstream sociocultural practices also requires integration with planning practice.

Breaking with the traditional separation of the two, urban planning should go hand in hand with disaster risk reduction and recognize opportunities for using local knowledge to identify vulnerabilities. Proactive risk reduction means going beyond only response and recovery and starts already with urban planning, but this demands political will (Johnson, 2012; Mascarenhas & Wisner, 2012). More specifically, governance of urban disaster risk plays out in four different spheres: development planning, development regulation, risk reduction and emergency management (Pelling, 2012). These have to be carefully coordinated and connected to actions in civil society. Development planning focuses on land-use whereas development regulation encompasses rules for the space developed such as building codes. Risk reduction includes assessing risks and implementing measures to reduce them while emergency management is about the organization of services to respond to a hazard. All of these should challenge the assumption that risks can be taken for granted for the goal of economic growth. At the same time, integration of risk governance in

environmental policy, poverty alleviation and development planning must be reflected in everyday planning practices (Pelling, 2012). Although progressing, this integration has so far been only of a theoretical nature while practical implementation is still lagging behind (Johnson, 2012; Sanderson, 2000). Greater emphasis must be placed on proactively implementing community-led risk reduction measures (Sanderson, 2000). Insights from this section on risk and vulnerability, the elements of riskscapes and the role of culture enable me to present a conceptual model for this study in the following section based on the thought that perceptions of vulnerability and risk are embedded in wider societal processes and eventually define the measures taken to manage risks and their success in reducing risks.

3. Conceptual model

Vulnerability is conceptualized as follows (see Figure 4), broadly taking into account actions and perceptions in society that produce a complex system of risk reduction and production. Perceptions are seen as subjective views on certain concepts that ultimately result in a specific strategy, hence the terms perceptions, definitions, views, etc. are used interchangeably in the context of vulnerability. The six elements of riskscapes presented by Müller-Mahn et al. (2018) are taken as the starting points to dig deeper into various spheres of disaster risk management. These elements are all influenced by the diversity of definitions and perceptions of the concept of vulnerability. In the end, they are reflected in every practice, strategy and action structuring the riskscape of Bucharest, Romania. Hence, this research uses the riskscape concept to explore framings of vulnerability and their effect on policy-making and citizen actions because different definitions and perceptions of vulnerability influence the assessment of vulnerability, the actors responsible to alleviate it, and the formal strategies, measures and tools used in risk management (Orru et al., 2021).

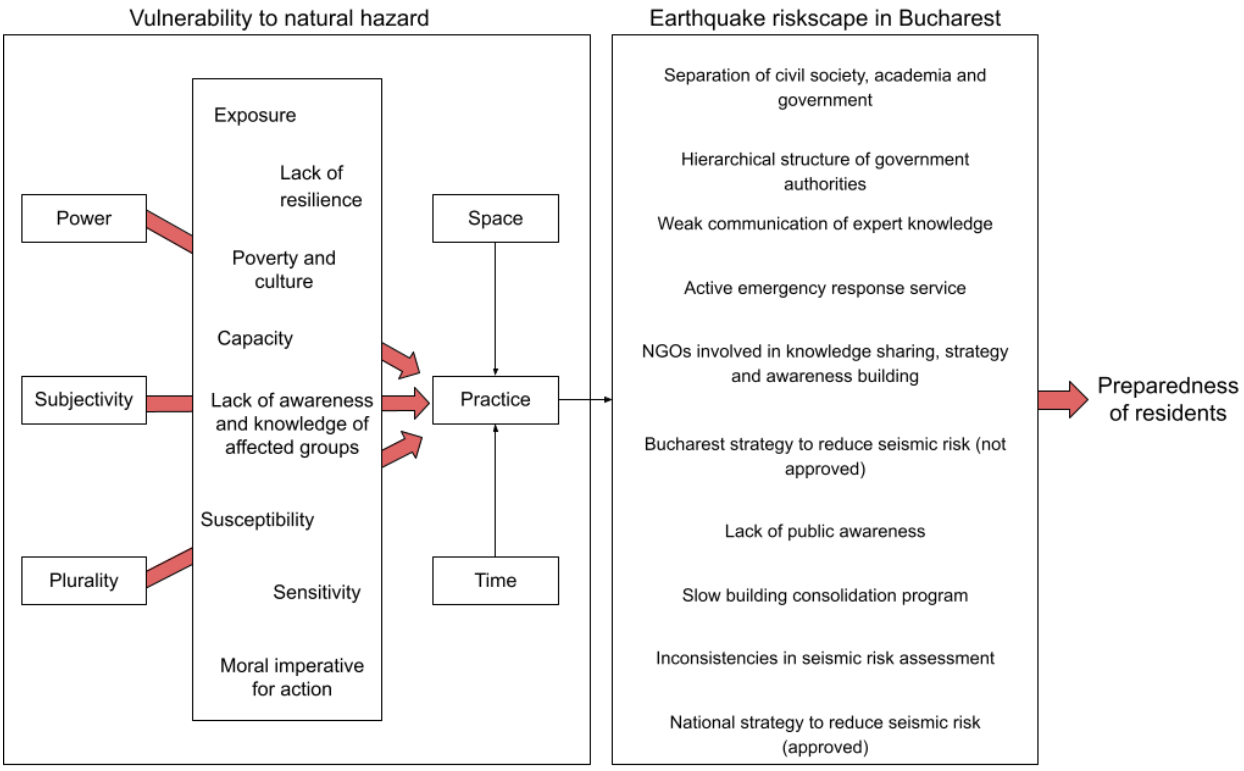

Figure 4: Conceptual model for this research (Source: Author)

Power, subjectivity and plurality are starting points that influence definitions and perceptions of vulnerability. Exposure refers to the physical space in which an individual is

subjected to a hazard, however, this space is often not voluntarily chosen but the result of root causes and dynamic pressures in society leading to marginalization. Hence, in theory, exposure is very much connected to socioeconomic factors and to power. However, many might only see it simply as the effects of the hazard itself. Other frequently mentioned terms in relation to vulnerability are capacity, susceptibility and sensitivity. Capacity moves the agency of the vulnerable into the spotlight, who are able or unable to adapt to the conditions based on their economic situation, knowledge of possible measures and the social support networks they can activate, among other factors. Coping strategies are usually mentioned in the context of capacity. Susceptibility and sensitivity are sometimes used interchangeably to describe certain vulnerable situations that create dependencies and greater risk in case of a hazard event (Birkmann et al., 2013). This often relates to critical services like water, energy or communication systems (Orru et al., 2021). However, sensitivity can also be conceptualized as becoming more aware of a hazard through knowing about one's particular sensitivity (Gallopín, 2006). The lack of resilience is often connected to limitations regarding access to resources (Birkmann et al., 2013), hence it can also be seen as a lack of capacity. Other perceptions include being morally obliged to facilitate risk reduction, highlighting poverty as a factor for vulnerability, or emphasizing the lack of knowledge of vulnerable people (Williams & Webb, 2021). Those involved with reducing disaster risk in society might view it as simply the 'right thing to do' as a service to the community, hence preparing the population becomes a moral imperative. Other views are less self-reflexive: some perceive vulnerability as a lack of knowledge, hence they attribute great significance to the lack of awareness of individuals. This approach might forget to ask why those people are not aware. Relating vulnerability to poverty and social class again means that access to resources and capacity move into focus while running the risk of labeling communities as vulnerable or resilient, not resulting in action that improves the situation of the vulnerable in the long term due to turning a blind eye to the root causes and dynamic pressures causing poverty.

The definitions and perceptions of vulnerability result in a certain practice, measurable and observable in the real world. This is embedded in time and space, hence it is also affected by historical path dependency as much as being applied in a certain location, defining who participates and benefits from the implementation of a measure. Therefore, special significance is attributed to the practice element of riskscapes as it embraces all other elements and eventually provides a link to the case study itself. The points mentioned under *Earthquake riskscape in Bucharest* in Figure 3 are hypothetical and based on preliminary insights that were corroborated throughout the research process. As an example, the process of upgrading a building to make it resistant to an earthquake depends on the collaboration of authorities, owners, tenants and construction companies, becoming a time-intensive process. Exploring these practices and processes in risk management further

makes it possible to estimate the effect on the preparedness of residents as the final outcome of a complex riskscape. The conceptual model shown in Figure 3 acted as the basis to create deductive codes in order to analyze sources of data while additional codes were used inductively throughout the process of data analysis based on insights not accounted for beforehand. At the beginning of this research, I expected a firm leadership of government authorities on the issue of earthquakes but also a lack of integration of risk management with development planning and regulation. Overall, I hypothesized that inequalities in society would not play a central role in risk management and therefore would leave some more vulnerable than others. The method of this study is explained in detail in the next section.

4. Methodology

4.1 Data collection

Figure 5 below shows the research framework for this study. It connects the units of observation obtained in the field such as different views on the concept of vulnerability and on strategies and measures in risk management, to units of analysis represented by the analytical tool of *riskscapes*. Hence, the empirical focus is centered around the role of vulnerability in the various tools applied in disaster risk management, both by governments and other actors. These insights enable me to construct a *riskscape* for Bucharest around components established by Müller-Mahn et al. (2018) and additional new ones.

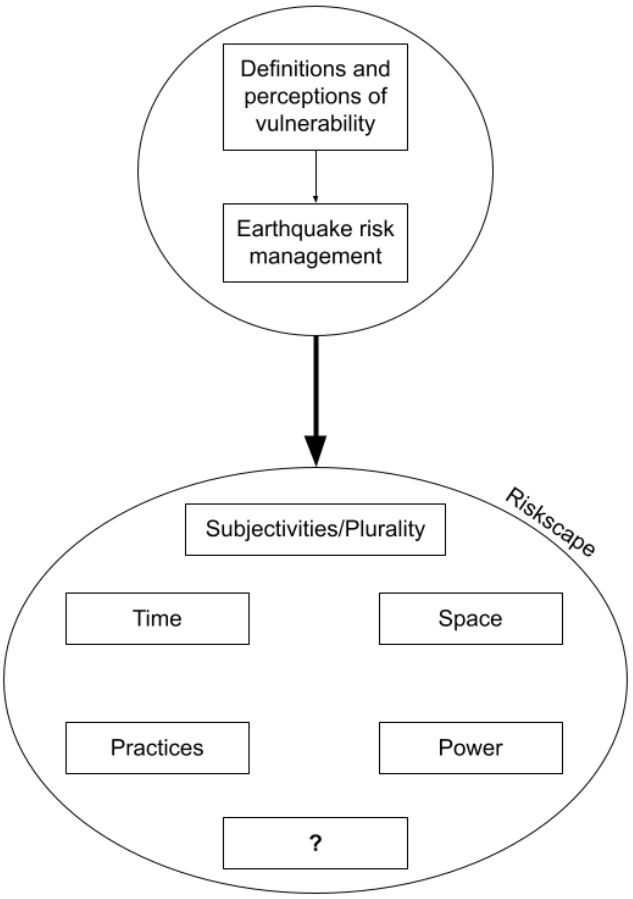

Figure 5: Research framework (Source: Author)

This study adopts a qualitative, fieldwork-based research approach including semi-structured interviews with actors in earthquake risk management in Bucharest, Romania. Risk management is defined very broadly as encompassing individuals actively involved in formal risk reduction such as policy-makers, experts advising institutional bodies as well as leaders of non-governmental organizations (NGOs) focusing on sharing

information with and preparing residents (Orru et al., 2022; the terms *risk management* and *risk reduction* are used interchangeably in this study). This research focuses on a single case study as a special case: Bucharest, the European capital with the highest seismic risk (Armaş, 2006). The exposure to earthquakes, although statistically comparably low with a major hazard event occurring only every 30 to 40 years (Romanian General Inspectorate for Emergency Situations, 2016), paired with the economic and administrative significance of the city in the Romanian context makes for an interesting and extreme case. In addition, literature can benefit from insights from a post-socialist setting where active citizen participation is usually underdeveloped (Nae et al., 2019). The method of case-study research is particularly suitable to gain a deeper understanding of a situation (Flyvbjerg, 2006) by providing an opportunity to use multiple sources of evidence, which in this case include documentation, direct observation and most importantly, interviews as data sources (Yin, 2014).

