The role of social capital in disaster recovery

A case study of the recovery process in the cantons of Jama and Pedernales after the 2016 earthquake in Ecuador

Laura Merki

Matriculation number: 11-734-100
E-Mail: laura.merki@uzh.ch

Supervisor: Dr. Jonas Jörin,
Supervisor: Prof. Dr. Ulrike Müller-Böker

Faculty representative: Prof. Dr. Ulrike Müller-Böker

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Picture on title page: Destroyed house in the village of Jama, Ecuador after the 2016 earthquake (Source: Xavier Cevallos, Jama)

University of Zurich[UZH]

Department of Geography

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Author
Laura Merki
11-734-100

Supervised by

Dr. Jonas Jörin
ETH Zürich
Professur Klimaschutz & -anpassung
Universitätsstrasse 16
CH-8092 Zürich
jonas.joerin@usys.ethz.ch

Prof. Dr. Ulrike Müller-Böker
University of Zurich
Department of Geography
Winterthurerstr. 190
CH-8057 Zürich
ulrike.mueller-boeker@geo.uzh.ch

Faculty representative
Prof. Dr. Ulrike Müller-Böker

30.09.2017
Department of Geography, University of Zurich

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Abstract

Research about social capital in disaster recovery has gained importance in recent years. This is due to the increase in adverse disaster impacts on human society and a simultaneous shift in Disaster Risk Management (DRM) from a strong focus on physical aspects towards a more integrated approach that also considers social aspects. Social capital, which is defined through the functions *networks, trust* and *norms* has been found to play an important role in DRM, especially during the recovery phase.

This thesis examines the role of social capital in the recovery process of the cantons Jama and Pedernales after the 2016 earthquake in Ecuador. In April 2016, an earthquake with a magnitude of 7.8 on the Richter scale hit Ecuador. Jama and Pedernales were among the most affected cantons. Through quantitative surveys, complemented with qualitative methods, the interactions between social capital and disaster recovery in these two cantons are investigated. This thesis' goal thereby is to better understand the influence of social capital on disaster recovery and the impact of disasters and disaster policies on social capital. Additionally, disparities between expert's perception and the affected population's perception of social capital and disaster recovery were analysed.

The findings show that overall social capital in the surveyed cantons is rather low. This accounts especially for networks and trust within communities and for network with and trust in authority figures. The government's reconstruction plan focused mainly on physical measures and followed a top-down approach. Thereby inclusion of local actors, i.e. the local council and affected communities, was minimal. This factor combined with the low levels of social capital led to reduced collective action and mutual support among community members. Additionally, a decrease in trust towards the local council was observed. The main recovery support derived from family members and from vertical networks, mainly the national government and NGOs.

Drawing on these results, it is recommended to strengthen social capital in the affected area. Furthermore, it is suggested to shift DRM policies towards a bottom-up approach with more involvement of the local council as well as the local communities. This may lead to greater viability and acceptance of the recovery policies and to quicker and more sustainable long-term recovery.

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Abbreviations

CBO	Community based organization
DRM	Disaster Risk Management
GFDRR	Global Facility for Disaster Reduction and Recovery
MIDUVI	Ministerio de Desarrollo Urbano y Vivienda (Ministry of Urban Development and Housing)
MIES	Ministerio de inclusión económica y social (Ministry for economic and social inclusion)
MP	Ministerio de Salud Pública (Ministry for Public Health)
SFDRR	Sendai Framework for Disaster Risk Reduction 2015-2030
SGR	Sec2retaría de Gestión de Riesgos (Secretary for disaster risk management)
SNGR	Secretaría Nacional de Gestión de Riesgos (National Secretary for disaster risk management)
UNISDR	United Nations for Disaster Risk Management

1. Introduction

In April 2016, an earthquake with a magnitude of 7.8 on the Richter scale hit Ecuador and left 720'000 people in need of help (OCHA 2016: 7; Telesur 2016; Gobierno de Ecuador 2016: 7). Different stakeholders were part of the recovery process, though the national government led and coordinated the process (SNGR 2012; SGR 2016b; SGR 2014; SGR 2016a). The most important part of the recovery process was the national government's reconstruction plan (Reconstruyo Ecuador). This included the reparation of slightly damaged houses and the reconstruction of houses that were either totally damaged or located in a risk prone zone (MIDUVI 2016).

The aim of this thesis is to analyse the role of social capital in the recovery process after the 2016 earthquake in Ecuador. Therefore, a detailed case study was conducted in the cantons of Jama and Pedernales, which were the most affected cantons in Ecuador.

1.1. Context of the study: Social capital in disaster recovery

Disasters have always had an impact on human beings (Khan et al. 2008: 43). However, in recent years, the adverse effects of disasters on human societies has increased (Khan et al. 2008: 43; Nakagawa & Shaw 2004: 6; Sanyal & Routray 2016: 101; UNISDR 2015: 10). Researchers as well as practitioners are therefore eager to improve *Disaster Risk Management* (DRM), the process of coping with the adverse effects of disasters.

Different definitions of disasters exist depending on the focus of research. Quarantelli (1985: 43-52) differentiates between six major focuses of disaster definitions. Disaster as the physical agent (hazard), as the physical impact of a hazard, as the assessment of the physical impact (here the definition of disaster depends on the threshold set), the social disruption resulting from the physical impact of a hazard, the social construction of reality (the social perception of a disaster independent of the actual physical impact) and the political definition of a crisis situation. This thesis mainly focuses on the social disruption of a disaster and the communities' capability to cope with it. Therefore, it works with the definition of the UNISDR (2009: 9), which defines disasters as follows: "*A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources*."

Through intense research on DRM, a shift from looking only at the physical impacts of disasters towards a more integrated DRM has taken place (Nakagawa & Shaw 2004: 5; Sanyal & Routray 2016: 101; Murphy 2007: 299). DRM can be divided into different phases, starting from mitigation to preparedness, response and recovery (Khan et al. 2008: 46-48; Davis & Alexander 2016: 66-69; Nakagawa & Shaw 2004: 11). The latter is the least investigated part of DRM, however, it should not be neglected. Recovery can be an opportunity for development if polices are chosen carefully (Nakagawa & Shaw 2004: 6). A successful recovery includes the restoration of physical as well as social community elements. Nowadays, it is, therefore, generally agreed that the inclusion of the community in the recovery process is crucial for a sustainable long-term recovery. This has led to a shift from top-down towards bottom-up approach in recovery policies and programs (Berke et al. 1993: 3-6).

Due to this trend, a discussion has started about the role of social capital in disaster recovery. Social capital can be defined as "*a function of trust, social norms, participation and network"* (Nakagawa & Shaw 2004: 5). There is a complex interaction between social capital, disasters and recovery policies. Social capital influences disaster recovery but disasters and disaster policies also have an impact on social capital.

Social capital fosters many elements of a sustainable long-term recovery such as collective action, mutual support and community participation. Therefore, communities with high social capital generally experience a quicker and more sustainable recovery than communities with low social capital (Nakagawa & Shaw 2004: 11-28 Joshi & Aoki 2014:100-107; Sanyal & Routray 2016: 101-104). It has to be taken into consideration though that social capital is often debilitated after a disaster as networks get disrupted (Ingram et al. 2006: 609; Alipour et al. 2015: 700). Depending on the recovery policies and programs, social capital can be strengthened or even further undermined (Alipour et al. 2015: 699-700; Brune & Bossert 2009: 885): While recovery policies with bottom-up approach and strong community participation usually lead to strengthening of social capital, top-down approaches often lead to the undermining of trust, community norms and collective action (Sanyal & Routray 2016: 110; Alipour et al. 2015: 697-699).

Research gaps

Different studies have shown that social capital plays an important role in disaster recovery. However, researchers suggest more investigation in this field to better understand the importance of social capital (Nakagawa & Shaw 2004: 29).

Studies about the role of social capital in disaster recovery were conducted in India, Japan and East Azerbaijan (Nakagawa & Shaw 2004; Sanyal & Routray 2016; Joshi & Aoki 2014; George 2008; Alipour et al. 2015) but no such study was found in Latin America or even Ecuador.

Characteristics of social capital vary between countries and even between regions and it is therefore useful to conduct studies about social capital in different areas. No such study was found for the coastal area of Ecuador. However, the culture of the coastal area differs from the culture of Ecuador's mountainous region. Complementary to other studies, this study includes vertical social capital in the research. Other studies have investigated the role of strong leadership as an independent factor (see for example Joshi & Aoki 2014; Nakagawa & Shaw 2004) but have not investigated vertical networks within the scope of the dimensions of social capital.

1.2. Objectives and questions of research

By conducting a detailed case study, this thesis aims (1) to complement findings from the previous studies about the role of social capital in disaster recovery with a focus of the cantons Jama and Pedernales in Ecuador and (2) to find room for improvement in the recovery process after the 2016 earthquake in Ecuador.

(1) By analysing the role of social capital in the recovery process of Jama and Pedernales this Master thesis can contribute to the research in disaster recovery on a local, national and international level. The contribution of social capital to the recovery process as well as the impact of disasters and disaster policies on social capital are analysed. Research in this field is important because disasters are still going to happen and a good recovery plan can speed up the recovery, help to strengthen the economic, social and physical development of affected villages and be a chance to improve future mitigation.

(2) The investigation of the role of social capital in the recovery process in Jama and Pedernales and its correlation with the recovery satisfaction makes room for possible improvement in national and local recovery policies, plans and programs. Thereby, the findings of this thesis could contribute to future planning of disaster recovery in Ecuador, especially in the coastal area.

Research questions:

To examine the role of social capital in the recovery process of the cantons Jama and Pedernales, three main questions are posed:

- How does social capital influence the recovery process?
- What impact the earthquake and the recovery policies had on social capital?
- Do experts of the recovery process and the affected population perceive social capital and recovery satisfaction equally?

Social capital as well as the recovery process depend on the cultural context. Specific results about social capital in the context of this disaster recovery process therefore can not be generalised. However, Nakagawa & Shaw (2004: 29) emphasise that social capital is a basic attribute of community activity, which is universal in nature. For this reason, connections between social capital, community activity and disaster recovery can be generalised universally.

1.3. Structure of the thesis

The rough structure of this thesis consists of six chapters, of which this introduction is the first chapter followed by a literature review, the methodology, the results, the discussion and the conclusion.

Chapter 2, *literature review*, gives an overview of the current state of research about social capital in disaster recovery. It starts with a discussion about the concept of social capital in general. Further, disaster, disaster management and disaster recovery are described and an outline of the current state of research and international guidelines is given. The chapter ends by discussing the importance of social capital in disaster recovery.

Chapter 3, *methods*, explains the methods used to gather and analyse data. It starts with an introduction and explains the characteristics of qualitative and quantitative methods, then presents the methods used to gather and analyse the quantitative data and followed by the methods used to gather and analyse qualitative data.

Chapter 4, *results*, presents the results and findings of this thesis. It starts with the data from the household surveys, i.e. results about social capital, recovery satisfaction and correlations between the two. Further, the answers from the household survey are compared to the answers from the expert survey. The chapter ends by presenting the findings that were gained through qualitative research.

Chapter 5, *discussion*, analyses the results and compares them to already existing literature and discusses them critically. Further, recommendations for future research and recovery policies in Jama and Pedernales are given and the main limitations of this study are discussed.

Chapter 6, *conclusion*, summarises the main findings and recommendations of this thesis.

2. Literature review: Social capital and disaster risk management

2.1. Social capital

This chapter starts with a brief description about capitals in general. Later, different definitions and dimensions of social capital are discussed. Then, different ways to categorise social capital are laid out to understand it better, measure it and use it in practice. The chapter ends with a summary about social capital and the advantages and disadvantages of the concept.

2.1.1. The concept of capitals

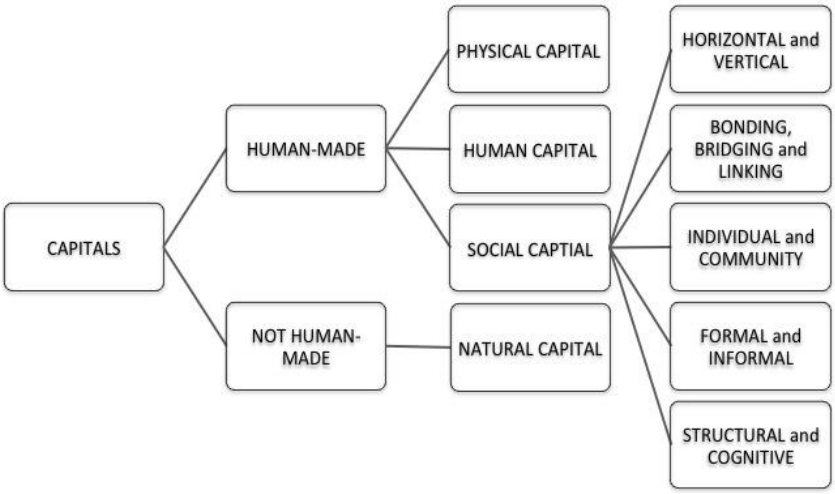


Figure 1: Categorisation of capitals (Source: Own graph, based on different sources (Coleman 1988; Ostrom 2000; Uphoff 2000; Grootaert 2001; Grootaert et al. 2004; Putnam 2001; Putnam et al. 1993; Woolcock 2002; Dudwick et al. 2006)

About the concept of capitals a broad scientific debate exists. Different ways of looking at the interaction between different types of capitals, the importance the respective types of capitals and the accumulation and possession of it exist (see for example Silva & Edwards 2004: 2-4). This thesis refers to the debate around Coleman (1988); Ostrom (2000) and Uphoff (2000) because in their analysis about social capital they put a focus on social capital.

Capitals are tools, which facilitate the production of other resources or future activity (Coleman 1988: 100; Ostrom 2000: 174-175). An actor can accomplish much more per time unit and therefore makes future processes more efficient if he draws on existing capitals (Ostrom 2000: 176; Uphoff 2000: 216). "*All forms of capital can be understood as assets*

[…]. Assets are things that yield streams of benefit that make future productive processes more efficient […]" (Uphoff 2000: 216). In general, capital can be divided into human-made and natural. Human-made capital can be further divided into physical, human and social capital. As its name implies, natural capital consists of natural resources, whereas human-made capitals are created through humans (cf. figure 1) (Coleman 1988: 100; Ostrom 2000: 174-175).

Physical capital is the stock of material resources, created through a human-made change in materials. It can have a variety of forms (Coleman 1988: 100; Ostrom 2000: 174-175). An example for physical capital is building a road or an irrigation system (Ostrom 2000: 174-175). Human capital is the stock of skills and capabilities of an individual. These capabilities are formed through conscious (training or education) or unconscious (experience) changes in a person (Coleman 1988: 100; Ostrom 2000: 174-175). Social capital describes the stock of social networks that an actor is a part of. It is formed through changes in relationships (Coleman 1988: 100; Ostrom 2000: 174-175). An example for social capital is the membership of a religious organisation or also networks between family and friends. While human capital explains inequalities between human beings by the ability of every individual, social capital explains these inequalities by the connectedness of individuals, groups and communities. To put it another way, people with a high stock of human capital have advantages over others because they are in some form better than others - more attractive, more intelligent or more capable in some form. On the contrary, people with high stocks of social capital have advantages over others because of better connectedness through networks and relationships with others (Burt 2000: 31-32). The different forms of capitals can complement each other as each capital has its own advantages. While physical capital is the material input, human capital consists of skills and knowledge that are necessary for certain activities and social capital helps connect different participants and make an activity more efficient. Thereby social capital brings individual capitals together in an organised way for more efficiency (Ostrom 2000: 174-176).

2.1.2. Social capital: Emergence, definitions and dimensions

The term social capital first emerged in social science as an addition to physical and human capital. Later the idea spread to political and to economic sciences (Woolcock 1998: 155; Grootaert et al. 2004: 1; Sanyal & Routray 2016: 102). In recent years the concept has also gained importance in development science (Uphoff 2000: 215-216) and so also in DRM literature. As the concept spread to different sciences and came to be used for a variety of applications, a broad discussion about its definition started (Portes 1998: 2; Woolcock 1998: 155; Grootaert et al. 2004: 1).

2.1.2.1. Emergence of the term

More than a century ago, Hanifan, the state supervisor of rural schools in West Virginia, was the first to mention the term (Hanifan 1916; Joshi & Aoki 2014: 101; Wikipedia 2017). He defined social capital as *"[…] goodwill, fellowship, mutual sympathy and social intercourse among a group of individuals and families who make up a social unit […]* (Hanifan 1916: 130), from which the individual as well as the community benefit.

The concept social capital has since then gained a lot of importance in research as well as in praxis. However, the concept is incredibly complex due to its multifaceted character (Woolcock 1998: 154; Grootaert et al. 2004: 3) and because researchers from different backgrounds have brought different focuses and perspectives into the discussion (Sanyal & Routray 2016: 102). All agree that social capital consists of some kind of social structure, which fosters collective action or facilitates actors (corporate actors as well as persons) to access certain resources (Putnam 2001: 1-2; Woolcock 1998: 155; Portes 1998: 6). In other words, the social structure has a value for the actor (Coleman 1988: 97-101; Putnam 2001: 1). Social capital is, therefore, often described as a resource or an ability gained through membership of social networks, that is available to an actor and that helps him or her to secure benefits (Coleman 1988: 98; Portes 1998: 6; Baker 1990: 619).

2.1.2.2. Different definitions of social capital

Social capital is not a single entity but it consists of different functions. These functions are also expressed as dimensions or phrases and are interchangeable in most cases (Coleman 1988: 98; Serageldin & Grootaert 1999: 45; Ostrom 2000: 176; Putnam et al. 1993 177). The multi-functionality of the term makes it almost impossible to agree on one single definition.

So, the measurement of social capital is difficult. To have an integrated view of social capital, it is important to look at all types and definitions of social capitals as they can all coexist (Serageldin & Grootaert 1999: 49). In the following paragraph different definitions of social capital, mostly defined through its entities, are discussed.

Bourdieu (1986: 86) defines social capital as "*the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition which provides each of its members with the backing of the collectivity-owned capital, a credential which entitles them to credit in the various senses of the word."* In other words, social capital is a resource, which a person can gain through membership of a group and which brings each member of the group certain benefits. The characteristics of the relationships between members of a group can be of different nature (Bourdieu 1986: 86-88).

Bourdieu (1986) also claims that social capital is not given by nature, but it is formed through the conscious or unconscious effort of an individual or a community. An actor's social capital is never totally independent on its economic, cultural and symbolic capital as social relations are often based on them (Bourdieu 1986: 86-88).