Research subquestion	**Method**	**Specific data source**
SQ 1: What role does vulnerability play in the formal disaster risk reduction and management strategies for Bucharest?	Document and discourse analysis	*Romanian National Strategy to Reduce Seismic Risk* *World Bank Background Note on Climate and Disaster Management* *IGSU Country Report 5.1 Conditionality Romania* Websites of government, academic and civil society organizations
SQ 2: How do subjective definitions and perceptions of vulnerability affect the measures taken and the strategies developed?	Expert/in-depth interviews Direct observation	Academics, civil servants, NGO representatives, external actors (i.e. World Bank), citizens with a connection to earthquake risk
SQ 3: How can sociocultural and sociohistorical factors explain the difficulties faced in developing preparedness in society?	Expert/in-depth interviews Direct observation	Academics, civil servants, NGO representatives, external actors (i.e. World Bank), citizens with a connection to earthquake risk

Table 1: Links between research sub-questions and the methods used to answer them

Table 1 above shows the connections between research sub-questions and the methods applied. A scoping of possible respondents was undertaken in February 2023 to

establish connections in the field through simple conversations about activities aimed at reducing earthquake risk. In this way, purposeful sampling was done to identify respondents with a certain level of expertise or relevant connection to the field of research. Here, the method of snowball sampling was seen as particularly useful as referrals to colleagues or acquaintances during conversations helped to increase the circle of potential respondents (Biernacki & Waldorf, 1981, as cited in Engel et al., 2022, p.11).

A document analysis of three strategic policies and reports (see Table 2) was conducted to prepare for the interviews in April 2023 to obtain fundamental information from stable and broad sources of evidence (Yin, 2014) and to be able to - in the next steps - go beyond describing the structure of earthquake risk management. I analyzed the Romanian *National Strategy to Reduce Seismic Risk* accepted in November 2022, the flagship document in earthquake risk management at the moment, drafted with the help of the World Bank (Romanian Ministry of Development, Public Works and Administration & World Bank, 2020). This document was also chosen because such an overarching strategy has only been adopted at the national level whereas the local strategy for Bucharest has not been accepted at the time of conducting this research. In addition, the World Bank's background note on *Climate and Disaster Management* from 2018 and the *Country Report 5.1 Conditionality Romania* by the General Inspectorate for Emergency Situations were assessed as these were made available by respondents. At the same time, a critical discourse analysis was performed on these official documents, in particular to explore the use of the term vulnerability and the elements associated with it. The discourse is of course also reflected in other publications ranging from websites of NGOs, risk assessment maps, non-academic as well as academic papers to audio-visual materials. However, these sources were not explicitly analyzed; they instead helped to be able to position and reflect on insights from interviews in the wider context. The main idea behind a discourse analysis is to determine how language is used in certain contexts based on the assumption that language can never be fully neutral (Rapley, 2018) but is embedded in power structures, one of the elements of riskscapes (Müller-Mahn et al., 2018). Hence, analyzing documents and other sources related to earthquake risk management in Bucharest, paying particular attention to the use of language, revealed the role of the concept of vulnerability and how it is incorporated in tools and strategies aimed at reducing it.

Document	Publication date	Authors	Audience	Context
Romanian National Strategy to Reduce Seismic Risk	December 2022	Romanian Ministry of Development, Public Works and Administration, the World Bank (with inputs from a number of experts)	Romanian public, policy-makers at various government levels	First integrated government strategy tackling earthquake risk holistically
World Bank Background Note on Climate and Disaster Management	June 2018	World Bank team (with inputs from the Romanian Ministry of Interior Department of Emergency Situations and experts)	Romanian government	Technical and consultancy expertise offered to government actors including policy recommendations
IGSU Country Report 5.1 Conditionality Romania	2016	*Agora Est Consulting* under supervision of the Romanian General Inspectorate for Emergency Situations (with inputs from European advisors)	Romanian government, European institutions	Prepared under and co-financed by the European Social Fund (ESF) 2014-2020 (Project name: 'National Risk Assessment - RO RISK')

Table 2: Key characteristics of the publications analyzed

Once I answered the key framings of vulnerability in policy and discourse (SQ1), I explored perceptions and definitions of vulnerability that foster or hamper collaboration and thereby influence the spatial and social distribution of risk, which are central to SQ2. Semi-structured interviews were chosen as the preferred tool of data collection as this method facilitates a deep understanding of relationships and allows for flexible and personal insights from respondents (Clifford et al., 2016). Some interviews were held with experts, who are key informants and represent an extensive source of valuable information due to their position within the field of earthquake risk management (van Audenhove & Donders, 2019) such as civil servants, academics and consultants, providing insider perspectives. However, the term is broadly defined to encompass various backgrounds and fields of expertise ranging from academics in earthquake risk assessment to civil servants in emergency response and employees of NGOs affecting policy-making (see Table 3 for an overview). The lines between experts and non-experts and actors situated in government spheres versus individuals representing civil society are blurred in the case of Bucharest as many citizens actively involved with reducing earthquake vulnerability outside the official

authorities have a background in a scientific discipline related to earthquakes. While insights into the organizational structure of risk management are valuable in this research, interviews with experts also aimed at exploring more personal views or institutional perspectives that determine the underlying practical approach to vulnerability. Hence, expert interviews also have the characteristics of in-depth interviews in this study and are not limited to pure factual information. In addition, expert interviews provide an opportunity to compare insights from the document and discourse analysis with those from respondents. highlighting how subjectivities and plurality determine a riskscape.

Throughout the same interviews used to explore definitions of vulnerability (SQ2), I received valuable, sometimes less explicit insights to find answers to sociohistorical and sociocultural factors influencing disaster risk (SQ3). Questions in this area were predominantly addressed by representatives of NGOs giving financial support to citizen initiatives, and by sociologists, among others. Not only does this respondent group have localized knowledge but also a civil society perspective that is distinct to actors in risk assessment and to civil servants. In order to make respondent answers more comparable to each other and increase reliability, the questions asked to experts and non-experts were fundamentally the same, with some more targeted questions asked according to the respondent's position in or towards risk management.

The spatial element of *riskscapes* was also explored through direct observations (SQ2 and SQ3). The advantage of this method is that it does not require particular resources but can be done by the researcher by observing social and environmental conditions in the real-world setting of the case (Yin, 2014). As no earthquake preparation training or informative neighborhood events could be attended, observations were instead used in an informal way to increase the understanding of the urban setting that decisions are being made in. This included aspects in the urban environment such as the physical state of buildings, the designation of risk classes on houses or the living conditions of some neighborhoods hinting at factors increasing vulnerability. The sources of data mentioned above including documentation, interviews and direct observations help to triangulate the data obtained by resolving misunderstandings or bias from interviews through comparison with documentation and other interview results (Yin, 2014).

As mentioned before, the fieldwork for this study started with a 1-week stay in Bucharest in February 2023 to connect personally with potential respondents and obtain an overview of current processes in risk management and the urban setting. Subsequently, I made appointments with respondents to meet in person during a second 10-day stay in Bucharest in April 2023, all of which were pleasantly surprised about my interest in the issue and thus very open to sharing their personal views and knowledge. The interviews were conducted predominantly in the respondents' respective office, resulting in eleven interviews

accomplished on-site. An additional four interviews were conducted back in Groningen, online through the *Zoom* application, amounting to 15 interviews conducted in total. Most interviews took between 30 minutes and one hour, but all were at least 30 minutes long while others lasted longer than one hour. As shown in Table 3, most respondents are either active in academia or for an NGO. Only two representatives of government institutions could be interviewed due to difficulties with establishing a connection with authorities. Missing the perspectives of the municipality of Bucharest and responsible ministries is a limitation of this study as it might lead to omission of some insights into important decision-making processes. Nevertheless, the respondent characteristics make for an appropriate reflection of the varied backgrounds of the individuals involved with earthquake risk in Bucharest. In addition, some key personalities were consulted, who have years of experience and an insider perspective that reduces the chances of having omitted an important process in the field to almost zero.

A few ethical considerations were taken into account in this research. First, data was only collected on the basis of consent and respondent names were anonymised. Explicit connections between responses and their respective institutions were largely avoided. Another aspect to keep in mind is my positionality towards the research location and cultural context: As I am not from Romania and have spent comparatively little time there, it was essential to maintain a respectful, open-minded attitude towards insights rooted in the local context. In other words, I had to balance my own views and understanding of urban planning with a respectful reflection on the different sociogeographical context.

Respondent	Expert, non-expert	Characteristics
1	Non-expert	Author of influential article *Earthquake in the Vulnerable City*
2	Expert	Researcher and rector at Technical University of Civil Engineering Bucharest
3	Non-expert	Researcher at University of Bucharest, program coordinator at NGO *ActiveWatch*
4	Non-expert	Real estate developer
5	Expert	Researcher at National Institute for Constructions, Urbanism and Sustainable Territorial Development (URBAN-INCERC)
6	Expert	Employee at NGO *MKBT* (*MakeBetter Foundation*), contributor to World Bank reports
7	Non-expert	Leader of NGO *Bucharest Community Foundation*

8	Expert	Employee at World Bank, previously leader of preparedness initiatives under Red Cross
9	Expert	Civil servant at General Inspectorate for Emergency Situations (*IGSU*)
10	Expert	Civil servant at Municipal Administration for Building Rehabilitation (*AMCCRS*)
11	Expert	Researcher at National Institute for Earth Physics (*INFP*)
12	Non-expert	Coordinator of Bucharest Prepared Program at *Bucharest Community Foundation*
13	Non-expert	Trainer at *Utility Dogs Club*
14	Expert	Founder of NGO *Re:Rise*, World Bank consultant
15	Expert	Disaster risk management specialist for the World Bank

Table 3: Respondent characteristics

4.2 Scope of this study

Various aspects limit the scope of this study. First, the spatial boundary is the city of Bucharest taking into account and paying particular attention to poorer neighborhoods in the suburbs or the city center, where vulnerability may be higher. The residents living in these areas are the most important stakeholders as they are likely to be the most affected in an earthquake. In addition, this study broadly encompasses historical developments - operationalized as time in the riskscape concept - in order to substantiate the root causes and dynamic pressures in risk and vulnerability. Looking at the wider sociocultural and political context and its role in producing risk through assemblages of power, discourse and contradicting approaches is central to political ecology (Bryant, 1998; Donovan, 2017). It is evident from the literature reviewed that pointing out vulnerable individuals is not enough, instead one should ask why this is the case (Wisner et al., 2005). The focus is on the preparedness of residents as the final outcome of policies, strategies and practices in risk management, hence the safety of residential buildings becomes central particularly in relation to the earthquake hazard (Wisner et al., 2005). Critical infrastructure - networks for basic amenities including transport, water, sewage or heating (Orru et al., 2022) - arguably play an important role in safety during and after an earthquake including transport and the provision of water and electricity. However, these aspects are secondary to the aims of this research. Elements of disaster risk management extend from prevention to preparedness to response and recovery, which are all taken into account in this study for a holistic perspective. However, again the focus here is on the preparedness of residents in line with the aforementioned reasons. Even the best emergency service will not be able to prevent a disaster if the root causes of vulnerability are not addressed before the hazard strikes. All these elements of disaster risk management are reflected in the next section as I move towards the results of my research after introducing the city chosen as the case study: Bucharest.

5. Towards an emerging earthquake riskscape for Bucharest

5.1 Governance of earthquake risk in Romania

As mentioned previously, Bucharest has the highest seismic risk of any European capital (Armaş, 2006). However, as this research will also make clear through a detailed description of the city's riskscape, the risk originates to a lesser degree in the actual hazard represented by an earthquake and is much more rooted in the vulnerability of the urban form and population. Before diving into each element of sociopolitical assemblages of risk inspired by the categories of Müller-Mahn et al. (2018), I set the scene by briefly discussing the geographical and political context of the city and of Romania as a whole.

After the fall of the iron curtain, Central Eastern European countries previously led by socialist regimes had to deal with a triple shift: not only to a new government but most significantly to capitalism and democracy. The semi-presidential republic of Romania replaced the socialist regime of Nicolae Ceaușescu (European Union, n.d.). In this period, Romania became a "super homeownership society", a result of the wave of homes changing from government to private ownership after 1990, which saw many Romanians purchasing the home they were living in at the time (Zamfir, 2022, p.38). The neoliberal paradigm shift led developers to use loopholes in laws to push for economic advantages, resulting in a chaotic, often deficient and improvised urban form and infrastructure since the 1990s (Gavriş, 2013; Nae et al., 2019). The country has a large Roma population, which has been historically marginalized in society (Lancione, 2022) and by government policies: for instance, the group is disproportionately affected by eviction (Zamfir, 2022).

The planning system had to be drafted from scratch after 1989 and the process of adapting legislation for urban development is still ongoing as institutions battle with a lack of capacity (Ionescu-Heroiu et al., 2013). Romania is an EU member state since 2007 and has profited from financial support available through various funding mechanisms such as the European *Cohesion Policy*, which addresses regional socioeconomic disparities across member states and fosters green and digital transitions (European Commission, 2022). European funds also made the *National Recovery and Resilience Plan* possible, which focuses on sustainability in the energy, transport and building sectors (European Commission, n.d.), including energy-efficient and earthquake-resistant renovation.

Participatory planning and civic engagement are only emerging in Bucharest (Nae et al., 2019), a city of two million people and the country's seat of government and economic powerhouse (Gavriş, 2013). Bucharest as it exists today emerged in concentric rings throughout time and different political systems: the center was formed until the end of the

19th century, alternating residential and utility areas were built in and around the center until World War 2, replaced later by large-scale socialist neighborhoods, and sprawling low-rise developments have grown since the 1990s (Nae et al., 2019). Many lower-income groups such as the Roma are forced to live in abandoned buildings in the city center or overcrowded apartment blocks on the outskirts of the city (Armaş, 2006). The latter is explored by Lancione (2022) through ethnographic research into the racialized dispossession of Roma people as a result of neo-liberal urban development, in terms of housing and working conditions.

The end of the socialist period left behind a disinterested civil society discouraged from participation due to mistrust of authorities and ingrained thinking of being the beneficiaries of state action (Creţan & O'Brien, 2020). The mistrust can partly be traced back to the negative connotations of destructive urban renewal shaped by the regime's brutal relocation of residents (Nae et al., 2019). In 2015, a fire broke out at an old warehouse in Bucharest used as a nightclub called *Colectiv* after the ignition of unlicensed fireworks, leaving 64 people dead (Creţan & O'Brien, 2020). Described as one of the largest post-socialist disasters in Romania, anger over the lack of enforcement of safety regulations and inaction of emergency services led to anti-government protests alleging widespread corruption (ibid., 2020).

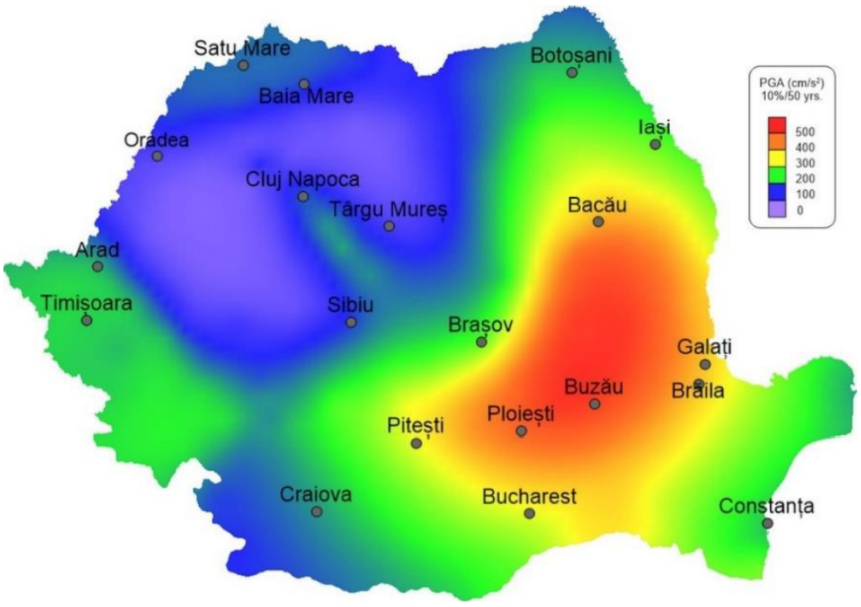

Figure 6: Seismic hazard map of Romania: Bucharest is located to the south-west of the most active zone Vrancea (in red; Source: Pavel et al., 2016, as cited in Romanian Ministry of Development, Public Works and Administration & World Bank, 2020, p.15)

The Vrancea region around 180 kilometers to the north-east of Bucharest is the most active seismic zone of Romania (Calotescu et al., 2018; see Figure 6) and was the origin of Romania's "greatest natural disaster of the 20th century" (Georgescu & Pomonis, 2018, p.281): an earthquake on March 4th, 1977, left 1570 people dead and 35,000 families homeless (Armaş, 2006). Damage and suffering were concentrated in Bucharest with 90% of the casualties being residents of the capital (Armaş, 2006). In the aftermath of this traumatic event, as international attention abated, the strengthening of buildings was abruptly stopped by the regime, allowing only minor cosmetic repairs on facades (Georgescu & Pomonis, 2018). This inadequate and intransparent governance of building safety continues to influence urban risks in Bucharest to this day.

A magnitude 7 earthquake is expected to occur on average every 33 years in the Vrancea region (Armaş, 2006). According to the General Inspectorate for Emergency Situations (2016), there is a high level of anxiety over earthquakes among the population of Bucharest, especially those that experienced the destructive 1977 earthquake. Over 75 % of the Romanian

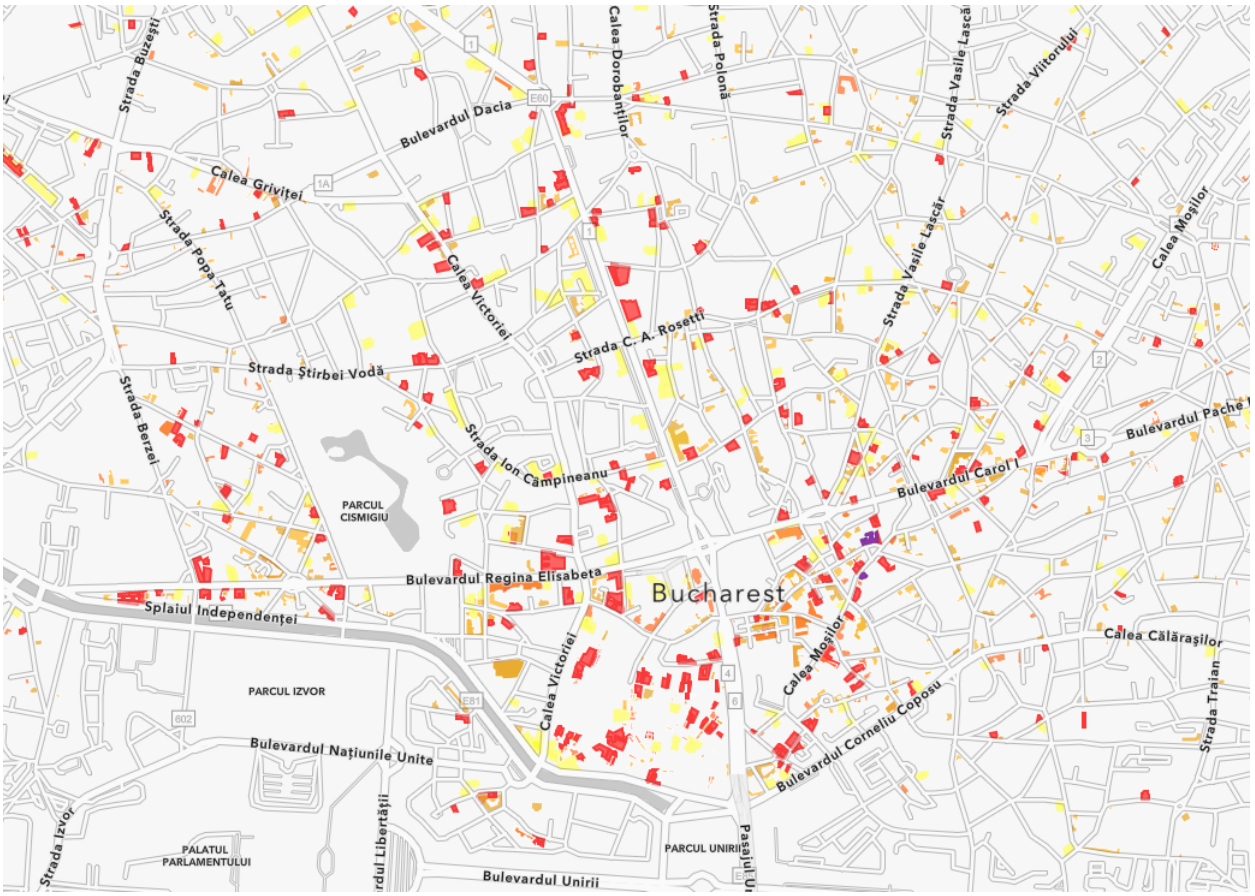

Figure 7: Seismic risk in Bucharest: Map showing all buildings in seismic risk classes and urgency categories (Source: *Institutul Naţional de Cercetare - Dezvoltare pentru Fizica Pământului*, 2022)

population is exposed to high seismic hazard, and up to three-quarters of fixed assets and 80 % of gross domestic product (GDP) is concentrated in areas prone to seismic activity (World Bank, 2018). Earthquake risk in Bucharest is mainly represented by buildings constructed before the first seismic code of 1963 came into force (World Bank, 2018). The city center with its many historic buildings is a particularly hazardous location, where the houses have often not been maintained appropriately (see Figure 10, Armaş, 2006). In total, 2500 apartment buildings in Bucharest need structural reinforcement and are categorized in one of three seismic risk categories (World Bank, 2018, see Figure 7).

There are four main institutions in charge of disaster risk management in Romania (see Figure 8): the Department for Emergency Situations and the General Inspectorate for Emergency Situations are responsible for response and prevention under the Ministry of Interior (*Ministerul Afacerilor Interne* or *MAI*), the Ministry of Development, Public Works and Administration (shortened to Ministry of Development in the following paragraphs, *Ministerul Dezvoltării, Lucrărilor Publice și Administrației* or *MDLPA*) coordinates preventive risk reduction measures while the National Institute for Earth Physics (*Institutul Naţional de Cercetare - Dezvoltare pentru Fizica Pământului* or *INFP*) monitors earthquakes through the early warning system (World Bank, 2018). A building rehabilitation program is managed by the Bucharest municipal authority for the consolidation of buildings under seismic risk (*Administrația Municipală pentru Consolidarea Clădirilor cu Risc Seismic* or *AMCCRS*) and applies to houses

categorized in the highest risk category (class 1) due to danger of collapse during an earthquake: nationwide, around 380 buildings or 60% of these structures are located in the capital (see Figure 9; Administrația Municipală pentru Consolidarea Clădirilor cu Risc Seismic, 2022; World Bank, 2018). Most policies in risk reduction focus on emergency management organizing the response during an earthquake event such as simulation drills (Glod-Lendvai, 2019). Since 2016, communication between stakeholders has been organized through the *National Platform for Disaster Risk Reduction* composed of government authorities and representatives from civil society (United Nations Office for Disaster Risk Reduction, n.d.). Governance of earthquake risk is complicated by the fact that the city's sectors have their own governments and do not follow the boundaries of neighborhoods (Armaş et al., 2017). Şercăianu et al. (2018) state that efforts in risk management in Romania have traditionally focused on the hazard and not the vulnerability element of risk. Such efforts and practices are explored more in-depth in the following section.

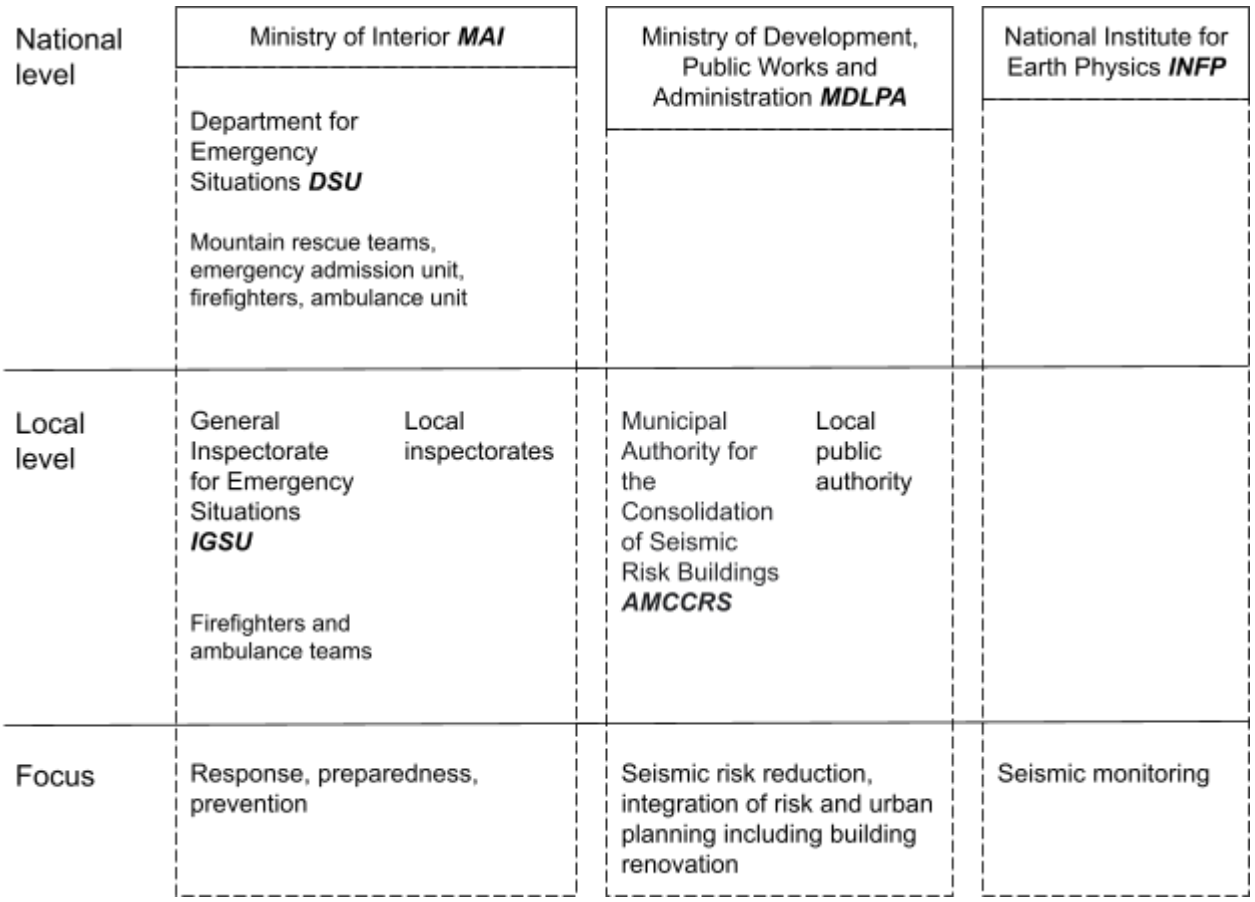

Figure 8: Institutional hierarchies of Romanian earthquake risk management (abbreviations of institutions in Romanian, Source: Author)