Coleman (1988) uses the three dimensions *obligations and expectations*, *information channels* and *social norms* to measure social capital in his analysis about dropouts from high schools. *Obligations and expectations* arise when one actor helps another in some way. Depending on the trustworthiness of the obligated actors, the expectations are fulfilled or unfulfilled (Coleman 1988: 102-104). According to Coleman (1988: 104) analysis, *Information channels* are also a form of social capital. Information is important as it provides a basis for action. High levels of social capital, for example, good social relations can help to acquire information as information flows along social relations. Burt (2000: 134) also mentions the advantages of groups for information flows. *"[…] Information circulates more within than between groups […]"* Burt (2000: 34). The dimension *norms* will be discussed later in this chapter.

Portes (1998) critiques the way in which social capital is defined by its functions. He defines social capital simply as *"the ability to secure benefits through membership in networks and other social structures"* (Portes 1998: 8). In his view, all other entities that are used to define social capital are a source or a consequence of it. He claims that it is important to differentiate

between social capital and its sources and its outcomes. According to his concept, trust and reciprocity would be a source of social capital, while norms, social control, network-mediated benefits etc. count as consequences (Portes 1998: 1-9).

In more praxis-oriented research a common way to define social capital is by the functions - *social networks, trust* and *norms* (Joshi & Aoki 2014: 101; Serageldin & Grootaert 1999: 45; Nakagawa & Shaw 2004: 7). This thesis works mainly with that definition, and so the entities social networks, trust and norms will be described in detail in the following paragraphs.

Social networks are formal or informal relationships between a group of people, characterised through social exchange and interaction (Uphoff 2000: 219). They are held together through the norms of reciprocity and foster other forms of social capital, for example, flow of information and cooperative action (Putnam et al. 1993: 173-174; Uphoff 2000: 219). Some disagreement exists concerning the strength of networks. There are two main arguments, the closure argument from Coleman and the structural hole argument from Burt.

Networks with closure will say that every member of a network is connected to the others. This fosters information flow and trust between members of the network and facilitates effective sanctions and cooperative action. The first argument states that a dense network with strong relationships leads to better connectedness and higher social capital and so an actor can draw more benefits from such a network (Coleman 1988: 104-108; Burt 2000: 31-38; Putnam et al. 1993: 173). On the contrary, the second argument states that structural holes within networks are necessary for broker connections. These are valuable as they act as brokerage between different groups and consequently connect people and groups which otherwise would have been excluded. For example, in information flow, information that flows only within a group is never renewed. Weak ties between group members with some holes enable new knowledge and information to find their ways into the network (Burt 2000: 31-53).

Social norms exist in different forms, such as obligations, the willingness toward mutually beneficial action and reciprocity. They can be formal or informal (Nakagawa & Shaw 2004: 10; Putnam et al. 1993: 171-172). The function *social norms* is connected with other functions of social capital such as social networks, collective action, social exchange and trust. For example, norms are the drivers of any collective action for mutual benefit and motivate people to work towards a goal together instead of individually (Coleman 1988: 104-105). Dense networks often and norms often work together, for example, the norm of reciprocity

(Putnam et al. 1993: 172).

Trust, like social norms, is closely linked to other dimensions of social capital. For example, dense networks can increase the trust between the members of the group (Woolcock 1998: 156). This can be visualised by a simple example: When a person has two friends that do not know each other they will still trust each other because they trust their common friend (Putnam et al. 1993: 168-169). Strong social norms such as effective sanctions can also have trust as a by-product. Mutual trust is an important part of social capital because cooperation and collective action as well as contracts would not be possible without it (Putnam et al. 1993: 164-171).

2.1.3. Categorisation of social capital

Apart from the different dimensions of social capital, there are also different ways to categorise social capital (cf. figure 1). Especially when looking for ways to measure social capital, it is crucial to be aware of the different ways to categorise it (Uphoff 2000: 217-218). Social capital can be divided into *bonding, bridging* and *linking* social capital, which is a similar division as *macro-, meso-* and *micro-* social capital or *vertical* and *hierarchical* social capital (Joshi & Aoki 2014: 101). It can also be divided into *public* and *private* social capital or *community* and *individual* social capital. Finally, another important distinction is between *structural* and *cognitive* social capital. In the following subchapters, the different categories are described in more detail.

Horizontal and vertical social capital

Social capital consists of *horizontal* as well as *vertical* relations. Horizontal networks are within people of the same hierarchical level, such as family, neighbours and community members. Vertical networks are asymmetric relationships, for example, relations between community members and authority figures such as local council, state or between employees and the head of an institution. In praxis, it can be difficult sometimes to clearly define which relations are hierarchical and which are vertical as there is always some hierarchy within a group of people (Grootaert 2001: 2; Putnam et al. 1993: 173).

Bonding, bridging and linking social capital

Another classification of social capital is *bonding, bridging* and *linking* social capital. Linking social capital describes the vertical social capital. Bonding and bridging are two types of horizontal social capital. Bonding social capital consists of strong ties within a group while bridging social capital contains the relations between two or several different groups. Bridging social capital could be, for example, the network between different villages or ethnical groups, while bonding social capital describes the network within the village or ethnic group (Woolcock 2002: 23; Nakagawa & Shaw 2004: 10).

Individual and community social capital

While discussing about social capital, the question whether it is a resource for an individual or if it exists only on a community level often arises. Indeed, there is a difference between *individual* and *community social capital.* Individual social capital focuses on social relationships that enable individuals or households to get access to resources and to attain personal goals. Resources can flow through networks and therefore be mobilised by members of these networks. People with key positions in networks have a higher social capital, as it is easier for them to mobilise resources for their own benefit. Community social capital describes the interaction and collaboration within a community, which leads to collective achievements, such as collective action in order to enhance common goals like social development (Dudwick et al. 2006: 1-2; Son & Lin 2008: 330; Grootaert et al. 2004: 3).

It is difficult to completely separate community and individual social capital because the community well-being is usually connected to the individual well-being. Oliver-Smith (2005: 46) explains the link between individuals and communities: "*Because human beings are social creatures, the reinvention of the self is intimately linked to the reinvention of community as humankind's principal form of living."*

Formal and informal social capital

Putnam (2001: 2) divides social capital into *formal* and *informal* social structures. Structures of social capital can be of a formal nature like a labour cooperation or of an informal nature like networks between friends, families and neighbours. Both forms of social capital can lead to reciprocity and to gains for all members of this social structure (Putnam 2001: 2).

Structural and cognitive social capital

Uphoff (2000: 218) claims that the differentiation between *structural* and *cognitive social capital* is the most important and fundamental to understand social capital better. The category *cognitive social capital* includes mental processes and ideas such as social norms, behaviours and attitudes and governance that lead to cooperative behaviour and collective action (Minamoto 2010: 549-550; Nakagawa & Shaw 2004: 10; Uphoff 2000: 218-221).

Organisations, formal networks, formal rules (such as state laws) and roles, which lead to cooperative behaviour and collective action, are part of the category *structural social capital* (Minamoto 2010: 549-550; Nakagawa & Shaw 2004: 10; Uphoff 2000: 218-221).

In praxis, cognitive and structural social capital most likely persist together (Uphoff 2000: 218). For example, in an association, members usually develop mutual trust, norms and similar ideas and attitudes.

2.1.5. Use, advantages and disadvantages of strong social capital

2.1.5.1. Use of social capital

As discussed earlier, social capital needs effort to grow and to sustain. Social capital, in contrast to physical capital, grows when used and decreases when not used (Putnam et al. 1993: 169; Ostrom 2000: 179-180). Community social capital can be accumulated through community gatherings, meetings and social occasions such as weddings etc. (Hanifan 1916: 131). Though, it is very difficult, to construct social capital under external interventions (Ostrom 2000: 179).

Once a stock of social capital is accumulated it can lead to a lot of benefits for the actors that possess it. However, many researchers emphasise that social capital has both positive and negative consequences (Portes 1998: 1-9; Putnam 2001: 3; Ostrom 2000: 176). "[…] *All forms of social capital, indeed any form of capital, can be used to ends that are in some instances destructive"* (Putnam 2001: 3). In the following section the benefits as well as the disadvantages of social capital are described.

2.1.5.2. Advantages and disadvantages of strong social capital

A high level of social capital has many advantages. To start with, it helps to reduce opportunistic behaviour and therefore to overcome the dilemma of collective action (Putnam et al. 1993: 167; Grootaert et al. 2004: 11). Strong norms and sanctions and trustworthiness between members of a community motivate people to work together and facilitate collective action as there is a stronger commitment to mutual work (Putnam et al. 1993: 164; Grootaert et al. 2004: 11). Additionally, they support the coordination of activities and collective decision-making. As a result, they foster productive activity and economic growth (Putnam et al. 1993: 167; Grootaert et al. 2004: 11; Serageldin & Grootaert 1999: 45-47; Coleman 1988: 98-99). It has been noticed that social capital has a positive influence on security and facilitates the flow of information (Coleman 1988: 99-100; Serageldin & Grootaert 1999: 47; Grootaert et al. 2004: 11). There is a growing consensus that a high stock of social capital has an effect on development outcomes (Grootaert 1996: 3).

When the concept of social capital emerged, only its positive effects were stated. But in the recent years, its negative consequences have been mentioned more frequently (Portes 1998: 15-18; Ostrom 2000: 176-179; Minamoto 2010: 55). Portes (1998: 15) names four possible

negative consequences of social capital: "*exclusion of outsiders, excess claims on group members, restriction on individual freedoms and downward levelling norms."* The exclusion of outsiders is mostly a problem in organisations or groups that consist of strong ties. While the members of the group are very closely connected, people who are not a part of it can be completely excluded. Excess claims on group members mostly arise due to strong norms and community closure. The third consequence refers to a strong social control in communities with strong networks and shared attitudes and beliefs. Downward levelling norms can be a result when "*group solidarity is cemented by a common experience of adversity and opposition to mainstream society*" (Portes 1998: 17). When one group member reaches individual success, this can undermine the group identity. Therefore, skilled and ambitious members usually escape from the group, while the ones with little ambition stay in the group (Portes 1998: 15-18). Other negative consequences of social capital are the use of social capital to control group members and to put peer pressure (Ostrom 2000: 176-179; Minamoto 2010: 555). However, the negative consequences of social capital can be moderated when researchers and decision-makers become aware of it.

This thesis mainly works with the definition of social capital that describes it by the functions social norms, trust and networks, as these play an important role in risk management. Distinctions are made between community and individual social capital, between horizontal and vertical social capital and between formal and informal social capital. As this paper focuses on the relations within groups and vertical linkages but not on the relations between different groups, there is no distinction made between bonding and bridging social capital. A clear distinction is also not made between cognitive and structural social capital as it is difficult to make this difference in praxis.

2.2. Disaster risk management

This chapter starts by defining disaster and other terms that are important to understand and analyse disasters. Later, factors that are important in disaster risk management are discussed. The last part of this chapter focuses on the recovery stage of disaster risk management and on the importance of community inclusion.

2.2.1. Disasters and Disaster risk

Disasters are sudden adverse extreme events, which cause great damage to humans and to plants and animals (Khan et al. 2008: 43). The United Nations define disasters as *"a serious disruption of the functioning of a community or a society causing widespread human, material, economic ability of the affected community/society to cope using its own resources"* (UNISDR 2009: 9). According to this definition, a disaster is the impact a hazard has on the human society. The level of impact is not only contingent on the nature of the hazard but also on a complex interplay between natural forces and human action (Bolin & Stanford 1998: 22). This is best described by the level of vulnerability of an asset, a community or a person (UNISDR 2009: 9-10; IPCC 2012: 4-5; Wisner et al. 1994: 6-7) (cf. figure 2). An earthquake taking place in an empty area in absence of humans and assets wouldn't cause any damage. It would also not cause any damage if it hit an area with earthquake-resistant assets. In other words, the conditions for a hazard to turn into a disaster are the exposure and vulnerability of certain elements, persons or communities. The result of the *level of vulnerability (in this case exposure is included in vulnerability)* multiplied by *the probability of a hazard* event is the *disaster risk*. Disaster risk is the possibility of future adverse effects deriving from a hazard (Wisner et al. 2011: 24) (cf. figure 2).

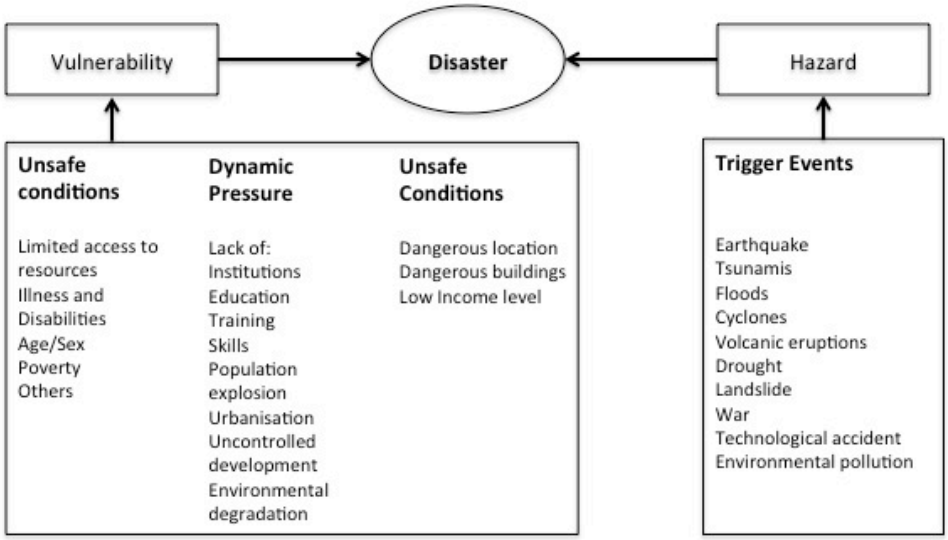


Figure 2: What is a Disaster? (Source: Modified after Khan et al. (2008: 44))

In the following paragraphs the terms hazard, vulnerability, exposure and capacity will be described in detail.

Hazards are dangerous events with the potential of having adverse effects on persons or communities (Khan et al. 2008: 45; IPCC 2012: 69). They can be natural or man-made (Khan et al. 2008: 45). Depending on the nature of a hazard, the measures to prevent disasters have to be chosen accordingly.

Khan et al. (2008: 45) make a broad distinction between geological hazards, water and climatic hazards, environmental hazards, chemical, industrial and nuclear accidents and accident-related hazards such as forest fires. Earthquakes belong to the category of geological hazards. They are not climate-related and therefore not affected by climate change. Neither are earthquakes influenced by any social action (Wisner et al. 1994: 274). As they happen very quickly it is almost impossible to predict them. But still human actions can have a great impact on the outcome of such an event (Wisner et al. 1994: 274). This will be discussed in detail in the following chapters.

Exposure refers to the persons and assets located in an area where a hazard may occur (IPCC 2012: 69). The more likely it is for a hazard to occur where an object is located, the higher is the object's level of exposure.

Vulnerability refers to the likelihood of assets and persons suffering damages due to a hazard. Wisner et al. (1994: 11) define it as "*the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard"*. A person's or community's vulnerability is dependent on both the physical component of assets and the social structure of a community (Sanyal & Routray 2016: 101; Murphy 2007: 299). The physical part of vulnerability comprises the nature, the construction and the fragilities in infrastructure (Khan et al. 2008: 45; IPCC 2012: 69-70). The social part of vulnerability is described by a person's or community's capacity or the lack of capacity to cope with a hazard that favours an adverse impact of a hazard (Khan et al. 2008: 45; IPCC 2012: 69-70). The vulnerability as well as the exposure vary greatly, depending on economic, social, geographic, demographic, cultural, institutional, governance and environmental factors (IPCC 2012: 7).

Capacity includes all the measures that enable persons and communities to cope with disasters and recover from them (Khan et al. 2008: 46). These could be, for example, social networks, institutions and different assets necessary in enabling people to take actions to lower the disaster risk (IPCC 2012: 74).

2.2.2. Disaster risk management

Human civilisations have always experienced disasters, but in recent years disasters have had a much greater impact on the society. There is an increase in the adverse effects caused by disasters. This is mostly related to an increase in value (more infrastructures, more valuable houses etc.) as well as an increase in hazards due to climate change at the same time (Khan et al. 2008: 43; Nakagawa & Shaw 2004: 6; Sanyal & Routray 2016: 101). Just between 2005 and 2015, disasters have caused over 700'000 casualties, 1.4 Mio injuries, 23 Mio people to become homeless; in total, they have affected over 1.5 Bio people (UNISDR 2015: 10). DRM has, therefore, become a much-discussed topic in science and also among practitioners. However, despite the growing importance of DRM over the last couple of years, the impacts of disasters have continued to increase. This is mainly on account of the fact that the exposure of people and assets has increased faster than their vulnerability has decreased (UNISDR 2015).

DRM is a complex topic, as many different dimensions and stakeholders are impacted by or

have an influence on disasters. Thus, it has to be a flexible process, as different factors need to be considered depending on the situation (Kreps & Lovegren Bosworth 2007: 306). Especially, flexibility towards local social conditions is crucial for DRM. It is generally agreed today that disasters can neither be prevented nor properly recovered if the social aspects are not taken into account (Eiser et al. 2012: 6). Therefore, a shift from looking only at the physical part of vulnerability towards a more integrated disaster management with a greater attention to the social aspects of vulnerability and more community inclusion has been the focus of many researchers (Nakagawa & Shaw 2004: 5; Sanyal & Routray 2016: 101; Murphy 2007: 299).

To support policy makers and to ensure sustainable and equal DRM, guidelines and policies have been developed. The international guidelines for DRM are written in the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) formulated by the United Nations for Disaster Risk Reduction (UNISDR) (UNISDR 2015). It is built on the elements of the Hyogo Framework but has undergone some changes. The focus has shifted from Disaster Management to Disaster Risk Management, putting an emphasis on the elements of risk: vulnerability, exposure and hazard characteristics. The SFDRR guidelines also prioritise the empowerment of local communities in all stages of DRM and the "*Build Back Bette*r" principle during all stages after a disaster (UNISDR 2015).

2.2.3. Disaster cycle

All activities, measures and programmes that are part of disaster management can be divided into different steps that form a wheel starting from preparedness, response, recovery and risk reduction (Khan et al. 2008: 46-48; Davis & Alexander 2016: 66-69; Nakagawa & Shaw 2004: 11). Preparation is mostly done before a disaster event, response is given during and shortly after the event and recovery is made between some weeks to months after the event. According to the disaster cycle (cf. figure 3), risk reduction is supposed to happen in the transition phase from recovery after a disaster to preparedness. However, all these steps overlap and can not be clearly separated as it is not possible to define until when the period after a disaster lasts, and at what point the period before a disaster starts. Therefore, it seems reasonable to form a wheel, also called a disaster cycle, to describe disaster risk management.