5.2 Riskscape of Bucharest: Practices of different actors

Now that I have set the scene in terms of the geographical context of Bucharest, the next sections discuss the emerging riskscape largely following the main elements of Müller-Mahn et al. (2018) including space, time, power, practices and subjectivities as well as one additional element identified inductively (the element of plurality is discussed throughout the sections and is strongly reflected in the subjectivities that create it). Practices are discussed as the first element of the riskscape of Bucharest in order to gain an overview of the different efforts initiated by various actors. As such, they are very much influenced by the subjective views of each actor, which are discussed towards the end of this section due to their central role in this research. I define social practices as broadly as possible to include government activities as well as projects by NGOs. In this, power plays a defining role in organizing effective social practices and the struggle can lead to overlapping, fragmented or even contradictory efforts in risk management.

Figure 9: Buildings categorized under risk class 1 with the distinctive red dot symbol (Source: Author)

5.2.1 Government

Important long-term visions characterize government practices in the field: the *National Strategy to Reduce Seismic Risk* (referred to as National Strategy in the further course), the *Bucharest Resilience Strategy* and the *National Strategy for Disaster Risk Reduction* are documents leading to the incremental revision of legislation. While the former has been officially adopted, the local strategic document has not been accepted and the latter is currently still being developed. Compliance with The *UN Sendai Framework* is checked through submission of the National Strategy to UN experts. Under the mandate of

the Ministry of Development, these documents contain dedicated programs for public buildings with important functions like schools and hospitals and are frequently revised and expanded in follow-up documents, for instance presenting new methods to prioritize buildings for consolidation through *Rapid Visual Assessment*, a quicker assessment of the state of a building only by exterior observation to replace the regular time-intensive procedure. Local governments are responsible for executing the analysis supported by expert teams in an iterative process linked to risk assessment at higher administrative levels. Public authorities work closely together with academia such as the Technical University of Civil Engineering in Bucharest, for instance helping to prepare the Rapid Visual Assessment. In addition, the Institute for Earth Physics develops interactive maps and guided tours for citizens to learn about the extent of buildings at risk (see Figure 7).

As mentioned before, the Department for Emergency Situations (*Departamentul Pentru Situaţii de Urgenţă* or *DSU)* and the General Inspectorate for Emergency Situations (*Inspectoratul General Pentru Situații de Urgență* or *IGSU*, see Figure 8*)* are the leading authorities in emergency response at the national and local level, respectively. In 2018, the *DSU* started a large-scale simulation to practice the emergency response in case of an earthquake and evaluate the readiness of each unit. The website *Nu tremur la cutremur* (*Don't shake during an earthquake*) is the main way that *IGSU* and *DSU* inform about how to behave in an earthquake, with the help of short animations. In addition, emergency trucks and caravans tour through the country as another practice with an educational aim. Countrywide awareness campaigns have aimed to increase adaptation to the earthquake hazard and foster preparedness (World Bank, 2018).

The process of strengthening buildings (the words strengthening, consolidation and rehabilitation are used interchangeably here) to make them safer is mainly coordinated by the municipality's dedicated authority, which has grown over the past years and has made the process of renovation of *red-dot buildings* more transparent (see Figure 9 above). Currently, owners must approach the authority if they wish to have their property at risk refurbished; the public institution subsequently covers all the costs. The condition that all owners of a building must agree on the consolidation is currently under revision to be changed to a qualified majority (meaning 50% of owners and one additional one must agree for the renovation to go ahead), in order to reduce some barriers to implementation. In addition, the costs are fully financed by the municipality on the condition that the owner does not sell the property in the following 25 years. The municipality's special authority unites all necessary experts from architects and engineers, who decide the technical details, to the construction workers executing the project and acts as a mediator between the respective firms and the owners.

While many buildings in Bucharest have not yet been assessed to be qualified for retrofitting, the process of consolidation itself is extremely time-intensive. Public acquisition of buildings, disagreement between owners (some of which live abroad) and the relocation of tenants all slow down the process significantly, as reflected in the words of one of my respondents:

> *"In my apartment building, that's 140 owners. And there was a huge scandal on the WhatsApp group. Last year, we had over 1000 messages in a day. Everyone arguing, because the administration wanted to register the apartment building with the city hall, so we get funds for retrofitting and insulation"* (Respondent 1, 03.04.2023)

> *"So you have all these things that are not really working, and you blame the owners for not being organized and decisive"* (Respondent 1, 03.04.2023)

Owners have a right to be relocated to alternative housing during the reconstruction works, while tenants are in a much less powerful situation: they are only informed about planned activities, lack agency to affect the decision to consolidate while it is them who have to bear the risk if owners are not convinced (Şercăianu et al., 2018).

Regulations were also updated to integrate energy efficiency measures with the strengthening of buildings, which is a synergy that was previously missed and led to cases in which newly erected buildings did not follow the seismic code. In many cases, residents who are not tenants or owners of the property they occupy are dealt with by either the police or the social care department and sometimes led to self-evict. Current regulation allows the responsible authority in some cases to execute the consolidation of a building without agreement from the owners. In addition, compulsory and affordable earthquake insurance has existed for years, but has not been popular among the population. In the aftermath of the deadly fire at nightclub *Colectiv* and the country-wide anti-corruption protests that followed, regulations on the use of buildings for public gatherings were made stricter, which first led to the closure of businesses such as cafés and theaters but was followed by the realization that many schools do not satisfy the safety requirements either. Hence, the stricter regulations were replaced by assigning the matter of safety as a responsibility to the owners, which enabled them to reopen their business, in some cases with a little monetary help (see section 5.5).

The World Bank is now a central actor for risk management in the country, which goes back to early advocacy of a collaboration by the head of the Department for Emergency Situations. The institution directly influences the process of drafting strategic documents and filling legislative gaps as becomes evident through their involvement in developing the *National Strategy to Reduce Seismic Risk*. The World Bank has the expertise to give technical advice and the leverage to start collaborative processes such as the

Romania Disaster Risk Management Community, which saw emergency response services sit at the same table as local initiatives. Since 2018, trust funds from the World Bank also make educational programs for civil servants and engineers possible, which clarify the contents of national and local strategies specifically regarding their implementation. The bank had funding available before any EU funding schemes were applicable, which has also benefited the retrofitting of schools and fire stations in Bucharest. In short, government authorities are active in the fields of emergency response and prevention through reducing risks represented by unsafe buildings. Government capacity at the local level has greatly improved through the growth of the renovation authority *AMCCRS*, nevertheless much of the active preventive work seems to be in the hands of emergency response authorities.

5.2.2 Civil society

Many practices connected to earthquake risk in Bucharest today can be traced back to an influential article published in the magazine *Decât o Revistă* (DoR) in 2017 with the title *Earthquake in the Vulnerable City*, a huge success that led the author to be invited as far as Mexico to share her story. By writing about the many practical implications of the impact of an earthquake with a magnitude as the one in 1977, focusing on the emergency response and administrative and social procedures in the aftermath of such an event, the author sparked a wave of grassroots initiatives and collaborative activities between institutions that were later stabilized through the work of a small but strong community of NGOs such as the *Bucharest Community Foundation*.

Since 2019, the foundation coordinates the *Bucharest Prepared Program*, which raises funds to finance initiatives working on preparedness. Their aim is threefold: first, to raise awareness of the issue, second, to share information with and train residents on how to behave before, during and after the earthquake, and third, bring the stakeholders in this field to the same table. By funding initiatives in the fields of training rescue dogs or upholding communication during the hazard event through amateur radio, they complement the work of public authorities in the field of prevention and made them aware of opportunities for collaboration with civil society, which until that point was scarce. In the future, they aim to target their education efforts towards corporate employees and school students as they make up a large part of the city's population and can be easily reached. This would mean a continuation along the lines of a cooperation with the Red Cross, also funded through the organization, aimed at school children, which could be expanded to fit the needs of people with disabilities as well. Another vulnerable group is tourists, which the foundation planned to give leaflets to as they are often clueless about the fact that their holiday home could be one of many buildings at risk of collapse.

Another NGO working in the field is *Re:Rise*, founded in 2016 for seismic risk reduction, promoting factual knowledge about earthquakes and pointing out the fake news and myths circulating in society in order to create communities of trust and good habits that are stronger and more resilient when an earthquake strikes. In the same year, *Make Better Foundation* (*MKBT*), an organization focusing on revitalizing urban and rural spaces, started to map buildings at risk of collapse and conducted surveys with their residents to determine the demographics of more than 12,000 citizens living in these hazardous houses. *Re:Rise* worked together with another NGO, *Arcen*, on a project called the *Anti-seismic District*, which saw organizers reach out to communities to start a discussion on awareness and risk perception. Hence, NGOs are primarily active in the area of information-sharing to build awareness and responsibility enabling citizens to take measures themselves. In contrast to the public authorities, while they also present the hard facts, the NGOs highlight the agency of every resident of the city to get prepared through an array of various actions, which creates a positive image of collaboration between friends and family.

Regarding the topics of response and recovery, the scale of damage that a major earthquake could cause is not addressed in public debate. Although the emergency services know their role, they are likely to be overwhelmed without a clear prioritization of response efforts, including cooperation with residents themselves. One respondent compares the potential disaster during an earthquake to the situation after the *Colectiv* fire:

> *"Imagine that the whole emergency system and hospitals were overwhelmed by 160 injured [...] so imagine how huge the scale of a large earthquake would be compared to that"* (Respondent 6, 10.04.2023)

An early warning system is in place but a great number of volunteers will be needed for search operations, to clean up the streets, perform maintenance works and distribute basic supplies. In general, communication between government actors and citizens lacks transparency, for instance when it comes to documentation of the building renovation process. In addition, essential information is hard to find for the regular citizen due to the authorities' inadequate information politics, as one respondent pointed out:

> *"So people are not informed, nobody would sit on that website for more than 40 minutes in order to find this list [of emergency shelters]"* (Respondent 3, 06.04.2023)

While academic knowledge staying in academic circles is not unusual, in Romania, efforts to simplify insights for the wider population are underdeveloped as one respondent from academia stated:

> *"[...] it is not working well.You need a lot of exercise in order to be able to communicate complicated things with very simple words"* (Respondent 2, 04.04.2023)

Creating awareness and spreading knowledge therefore falls on the shoulders of NGOs. From the practices of risk management, we now move to the spatial manifestation of risk and vulnerability.

5.3 The spatial dimension of riskscapes

The spatial component of riskscapes is a vital one as it describes the physical manifestation of practices and processes that decrease and increase vulnerability and risk. At first glance, looking at space might seem like a trivial snapshot of a situation at one point in time, however, in reality it is evidently the product of different powerful actions throughout time. In Bucharest, there are two categories of hotspots of vulnerability: rundown, sometimes historic buildings in the city center and suburban blocks on the fringes. The vulnerability of those that live in these houses is directly related to the location and state that the buildings are in. In the city center, poor people living in previously abandoned buildings are spatially more distributed (see Figure 10) while others living in overcrowded neighborhoods on the outskirts are homogeneously marginalized. However, one respondent emphasized that poverty is not localized but spread throughout the city. Disadvantaged groups like the Roma minority that cannot afford to pay rent squat derelict buildings that bear a high degree of earthquake risk:

> *"Homeless people who are just building some shacks and things like that. But they mainly live in the center, so they have nearby some sort of income"* (Respondent 3, 06.04.2023).

Concentrations of disadvantage in some outer neighborhoods like *Ferentari* also emerge due to the lack of large-scale social housing schemes in Bucharest:

> *"We have no social housing in Bucharest. They are only giving 20 social apartments per year, but they have tens of thousands of applications per year"* (Respondent 3, 06.04.2023)

In disadvantaged neighborhoods, the lack of enforcement of regulations can also be observed in private additions to property particularly with the aim of increasing the living space. The structural instability of privately added living space contributes to the fundamental vulnerability of those that live there. As one respondent described, the potential for disaster is particularly high in these areas:

> *"Casualties from areas where there are not necessarily red dots on buildings, but where there are poor families in condominiums which have been degrading over time because of low income levels and because there have been authorized interventions on buildings that have been tolerated by the City Hall"* (Respondent 6, 10.04.2023)

Consolidation of buildings is generally unattractive due to the dramatic decrease in living space once walls are added for further strengthening. From the perspective of programs to strengthen buildings, older houses with a heritage value are naturally more attractive and profitable to consolidate than, for instance, the socialist blocks. While this can

increase evictions to enable the strengthening of ‘beautiful old buildings’, it leaves out a large number of houses inhabited by disadvantaged groups that only seem more modern but represent a similar risk. An interesting spatial manifestation of an uninformed population are the emergency shelters, which are often located in basements or attics of private buildings, whose owners likely do not know about their responsibility. Lastly, the collapse of facades and their impact on streets and surroundings is another spatial risk as the norms for seismic stability of facades are very recent, meaning that most buildings do not comply with this regulation. The high ownership rate in Bucharest is generally an asset as it provides even the disadvantaged with a home in uncertain times such as financial crises and earthquakes. However, the nexus combining lack of maintenance, responsibility and resources might act to dissolve this asset as the process of strengthening falls on the shoulders of a central authority who lacks leverage. The question of responsibility is one of the factors that highlights a certain degree of path dependency, as described in the next section.

Figure 10: Rundown buildings in and around the city center of Bucharest (Source: Author)

5.4 The temporal dimension of riskscapes

For analytical purposes, we can split up the factor time in past practices impacting risk management to this day and imaginaries of the future, particularly with respect to the earthquake event. Although one tends to isolate current practices in the now as being independent from the past, it is important to acknowledge that those practices are embedded in a much wider course of events.

After the major earthquake of 1977, the Socialist regime took the stance that buildings were rehabilitated sufficiently to be safe, which was far from the truth and would complicate risk management for decades to come. The government ignored their obligation to keep buildings habitable, also undermining their role as caretaker of the population. In addition, the authorities at the time discouraged citizen action by creating the image that they are in control and the buildings are in good condition. This became breeding ground for urban myths such as the view that buildings become stronger with every earthquake they experience: those houses that survived 1977 do not need to be retrofitted because they will sustain another earthquake easily (scientifically speaking, building structures become weaker with every earthquake; Armaş, 2008). The borders of what is regarded as scientifically proven were bent towards "*urban legends that people created in order to mitigate the fear" (Respondent 1, 03.04.2023)*, hence finding simple answers to complex problems.

> *"In order to have capitalism you needed capitalists. So people were made capitalists by selling them property"* (Respondent 14, 05.05.2023)

However, this switch from a population of state tenants to private home owners also introduced unclear complex ownership regimes, in which some poor residents are contractless. This can be explained by the following: after the fall of the regime, ownership was transferred from the municipality to the previous owner, who is now reluctant to sign a contract with the tenants, whose former contract with the city hall has of course lost validity. In this way, state ownership in the past is a major factor in inequality today. The collective view that the state is responsible for managing the housing stock also dates back to communist times. While ownership is now in the hands of private landlords, this has not been accompanied by a growing sense of responsibility of this group for their property. This slows down the building rehabilitation program at city scale, as it is built on the owner's initiative: voluntary action that fails to materialize in many cases, as two respondents pointed out:

> *"Therefore there was no pressure for the city hall to consolidate these buildings, therefore they did I think 4 or something in 20 years, something ridiculous"* (Respondent 3, 06.04.2023)

> *"I mean, I would love to see all the buildings we're talking about [consolidated]. I will not see it happen in my lifetime."* (Respondent 1, 03.04.2023)

The lack of responsibility for preparing oneself for the possibility of an earthquake can be attributed to citizens in general, not only to property owners: parents might stay passive even though their children go to a school building that is at risk of collapse. In addition, low-quality block developments from the 1950s and 60s were built by the communist regime with an 'expiration date' in mind: they would require significant renovation after 50 years, something that has generally not happened.

Before the unprecedented integrated strategies in risk management that were only recently presented by national authorities containing prioritization and progress evaluation mechanisms, there were annual programs for the seismic risk reduction of buildings. Apart from being exclusively aimed at the building stock, continuity and financing of projects was complicated as construction on one house would typically take longer than one year. Additionally, in risk management there remains the question of how to transfer the urgency levels used before 1996 to the seismic risk categories after in order to make a coherent prioritization of buildings, a task complicated by the variety of different factors used in both approaches to seismic risk assessment. Hence, some risks are still hidden in buildings by a puzzle of different assessments while other houses have not been assessed at all.

To a certain extent, the socialist era also erased social trust by setting up a culture of surveillance, which was followed by an increasingly individualized society since the opening of the economy. Both are fundamental causes of neighbors not knowing each other, a vital ingredient now missing to create prepared communities that look out for one another:

> "*If you see your neighbor that does something bad, or contrary to the regime, if you give a phone call to the regime, you have something to gain. And this demolished the trust"* (Respondent 14, 26.05.2023).

Interestingly, this seems to be a problem in the bigger cities like Bucharest whereas social cohesion is much greater in rural areas where people are more used to helping out their neighbors on a regular basis, as reflected in the words of one of my respondents:

> *"There's a big difference in the cohesion of the community. When you talk about big cities and small cities, [...] in the rural area, people know each other* (Respondent 15, 26.05.2023)

Every year, the 1977 earthquake is commemorated on 4th March, with public programs and speeches from politicians bringing the earthquake issue back to people's attention, while the rest of the year the general public is not concerned with such considerations of risk and safety. The low frequency of earthquake events understandably reduces the sense of urgency in society to become prepared: many have never experienced

a major earthquake. However, a small shift has been visible in the public perception of practices raising awareness and preparedness from previous mistrust to current increased acceptance for actions proposed and promoted by NGOs such as the *Bucharest Community Foundation*.

The question of time also becomes evident when we turn to assumptions about the future. While an earthquake could potentially happen tomorrow, many public authorities believe there is still time to prepare: the renovation authority *AMCCRS* follows a system of consolidating buildings on a voluntary basis, and emergency services will need to join forces with volunteers during and after the event, requiring prior training. However, the illusion of time continues in civil society, with companies postponing earthquake drills and families slowly preparing earthquake kits (Ilie, 2017). What is certain, is that a major earthquake would radically change the city's face and also shape subsequent practices in risk management possibly towards a different focus, perhaps with a stronger look towards vulnerable groups that are subjected to unequal power regimes, as evidenced by the next section.

5.5 Riskscapes of power and wealth

There are different types of power as defined by Svarstad et al. (2018): structural, economic and discursive. Combining all three, this section will predominantly focus on the decision-making power of government authorities. Another element of power is financial capacity, which can become a tool for decision-making in capitalist environments not only in terms of well-organized and democratic financial mechanisms available through international organizations such as the European Union or World Bank but also when actors undermine risk governance through the illegal exchange of funds.

Responsibilities of authorities in risk management often overlap, which results in avoiding tasks supposedly fulfilled by another institution, as two respondents make clear:

> *"A lot of public institutions are responsible for the same thing. There are a lot of documents that make no sense. There is no unified concept. The authorities still work in silos, they cannot always communicate"* (Respondent 12, 26.04.2023)

> *"Many authorities with various responsibilities, some of them overlapping, and making sure that it wasn't my responsibility, it was the other authority's responsibility, it's a sport and dangerous tendency"* (Respondent 11, 12.04.2023).

In addition, the dysfunctional environment that politicians and policy-makers work in is characterized by populist decision-making and a lack of continuity in public offices. Earthquakes are negatively connoted, hence politicians prefer to focus their advocacy work in other fields during their mandate in order to increase their chances to be re-elected. While delving into seismic risk is risky for a politician's career, the issue also exceeds their mandate making it less attractive than investing into something with short-term benefits:

> *"[It is not] the most attractive topic for politicians [...] because of this negative image on the one hand. On the other hand, this really exceeds their mandate. So it is not an issue you've solved in two years or so. And if there isn't any earthquake during your mandate, your opponents will say, better invest in education"* (Respondent 2, 04.04.2023).

Another issue is the constant change of staff in decision-making, which means that technical consultants continuously have to convince leaders of the significance of improving risk management. For project leaders this makes funding difficult as urgency of the issue has to be advocated again and again due to different opinions of the person in office. For instance, the local seismic risk strategy for Bucharest, although completed, has yet to be accepted:

> *"The strategy has not been officially adopted. So it's a document that sits somewhere in somebody's office, and nobody does anything about it"* (Respondent 7, 11.04.2023)

Currently, however, the choice to 'bother with seismic risk' is changing into an obligation based on strategic documents. Recent earthquakes, minor ones in Romania and the devastating one in Turkey and Syria in February 2023, sparked a form of opportunism in national ministries to justify stricter laws and, for instance, ban the renting out of apartments in seismic risk category 1, which can be contested in terms of consistency as it would ignore the much higher number of class 2 buildings. By deciding the specific time when the topic gets addressed, the state dictates the public debate. When the government stays silent on the earthquake issue, it does not exist as a collective problem, and once more institutions acknowledge it, as is currently the case, it wells up again in public memory, a clear case of discursive power. Especially when money is available, it becomes more attractive for government institutions to carefully listen to suggestions from, for instance, the World Bank on how to improve risk management, as one of my respondents pointed out:

> *"Institutions in Romania, like the parliament, right, which is supposed to only stand for the people's will, they are very open to the suggestions of the World Bank, because the World Bank has a big bag of money"* (Respondent 14, 05.05.2023)

At the local level, successful consolidation projects in the municipal portfolio also help to improve the institution's image, credibility and trustworthiness. Taking care of all the costs and introducing the qualified majority rule as a way to come to a decision among owners facilitates the aim of increasing the number of successful projects. Secondary to this aim is setting off a virtuous cycle where other owners decide to strengthen their property on their own even without the help of the government. Generally, the decade-long focus on buildings means that the vulnerability of people is understudied. Little data is available also due to difficulties with gathering it: the reason why social vulnerability maps have not been created and knowledge on occupants of rundown buildings is lacking (Gavriş, 2013). While scarce data does complicate the task of reducing vulnerability to earthquakes, the government's unwillingness to interact with people surely also plays a role.

The state is naturally the most powerful actor in preparing the population and preventing the worst impacts of an earthquake. This paternalism is justified in the sense that they have a responsibility towards the population and have to believe in their own strength in managing the situation. However, this paternalism does not seem to be evenly distributed in state authorities, being particularly pronounced within the emergency services and much less among other state actors. The paternalistic attitude of the Department and General Inspectorate for Emergency Situations is a clear show of power rooted in the belief that preparedness can be achieved through one institution rather than through a participatory process. As militarized personnel, individuals have an understanding of leadership based on strict hierarchies. Strikingly, however, the *IGSU* is also the most active institution pushing to

be more inclusive through keeping a registry of NGOs and their assets although they are sometimes reluctant to work with actors from civil society such as volunteers. While the ministries preferred to keep the population uninformed to avoid the negative connotations, the emergency service worked hard to convince them to show educational campaigns on television. The same tedious process applies to studies of vulnerable groups that require approval by higher authorities. Importantly, the emergency service *IGSU* has tremendous power to create awareness in the population because they enjoy the population's trust.

Corruption plays a role in planning, issuing of building permits, execution and maintenance of property with the goal of maximizing profit from using the buildings, as one respondent pointed out:

> *"Corruption is also big. So I expect that this might have led to some big frauds, either in planning or in execution or in maintenance, that might lead to huge disaster"* (Respondent 4, 06.04.2023)

It is difficult, however, to estimate how many buildings are affected by such procedures in terms of seismic risk. Cases of bribery are also known to affect seismic assessment: some buildings containing cafés and restaurants would be downgraded from the first to the second risk category, allowing owners to reopen their businesses. In addition, landlords capitalize on renting out units in high-risk buildings, exposing the already vulnerable even more simply by disinterest in earthquake risk and in their tenants. Two very different groups contribute to the slow pace of renovation of buildings in seismic risk categories; they are the landlords who keep renting the property to tenants to make a profit, and the tenants, who are often so old that they do not see any benefit in moving at that stage in their lives, according to one respondent:

> *"The main difference between these two categories is that the second category is aware of the risks and is willing to take it to assume this risk on themselves, whereas the first category is aware of the risks, but they just externalize the risk to the tenants"* (Respondent 14, 05.05.2023)

Another respondent points to the lack of legislation in this area:

> *"And you still allow people to rent their [property] to students, to poor families, to tourists? How's that possible? But there's no law forbidding this"* (Respondent 6, 10.04.2023)

Another factor is the yawning disparity between low-income classes and the elite middle class employed by multinational corporations in terms of the support systems available to them in the event of an earthquake. The government's tolerance of unauthorized interventions on buildings renders the least powerful without money and decent housing,

even more vulnerable through inaction. In other cases, action is taken to incriminate poverty when police intervene where people occupy housing illegally. This can result in forced, but legal evictions of marginalized, disadvantaged groups under the pretense that their homes pose a public danger in the case of an earthquake. The occupants are neither offered alternative housing nor protected by the law otherwise, as reflected in the words of one of my respondents, insinuating the role of subjectivities in the public reflection on vulnerability, which becomes the focus of the following section:

> *“They are not really quite well represented. They don't really have a voice”* (Respondent 8, 11.04.2023).