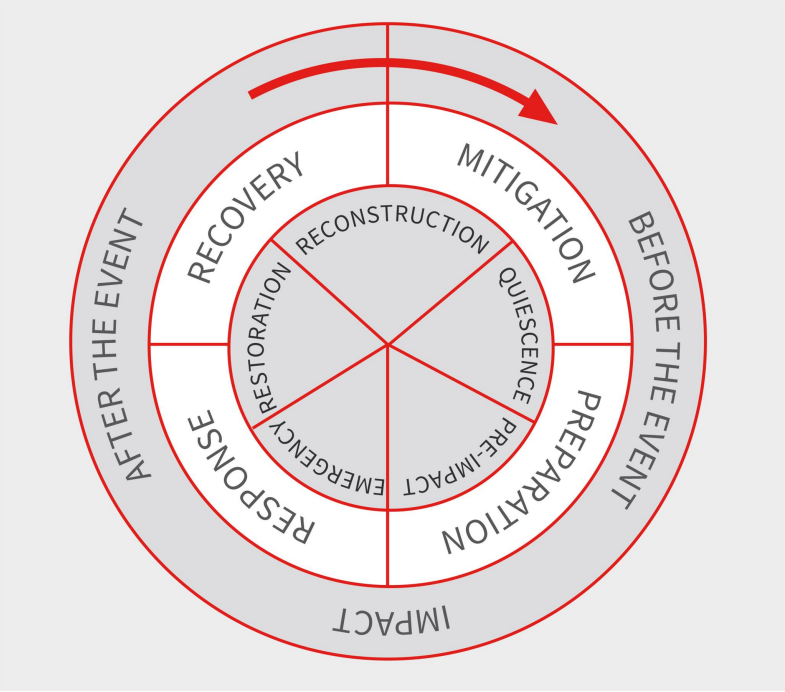


Figure 3: Disaster cycle (Source: Davis & Alexander 2016)

2.2.4. The phase of recovery

Disaster recovery is the least investigated part of disaster management even though it should not be neglected. The phase of recovery is an important opportunity for development and it is crucial to choose recovery policies, plans and programs carefully (Nakagawa & Shaw 2004: 6). The disaster cycle (figure 3) shows that the process of recovery does not start until sometime after a disaster has taken place. The recovery phase is placed between response and risk reduction. However, these stages can not be clearly separated. Recovery can start during the response phase already and risk reduction should always be part of the recovery phase. Therefore, Smith & Wenger (2007: 237-238) include the emergency period, the restoration, the reconstruction and the betterment and development phases all in the stage of recovery.

Disaster recovery is defined as "*the restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors"* (UNISDR 2009: 23). Smith & Wenger (2007: 237) define it as "*the differential process of restoring, rebuilding, and reshaping the physical, social, economic, and natural environment through pre-event planning and post-event actions"*.

Both definitions emphasise that disaster recovery should include the restoration of physical as well as social community elements and thereby also include the restoration of the functioning of a community. Thus, community inclusion is vital for a sustainable disaster management for both DRM on the whole and for the recovery phase in the DRM cycle. The definition of the (UNISDR 2009: 23) additionally mentions the need to reduce disaster risk and to implement the "Build Back Better" principle, while Smith & Wenger (2007: 237-239) mention the pre-event planning as an important part of disaster recovery.

2.2.4.1. Community-based recovery approaches

International guidelines and research from recent years put a strong focus on sustainable long-term recovery including the "Build Back Better" principle. Nonetheless, in praxis this is still often lacking as recovery is a chaotic and complex process and a challenging task for decision makers because decisions have to be taken very quickly in an emergency situation (Smith & Wenger 2007: 237). This often leads to short-term recovery with top-down approaches (Ingram et al. 2006: 607). However, different studies concluded that top-down approaches are successful only in rare cases when it comes to disaster recovery as they ignore certain

problems at the community level (Berke et al. 1993: 3-6). Top-down approaches often do not meet the needs of marginal and vulnerable groups, the programs are often poorly coordinated and there is little to no local involvement (Berke et al. 1993: 3-6). It is, therefore, recommended to work with bottom-up approaches and a high degree of community participation. Local consultation before a disaster strikes is preferable to ensure that local needs and local conditions are taken into consideration in the recovery planning and to make sustainable practices more viable within the local context. As an additional benefit such a consultation brings different stakeholders together and already includes them in an early stage of the recovery policies (Ingram et al. 2006: 611; Smith & Wenger 2007: 239). Local participation in the decision-making and in the implementation of the recovery process can help to gain trust, to empower affected people and to make the recovery more effective.

To enhance the sustainability of a recovery process, the foundation should be laid before a disaster strikes considering that many social, physical, environmental, economic and political components influence a long-term sustainable reconstruction and rehabilitation (UNISDR 2009: 23; Ingram et al. 2006: 610). Planning ahead has the advantage of a clear division of responsibilities beforehand and gives a greater chance to public participation, which in turn enhances a quick and long-term recovery and the application of the "Build Back Better" principle (UNISDR 2009).

To conclude, the stage of recovery is an important phase of DRM as it is an opportunity for development. In recent years, the focus of DRM guidelines and recommendations has shifted from a strong physical approach towards a more integrated approach that also includes social aspects. Many researchers stress the importance of community-inclusion and bottom-up programs in order to recover more sustainably, more quickly and on a long-term basis.

2.3. Social capital in disaster risk management

This chapter ties up with the previous two chapters and connects them by discussing the importance of social capital in DRM and especially in disaster recovery.

Through several case studies, it was observed that all dimensions of social capital play a crucial role in DRM and especially in disaster recovery: Social capital has a positive influence on the sustainability of DRM, on people's satisfaction with it, on the speed and the overall success of disaster recovery (Nakagawa & Shaw 2004; Joshi & Aoki 2014; George 2008). However, social capital does not only influence disaster outcomes and DRM but is also influenced by it. The aim of this chapter is to outline the interactions between disasters, disaster recovery and social capital. It starts with a list of studies that have analysed different roles of social capital in disaster recovery to show the diversity of these interactions. Further, the influence of disasters on social capital, the influence of recovery plans, programs and policies on social capital and lastly, the impacts of social capital on disaster recovery are discussed.

2.3.1. Examples of interactions between social capital and disaster recovery

Different studies show that social capital is especially important in the recovery phase. For instance, after the 1995 Kobe earthquake in Japan and also after the 2011 earthquake and tsunami in Japan most people were saved by neighbours, friends and family (Sanyal & Routray 2016: 104). Nakagawa & Shaw (2004) examined the role of social capital and leadership in the reconstruction efforts in Kobe, Japan and Gujarat, India after the respective earthquakes. They observed that communities with higher levels of social capital and leadership recovered faster and in a more sustainable way than communities with weaker social capital. Joshi & Aoki (2014) compared two districts in India, where tsunami recovery had either been successful or unsuccessful and concluded that social capital plays a great role in disaster recovery, regardless of culture or ethnicity. George (2008) compared the post-tsunami recovery in a tourist destination in India and an agrarian village in India. He made an interesting observation that social capital definitely had positive impacts on the recoveries of an agrarian village, while the same social capital had adverse effects on the recovery of a touristic village. He concluded that the reason for this contradiction was the high motivation of the affected people to support the recovery in the agrarian village, while affected inhabitants of the touristic village rather felt resentment towards development. In Sundarbans,

India, where natural hazards are very frequent, ties and trust among community members is crucial for the survival of the community in cases of disasters. Community networks enable the cooperation of people: They help each other out, safeguard houses, give shelter, share resources and get emotional and mental support (Sanyal & Routray 2016). Alipour et al. (2015) conducted a study after the 2012 earthquake in East Azerbaijan to get an overview of the most important social issues emerging after a disaster. Among many others, weakening of social capital in terms of disruption of roles, undermining of trust and social networks and social division was an important outcome.

2.3.2. Interactions between disasters, disaster recovery and social capital

2.3.2.1. Impact of disasters on social capital

Social capital and mainly social networks can be largely disrupted by disasters (Ingram et al. 2006: 609; Alipour et al. 2015: 700). After a disaster, it is often the case that a large part of a community moves away either to live with their friends and family or to resettlement camps. This rupture of the traditional community structure can break ties and it is difficult, especially in large resettlement camps, to attain a sense of community (Ingram et al. 2006: 609). So it is especially important to take social capital into account in the recovery phase as it is crucial for the rehabilitation after a disaster (Joshi & Aoki 2014: 101-102).

2.3.2.2. Impact of disaster recovery policies, plans and programs on social capital

Ignoring social capital in the recovery phase can lead to social division and seriously hinder the recovery process (Alipour et al. 2015: 699-700). Thus, for a sustainable recovery, it is not only crucial to think about social capital as an available resource to foster recovery but also to choose policies, plans and programs carefully to further strengthen it (Brune & Bossert 2009: 885). Paternalistic top-down approaches are therefore not recommended because then social capital is often debilitated (Sanyal & Routray 2016: 110). The lack of community participation in the recovery process can lead to lack of trust and weakening of social networks, which in turn can lead to non-acceptance of the recovery measures. This sometimes can lead to protests and the further emergence of social issues (Alipour et al. 2015: 697-699).

Social capital can be reinforced in vulnerable areas and resilience of groups in such areas can be strengthened if participatory recovery policies, plans and programs are applied and the local context, especially the social structures, are taken into account (Alipour et al. 2015:

701). This underlines the importance of community-inclusion and bottom-up disaster recovery programs, outlined in the previous chapter.

Nevertheless, it is important to consider that participation does not always have good effects. The outcome of participation highly depends on the way it is conducted. If people are forced to participate through norms such as penalties by a more powerful individual or institution it can have an adverse effect on social capital (Minamoto 2010: 555-556).

To conclude, paying attention to social capital in disaster recovery planning helps people to return to normal life and leads to better social development and social resilience (Alipour et al. 2015: 701).

2.3.2.3. Influence of social capital on recovery

Many studies have mentioned that social capital is vital for disaster recovery (c.f. chapter 2.3.1). Communities with high social capital have reported, in general, greater recovery satisfaction and greater community participation during the recovery process and overall faster and more successful recovery results (Nakagawa & Shaw 2004: 11-28; Joshi & Aoki 2014: 100-107). Social capital as a concept helps to understand and analyse community structures and thus to find appropriate recovery measures. Social capital as a resource fosters collective action and community participation. As a resource, social capital is a vital element and plays different roles in every stage of DRM, from rescue to relief to rehabilitation to preparedness (Sanyal & Routray 2016: 101; Nakagawa & Shaw 2004: 18-19).

In emergency cases, social capital is often one of the only resources a community can mobilise in the first instance. It is, therefore, crucial for survival until outside helps arrives (Sanyal & Routray 2016: 101). In the recovery phase, it facilitates people to access aid given by government or other aid organisations (Joshi & Aoki 2014: 102-103) and also to access resources from networks such as getting assistance from others for child care, shelter and emotional support (Sanyal & Routray 2016: 104). Further, social capital is often used during an event assessment, as it helps to understand essential elements of the community and facilitates the event evaluation (Nakagawa & Shaw 2004: 11; Sakamoto & Yamori 2009: 50). Minamoto (2010: 548) mentions the importance of including the community in the event evaluation because "*perceptions about the issues of post-disaster recovery differ between the victims of a disaster and those who provide assistance […] as there is little understanding by the assistance-providers of internal factors in the affected society"*. She even claims that

"Community based organisations (CBOs) can be seen as a representation of the local social structure" Minamoto (2010: 549).

Social capital also provides a source of information. Many people get their information about the recovery plans and programs from their relatives and friends (Sanyal & Routray 2016: 104).

It was discussed in chapter 2.1.4 that collective action and a high level of participation are outcomes of a strong social capital. This is a huge advantage in disaster recovery because affected communities can organise themselves and support the government and aid agencies in the task of recovery. Therefore, it can be said that existing CBOs and also emergent groups, play an important part in disaster recovery especially in case of emergencies. They help in different tasks of the recovery process such as damage assessment, operation (collecting and distributing aid) and recovery coordination (such as citizen committees) (Murphy 2007: 94-96).

Both horizontal social capital, and vertical social capital have an influence on disaster recovery. Vertical networks help communities and persons to utilise connections with the government and aid organisations to recover more quickly and more sustainably (Sanyal & Routray 2016: 105-106). Vertical trust, that is, to trust people in charge for the recovery, fosters better recovery outcomes. Especially trust in the local government has been found to be extremely important for the success of a disaster recovery (Joshi & Aoki 2014: 105), whereas mistrust between affected communities and authority figures can lead to reluctant attitudes towards the recovery programs and plans (Bolin & Stanford 1998: 26).

At this point, it is also important to mention the negative impacts that social capital can have on disaster recovery. Tightly knit networks can lead to an enhanced disaster recovery for members of the networks, but they can be disadvantageous for outsiders. For example, aid is often distributed only among the members of a network, and so non-members are left out. This can widen the existing social gap even further and have a negative impact on pre-existing social capital (Minamoto 2010: 549-562; Murphy 2007: 303; Sanyal & Routray 2016: 105).

3. Methods

3.1. Introduction

In the course of this study several methods were used to obtain and analyse data. The main results were acquired by a quantitative *survey on household level*. To complement the results of the household survey, *field notes, notes from informal conversations and supplementary statements from the survey* were recorded and analysed. Additionally, an *expert survey* was conducted in the same study area with similar questions like the household survey. The aim of the expert survey was to compare the perception of experts and the affected populations on the recovery. Further, *secondary data* such as official records and reports as well as media reports were used to get an overview of the current situation, the involved stakeholders and the political, institutional, social and financial framework of the recovery process.

This chapter aims to present these methods in detail. The general structure consists of an introduction, a subchapter about the quantitative surveys and a subchapter about the qualitative methods used. The introduction is further divided into a description of the basic characterises of quantitative and qualitative methods and a discussion about the approach of triangulation. The subchapter about the surveys starts with an outline of the preparation phase followed by a description of the household survey and the expert survey; it takes into consideration the implementation, sampling, structure and limitations of the concerning survey methods. It ends with a description of the data analysis. The final subchapter about qualitative methods discusses the how the data was gathered followed by the data analysis and ends with the limitations of the qualitative methods used.

3.1.1. Quantitative versus qualitative methods and triangulation

In social sciences, quantitative as well as qualitative research methods are used. Quantitative methods are used to analyse social phenomena in a quantitative form, i.e. in models and statistical correlations, while qualitative methods are most commonly used to find causalities of certain issues and subjective views within the population (Winter 2000: 1-3; Dudwick et al. 2006: 3-4).

3.1.1.1. Quantitative methods

Quantitative methods are highly structured and standardised. They usually work with big, randomly selected samples. Hence, conclusions can be drawn for the total population. Quantitative methods are applied to either test a hypothesis, statistic correlations or "*to validate original findings by independently replicating the analysis"* (Dudwick et al. 2006: 3). The advantages of quantitative over qualitative methods are: statistical correlations are possible, they reach a better objectivity and comparability and they are generally representative for the total population (Winter 2000: 1-3; Dudwick et al. 2006: 3-4). However, quantitative methods also have limitations: (1) As they are highly standardised, there is no flexibility during the phase of data collection; (2) there is often a bias towards the researcher's perspective; (3) thus, usually through quantitative research, no absolutely new findings are made and (4) the causality for relations between certain variables can not be explained. Additionally, (5) many social characteristics of community can not be reduced to a number (Winter 2000: 1-3; Dudwick et al. 2006: 3-4).

3.1.1.2. Qualitative methods

Qualitative methods have different levels of standardisation and structure. As compared to quantitative methods, they are less structured and usually work with smaller sample sizes. They are also more flexible than quantitative methods and the participant has a greater influence on the direction of the research. Therefore, qualitative methods are often used to get a detailed description of individual opinions and relations and to examine issues of causality, processes and context (Dudwick et al. 2006: 3-4; Flick 2009; Winter 2000:1-4). The limitations of qualitative methods are that (1) no quantitative statements are possible, (2) they generally are time and cost consuming, (3) it is extremely difficult to decide who is included in the sample and (4) they are more subjective than quantitative methods (Dudwick et al. 2006: 3-4; Flick 2009; Winter 2000:1-4).

To compensate these weaknesses of quantitative and qualitative methods, it is possible to integrate quantitative and qualitative methods into the same research. This is called triangulation.

3.1.1.3. Triangulation

The concept of triangulation was developed in the 1970s by Denzin (1978: 291; cited in: Flick 1991: 432) who defines it as "*die Kombination von Methodologien bei der Untersuchung desselben Phänomens*" (Denzin 1978: 291; cited in: Flick 1991: 432) ("*the combination of methodologies, while investigating the same phenomena"* (translated from German into English: Denzin 1978: 291; cited in: Flick 1991: 432)).

He explains triangulation as a strategy for validating results. However, many researchers criticised this use of the concept (Flick 1991: 432-433). Therefore, the focus of triangulation has shifted from a strategy for validation towards a strategy to "*further enriching and completing knowledge*" (Flick 2009: 444).

Denzin (1989: 237-241; cited in: Flick 2009: 444) defines four types of triangulation: data triangulation, investigator triangulation, theory triangulation and method triangulation, of which the last is the most common form. Method triangulation can be further differentiated in to the within-method and the between-method triangulation. The between-method triangulation is used only within quantitative or qualitative research or between the two (Flick 2009: 26; 444).

In this research, the between-method triangulation is applied to complement the quantitative results of the survey with qualitative results (cf. figure 4). Generally qualitative research can support quantitative research to find causalities for the quantitative correlation of variables and to get a broader picture of the examined issue (Bryman 1992; cited in: Flick 2009: 31-32). Quantitative and qualitative methods can be combined in different steps (c.f. Flick 2009: 26). In this thesis, a qualitative approach (interviews and informal conversations) was used for the exploration phase (cf. figure 4). Based on the results of the exploration phase, the quantitative household survey was designed (c.f. chapter 3.2.2). To get in-depth results of the quantitative analysis, qualitative methods (field notes, informal conversations) were applied (c.f. chapter 3.3). However, qualitative data was often gathered at the same time as the survey was conducted.

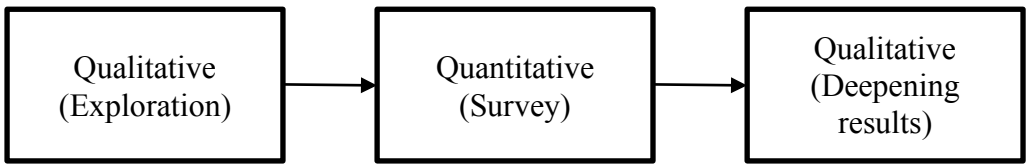


Figure 4: Integration of qualitative and quantitative results in this thesis. (Source: Adapted from (Flick- an introduction: 26))

Nevertheless, it should be considered that the quantitative data was largely used to get this thesis's data and qualitative data was only used supplementary.

3.2.Surveys

3.2.1. Preparation

As mentioned at the beginning of this chapter, the main results of this study are drawn from a quantitative survey. A major weakness of quantitative surveys is that they are often formulated far away from the study area and therefore reflect the pre-existing ideas of the researcher. Thus, it is unlikely to discover new findings. To minimise this bias, I visited Ecuador twice. The goal of my first visit was to understand the framework of the earthquake recovery and the local conditions better. During the second visit, I carried out the survey.

On the first explorative stay, I was located in Muisne, a little island in the province of Esmeraldas. There I conducted several interviews with affected people, including many informal conversations and thus got an insight into the culture and the problems people were facing in the recovery phase. Additionally, I talked to experts to get more detailed information about the national and local recovery plans.

Due to the changes in the security situation I had to change the study site. Nevertheless, the preparation phase was an important help in designing my survey. The culture in the surveyed cantons of Pedernales and Jama is similar to Muisne and they have a comparable poverty rate. Also, the recovery plans of Jama and Pedernales are similar to Muisne as they are designed by the national government. Thus, affected people faced similar problems in the recovery phase. The first visit to Ecuador, therefore, enabled me to adapt my survey to local conditions.

At the beginning of my second stay in Ecuador, five pre-tests were conducted to test whether local people understand the questions. A few changes were made in the survey after the pre-tests.

3.2.2. Household survey

Implementation

The household surveys were conduct between the 21st January and the 5th March 2017 in the cantons of Jama and Pedernales, province of Manabí, Ecuador. 203 household questionnaires were filled out in total, 103 in the canton of Jama and 100 in the canton of Pedernales. High school students conducted additional 73 questionnaires with their parents.

The province of Manabí was chosen because it was the most affected province by the 2016 earthquake. Pedernales and Jama suffered a relatively similar extent of damage (this information is based on conversations with people from Ecuador as no exact data about the damage in the two cantons is available) and have a comparable poverty rate (c.f. chapter 4.1.2). In the canton of Pedernales, people from the villages of Pedernales Palmar, La Cabuya, Nuevo Pedernales, Koaque and Nalpes were questioned, and in the canton of Jama, people from the villages of Jama, Bellavista, Tabuga, Camarones and Matal were questioned.

All questionnaires were filled in by me except for the questionnaires conducted by students. I visited the participants at their houses or in the camps and guided them through the questionnaire. I visited the students, who conducted the questionnaire of my behalf, at their school and explained them the purpose of the questionnaire and how it worked. They then took the questionnaire home to interview their parents. All respondents were informed that the data would be treated anonymously and would be used for my Master Thesis.

Picture 1: Conducting survey. Left picture: Provisional shelter in an informal camp in Nuevo Pedernales built by people who had lost their houses. Right picture: Woman selling food in the streets of Jama. The house in the background partly collapsed during the earthquake and left one person dead. (Source: Laura Merki)

Sampling

The samples were selected randomly with some considerations: Jama and Pedernales should have the same number of questionnaires, and questionnaires should be equally distributed among gender, rural/urban populations and people living in camps should be included. Jama and Pedernales (the capitals of the cantons) were labelled as *urban,* while all other villages were labelled as *rural*. The villages where surveys were conducted were chosen, in general, randomly but sometimes with the approach of snowball sampling: When I was conducting the survey, people also took me to areas inaccessible by public transportation. So, I could also conduct questionnaires in more remote areas.

Structure

The questionnaire contains only closed questions in from of multiple-choice questions (c.f. annex A). Most of the questions had to be answered with one single option. The questionnaire was divided into four main sections:

- Demographic and regional data
- Damage
- Satisfaction with the recovery so far
- Social capital

The section of social capital was the main part of the survey. As explained in chapter 2.1, social capital consists of different entities and it is difficult to measure it. Therefore, the following guidelines from the world bank were used to find appropriate questions to measure social capital: Measuring Social Capital - An Integrated Questionnaire (Grootaert et al. 2004) and Instruments of the Social Capital Assessment Tool (Grootaert & Bastelaer 2002). The questions were then adapted for the thesis' topic. The section of social capital was further divided into:

- Groups and networks
- Horizontal trust
- Norms
- Collective action and cooperation
- Participation, information and communication
- Vertical social capital (vertical trust and vertical access)

Limitations

The main limitations of the household survey are the sample size and the sampling itself. The sample size is considerably small compared to the inhabitants of the cantons. Additionally, only villages that were accessible by public transportation or where people took me to could be considered in the survey and only the people who were at home at the time could be questioned. Nevertheless, questionnaires were filled out during the week and also on the weekends. Therefore, people who were at work during the week were also included in the survey. The lengthiness of the questionnaire was another limitation. At times, it was difficult to hold people's interest until they got to the end of the questionnaire.

The political situation of the country at the time was also limiting the data gathering process. Due to the presidential elections on the 19th February 2017 and on the 2nd April 2017, it was officially prohibited to conduct surveys in the camps. So I had a limited access to the camps where I was often accompanied by a police officer or a soldier. Sometimes, people refused to talk to me even though I explained them that I was not from any political party. Though these cases were rare.

The questionnaires filled out by students were not suitable for the analysis. These questionnaires were tested with the Mann-Whitney-U-Test to see if they significantly differed from the other questionnaires or not. The test showed that many answers were significantly different from the rest of the survey and so they were not included in the analysis.

3.2.3. Expert survey

Implementation, Sampling and Structure

A total of 83 expert questionnaires were conducted with people from the academia, the police and the military, NGOs and politicians from the local councils (cantonal) (c.f. figure 5). Some of the expert questionnaires were filled out by me, and some by the experts as they preferred to fill it out on their own. A snowball sampling was used to get to the experts in the region.

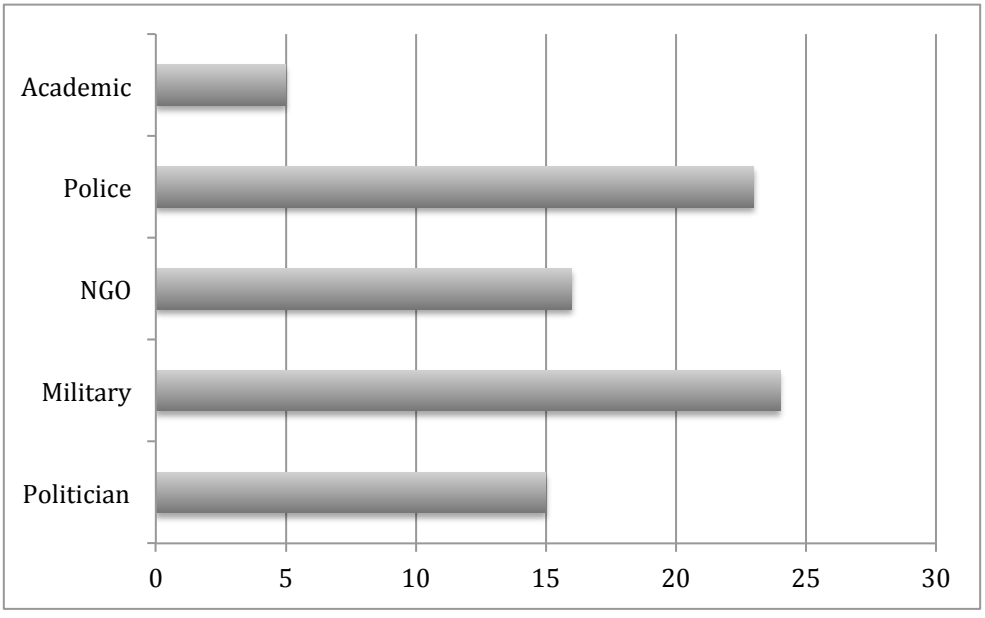


Figure 5: Number of surveyed experts per expert type (n=83)

The expert survey contains the same questions as the household survey except for the slight change in the formulation. The following example illustrates how the questions were changed for the expert survey:

Household survey: "*In general, how well would you say are you informed about what the government is doing in the recovery process?"*

Expert survey*: "In general, how well would you say is the population informed about what the government is doing in the recovery process?"*

Limitations

Many members among the surveyed experts are not directly involved in the decision-making process, such as the military and the police officers. However, they play an important role; for example, the military is responsible for the reception camps and it sends reports about the situation to the national government regularly. They also work closely together with NGOs and the ministries that are active in the camp (e.g. MIES (Ministry for economic and social inclusion)).

Only experts who were interested in being a part of the survey could be questioned. Because of the political situation in the country at the time some experts were unwilling to take part in the survey. This limited the scope of the expert survey.

It was not possible to separate the experts according to the cantons because most experts work on a provincial or national or international level.

3.2.4. Data analysis

Data aggregation

Social capital was measured through different questions. To get an overview and a comparable measure, different questions concerning social capital were aggregated into classes using the classifications discussed in 2.1 (c.f. table 1):

- Individual social capital (SC 1): Networks with trust and number of neighbours, friends and family
- Informal community social capital (SC 2): Community trust (neighbourhood and village) and community norms (measured through the variables of security and willingness towards collective action)
- Formal community social capital (SC 3): Formal networks (also called organisational networks) such as groups, associations and organisations
- Vertical social capital (SC 4): Trust and access to figures with authority (NGOs, neighbourhood president, local council and national government)
- Collective action and participation (SC 5): Participation and collective action in the earthquake recovery

A detailed overview of the questions aggregated in order to calculate the according classes can be consulted in the annex C. Various methods were used to aggregate the different questions into the respective classes. The first step was always a scale transformation, as some answers were given on a scale from 1 to 5, others on a scale from 1 to 6 and others were even binary responses. In the annex C the scale transformations are described in detail.

The next step was the aggregation of the data. This was done by adding the scores of the respective questions. In some cases, a weighted sum was used, i.e. when one topic or one question was considered more important than the others. A more detailed overview of the calculation for the social capital classes can be found in annex C.

Table 1: Data aggregation: Topics that belong to the respective social capital classes with the according methods used for data aggregation

New Variable	Topic	Methods used
SC 1	• Number of relations • Number of reunions • Trust (family, friends, neighbours)	• *Scale transformation* • *Sum*
SC 2	• Trust (people of the village) • Security • Mutuality	• *Scale transformation* • *Weighted sum: Questions about mutuality were counted as double*
SC 3	• Organisations	• *Scale transformation* • *Sum*
SC 4	• Trust • Access	• *Scale transformation* • *Weighted sum: Questions about access were counted as double*
SC 5	• Collective action • Participation	• *Scale transformation* • *Weighted sum: Participation in community activity counted as double*

Analysis

For the analysis of the household and the expert surveys the statistical program SPSS (IBM SPSS Statistics, V 22.0) was used. For all variables, except the social capital classes, parametric testing was not possible as they were measured on an ordinal scale.

Social capital classes are measured on a continuous scale. However, for SC 2, SC 3, SC 4 and SC 5 no parametric testing was possible as several assumptions were violated. So parametric testing was only possible for SC 1.

SC 3, SC 4 and SC 5 violate the assumption of normal distribution, while SC 2 violates the assumption of not having any outliers. Whether the social capital classes are normally distributed or not is tested with the *Kolmogorov-Smirnoff-Test.* The result of the Kolmogorov-Smirnoff-Test is that only SC 1 is normally distributed. To retest for normal distribution, the classes SC 2, SC 4 and SC 5 are *transformed* into SCT 2, SCT 4 and SCT 5 (cf. table 2). SC 3 is not transformed, as it is strongly biased (cf. figure 10). After transforming the data, SCT 2 is also normally distributed, while SCT 4 and SCT 5 are still not normally distributed. However, SCT 2 violates the assumption that there should not be any significant outliers as there are several outliers for all variables.

Table 2: Transformation of data in order to test for normal distribution. The skewness value was calculated with descriptives in SPSS. 60 is the highest score in SC 4, while 25 is the highest score in SC 5.

	SCT 2	SCT 4	SCT 5
Skewness	0.264	-0.983	-0.715
Transformation for moderate skewness	SQRT(SC2)	SQRT(61-SC 4)	SQRT(26-SC 5)
Transformation for strong skewness		LG10(61-SC 4)	LG10(26-SC 5)
Transformation for extreme skewness		1/(61-SC 4)	1/(26-SC 5)

Differences in the level of information, social capital (SC 2, SC 3, SC 4 and SC 5) and recovery satisfaction between demographic and regional variables were tested with the *Kruskal-Wallis-Test* (Age class, Education level and Income class) and the *Mann-Whitney-U-Test* (Canton, Rural/Urban, Gender and Camp).

Differences in SC 1 were tested with the *One-way Anova* (Age class, Education level and Income class) and the *T-Test* (Canton, Rural/Urban, Gender and Camp). A *General Linear Model* was used to calculate the effect size for Anova.

Correlations between social capital and information level/recovery satisfaction were tested with the *Kendall's Tau-b-Test*.

One of the research questions is whether social capital changed during and after the earthquake. Depending on the formulation of the question this was done by looking at the *median* of the answers or by using the *Wilcoxon-Test*.

To compare the answers of experts and the affected population the *Mann-Whitney-U-Test* test was used. Three *Ordinal regressions* were performed to see how well social capital describes the satisfaction with house recovery, mental health recovery and village recovery. The assumption for multicollinearity was tested with a *Linear regression model* and the assumption of proportional odds was tested by a *Full likelihood ratio-Test*. None of the assumptions were violated except the assumption for proportional odds for mental health recovery (p=0.005; Chi-Square=16.779).

The effect size for the respective tests was calculated by using methods suggested by the University of Zürich (University of Zürich 2016), which are based on Cohen (1988) and Cohen (1992).

Mann-Whitney-U-Test:

$$r = \left| \frac{z}{\sqrt{n}} \right|$$

r=0.10 corresponds to a weak effect
r=0.30 corresponds to a medium effect
r=0.50 corresponds to a strong effect

T-Test:

$$r = \left| \sqrt{\frac{t^2}{t^2 + df}} \right|$$

r=0.10 corresponds to a weak effect
r=0.30 corresponds to a medium effect
r=0.50 corresponds to a strong effect

One-way Anova:

$$f = \sqrt{\frac{\eta_p^2}{1 - \eta_p^2}}$$

r=0.10 corresponds to a weak effect
r=0.25 corresponds to a medium effect
r=0.40 corresponds to a strong effect

Ordinal Regression (R^2: Nagelkerke):

$$f = \sqrt{\frac{R^2}{1 - R^2}}$$

r=0.10 corresponds to a weak effect
r=0.25 corresponds to a medium effect
r=0.40 corresponds to a strong effect

3.2.4.1. Limitations

The aggregation of the data was based on a broad literature review (cf. chapter 2.1). Still, there is some subjectivity in the way it is aggregated. However, the variables of every social capital class are described in more detail in the result section (cf. chapter 4.2.3). Because most of the variables are ordinal, no parametric tests could be used for the analysis, except for SC 1.

3.3. Qualitative data

Implementation and acquisition

During my stay in the study area, I stayed in a hostel in the canton of Jama, close to the border of Pedernales. During the survey but also in everyday life, i.e. in the public transport while buying food and through the owner of the hostel I got to know a lot of people from the area, all from different social classes and diverse backgrounds. Whenever I talked to the people, the earthquake was always an important topic of conversation. Thus, I gained additional information about the earthquake and the earthquake recovery. This information was recorded in two different ways: (1) I wrote every evening into a field book, and documented all the additional information about the earthquake and the recovery process that I had learned during the day. (2) People also gave additional information about the recovery issues during survey which was not asked as a part of the questionnaire. I documented this information on the back of the respective surveys and later recorded it in a separate file.

My position as a researcher differed depending on the situation. During the survey, I explained people that I was from Switzerland and that I was conducting the survey as per the framework of my Master Thesis. As I speak Spanish fluently, the people usually accepted me even though in some rare cases they did not want to talk to me. Still, I was confronted with two severe issues during my fieldwork. As the presidential election was scheduled to take place during the timeframe of my fieldwork, a lot of political campaigning was going on. On one hand, many people were hesitant in giving information, because they thought I was from a political party. On the other hand, some people thought I was from an NGO and hoped that I would help them with money or some other form of aid. This certainly had an influence on the information they gave me.

When talking to people I got to know outside from the survey my position was different. Usually I introduced myself as *"from Switzerland"*. Only when somebody asked me what I was doing in the area, I explained them that I was conducting surveys for my Master Thesis.

Analysis

The qualitative data was structured on the basis of the results of the survey. It was only used for the interpretation of the relationships between variables from the survey and not used to find new insights.

Limitations

It is important to consider that only a small amount of qualitative data was gathered and analysed in this thesis. The way of gathering information was not structured in advance as the primary method of this thesis is the quantitative survey. Therefore, no consideration about the sampling was made, but all the information available was collected. The analysis of the data was done in combination with the results of the survey.

Taking field notes is always subjective as the researchers decide what is important for the research and what can be left out and therefore also what he or she writes down (Flick 2009: 297). In the case of this thesis, only statements that were relevant for the topic of this research and compatible with the survey were recorded.

Usually the information gathered was recorded as notes later in the day. Also, while taking notes during the survey a lot of information had to be left due to time constraints. Therefore, a significant filtering of information needed to be done.

4. Results

4.1. Situation overview

4.1.1. Disaster Risk Management in Ecuador

4.1.1.1. Disasters in Ecuador

Ecuador is a multi-hazard country and suffers from an especially high level of vulnerability due to natural as well as human-made events (SNGR 2012: 7; GFDRR 2014: 2), though in the coastal areas seismic hazards are the most common ones. The high level of vulnerability is reflected in the high numbers of emergencies. In 2012, for example, the country experienced some type of emergency related to adverse events for 147 out of 365 days (SNGR 2012: 7). Poor land-use planning has also caused a high level of exposure of people and assets in addition to exposure from an already high number of hazards and vulnerability. According to the Global Facility for Disaster Risk Reduction (GFDRR 2014: 2) around 96% of the population of Ecuador live in exposed areas.

4.1.1.2. Disaster risk management policies

The high level of vulnerability combined with the high number of disasters has, inter alia, contributed to the strengthening and transformation of the country's DRM. Ecuador is steadily deploying risk management into its policies and establishing leadership in action to reduce risks on a national and regional level (SNGR 2012: 7). In recent years, the country also started to shift the focus of DRM from emergency response towards risk mitigation and reducing the country's vulnerability (GFDRR 2014: 1).

Ecuador has a decentralised system of risk management, led and coordinated by the national government (SNGR 2012; SGR 2016b; SGR 2014; SGR 2016a). In fact, many different ministries and institutions play a role in the sector of disaster risk management: The Ministry for Economic and Social Inclusion (MIES), the Ministry for Development and Housing (MIDUVI), the Ministry for Public Health (MP), etc. Therefore, it is written in the constitution of Ecuador that DRM is the responsibility of each institution in its sectorial and geographical area (SGR 2016a: 4; SGR 2016b: 4). Nevertheless, the state has the exclusive competency over natural disasters (SGR 2016: 4):

"es obligación del Estado proteger a las personas, las colectividades y la naturaleza frente a los efectos negativos de los desastres de origen natural o antrópico mediante la prevención ante el riesgo, la mitigación de desastres, la recuperación y mejoramiento de las condiciones sociales, económicas y ambientales, con el objetivo de minimizar la condición de vulnerabilidad" (SGR 2016: 1).