5.6 Subjective riskscapes of vulnerability

In this section, I turn to the views on vulnerability and the practical use of the term in the Romanian context. Subjectivity here describes different personal perceptions of earthquake risk in the specific context of Bucharest. Particularly, elements attributed to the human and social side of risk are scrutinized. Many subjectivities together produce a plurality of interpretations of vulnerability, thereby affecting the actions taken to reduce it. However, in order to be relevant to these actions in risk management, the subjectivities explored belong to individuals firmly connected to and experienced in this field.

5.6.1 Vulnerability in key policy documents

Documents represent the subjectivities of their respective authors and portray a certain discourse on risk management. The following section looks at three documents outlined before (see section 4 on methodology). The *National Strategy to Reduce Seismic Risk* was officially published on 13th December 2022 as official legislation. The main objectives include reducing seismic risk at the national level and connecting it to energy efficiency considerations, integrating seismic risk into territorial planning, ensuring resilient earthquake recovery, mobilizing participation, increasing the level of public awareness and strengthening institutional capacity in seismic risk management (Institutiile Statului, 2022). In addition, the strategy develops a prioritization of urgencies at national, regional and local levels. It includes sections on analysis, on objectives that are translated into actions, on the evaluation of the implemented measures and on the communication of the strategy. The basis for the strategy, which used funding from the European Union, is the UN Sendai Framework for Disaster Risk Reduction 2015–2030.

The word *exposure* was used 13 times in the strategy document and is defined as being present in a hazardous area and subject to potential loss. Hazard itself is seen as the probability of an earthquake occurring combined with the probability that it will affect people and physical structures. In this way, considerations of vulnerability are already included in the conceptualization of hazard. According to the strategy, vulnerability, by contrast, are conditions that make it more likely that people and assets are negatively affected by hazards. Here, the authors make a distinction between physical vulnerability, which describes damage to building structures, and social vulnerability. The latter is defined as negative effects on livelihoods, social ties and vulnerable populations by influencing the capacity to “respond, cope and recover from a disaster” (Romanian Ministry of Development, Public Works and Administration & World Bank, 2022, p.12). Vulnerable populations are only mentioned once and not defined further. Capacity is only described in terms of agency

enabling actions during a hazard event. In the literature, capacity is strongly linked to vulnerability that exists prior to the event and is not produced by the hazard (Tierney, 2006; Wisner et al., 2005). Although awareness-building and consideration of socioeconomic factors are highlighted as aspects the strategy aims to promote, the vision section also explicitly states that the focus is on physical vulnerability instead of social vulnerability or earthquake preparedness. In the terminology appendix, vulnerability is defined differently than in the body of the strategy report: the term is described as "susceptibility to adverse impacts from a hazard" (Romanian Ministry of Development, Public Works and Administration & World Bank, 2022, p.144). These adverse impacts manifest themselves and are measurable through the expected level of loss further operationalized as the costs of repairing or replacing a building. This again emphasizes the focus on a physical conceptualization of vulnerability while presenting quantitative, economic criteria. The people suffering the adverse impacts inside the buildings are omitted to simplify vulnerability into a technical, controllable phenomenon that will be solved once the buildings are resistant to earthquakes. One of the main factors increasing vulnerability - poverty - (Tierney, 2006; Wisner et al., 2005) is only marginally considered as an additional criterion in the prioritization of buildings to be strengthened. Hence, vulnerability is a characteristic attributed to buildings rather than people in the *National Strategy to Reduce Seismic Risk*, leaving the impression that most efforts in risk management will be concentrated on building rehabilitation. While this sector is undoubtedly important to reduce earthquake risk, this approach forgets to differentiate vulnerable populations, which do not have the time or resources to become aware and prepared.

The second document analyzed here, the *Systematic Country Diagnostic for Romania Background Note on Climate and Disaster Management* by the World Bank (2018), focuses on the analysis of the current hazard situation including risks from different natural hazards and how the legal and organizational framework responds to these risks. Earthquake vulnerability is stated as originating in the Vrancea seismic zone in Romania. In addition, the Romanian economy and its assets are described as vulnerable, emphasizing financial returns as a measure of wellbeing as in the case of gross domestic product (GDP). Buildings are considered to be the source of earthquake vulnerability because many do not follow a seismic code and are not resistant to earthquakes. A resilience indicator is presented taking into account risk to assets. The assets of poor people are seen as particularly vulnerable. This vulnerability can be reduced by decreasing the exposure of assets and developing better early warning systems. This will lead to a strengthening of resilience, which seems to represent the opposite of vulnerability in the World Bank's definition. The central term here, however, is *asset*, which is not specified but is generally taken as private objects or services central to a person's livelihood. Naturally, the term is

rooted in the financial sector and is used here to quantify and measure vulnerability. Furthermore, vulnerable groups include the elderly and low-income populations living in badly-maintained housing. However, capacity is used in the sense of availability of resources in local and national authorities in disaster management and not connected to the residents' agency. Assets are linked to awareness of exposure, i.e. knowing that a personal asset is at risk of losing value. Although people are seen as vulnerable due to old age or low income, the report focuses on the physical dimension that determines the vulnerability of people. The root causes and dynamic pressures causing vulnerability of people are not the starting point; instead of human lives, it is assets that seem to require protection. While resilient assets enable coping with, resisting and recovering from an earthquake, this conceptualization fails to emphasize the lack of assets and financial resources leading to vulnerability (Pelling, 2001; Tierney, 2006).

The third document evaluated here is the *Country Report 5.1 Conditionality Romania* by the General Inspectorate for Emergency Situations (*IGSU*), which was produced as a condition for accessing European funds. Starting from having reached a general agreement on the way risks are assessed, it presents the assessment for each type of risk in the Romanian context including natural hazards like earthquakes and floods, technological hazards such as industrial and transport accidents as well as biological hazards such as epidemics. In addition, advice on how to improve the legal and institutional framework in order to manage risks is presented.

The "main concern" in earthquake risk is building vulnerability (Romanian General Inspectorate for Emergency Situations, 2016, p.24) but pathways for action are not explicitly connected to this finding. *Vulnerability* is used to describe either lacking physical infrastructure or the lack of capacity and organization of institutions. Risks are operationalized in terms of their impact: the physical, economic and social categories are all measured quantitatively. For instance, impacts include the number of people killed or injured, the amount of infrastructure and buildings damaged as well as financial losses. In the social category, it is unclear how disruptions of livelihoods and psychological effects are or should be measured. As the report focuses on risk assessment, the strong orientation towards hazards including the probability of earthquake events, sources of seismic activity and damage from previous earthquakes comes naturally. Exposure is connected to the hazard rather than to the vulnerability of societal groups pointing to the use of the hazard paradigm (Gaillard & Mercer, 2013). Damage from previous earthquakes is mentioned as a source of anxiety vis-à-vis the next hazard event, however, this is not related to awareness. While the report's focus is evidently not risk management but risk assessment, the vulnerability element of risk (Wisner et al., 2005) seems to be forgotten and root causes or dynamic pressures linked to poverty and inequality are not taken into account.

In short, the three documents analyzed above do not emphasize vulnerability as a starting point for action regarding risk management. Vulnerability is a feature of buildings rather than people, opposing Wisner et al.'s (2005) view that only people can be termed vulnerable, while buildings are *unsafe* or locations *hazardous*. This results in the term physical vulnerability, strongly distinguished from social vulnerability. The National Strategy proposes a plan to renovate buildings, the World Bank report highlights the importance of assets to reduce risk and emergency service *IGSU* presents earthquake risk as a simple matter of increased exposure. While the World Bank does acknowledge poverty as a factor influencing vulnerability, this vulnerability is attributed to assets or buildings, as in the National Strategy and the *IGSU* report. The causes of vulnerability seem to be represented by a purely physical situation, according to the conceptualization used in the three documents. The question, where vulnerability might also originate from on a wider societal scale is only marginally addressed, if at all. This shows that inequalities in the population are not seen as an aspect to account for in risk management strategies. It also helps to simplify the issue, which enforces the authority of the institutions presenting the publications. The use of technical language as in the National Strategy has the similar effect of leaving the impression that the government is in control and has everything under control. The perspectives on vulnerability reflect the authors' backgrounds: engineering approaches dominate the National Strategy, the World Bank looks through the financial lens, and *IGSU* focuses on the hazard due to their specialization in emergency response. Through the perspectives of vulnerability to earthquakes as a structural and physical situation, the three documents reduce the discourse to buildings only and push actions in risk management towards retrofitting (Svarstad et al., 2018). At the same time, research and legislation represented by the three documents overall have a negligible impact on the citizens themselves, as one respondent pointed out:

> *"This isn't something that immediately has an impact. For the people that live in unsafe buildings, they don't care about, you know, the long-term vision, right, they just want a safe house. So this doesn't immediately translate into safer buildings"* (Respondent 14, 05.05.2023)

5.6.2 Multiple subjectivities in vulnerability and risk management

Precisely these subjectivities as portrayed by the last quote were expanded during interviews. Separating the application of the concept to buildings and infrastructure and the use of it to describe a person's situation continues to be a prominent theme, however, the social definition is highlighted more often and, as a result, becomes more contested.

Physical vulnerability is attributed to buildings and infrastructures and is rooted in the engineer's perspective measuring financial and human losses due to building damage. Respondents agree that social vulnerability is all about people: some see it as the time required to get back to 'normal', others as the degree of being affected while yet others view it as the opposite of resilience and the preparedness to absorb shocks. Respondents agree that there are human factors involved in risk, mentioning a multitude of aspects pointing towards the concept being more contested than physical vulnerability (see Table 4). It should be stated that not all made the distinction between the physical and the social. The mainstream interpretation stipulates vulnerability as a complex, multi-layered concept that also - among other factors - relates to buildings people live in. While some reserve vulnerability for people, the interchangeable use of risk and vulnerability in the field linguistically often leads to *vulnerable buildings*, which might be easier to say than *unstable*.

Physical vulnerability	Social vulnerability
Age of buildings Structural stability Hazard exposure Observance of the seismic code	Poverty, low income, lack of resources Exposure Susceptibility Unawareness, lack of knowledge, undeveloped public communication Lack of insurance Low resilience Forced eviction, illegality Old & young age, disability, homelessness Temporary stay e.g. tourists Attribution to minority group

Table 4: Factors mentioned in relation to physical and social vulnerability are in line with constitutive factors found by Orru et al. (2022) in European disaster risk policies

Evidently, the physical is interlinked with the social in conceptualizing vulnerability: Poverty means that people are forced to live in improper housing that is not resistant to earthquakes. Interestingly, however, a large share of old buildings in the center are occupied by high-income groups according to the consolidation authority. This perspective brings these groups into focus of considerations of earthquake exposure although they have the necessary funds and access to information to commission the strengthening of their property unless they completely ignore the risk. This view might divert the focus away from disadvantaged groups that are much more vulnerable in terms of resources and awareness. According to one respondent, government authorities misinterpret the concept of risk: they relate it purely to the physical, categorizing building in risk classes while it should be applied

to people, primarily. Over-emphasizing the social component in this way can also be contested as risk is rather the combination of the geophysical hazard and root causes of vulnerability in society (Wisner et al., 2005). The two representatives of government authorities interviewed in this study both focus on risk, hazard exposure and physical stability and much less on the role of inequality in determining who suffers most from the impacts of an earthquake. One of them proposes a step-by-step plan:

> *"We have to focus on reducing at least the physical vulnerability first, and then see what other measures can be taken to help the vulnerable [population]"* (Respondent 9, 12.04.2023).

This approach was reflected on by another respondent, who works in academia and as an activist:

> *"They need to discuss about this process in terms of public safety, of course, so that the buildings will not fall on people. And in terms of the beautification process in the city, really important to restore these buildings because they are important, historically relevant to the city, things like that.But these are the only angles from which the city hall looks at this situation.They do not talk about the people"* (Respondent 3, 06.04.2023)

In total, two respondents opposed the idea that vulnerability relates to inequality altogether as the privileged appear to be just as exposed to the seismic risk. It is evident that vulnerability is not part of the public debate or language used by authorities. Most respondents (from the academic and activist fields), however, do acknowledge that vulnerability is a question of resources and awareness of earthquakes.