("It is the state's obligation to protect the people, the collective goods and the nature from adverse effects of disasters of natural or man-made origin through the prevention of risks, the mitigation of disasters, the recuperation and the improvement of the social, economic and ecological conditions, with the objective to minimise the vulnerability") (translated from Spanish after SGR 2016: 1).

As a consequence, the state formed the Technician Secretary for Risk Management (Secretaría Técnica de Gestión de Riesgos) in 2008, later renamed as National Secretary of Disaster Risk Management (SNGR) and finally in 2013 as Secretary for Disaster Risk Management (Secretaría de Gestión de Riesgos (SGR)) (SNGR 2012: 1). The SGR is the governing body in the sector of disaster risk management and has the status of a national ministry. To meet the requirements of a decentralised DRM, the SGR is supposed to coordinate the country's DRM, while executing its competency in an independent and decentralised way. (SNGR 2012: 1)

4.1.1.3. Emergency management

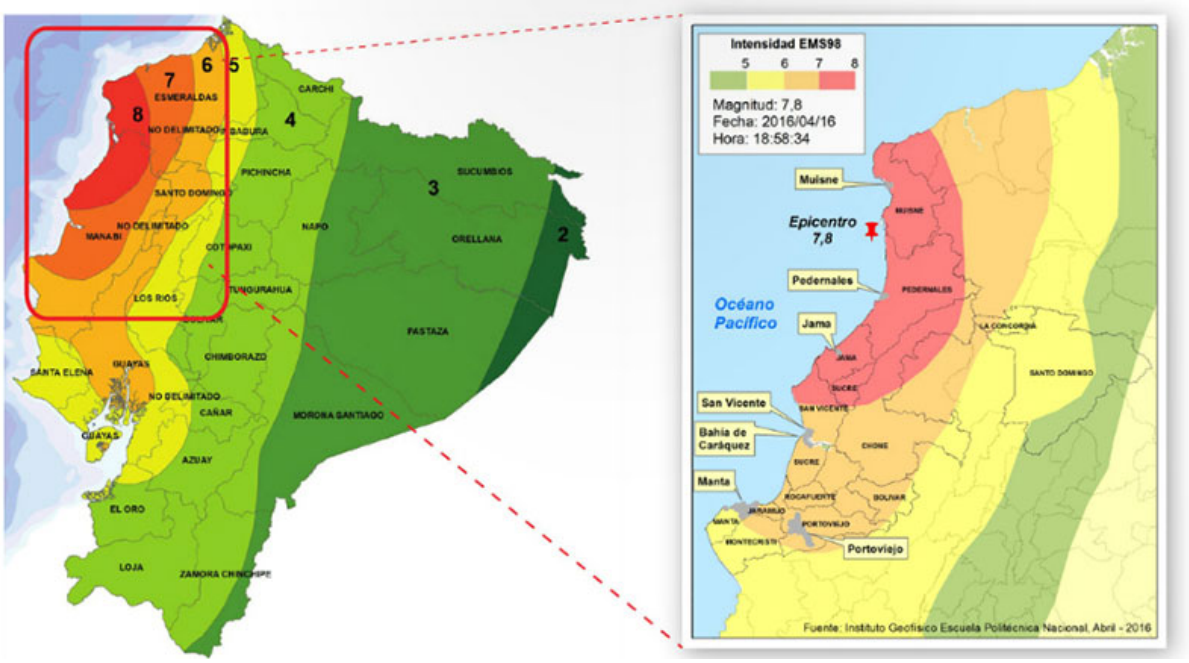
In case of an emergency, a committee for emergency operations is formed (SGR 2016a: 4). This was also the case after the earthquake in 2016. Within one hour of the earthquake, the committee for reconstruction was elected by a plenary to deal with the negative effects of the disaster. Its tasks included coordinating with all actors (public, private, national and international), structuring of plans, programs and projects, identifying and prioritising of plans, programs and projects and the approving of the plans prepared by the responsible actors. The committee of reconstruction consists of various ministries, local governments and representatives of the private sector. In addition to the committee of reconstruction, there are several technical agencies (MTT for Mesas Técnicas de Trabajo), which are responsible for different recovery sectors (for example access to and distribution of water, health, sanitary and hygiene, infrastructures, etc.) (Méndenez 2016).

4.1.2. Overview over the 2016 earthquake in Ecuador

On the 16th of April 2016,an earthquake with a magnitude 7.8 on the Richter scale hit Ecuador and left around 660 people dead, 12 people missing, 7000 people hurt and 720'000 in need of help (OCHA 2016: 7; Telesur 2016; Gobierno de Ecuador 2016: 7).

Picture 2: Destruction of the 2016 earthquake. Upper two pictures: Jama, Ecuador (Source: Photography by Xavier Cevallos, Jama, Ecuador); Lower two pictures: Pedernales, Ecuador (Source: Photography by Jorge, Pedernales, Ecuador)

In the following months, many aftershocks kept the population and the institutions in the affected areas on high alert (OCHA 2016a). The strongest effects were seen in the coastal area of Ecuador. The most affected province was Manabí, followed by Esmeraldas, Santa Elena, Guayas, Santo Domingo and Los Rios.



Map 1: Affected areas after the 2016 earthquake in Ecuador (Source: Shigeru Ban Architects 2017)

7.9 Mio people lived in the affected provinces (OCHA 2016b: 2) where 80'000 people had to be evacuated to camps, because of loss of or severe damage to their houses (Gobierno de Ecuador 2016: 7). However, these numbers should be treated with caution as they vary according to different sources.

4.1.2.1. Earthquake response

As mentioned in the earlier chapter, the government coordinates the earthquake response. While looking at the earthquake response and recovery, it is important to consider that the presidential election was held on the 19th of February 2017.

After the earthquake, the SGR declared red alert in coastal provinces and the Emergency Operations Committee (Comité de Operaciones de Emergencia (COE)) declared an emergency in six provinces. The president declared the state of exception in all of Ecuador (SGR 2016a: 4).

Firemen, police, military and teams for medical response were sent to the affected areas and Rafael Correa, the president of Ecuador, asked all his ministers to assume the control for the response to the earthquake in each of the affected cantons. The government also asked for international support and therefore the ONU (United Nations) supported the Ecuadorian government in the earthquake recovery and worked in close coordination with the SGR (OCHA 2016b: 2).

4.1.2.2. Earthquake recovery

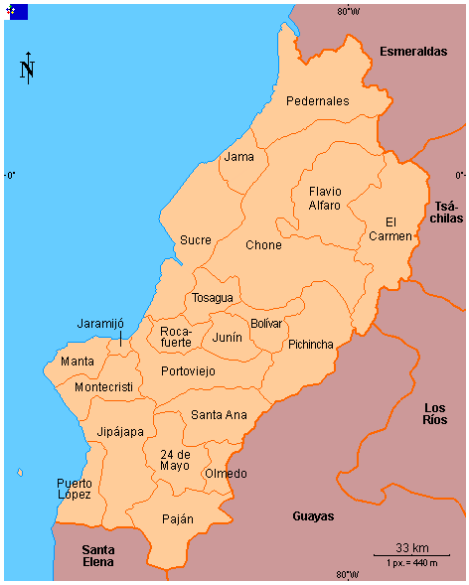
The most important part of the government's recovery projects is the plan „*Reconstruyo Ecuador*" (Reconstruct Ecuador), developed by the MIDUVI (MIDUVI 2016). This plan implies that every person who has lost her or his house, whose house is in a risk zone or who has rented a house or apartment before the earthquake in such a zone, can apply for a new house, which would be donated by the government. Only a small part (10%) must be paid by the beneficiary. People, whose houses were damaged but still in repairable conditions, get an incentive of 4000 US$ in order to reconstruct their houses. The reconstruction plan would be financed by the "*Ley de solidaridad*" (Law of solidarity), which states that the planning, construction and reconstruction of the infrastructure and the recovery of the manufacturing sector are paid through increased taxes and contributions towards solidarity. For more detailed information, the plan "*Reconstruyo Ecuador*" can be referred to online (MIDUVI 2016).

Additionally, the MIES was available with social workers, psychologists and persons who organised workshops for the inhabitants of the camps.

4.1.3. The case study site

The cantons Pedernales and Jama are both located in the north-western region of the Ecuadorian coast, in the province of Manabí, which was the most affected province by the earthquake (cf. map 2 and 3).

Map 3: Province of Manabí (Source: Wikipedia 2017)



Map 2: Cantons of Manabí (Source: FOTW 2017)

The canton of Pedernales has 61,100 inhabitants, out of which around 56% live in the rural areas and 48% are women. It has a poverty rate of 94%. This is higher than the national (60%) or provincial (77%) poverty rate and 17% of all the people older than 15 years are illiterates. The main fields of employment are agriculture, farming, fishing and forestry (46%), trade (16%) and industry (8%). The canton of Jama counts 25,400 inhabitants, out of which around 72% live in the urban areas and 49% are women. It has a poverty rate of 90%, which is lower than Pedernales but still quite high. 11% of all the people older than 15 years are illiterate and most people work in agriculture, farming, fishing and forestry (62%), trade (10%), education (6%) and industry (6%). (SENPLADES 2014a; SENPLADES 2014b)

4.2. Household survey: Results about social capital and disaster recovery in Jama and Pedernales

This chapter presents the results of the household surveys. The aim is to answer all the research questions and give an overview of the interaction between social capital and disaster recovery discussed in chapter 1.2: The influence of social capital on disaster recovery and vice versa. The chapter starts with (1) a brief overview of the level of damage, which the surveyed persons experienced. Further, (2) the differences in social capital, satisfaction and information level between the two cantons are presented. To answer the research questions, it is important to first get an idea about the levels of social capital in the surveyed region and how it differs among certain groups. Therefore, in the next step (3) the distribution of the social capital classes is discussed and how the respective classes differ in respect of demographic and regional data is presented. The next subchapter focuses on (4) the changes in social capital during and after an event. Then (5) the main actors who helped in the recovery and the main information channels are presented. Furthermore, (6) the people's satisfaction with the earthquake recovery and differences in satisfaction between demographic and regional data are examined. The next subchapter explains (7) correlations between social capital and people's satisfaction with the earthquake recovery. Finally, (8) differences in the perceptions of experts and the affected people on social capital and their satisfaction with the earthquake recovery are discussed.

4.2.1. Damage overview

Table 3: Reported data about the consequences of the 2016 earthquake (CRRP, **SENPLADES)*

	Pedernales	**Jama**
Inhabitants	61,100**	25,400**
Death	173 (0.28%)**	27 (0.11%)**
Number of persons in camp	1175 (1.92%)**	775 (3.05%)**
Number of persons in shelter	1624 (2.66%)**	2205 (8.68%)**
Shelter and Camp together	2799 (4.58%)	2980 (11.73%)
Damaged houses		
Inspected houses	5864*	504*
Damaged but repairable	2193*	153*
Totally damaged	2792*	167*

The cantons of Pedernales and of Jama were among the most affected from the 2016 earthquake in Ecuador. Table 3 shows the officially reported data about deaths, the number of persons in camps and shelters and damaged houses, which was collected from two different sources (CRRP 2016; SENPLADES 2016). Depending on the source, the data varies to some extent. No data about the exact amount of damage per canton was available. Many more houses were inspected in the canton of Pedernales than of Jama (cf. table 3). Therefore, a higher number of damaged houses was reported in the canton of Pedernales. However, according to the available data, more people live in the camps and shelters in the canton of Jama than in the canton of Pedernales.

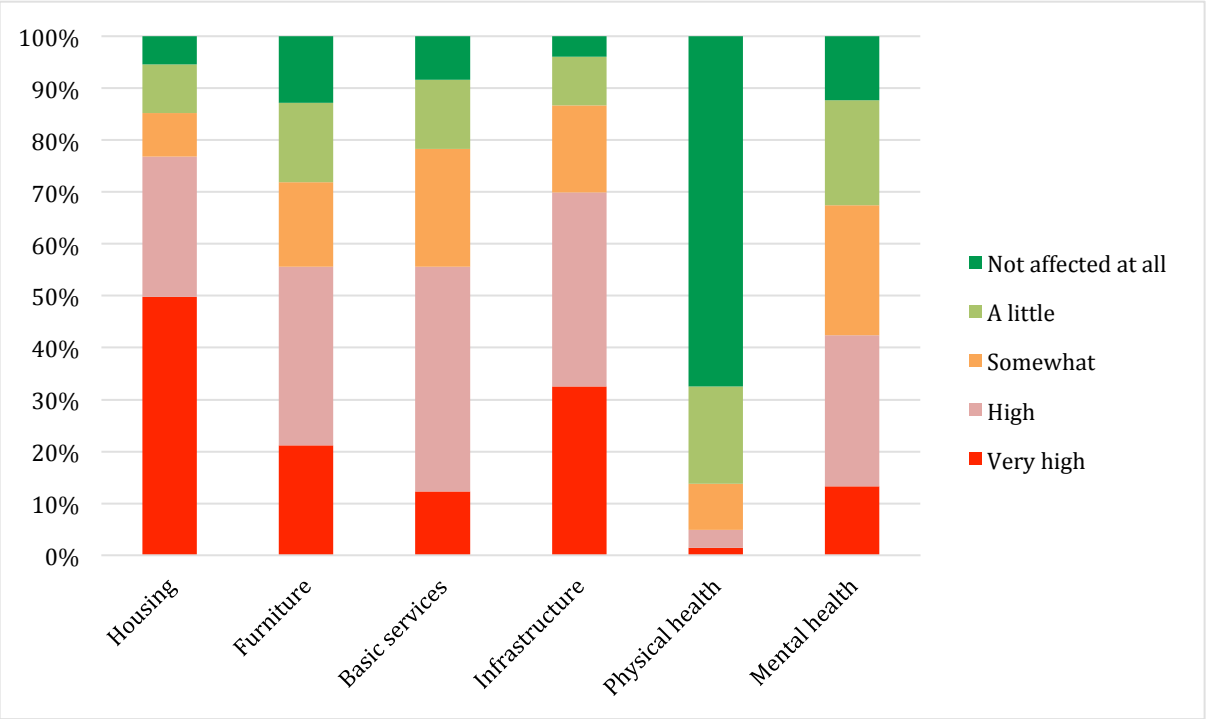


Figure 6: Damage severity of respective items measured on a 5-point scale (Not affected at all to very severely damaged). Results are shown for (1) Housing, (2) Furniture, (3) Basic services (electricity, drinking water), (4) Infrastructure, (5) Physical health, (6) Mental health. Results are shown as percentage of the participation (n=203)

The results of the conducted survey show that more than 75% of all the houses of the surveyed households were severely to very severely affected. More than 50% of the surveyed people also stated that “infrastructure”, “basic services” and “furniture” were severely or even very severely affected (c.f. figure 6). The mental health of more than half of all the surveyed people was somewhat affected to very severely affected. Few people suffered from physical health problems (c.f. figure 6).

4.2.2. Differences in levels of social capital, recovery satisfaction and the level of information between Jama and Pedernales

Demographics and regional distribution of the surveyed persons are similar in the cantons of Pedernales and Jama (cf. annex B). According to the data of the survey, Pedernales reports higher damage in "housing" and slightly higher damage in mental health while Jama reports slightly higher damage in furniture and higher damage in basic services. Nevertheless, in data of the survey there are no significant differences in the damage between the cantons (cf. annex B).

Table 4: Difference in respective variables between cantons (SC 1: T-Test; all other variables: Mann-Whitney-U-test) (Pedernales: n = 100; Jama: n = 103)

Variable	p-value	U-value	z-value	r-value
Social capital				
SC 1	0.748			
SC 2	0.271			
SC 3	0.281			
SC 4	1.000			
SC 5	0.357			
Satisfaction				
House recovery	0.371			
Village recovery	0.000***	3435.5	-4.253	0.298
Mental health recovery	0.469			
Information				
Level of information	0.019*	4206.0	-2.337	0.164

According to the data of the conducted survey about people's satisfaction with the earthquake recovery so far, the p-values report a significant difference in the satisfaction with the village recovery ($r = 0.298$, $p = 0.000$, $n = 203$): Jama is in general less satisfied than Pedernales (cf. figure 7). The "level of information" also varies significantly between the cantons though the model effect is weak ($r = 0.164$, $p = 0.019$, $n = 203$): People in Pedernales feel slightly better informed than in Jama (c.f. table 4, figure 7). However, no significant differences in social capital between the canton of Pedernales and Jama were found. Due to this, the next chapters consider other factors too like demographic data, living in camps and urban/rural; thus a proposal to improve social capital can be made.

Nevertheless, the fact that the satisfaction with the village recovery is lower in Jama than in Pedernales and the information level is slightly lower in Jama than in Pedernales (c.f. figure 7) should not be neglected. It still needs to be investigated why these differences exist.

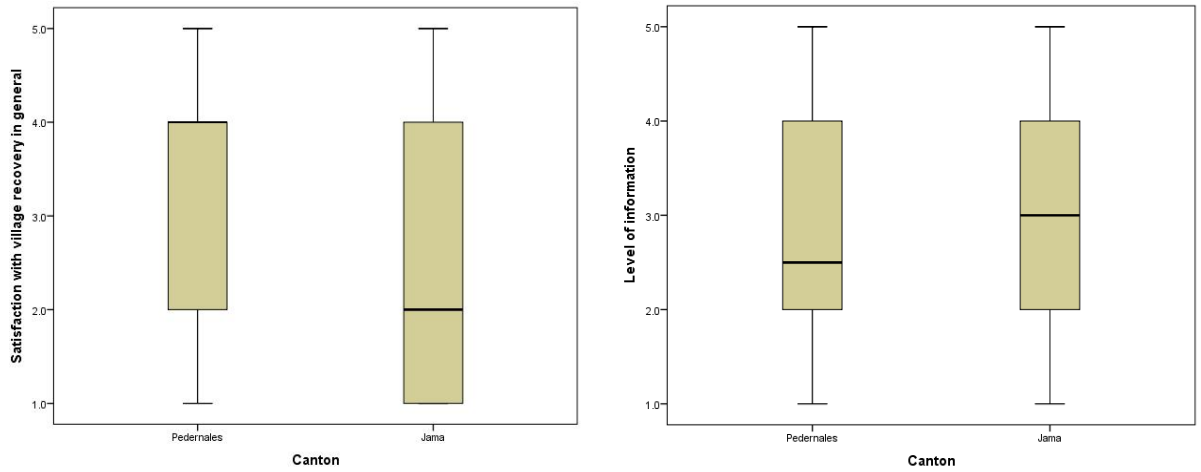


Figure 7: Variables, which differ significantly between the cantons, illustrated as boxplots: Results are shown for (1) Satisfaction with village recovery and (2) Information level. The scale ranges from 1 (very dissatisfied / very well informed) to 5 (very satisfied / not informed at all)

4.2.3. Characteristics of social capital

This subchapter presents the characteristics of each social capital class (range, distribution and level), based on the results of the conducted survey. As shown in table 4, none of the social capital classes differ significantly between the cantons of Pedernales and Jama. Therefore, in this chapter, the distributions of the respective classes are explained together for the two cantons and not individually. However, each question was examined separately to find out if there is a significant difference between the cantons. The topics that differ significantly are discussed at the end of each paragraph.