Apart from explicit and implicit responses conveying the perception of vulnerability, interviewees naturally also had opinions about other practices and processes in risk management. While some drew a pessimistic image of the current state of governance, others highlighted the immense improvements over the past years in the area of integrated regulations, although always with a little criticism as two respondents made clear:

> *"I mean, it's not enough but I see a lot of progress, if it is to compare what happens now as opposed to what happened in 2017"* (Respondent 6, 10.04.2023)

> *"Let's hope that there will not be some reverse actions by some lawyers and things like this in the Justice Court to stop the process [...] or to postpone and to postpone"* (Respondent 5, 08.04.2023)

IGSU, although active to protect and prepare the citizens and starting to take into account the needs of vulnerable groups during evacuation, act like *"bulls in a china shop"* (Respondent 8, 11.04.2023), with a strong grip on the issue but being a little clumsy at the same time. There is consensus among respondents that government institutions should protect the citizens but the same interviewees describe this as unlikely in the event of an

earthquake. Another respondent implicitly described the attitude of emergency services in the following way, alluding to the *Colectiv* fire:

> *"Half of the people in Colectiv died because they were not sent in time to other hospitals, because we say no, we have everything, we know everything. And this is super dangerous mentality"* (Respondent 4, 06.04.2023)

The strong grip of the emergency authorities can sometimes have the opposite effect that residents prefer not to face up to the earthquake issue, which leaves them as irresponsible, inconvincible citizens in the eyes of the authorities. In addition, it is unclear between emergency services and the city hall, whose responsibility it is to work with local initiatives. While there is a 'traditional' skepticism from all sides between academia, government and civil society, cases where building codes and plans were not observed as required lead to mistrust even between authorities. For instance, one respondent from academia argued that NGOs do not always inform about earthquakes in a scientific way.

A central debate brought up by respondents surrounds the use of public money to strengthen buildings: some defend the current approach as a normal centralized organization to deal with the government's past mistakes (in the socialist era) and intransparency - *"The state [...] didn't say, hey, there's a problem with this property"* (Respondent 14, 05.05.2023) - while others strongly criticize it for its paternalism, the swallowing of public money and for its contribution to inequality when higher-income owners profit from a newly refurbished house:

> *"So in this way you will support the people that are in need, but also you will support the people that are not in need. But if the effect is that many buildings will be retrofitted, then so be it."* (Respondent 2, 04.04.2023).

One respondent compared the current lack of enforcement to car safety checks, advocating that people should not be allowed to live in buildings that do not fulfill general safety standards.

NGOs organize participative processes but primarily with higher-income groups while the actually vulnerable groups are often forgotten. The low social status of the disadvantaged becomes evident when the social care department prefers to threaten residents to move out instead of running the risk of causing a scandal surrounding eviction. One respondent reported the better treatment of those that bring monetary value to society than those following more traditional lifestyles, a possible effect of a dominant neoliberal strategy. In general, earthquakes are like *"ghosts"* to Romanians (Respondent 13, 28.04.2023), something supernatural. On the other hand, in many poor neighborhoods the topic is avoided as it is believed to bring bad luck to even think about it. For some respondents, the state of the Romanian government is tied together with a low level of

education in society, hence politicians reflect the disinterest of the population and governance of earthquake risk can only be improved when awareness in the population increases. For some policy-makers, however, residents do not want to know about their own vulnerability *“like that animal who puts his head inside the sand. That's the philosophy”* (Respondent 10, 12.04.2023). The only option left to residents who mistrust government institutions and want to translate their awareness into preparedness then becomes a strong social support network among neighbors, which makes the role of cultural factors an important consideration.

5.7 Riskscapes of culture

Culture here takes into account social norms, behaviors and practices exercised by the majority of the population or, when it comes to subculture, by a part of the population contributing to a shift from more widely accepted practices. One respondent referred to a study that showed that citizens anticipate the authorities to provide them with food and shelter within six hours after an earthquake, which shows that the population has high expectations towards their government. However, the high degree of confidence in the ability of emergency services, who can boast well-organized personnel looking back on a successful history of emergency interventions, contrasts with the general mistrust of government institutions. For instance, this mistrust is represented by the elderly being scared to give up their familiar environment and be moved in their final stage of life for the retrofitting of a building. One respondent reflected on the personal circumstances of the elderly:

> *"But we have a lot of old people who are alone in their homes. [...] They have really low income. The pension is really small in Romania"* (Respondent 3, 06.04.2023).

In Romania, the continuous increase of vulnerability did not lead to stronger adaptation efforts:

> "*Whereas you would think that, you know, a society, any living organism, if it's subjected to a similar type of stress, recurrently, it adapts to it, and it becomes stronger, right? Well, in Romania, we didn't do that."* (Respondent 14, 05.05.2023).

In addition, the competitiveness of Romanians especially in the setting of Bucharest makes acknowledging mistakes difficult especially for those that are in successful (government) positions. Collaborative processes are historically underdeveloped in Romanian society and so is long-term thinking and general preparedness when it comes to e.g. vaccinations, according to some respondents. This might be why myths and simple answers to the earthquake are so popular. Public awareness of the danger posed by debris falling from unmaintained buildings is greater than that of earthquakes: the sign *Atentie Cade Tencuiala* has become an item of folklore (Figure 11). A similarly weird sense of pride in being the seismic capital of Europe was reported by another respondent:

> *"Sometimes it is too strange or it's a kind of happiness that we are at the top"* (Respondent 5, 08.04.2023)

In positive terms, a small culture of preparedness has developed among the highly-educated, often young generation advocating constructive, practical thinking about the earthquake. However, respondents agree that a major earthquake might be needed to spark

a wider culture of awareness while the long period between larger earthquakes only benefits the process of forgetting in the collective societal memory. Recent earthquakes in regions where they normally do not appear, did however strike many and increased awareness at least for the short term. Some cultural factors that play a role in risk management are also brought up in the following section, where I discuss my findings in light of the wider academic debate on disaster risk and vulnerability.

Figure 11: Sign pointing out the danger of falling debris from buildings

6. Discussion

After having presented the results, I can look back at my research questions and position my findings in the wider academic literature. The main research question - *In what ways do definitions and perceptions of vulnerability in relation to earthquake risk (in)directly influence the preparedness of the residents of Bucharest?* - opened up a varied riskscape (see Figure 12). The way vulnerability is framed in public debate often leaves out parts of the population by emphasizing the factor of public safety embodied in buildings. This is strongly reflected in the formal disaster risk reduction and management strategies of government institutions (SQ1). Many actors from civil society are working to change this one-sided view but also struggle to build up awareness in society. Here too, NGOs are at the forefront of local risk reduction (Pelling, 2012). Different backgrounds and domains are reflected in the multiplicity of different views on how risks should be managed, however, the most powerful approach is rooted in a traditional civil engineering perspective, which makes it hard for other approaches to emerge successfully and be taken into account in the official strategies and measures (SQ2). Most, if not all of the problems faced in earthquake risk management in Bucharest are connected to the post-socialist setting the city finds itself in, including the lack of closely-knit urban communities, citizen responsibility and participation (SQ3).

Governance of seismic risk can be described as fragmented in the case of Bucharest. Integration of risk management in other sectors is progressing faster in policy-making than in practice. Civil engineers still dominate the field and financial opportunities rather than decision-making processes indicate the direction for actions. The blame game is frequently played: owners are blamed for not using the available opportunities to retrofit and authorities are blamed for not taking care of the citizens. This continues within the silos of authorities where overlapping responsibilities sometimes produce redundant documents. The local sector governments implement the new method of *Rapid Visual Assessment* under coordination of a central ministry and the city hall. Each of these local governments has their own political view influencing implementation and causing friction with the authorities who own public buildings and define the budgets and financing mechanisms applicable. This ownership division continues at the private level where the parties of a building must agree to take on retrofitting.

As symbolized by risk assessments and renovation programs, vulnerability was often discussed in relation to buildings and infrastructure among interview respondents and documents. On the other hand, the most prominent conceptualization of vulnerability as a characteristic of people - brought up primarily by respondents linked to an NGO - was a combination of poverty and culture with a lack of knowledge and awareness (highlighting two

of the perceptions found by Williams & Webb, 2021). For instance, poverty is linked with a lower degree of knowledge because public information does not reach the urban poor. Culture was more an implicit factor than a characteristic of vulnerable groups represented by the general societal attitude towards the government including mistrust and a low sense of responsibility and agency of citizens. Increasing this trust is vital to enhance the capacity to deal with earthquake risk (Wisner et al., 2005). Cultural factors could be connected to viewing vulnerability as a lack of security (Williams & Webb, 2021) in the case of the elderly who do not want to leave their homes and hence freeze the building consolidation process. The outlook that they could be subjected to eviction only intensifies their opposition to government actions.

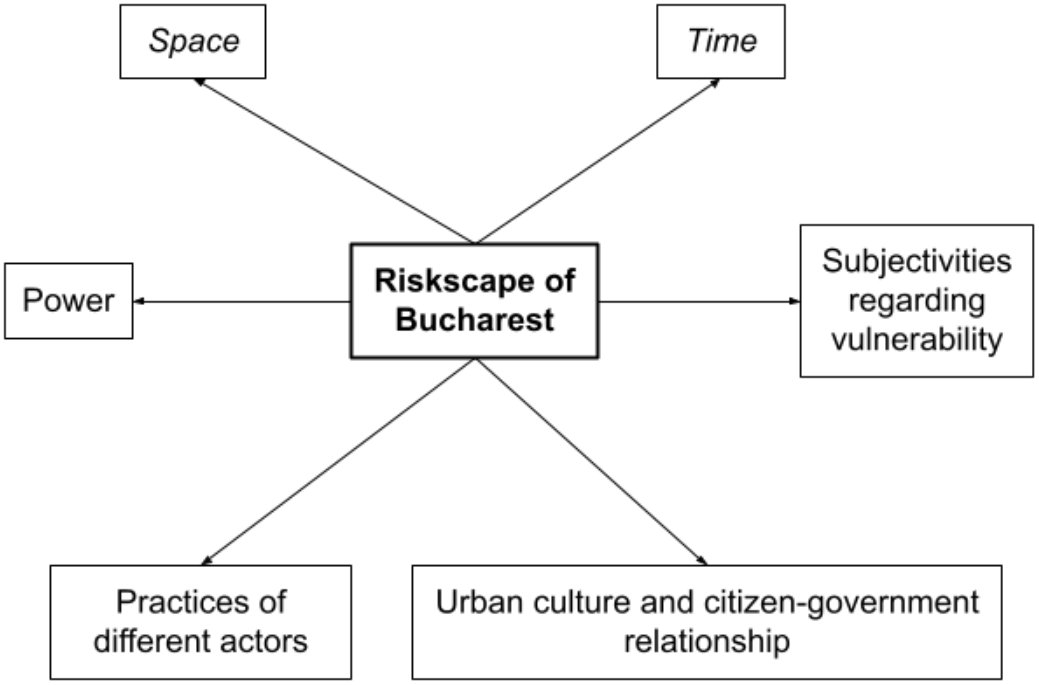

Figure 12: Riskscape of Bucharest

The results here clearly express that authorities largely follow the hazard paradigm: viewing the earthquake through a technocratic, engineering lens in terms of its geophysical impacts that affect mostly those who lack awareness at a specific moment in time (Gaillard & Mercer, 2013). Contrasting with this dynamic view of vulnerability, bottom-up civil initiatives see it as a static characteristic of e.g. *old people* or *poor people* (Williams & Webb, 2021). This practice might make it easier to zoom in on the assets and resources that vulnerable groups lack (the elderly, the poor, tourists, the homeless, minorities, people with disabilities, children) and how they cope with this situation, as operationalized by the Access Model (Wisner et al., 2005). However, while it seems like a useful practical approach, it bears the risk of depreciating these groups instead of highlighting their agency (Donovan, 2017). In the

case of Bucharest, government inaction is not legitimized through categorizing groups as resilient, instead the awareness that vulnerable groups exist is simply lacking or only emerging. Marginalized groups do not claim spaces to be included in risk governance as they themselves are unaware of the problem whereas some spaces have been created previously to enhance collaboration between civil society and the emergency services (e.g. training of rescue dogs; Mascarenhas & Wisner, 2012). As mentioned before, emergency management is the strongest part of risk governance in Bucharest while preparedness measures connected to raising awareness are almost exclusively handled by local community groups and NGOs (Pelling, 2012). This leaves the sphere of actual risk reduction and prevention somewhat unattended. The problem itself is framed in different ways: authorities and academics propose to assess and renovate buildings faster to move people to safety while civil society groups educate residents in practical measures and behaviors so they know what to do (Müller-Mahn et al., 2018). On the one hand, overlapping responsibilities in government institutions mean that the division of tasks becomes occulted with inaction as the outcome. On the other hand, their paternalistic attitude is reflected in the use of public money for the strengthening of buildings but not in the fact that it works on a voluntary basis: arguably, owners of buildings that are not safe should be forced to make them safe before they can rent them out. Overall, the lack of enforcement of regulations and corruption endangers building safety (Pelling, 2012). In addition, tenants have no way to influence the consolidation process: they are vulnerable as they depend on the owner's view on whether consolidation is necessary. Hence, safety is in the hands of those with economic power (Pelling, 2010), not because private funds are needed in order to consolidate a building but because only those groups have the power of political recognition (Menton et al., 2019).