4.2.3.1. Individual social capital (SC 1)

Individual social capital includes the number of individual networks and the trust one puts in them (family members, friends and neighbours) (cf. chapter 3.2). Scores for SC 1 range between 6.6 (very high individual social capital) and 36 (very low individual social capital). SC 1 is normally distributed (cf. figure 8). The mean score of SC 1 is 18, which lies slightly lower than the middle (21.3). This implies that the mean score for SC 1 is not very high.

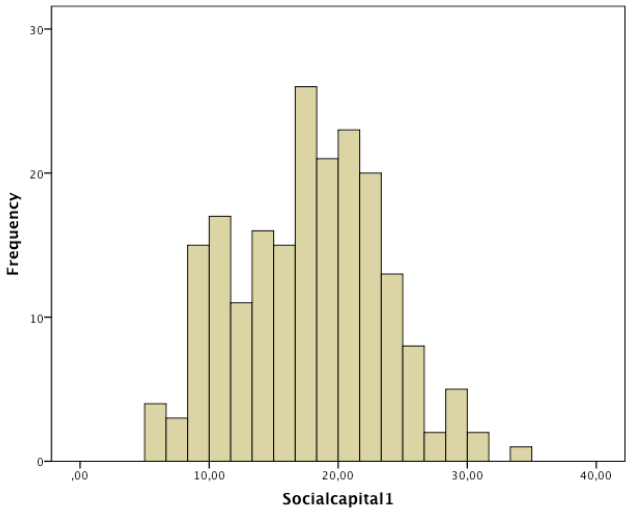


Figure 8: Histogram showing the distribution of Individual social capital (SC 1)

The median for the number of family members is 4 (*4-6 family members*) and so is the median for the number of friends. Thus, there is no noticeable difference between the number of close family members and close friends. For the category "trust", however, there was a difference found: the median for trust in family members is 1 (*totally*), while the median for trust in friends is 2 (*a lot*) and for trust in neighbours only 3 (*somewhat*). Clearly, the trust in family is the highest.

None of the determinants of social capital 1 vary significantly between Jama and Pedernales.

4.2.3.2. Informal community social capital (SC 2)

Informal community social capital includes community norms (measured through security and willingness for mutual support) and trust between community members. Scores for SC 2 have a range from 9.3333 (very high community informal social capital) to 40 (very low community informal social capital). SC 2 is not normally distributed. The mean of social capital 2 is 22.85, which is only slightly lower than the middle of the range of SC 2. This means that community informal social capital is neither high nor low.

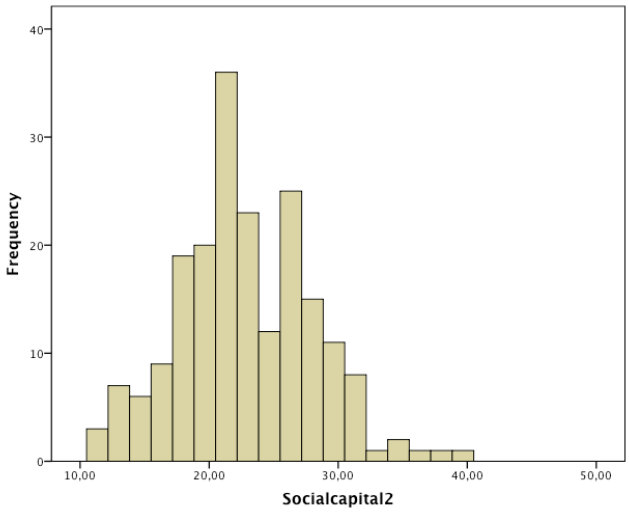


Figure 9: Histogram showing the distribution of Informal community social capital (SC 2)

Trust in people of the neighbourhood and the village is small with a median of 4 (*a little*). Yet, people feel "*moderately safe*" in the streets with a median of 2. At home, people feel "*neither safe nor unsafe*" with a median of 3. Many people stated that they would surely participate in a community activity to do some recovery work for their community with a median of 1 (*yes, for sure*). People are also willing to contribute in a project that does not benefit them directly.

The variable Security on the street varies significantly between Jama and Pedernales ($p = 0.000$; $U = 3451.00$; $z = -4.254$; $r = 0.299$). Jama rates the streets as well as homes more secure than Pedernales.

4.2.3.3. Formal community social capital (SC 3)

Formal social capital includes the membership of formal groups, organisations and associations and the help of CBOs in the earthquake recovery. More than 75% of all surveyed persons are not part of any organisation, association or group.

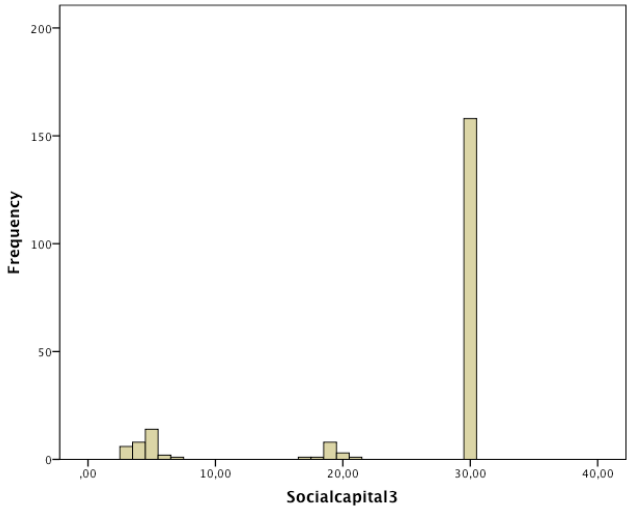


Figure 10: Histogram showing the distribution of Formal community social capital (SC 3)

Figure 10 illustrates the clusters of SC 3. People with a score of 30 are not a part of an organisation, the ones around 20 are a part of an organisation that did not help in the recovery and the ones below 10 are a part of an organisation, which helped them to recover.

The most common type of organisation in the area is the *working association*. Around 5% also picked *others* or *religious organisation*. Among the people who are a part of an organisation, a majority consider themselves "*active members*" and approximately 70% said that the organisation helped them in the earthquake recovery. Help from organisations came mostly in form of food, which was confirmed 20 times (cf. figure 11). Other types of help were advice (7 times), money or resources (6 times), reconstruction, shelter, psychological and medical assistance (all confirmed less than 5 times) and others (confirmed 5 times).

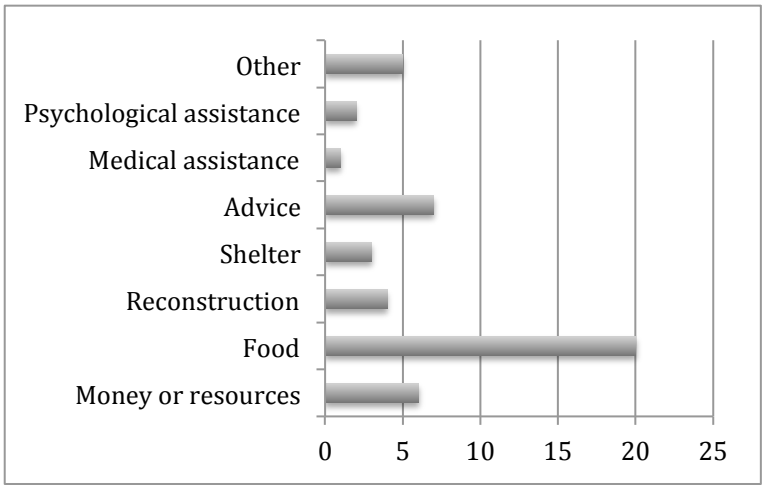


Figure 11: Type of help received through organisations in the earthquake recovery (surveyed people could choose several options) (n=31)

There is no significant difference in SC 3 between the two cantons. 25% of the surveyed people of Pedernales are a part of an organisation, while in Jama only 19.4% are a member of an organisation.

4.2.3.4. Vertical social capital (SC 4)

Vertical social capital includes trust in and accessibility to authority figures (NGOs, community presidents, local council and national government). SC 4 ranges from 17.3 (very high vertical social capital) to 60 (very low vertical social capital). The mean of vertical social capital is 50, which is low. SC 4 has a right-skewed distribution (cf. figure 12). Looking at the histogram in figure 12 it should be considered that it starts at a lower point (around 8) than the range of SC 4 (17.3).

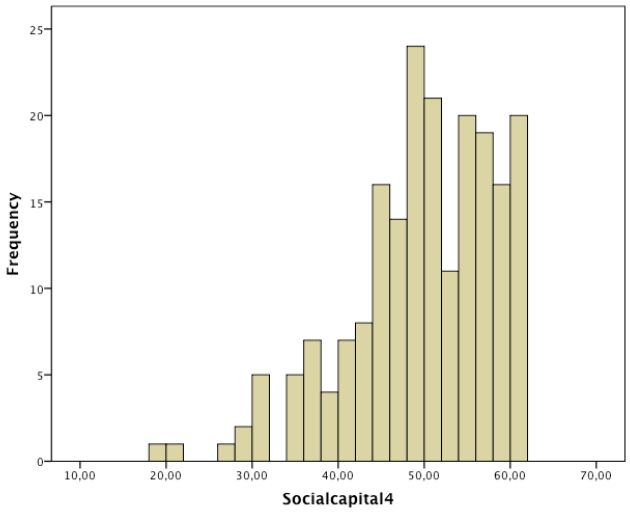


Figure 12: Histogram showing the distribution of Vertical social capital (SC 4)

Trust in as well as access to authority figures is very low in the surveyed region. The median for trust in neighbourhood presidents as well as in the local council is 5 (*nothing at all*). It should be considered that the option *not existent* also falls in this category. These two categories were taken together because the people who claimed "*not existent"* either did not know the person or had never dealt with the respective institution. People who had never dealt with an institution did not trust it (based on the comments from the surveyed people). Trust in the national government was a little higher with a median of 4 (*a little*) and NGOs got a median of 3 (*somewhat*).

Access to neighbourhood presidents, local council, national government and NGOs was rated with a median of 3 (*very difficult to impossible*). Again, the option *"not existent"* is also included in this category.

There are significant differences between the cantons in terms of trust and access to neighbourhood presidents and NGOs (cf. table 5).

Table 5: Differences in respective variables between cantons (NP=Neighbourhood president, LC=Local council, NG=National government) (Mann-Whitney-U-Test) (n=203)

	Trust				Access			
	NP	LC	NG	NGOs	NP	LC	NG	NGOs
p-Value	0.025*	0.769	0.371	0.038*	0.001**	0.340	0.310	0.007**
U-Value	4312.5			4305.0	3994.0			4244.0
z-Value	-2.235			-2.077	-3.209			-2.676
r-Value	0.157			0.141	0.225			0.188

All differences are weak considering the r-values in table 5. However, trust in the neighbourhood president was rated slightly better in Pedernales with a median of 4 (*a little*), while Jama has a median of 5 (*nothing at all*). The access was rated better in Pedernales than Jama. The opposite was observed when it came to trust and access to NGOs as trust as well as access was rated better in Jama than in Pedernales.

4.2.3.5. Collective action and participation (SC 5)

SC 5 includes collective action among community members and community participation in the recovery process. Scores for the category SC 5 range between 5 (very high collective action and participation) and 25 (very low collective action and participation). With a mean of 17 collective action and participation is low. Figure 8 shows the accumulation of SC 5 towards the higher numbers, which means lower social capital, and in this case, lower collective action and participation. SC 5 is not normally distributed.

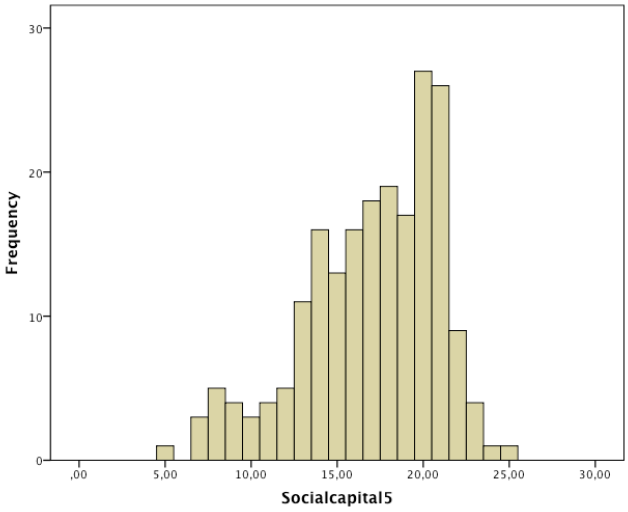


Figure 13: Histogram showing the distribution of Collective action and participation (SC 5)

More than 50% of the surveyed people did not participate in any communal activity for the recovery after the earthquake. Among the ones who participated, the majority participated from one to four times in a communal activity for the recovery. Most of the people who participated in a recovery activity stated that it was either *very successful* or *successful*.

None of the variables determining SC 5 vary significantly between the cantons.

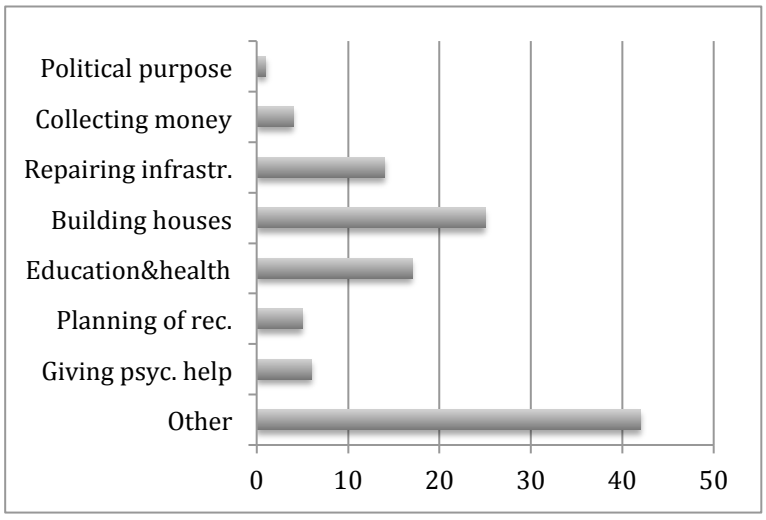


Figure 14: Type of participation in earthquake recovery (surveyed people could pick several answers) (n=92)

The most frequent recovery activity in which people participated is *other* (mostly clearance of debris). *Building and repairing houses*, *educational activities* and *contributing to the*

reconstruction of infrastructure or other damaged items were the activities that were listed more than 10 times. (cf. figure 14).

With a median of 2, most of the people stated that they have participated *1-2 times* in a political activity to jointly petition to government officials or political leaders for something benefiting the community. With a median of 3, they felt they were *neither able nor unable* to participate in the decision-making of the recovery process. However, there is a huge variation from 1 (*totally able to influence the decision-making*) to 5 (*totally unable to influence the decision-making*). The vast majority of the people claimed that they are *moderately willing* to participate in the decision-making process with a median of 2.

4.2.3.6. Differences in social capital depending on region/demographic factors

Table 6: Differences in Social capital between respective factors (SC1: Rural/Urban, Gender and Camp: T-Test; Age class, Education level and Income class: One-Way Anova; all other variables: Rural/Urban, Gender and Camp: Mann-Whitney-U-Test; Age class, Education level and Income class: Kruskal-Wallis-Test) (All variables except Income: SC1, SC 4: n = 202; SC2: n = 200; SC 3, SC 5 n = 203; Income: SC1, SC 4: n = 201; SC 2: n = 199; SC 3, SC 5: n = 202)

	SC 1	SC 2	SC 3	SC 4	SC 5
Rural / Urban	0.665	0.883	0.089	0.004**	0.000***
Gender	0.015*	0.010*	0.001**	0.216	0.064
Age class	0.004**	0.001**	0.112	0.097	0.406
Education level	0.600	0.912	0.091	0.559	0.083
Income class	0.998	0.163	0.383	0.025*	0.580
Camp	0.006**	0.239	0.513	0.116	0.041*

Differences in individual social capital (SC 1)

Significant differences in Individual social capital were reported for gender ($p = 0.015$; $t = 2.442$; $df = 200$; $r = 0.170$), camp ($p = 0.006$; $t = 2.781$; $df = 200$; $r = 0.193$) and age ($p = 0.004$; $F = 3.323$; $n^2_p = 0.093$; $f = 0.320$). SC 1 is stronger for people that are not living in a camp than for people living in a camp and a little bit stronger for men than for women. SC 1 differs significantly between the age group of 21-30 and the age group of 51-65 ($p = 0.004$; Mean difference = 4.455) and between the age group of 31-40 and the age group of 51-65 ($p = 0.010$; Mean difference = 4.435). SC 1 is significantly higher for the age group of 51-65 (cf. figure 15).

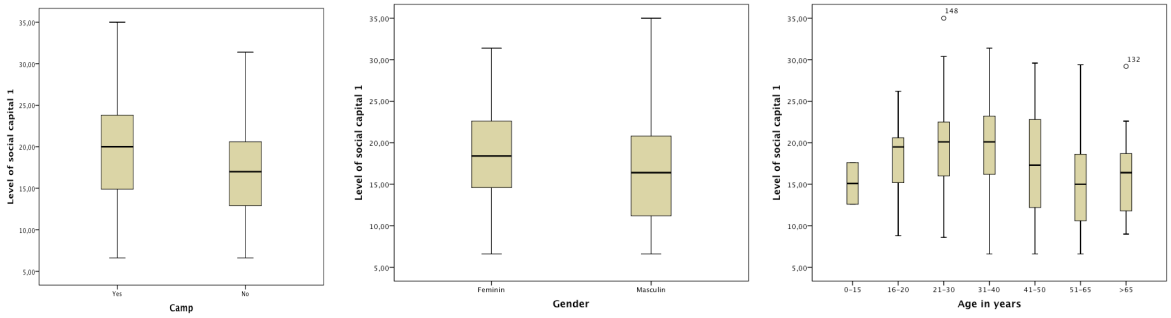


Figure 15: Differences in SC 1, illustrated as boxsplot. Results are shown for the variables (A) Camp, (B) Gender, (C) Age.

Differences in formal community social capital (SC 2)

Significant differences in Informal community social capital were reported for age ($p = 0.001$; Chi-Square = 23.848) and gender ($p = 0.010$; $U = 3687.5$; $z = -2.580$; $r = 0.181$). SC 2 is slightly higher for men than for women. There is no recognisable pattern for the age groups.

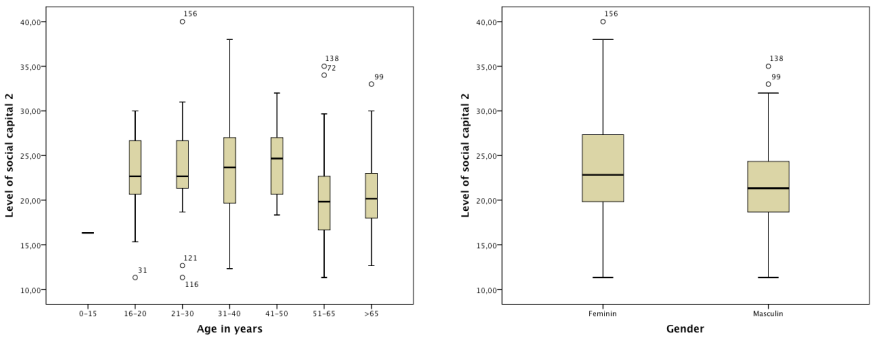


Figure 16: Differences in SC 2 illustrated as boxplot. Results are shown for the variables (A) Age, (B) Gender

Differences in formal community social capital (SC 3)

Significant differences in Formal community social capital were reported for gender ($p = 0.001$; $U = 3852.0$; $z = -3.458$; $r = -0.243$). SC 3 is very low in general. Women as well as men have a median of 30. As only people who are not part of any organisation, group or association, score 30, this only reflects that more than half of the surveyed people are not a part of any group (cf. chapter 4.2.3.3). However, figure 17 shows that men have a higher formal community social capital than women. This is mostly because more men are a part of a working association than women.

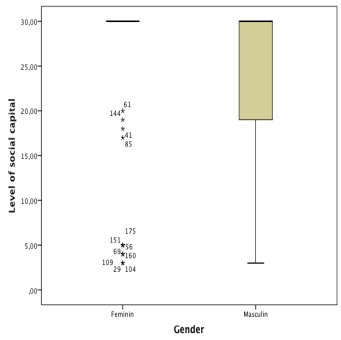


Figure 17: Differences in SC 3 illustrated as boxplot. Results are shown for the variable (A) Gender

Differences in vertical social capital (SC 4)

Significant differences in Vertical social capital were reported for urban/rural ($p = 0.004$; $U = 3703.5$; $z = -2.898$; $r = 0.203$) and income class ($p = 0.025$; Chi-Square = 14.481). People living in the rural areas have higher scores for vertical social capital than people living in the urban areas.

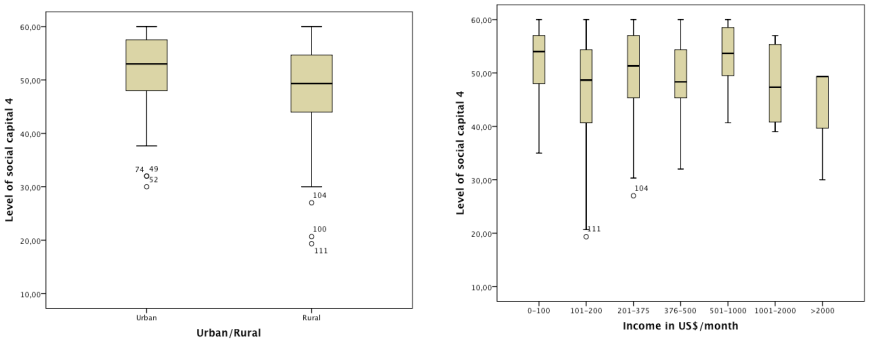


Figure 18: Differences in SC 4 illustrated as boxplot. Results are shown for the variables

Differences in collective action and participation (SC 5)

Significant differences in Collective action and participation were reported for camp ($p = 0.041$; $U = 3620.5$; $z = -2.047$; $r = 0.144$) and urban/rural ($p = 0.000$; $U = 3266.5$; $z = -4.102$; $r = 0.288$). The model effect for camp is weak, while for urban/rural it is medium.

The boxplot (figure 19) depicts that the people who are not living in a camp have a higher SC 5 than the people living in a camp. People living in the rural areas have much higher scores for "collective action and participation" than people living in the urban areas.

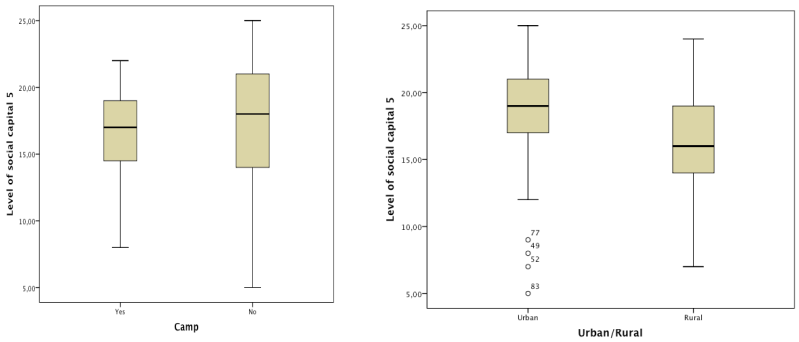


Figure 19: Differences in SC 5 illustrated as boxplot. Results are shown for the variables (A) Camp, (B) Urban/Rural

4.2.4. Changes in social capital during and after the earthquake

To measure changes in social capital, different questions were asked about the state before, during and after the earthquake (cf. annex A). Questions were asked for the dimensions networks, trust and norms. To investigate changes in networks, number of friends and family members, networks in general and access to authority figures were observed. To explore changes in trust, horizontal as well as vertical trust relations were examined. Changes in norms were investigated through changes in security and willingness to participate in community activities.

4.2.4.1. Changes in number of friends and family members

Table 7: Changes in Number of friends and family (Wilcoxon-Test) (Positive ranks: Higher number after the earthquake than before, Negative ranks: Lower number after the earthquake than before) (n friends=202, n family=203).

	Change in number of friends	Change in number of family
p- value	0.000***	0.726
z-value	-3.721	
r-value	0.261	
Positive rankings	14	10
Negative rankings	40	10

The number of family members did not significantly change, while the number of friends changed ($p = 0.000$; $z = -3.721$; $r = 0.261$). Due to the predominant negative rankings, it can be concluded that the number of friends decreased after the earthquake.

4.2.4.2. Changes in networks, horizontal and vertical trust

Changes in networks and trust were observed through the median and mean of the answers. The mean is reported when it differs at least 0.4 from the median. Changes in networks were observed for family and friends (median: 3 (*same as before*); mean: 2.5 (*rather stronger*)) and for the local council (median: 4 (*weaker than before*)). Networks with neighbours, religious organisations, NGOs and the national government did not undergo any significant changes (cf. annex B). Hardly any changes were observed in horizontal trust (family, friends, neighbours, people from the neighbourhood and people from the village) (cf. annex B). Changes in vertical trust were observed for the local council (median: 2 (*same as before*); mean: 2.45 (*weaker than before*)), while trust in the neighbourhood president, the national government and the neighbourhood president were rated with a median of 2 (*same as before*).

4.2.4.3. *Changes in access*

Table 8: Changes in Access to respective authority figures. Row 2 shows the changes from before to during the earthquake (Wilcoxon-Test), while row 4 shows the changes from before to after the earthquake (median) (NP=Neighbourhood president, LC=Local council, NG=National government) (Positive ranks: Access got more difficult, Negative ranks: Access got easier) (n=203)

	Before-during (Wilcoxon)					Before-After (Median)
	p-value	z-value	r-value	Pos. ranks	Neg. ranks	
NP	0.883					2 (same as before)
LC	0.284					3 (more difficult)
NG	0.157					2 (same as before)
NGOs	0.000***	-7.892	0.554	13	90	2 (same as before)

Access to the neighbourhood president and to the national government did not significantly change during and after the earthquake. However, access to NGOs got significantly easier during the earthquake. The effect size is strong with an r = 0.554. However, some months after the earthquake, the accessibility to NGOs went back to the same state as it was before the earthquake. Access to the local council got more difficult after the earthquake (cf. table 9).

4.2.4.4. *Changes in norms (security and willingness to participate)*

Table 9: Changes in Security at home and on the streets before, during and after the earthquake (Wilcoxon-Test) (Positive ranks: Less secure than before; Negative ranks: More secure than before) (n=203)

Security	Before-During			Before-After			During-After		
	p-value	Pos. ranks	Neg. ranks	p-value	Pos. ranks	Neg. ranks	p-value	Pos. ranks	Neg. ranks
At home	0.000***	100	5	0.000***	72	15	0.000***	6	60
In the street	0.000***	40	3	0.009**	32	14	0.000***	3	26

Security (in terms of violence, robberies etc.) at home as well as on the streets was better before the earthquake than during and after the earthquake, yet people felt more secure at home than on the streets. Even though people rated security after the earthquake worse than before the earthquake, they rated it better after than during the earthquake (Security at home before vs. during (p = 0.000; z = -8.142; r = 0.571); before vs. after (p = 0.000; z = -5.805; r = 0.407) during vs. after (p = 0.000; z = -5.853; r = 0.411); security on the streets before vs. during (p = 0.000; z = -5.108; r = 0.359) before vs. after (p = 0.009; z = -2.626; r = 0.184) during vs. after (p = 0.000; z = -3.781; r = 0.265)). Willingness to participate did not significantly change after the earthquake (c.f. annex B).

Overall, it was observed that horizontal trust and networks did not significantly change during the earthquake, apart from the variable number of friends that was reported a little smaller

after than before the earthquake. Vertical trust did not change significantly either, however, vertical networks did change. Networks with the local council and access to the local council were rated weaker than before the earthquake. Access to NGOs, on the other hand, was rated better during the earthquake than before the earthquake. With respect to norms, security was rated lower during and after the earthquake than before the earthquake.

4.2.5. Social capital during the recovery process

4.2.5.1. Sources of help

To determine which networks were the most helpful, the different actor were aggregated into classes of individual networks, vertical networks and organisational networks. Vertical networks can be equated with vertical social capital (SC 4), individual networks with individual social capital (SC 1) and organisational networks with formal community social capital (SC 3). SC 2 and SC 5 were not included as they are no networks (class 2 refers to norms, trust and mutual action within a community and class 5 to collective action and participation).

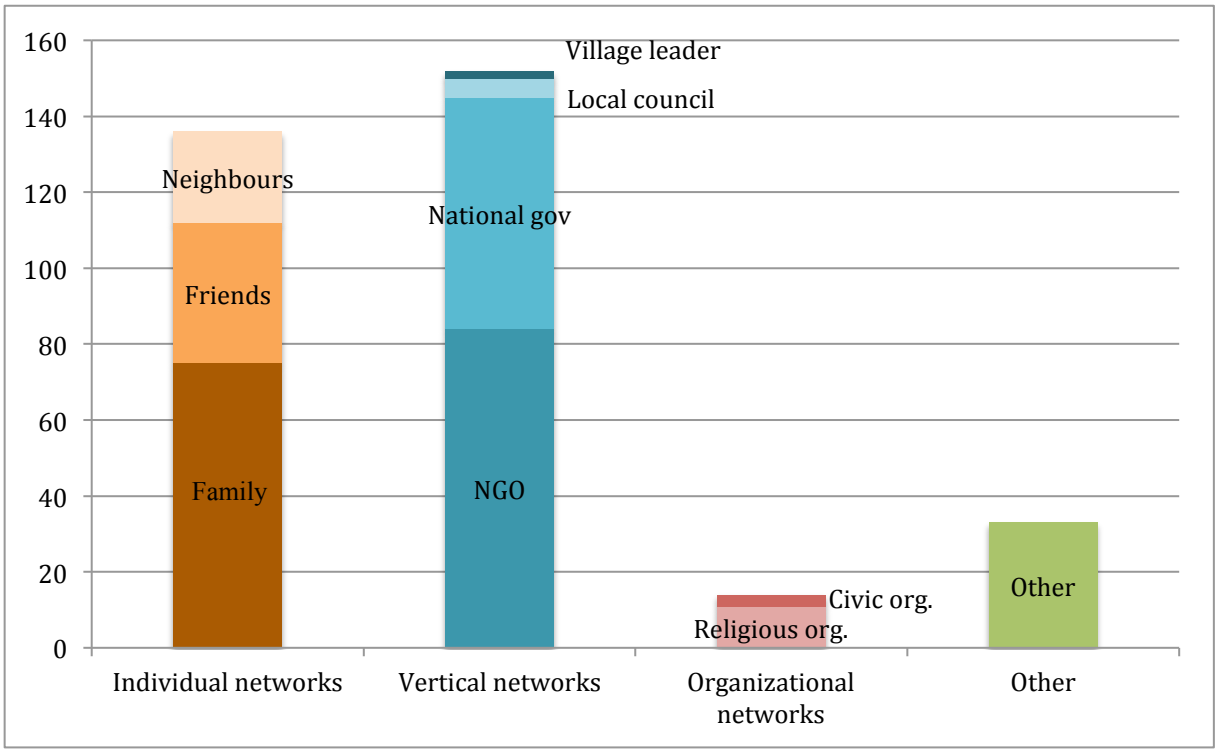


Figure 20: Actors that helped most in the overall earthquake recovery aggregated into Individual, Vertical and Organisational networks and Other (various) (surveyed persons could choose between 1 and 3 actors) (n=203)

Vertical networks were the most helpful in the disaster recovery followed by individual networks. Organisational networks were hardly ever mentioned. Within the vertical networks,

NGOs and the national government were the most helpful ones, whereas the local council and village leaders were both listed less than 10 times. Within the individual networks it was the family which was the most helpful. Friends and neighbours were considered less helpful than family. Religious organisations were mentioned 11 times and civic organisations were mentioned only three times (cf. figure 20).

According to figure 20, formal organisations in this thesis referred to as SC 3, did not play a significant role in the earthquake recovery.

4.2.5.2. Dimensions of help claimed

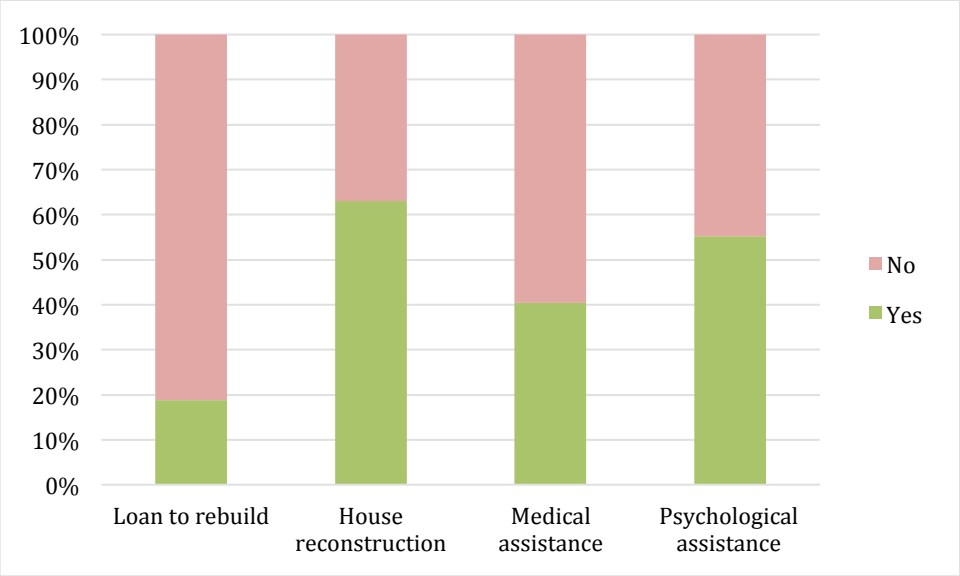


Figure 21: Percentage of people who claimed help in respective areas. Results are shown for (A) Loan to rebuild, (B) House reconstruction, (C) Medical assistance, (D) Psychological assistance (Loan to rebuild: n = 202, House reconstruction, Medical assistance, Psychological assistance: n = 203)

More than 60% of the surveyed people claimed help for house reconstruction. This is not surprising as most people said that their houses were severely damaged (cf. figure 6) and the government's reconstruction plan *"Reconstruyo Ecuador"* (c.f. chapter 4.1) for such situations already exists. Many people also needed psychological and medical assistance. The number for medical assistance should be treated with caution because people would often mention any medical incidences since the earthquake, which were not necessarily connected to the earthquake. Only a few people intended to get a loan to rebuild (cf. figure 21).

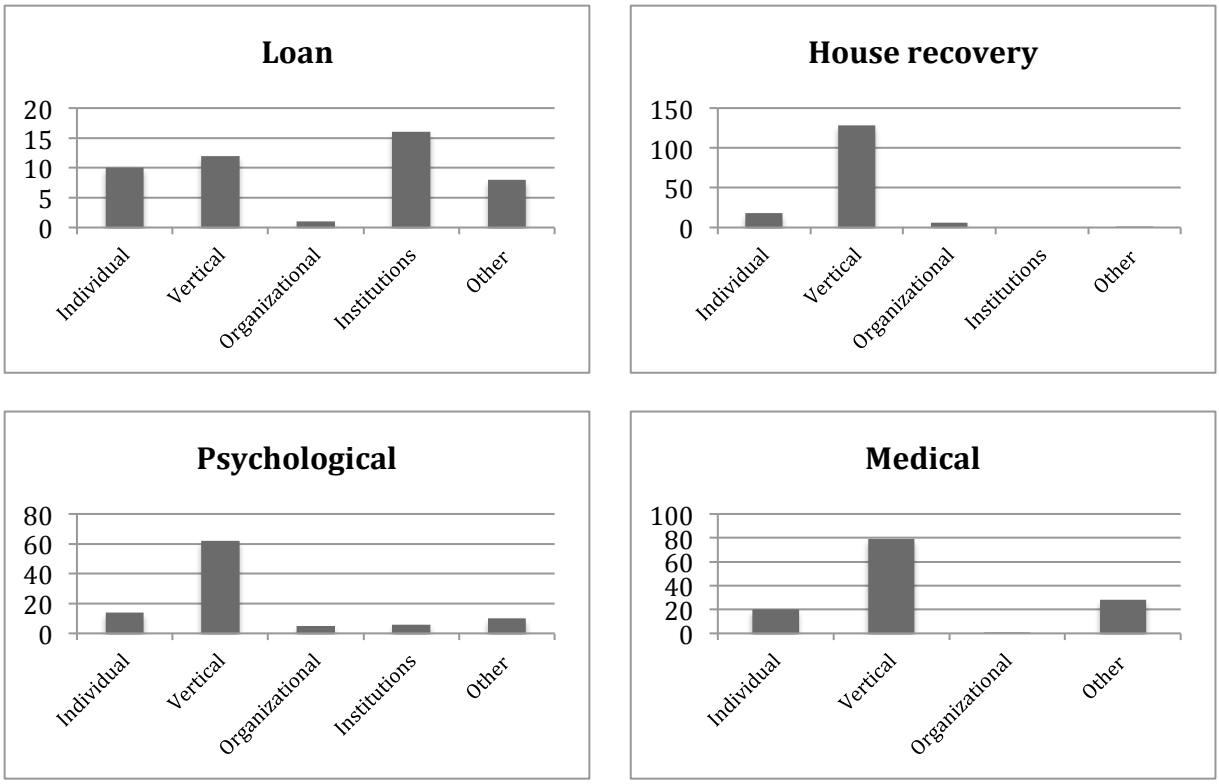


Figure 22: Networks asked for help in the respective areas. Results are shown for (A) Loan to rebuild, (B) House recovery, (C) Psychological help, (D) Medical help. The Individual network includes: family, friends and neighbours. The Vertical network includes: national government, local council, village leaders and NGOs. the Organisational network includes: civic organisations and religious organisations and institutions include mainly banks and hospitals (Loan; n = 38, House: n = 128; Psychological: n = 112; Medical: n = 82)

Loan: Most people who needed a loan, asked institutions (in this case, banks) for help. Vertical networks, mainly the government, were also often asked for loans. The local council and village leaders were hardly ever asked for help. Individual networks, mostly close family members and friends were asked for loans around ten times. Neighbours were never asked for loans. The organisational network was seldom asked for loans (cf. figure 22).