One of the central aspects of this study revolves around the concept of a disaster (sub)culture. In Bucharest, earthquakes are not perceived as a recurring threat, the hazard does not allow for forewarning (Turner, 1982, as cited in Engel et al., 2022, p.13), but all societal groups are likely to be affected. This means only one of three elements of the framework by Wenger & Weller (1973) is fulfilled. The adaptive learning process attributed to major disasters like the traumatizing 1977 earthquake vanished in this case due to the fact that earthquakes are not a frequent threat.

In their comparative study on how culture influences disaster preparedness in Romania and Malta, Appleby-Arnold et al. (2021) find that some residents of Bucharest do not want to stand in the way of government policies while others are more critical of them. Here, the acceptance of hierarchical structures goes hand in hand with high expectations of the government and also widespread mistrust due to expectations not being met. In line with previous research into earthquake risk perception in Bucharest (Armaş, 2006), this study can

conclude that residents of the city are not prepared to face an earthquake and cope with its consequences. In a quantitative study involving questionnaires filled in by 144 respondents in Bucharest, Armaş (2008) found that higher risk perception is linked to increased social vulnerability. In theory, one could assume that higher risk perception would be followed by actively taking measures to improve preparedness but those turn out to be two different stories. Feeling worried does not mean people take action to feel prepared. Low awareness levels found in this study are supported by Appleby-Arnold et al.'s (2021) findings: residents of Bucharest do not feel informed but want to improve their knowledge through formal training and by gathering information from the authorities. Hence, the authors point to the barrier that blocks the way from perceiving earthquakes as a problem to becoming prepared: a general helplessness of Romanians in becoming active citizens.

Although not the aim of this study, the results here also make it possible to name some root causes, dynamic pressures and unsafe conditions from the Pressure and Release Model in the context of Bucharest (see Figure 13; Wisner et al., 2005). The contrasting switch to a market economy with strong neoliberal approaches made some more economically vulnerable than others and sometimes aggravated discrimination of the urban poor (e.g. Roma communities) while the citizens' wary attitude towards the government is rooted in the previous authoritarian decision-making. Dynamic pressures include overlapping and incoherent risk management regulations, a hierarchic government structure without citizen participation and a high ownership rate, which complicates building renovation. At the level of the urban resident, the lack of maintenance of houses, the lack of enforcement of the building code as well as the lack of awareness of earthquakes creates unsafe conditions.

Disaster risk management in Romania, more specifically in Bucharest, has similarities with less economically developed countries in the Global South in terms of the lack of enforcement of legislative acts as well as cases where 'resilient' communities are left to adapt themselves or forcefully made to do so through eviction and resettlement. Roma communities are the prime example within the context of Bucharest for the need to go beyond resilience as a label for a continued life in precarity, as Lancione (2019) proposes not only in relation with governmental policies and civil activism but also in the form of critical scholarship. At the same time, however, Romania is of course different to many countries in the Global South due to its membership in the EU, which implies benefits in the form of funding and knowledge, but proves to be hard to translate into action in risk management due to the post-socialist setting, in which civil society is mostly a passive benefiter of political decision-making. Jacobsson & Korolczuk (2020), however, caution against a too pessimistic view on the state of civil society in Central and Eastern European countries as they report a switch from *ngo-ization* - the rise of organizations that work detached from the people they aim to represent - to widespread activism intending to solve the problems of ordinary people

struggling under neoliberalism. This *political becoming* also manifests itself in spontaneous uprisings - such as the one following the fire at the *Colectiv* nightclub - that represent a form of resilient citizen participation, which wells up every now and then when citizens notice major injustices (Creţan & O'Brien, 2020). Hence, an active civil society seems to be more present after large-scale disasters that uncover severe shortcomings in government decision-making. The question of how to remedy this reservation remains to be answered.

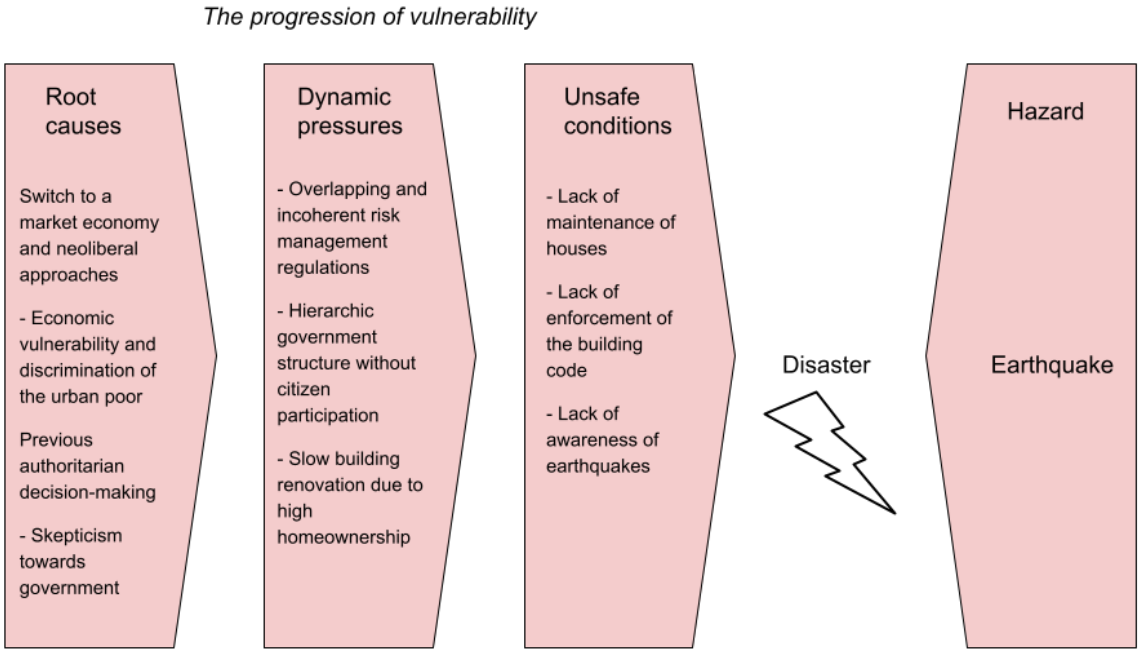

Figure 13: Pressure Model for Bucharest based on Wisner et al. (2005)

7. Conclusion

This research aimed to identify subjectivities regarding the use of the concept of vulnerability in earthquake risk management strategies in Bucharest and incorporate these in the wider context of post-socialist Romania. Assemblages of different actors implement subjective definitions of vulnerability resulting in a focus on building safety by authorities in general, on education and response organization by emergency services and on socially-sensitive practical measures by NGOs. Authorities want to speed up the process of renovating buildings, however, by making that the top point on the agenda, vulnerability in terms of differences in the population is forgotten. On the other hand, actors from civil society recognize that it will take too long to retrofit all buildings, so long that the urban form will never be fully resistant before the earthquake hits. Hence, for them it is obvious that other measures have to be taken while renovation progresses. These are simple but effective measures that equip people with the knowledge and tools to become prepared. From this, it became evident that the way vulnerability is conceptualized determines its assessment, the responsible actors as well as the strategies implemented (Orru et al., 2022). Subjectivities indirectly determine the actual sociospatial manifestation of risk to earthquakes in the case of Bucharest.

These subjectivities create a complex riskscape of interwoven expectations and responsibilities that hamper collaboration between civil society and government institutions, resulting in the earthquake issue staying on the margins of public debate. A hierarchic but peripheral government approach to risk management and a disinterested population are strongly tied together and continuously reinforce each other. In order to achieve awareness and preparedness as one package, community cohesion and a healthy citizen-government relationship are needed to clarify what citizens can do and where the government should lead the way. NGOs in Bucharest already emphasize the responsibility and agency of the citizen. The explorative nature of this study made it possible to find new elements of the riskscape of Bucharest, but it cannot be taken for granted. As mentioned earlier, the limited contact with and insights from government institutions have potentially created a bias towards critical understandings of government processes while the reasons for overlapping responsibilities and lack of collaboration within public institutions could not be determined.

In line with the aforementioned considerations of the weakness of civil society in post-socialist countries, practical disaster risk reduction would benefit from research looking into the barriers citizens face in becoming active participants in risk management (Appleby-Arnold et al., 2021). For instance, researchers could look at the participatory techniques that have successfully worked in countries formerly part of the Eastern Bloc.

Secondly, the marginalization of Roma people could be studied by exploring their perceptions of the looming earthquake and their treatment by authorities, providing pathways for the fusion of a critical scholarship on vulnerability, culture and citizen participation.

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Appendices

1. List of figures and tables

2. Summary of responses per respondent

	View on vulnerability (and use of the term)	Problems with risk management right now	How to fix it
1	Physical v.: Inoperable infrastructure Social v.: Time to return to 'normal' Who? Poor people, homeless people	Government paternalism, populism in politics Myths reducing the severity of earthquake Lack of knowledge on the state of buildings Corruption in seismic risk assessment Complicated retrofitting process	World Bank has leverage Practical education to empower population Strong message from government Social policies for vulnerable population
2	Physical v.: Buildings without seismic code Social v.: Pockets of poverty with low resilience	Unreliable seismic assessment Communication of risks in technical language Lack of continuity and populism in government	Rapid Visual Assessment to prioritize renovations Education Strong message from government World Bank has leverage
3	Lack of resources leads to concentration in decaying buildings, subject to forced eviction Who? Elderly	Focus on buildings, not on the people inside them Intransparent building prioritization for retrofitting Populism in politics Emergency situation planning lacks	-
4	Opposite of being aware Lack of resources leads to concentration in decaying buildings	Lack of collective memory Overconfident mentality of emergency services Gap between civil society and government Lack of enforcement of risk assessment	Continue building consolidation Public information campaigns
5	Emphasis on physical v. and building	Mistrust and lack of cooperation	Convincing public

	consolidation Social v.: Low income and no access to public information	by civil society Little capacity of authorities	information campaigns Increase trust in authorities NGOs as linkage between government and citizens
6	Lack of knowledge and resources	Exclusive focus on buildings through engineering lens Government paternalism Lacking instruments for implementation	Affordable housing Collaboration with civil society Policy integration of seismic risk management
7	Physical v.: Buildings, wrong behavior during an earthquake Social v.: Poor people in improper housing, no insurance	Lack of collaboration between parties Lack of enforcement of building code Little interest of local authority	Practical measures Financial mechanisms to increase capacity of public authorities and initiatives
8	Degree of being affected Who? Disabled, children, elderly, tourists, homeless, minorities	Topic is avoided in society Resilience is missing from public debate Emergency services' inflexibility	Strong legal framework Continuous funding for public information campaigns
9	Physical v.: Risk, hazard exposure, structural stability of buildings	Not seen as 'urgent' in public sector Citizen's mistrust of the government Belief in government as caretaker of citizen Lack of continuity in public office	Legislative improvements Binding strategic legislation throughout changing mandates
10	Risk decreases gradually from old buildings in the center outwards	Lacking implementation Citizen's mistrust of government Lack of collaboration between parties	-
11	Physical v.: Buildings	Lack of capacity of authorities,	Evaluating progress in risk

	Exposure, susceptibility to negative effects of a hazard Opposite of resilience	populism Risk and vulnerability used interchangeably Lack of data and interaction with civil society	management Transparency in allocation of funding Improved availability of public information
12	Lack of knowledge on how to behave during an earthquake Who? Elderly and people with disabilities	Fragmented and overlapping responsibilities of institutions Lack of enforcement Complicated retrofitting process	Unified concept and division of responsibilities Increase responsibility of society Evaluation mechanisms
13	Lack of knowledge and resulting exposure	Lack of education means disinterested population Lack of funding for preparedness programs	Political will to prepare the population
14	Human factor in risk Physical v.: Buildings Social v.: Preparedness to absorb negative effects, resilience	Long process of retrofitting Legal framework reflects lack of political support and awareness Lacking implementation Focus on buildings not people	Stronger legal framework Build trust and social cohesion in population
15	Long time to return to ‘normal’, underrepresentation in government strategies Who? Poor, disabled, children, elderly	Lack of preparedness of residents connected to low social cohesion and community responsibility	Awareness campaigns on lower governmental levels Prioritization of critical infrastructure Creating communities

3. Deductive coding tree