House reconstruction: Vertical networks were mostly asked for help in house reconstruction, and it was mainly the national government (c.f. chapter 4.1.1.6: The government's reconstruction plan "*Reconstruyo Ecuador"*). Individual networks were asked for help a couple of times, while organisational networks were hardly ever asked for help in house reconstruction (cf. figure 22).

Psychological and medical assistance: Psychological and medical assistance are discussed together as the results are similar. The vertical networks were mostly asked for medical and psychological help, at times individual networks and rarely organisational networks or

institutions were asked. From the vertical networks, similar to the areas discussed earlier, NGOs and the national government were asked for help (cf. figure 22).

Figure 20 therefore corresponds to figure 22, as vertical networks were mostly asked for help, while the organisational networks were hardly asked for help. Within the vertical networks, NGOs and the national government were mentioned most often, while the local council and village leaders were almost never mentioned. This applies to all investigated areas. Within the individual networks, close family members and relatives were more often mentioned than friends and neighbours. Specially in the case of requesting loans, most people asked the bank to help and a few asked for help within their horizontal or vertical networks. According to the figures 20 and 22, it can be summed up that that the vertical social capital helped more than horizontal social capital and within horizontal social capital, informal networks such as friends, family and neighbours were more important than formal networks such as organisations, associations and groups.

4.2.5.3. Information channels

In chapter X, it was discussed that social capital is often an important channel for information. Knowing about existing information channels and using them can lead to great benefits in a recovery program. Therefore, information channels were analysed too. This subchapter first looks at the means of information people used to inform themselves about the recovery process. Furthermore, differences in the level of information depending on demographic and regional factors are analysed. Finally, correlations between the level of information and social capital are outlined.

Information channels

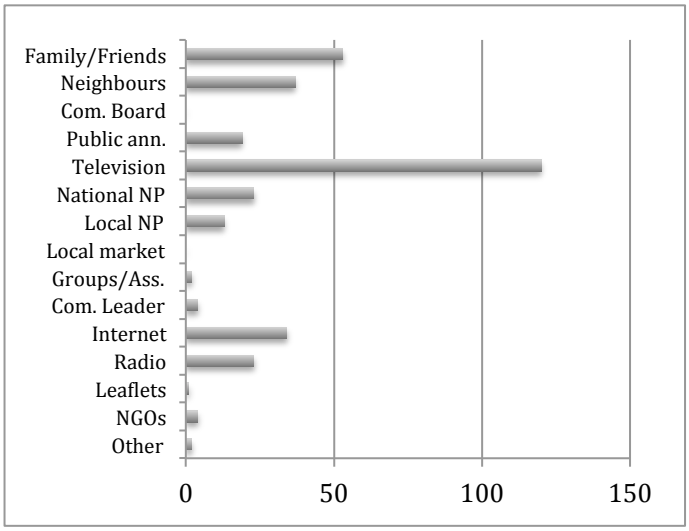


Figure 23: Number of people using respective channels of information (people could choose several options) (n=203)

Television is by far the most important channel of information. However, family and friends and neighbours (talks with people) were named the most important after television. So social capital, especially horizontal networks, does play a role in the acquisition of information. The internet, the radio and the newspaper were also named as important channels of information. Public announcements were less important and all other categories were hardly ever mentioned (cf. figure 23).

Difference in information level

Overall people said that they feel "*moderately well informed*" with a median of 3. Significant differences in the level of information were found based on the variables gender, education level, income class and camp (cf. table 11).

Table 10: Differences in Information level between respective factors (Rural/Urban, Gender and Camp: Mann-Whitney-U-Test, Age class, Education level and Income class: Kruskal-Wallis-Test)

Variable	P-Value	U-Value	z-Value	r-Value	Chi Square
Rural / Urban	0.830				
Gender	0.020*	3957.0	-2.336	0.164	
Age class	0.356				
Education level	0.028*				9.099
Income class	0.010*				16.784
Camp	0.045*	3660.0	-2.006	0.141	

As the r-values show, none of the differences have a strong effect. However, men are slightly better informed than women and people who don't live in the camp are somewhat better informed than people who live in the camp. People who finished secondary school or university feel better informed than people who finished only primary school or who did not go to school at all. In general, it can be said that people who have a higher income feel better informed than people with a lower income (cf. figure 24).

In table 7 and the following figures, it was shown that men and women have significant differences in SC 1, SC 2 and SC 3, while the variable camp shows significant differences in SC 1. Education level does not correlate with any social capital class but income level correlates with SC 4. Especially when looking at the variables camp and gender, the differences in level of information could correlate to the differences in the level of social capital. So, in the next paragraph, it was tested whether the level of information is related to social capital.

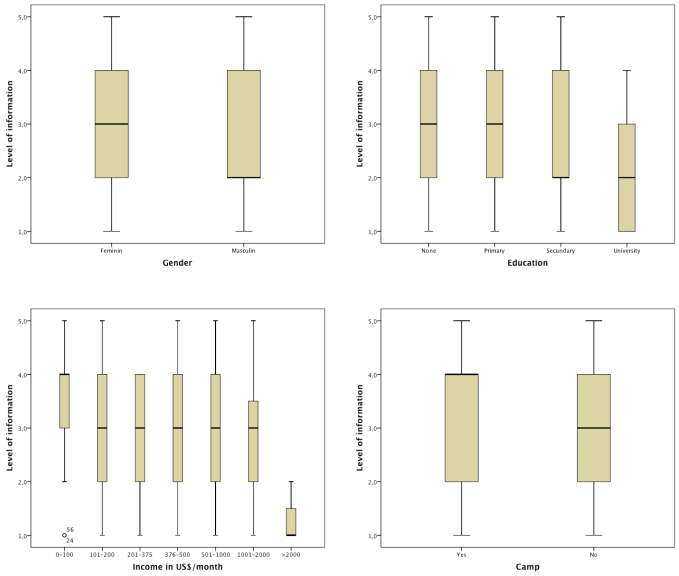


Figure 24: Differences in Information level illustrated as boxplot. The Information level is measured on a 5-point scale (from 1=very well informed to 5=not informed at all). Results are shown for the variables (A) Gender, (B) Education, (C) Income, (D) Camp

4.2.5.4. Correlation between level of information and social capital

Table 11: Correlation between Information level and Social capital classes (Kendall-Tau-b-Test) (SC 1, SC 4: n = 202; SC 2: n = 200; SC 3, SC 5: n = 203)

Social capital category	p-value	tau
SC 1	0.031*	0.114
SC 2	0.002**	0.169
SC 3	0.044*	0.123
SC 4	0.000***	0.264
SC 5	0.011*	0.138

The p-values in table 12 point out that all social capital classes correlate significantly with the level of information. However, the tau-values in table 12 show that the correlation effect is low for SC 1, SC 3 and SC 5. The highest correlation was found for SC 4.

People with higher levels of social capital generally also report higher levels of information. This accounts for all social capital classes (cf. figure 25 and table 12). It has to be taken into account though, that the model effects are weak, except for the correlation between SC 4 and the information level, which has a medium effect (cf. table 12).

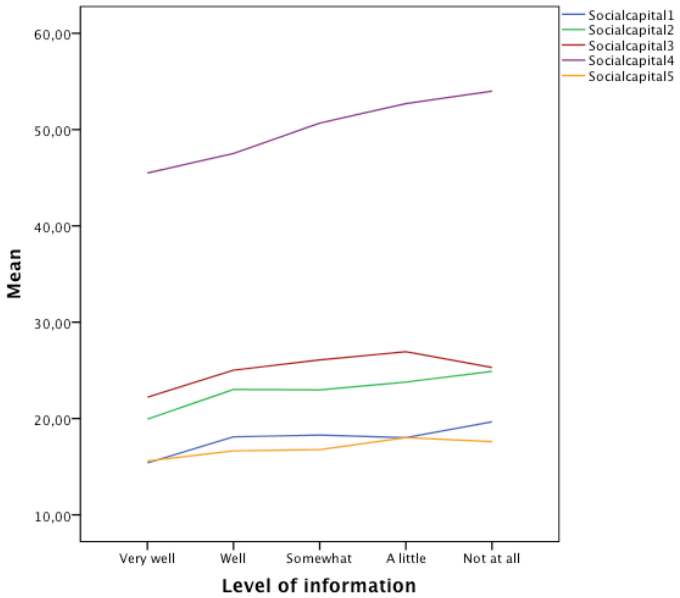


Figure 25: Correlation between Social capital and Information level (lower numbers of social capital stand for higher social capital)

4.2.6. Satisfaction with the recovery process

This subchapter presents the findings about people's satisfaction with the recovery. It shows how the level of satisfaction with the different recovery dimensions (house recovery, mental health recovery and village recovery) is distributed and how satisfaction differs with respect to demographic and regional data.

4.2.6.1. Distribution of Satisfaction

In general, it can be seen that people's satisfaction with earthquake recovery varies greatly within all dimensions. Most of the surveyed people are very dissatisfied or dissatisfied with the house recovery (median: 2 (*dissatisfied*)). Satisfaction with the village recovery is also low (median: 3 (*indifferent*)), however, it is higher than satisfaction with the house recovery. Most of the people are satisfied or very satisfied with the mental health recovery (median: 4 (*satisfied*)) (cf. figure 26).

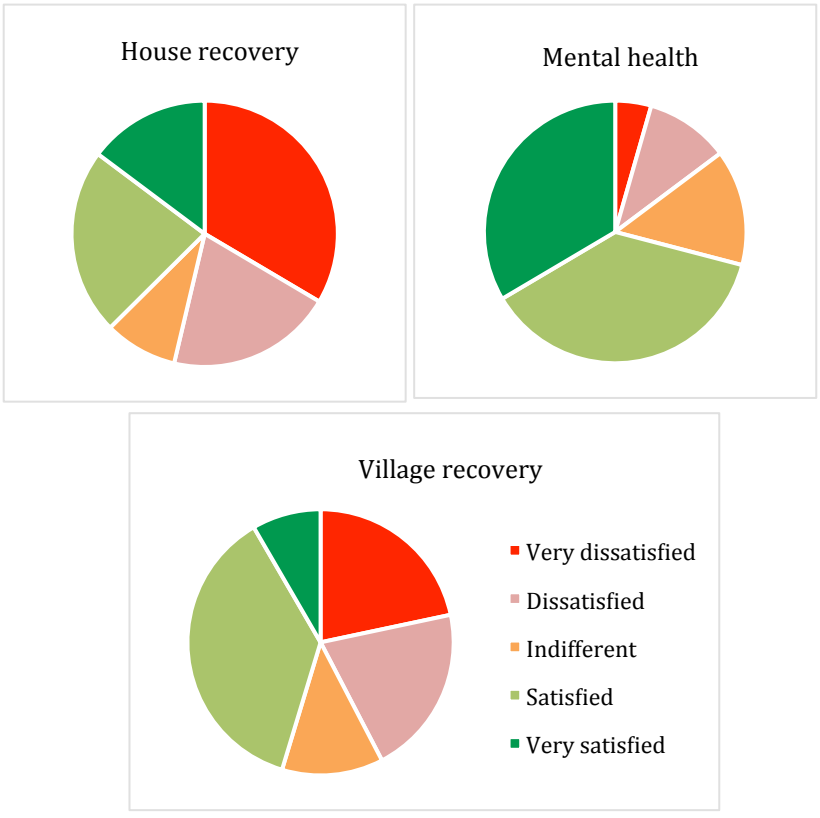


Figure 26: Distribution of Satisfaction with the recovery process in respective areas (measured on a 5-point scale from 1 = very dissatisfied to 5 = very satisfied). Results are shown for (A) House recovery, (B) Mental health, (C) Village recovery (n= 203)

4.2.6.2. Difference in recovery satisfaction depending on region/demographic factors

People's level of satisfaction with the house recovery differs with respect to the variables education level, income class and camp, while people's satisfaction with the mental health and the village recovery only differ with respect to the variable gender.

Table 12: Differences in Satisfaction between respective factors (Rural/Urban, Gender and Camp: Mann-Whitney-U-Test, Age class, Education level and Income class: Kruskal-Wallis-Test) (n=203)

	Satisfaction with house recovery	Satisfaction with mental health recovery	Satisfaction with village recovery
Rural / Urban	0.203	0.310	0.687
Gender	0.498	0.003**	0.012*
Age class	0.110	0.805	0.551
Education level	0.004**	0.582	0.297
Income class	0.028*	0.314	0.789
Household size	0.508	0.613	0.409
Camp	0.003**	0.569	0.064

Differences in the satisfaction with house recovery

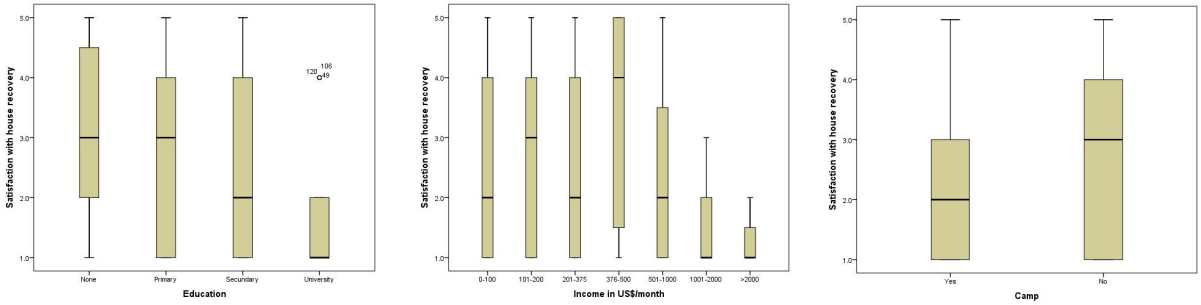


Figure 27: Differences in Satisfaction with house recovery illustrated as boxplot (measured on a 5-point scale from 1 = very dissatisfied to 5 = very satisfied). Results are shown for the variables (A) Education, (B) Income, (C) Camp.

Significant differences in satisfaction with house recovery were reported for education ($p = 0.004$; Chi-Square = 13.462), income class ($p = 0.028$; Chi-Square = 14.192) and camp ($p = 0.003$; $U = 3305.0$; $z = -2.945$; $r = 0.207$). There are large scatterings in the satisfaction with house recovery within all groups and thus, the model effects are not very strong. However, the boxplots show some interesting trends. With respect to the variable education, the satisfaction decreases with higher education. People with no education or only primary school education have a median of 3 (*indifferent*), people who finished secondary school have

a median of 2 (*dissatisfied*), and people who finished university have a median of 1, (*very dissatisfied*) (cf. figure 27).

It is very difficult to find a clear pattern for the variable income. The two highest income classes are the least satisfied with the housing reconstruction (*very dissatisfied*) and the middle-income class (376-500 US$/month) are the most satisfied with the recovery (*satisfied*) (cf. figure 27).

People who live or have lived in a camp, are less satisfied with the house reconstruction (*dissatisfied*) than the people who have not lived in a camp during the reconstruction process (*indifferent*) (cf. figure 27).

Differences in the satisfaction with mental health and village recovery

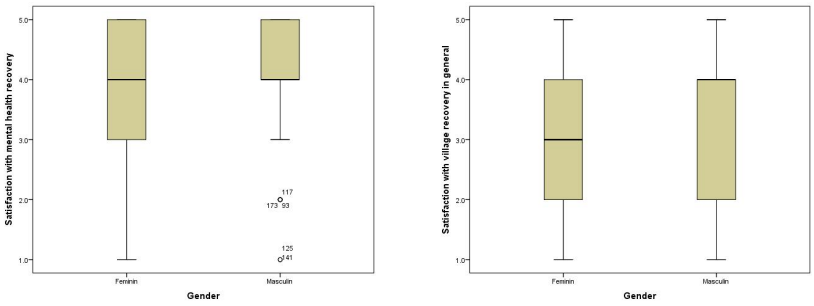


Figure 28: Differences in Satisfaction with mental health recovery and in Satisfaction with village recovery illustrated as boxplot (measured on a 5-point scale from 1 = very dissatisfied to 5 = very satisfied). Results are shown for the variable (A) Gender

Significant differences in satisfaction with mental health recovery and in satisfaction with village recovery were found for gender (satisfaction with mental health recovery: $p = 0.003$; $U = 3731.5$; $z = -2.951$; $r = -0.207$; satisfaction with village recovery: $p = 0.012$; $U = 3887.5$; $z = -2.518$; $r = -0.177$). Similar to the satisfaction with house recovery, the satisfaction with mental health and village recovery also varies greatly. However, men are slightly more satisfied with the mental health recovery as well as with the village recovery than women (cf. figure 28).

4.2.7. Correlation between social capital and satisfaction with earthquake recovery

Table 13: Correlation between Social capital and Recovery satisfaction (Kendall-Tau-b-Test) (SC 1, SC 4: n = 202; SC 2: n = 200; SC 3, SC 5: n = 203)

	Satisfaction with house recovery	Satisfaction with mental health recovery	Satisfaction with village recovery
SC 1	0.002**	0.456	0.338
SC 2	0.005**	0.194	0.738
SC 3	0.514	0.683	0.138
SC 4	0.001**	0.033*	0.000***
SC 5	0.371	0.907	0.033*

Satisfaction with house recovery correlates significantly with SC 1 (p = 0.002; tau = -0.162), SC 2 (p = 0.005; tau = -0.149) and SC 4 (p = 0.001; tau = -0.174). Satisfaction with health recovery correlates significantly with SC 4 (p = 0.033, tau = -0.115). Satisfaction with village recovery correlates significantly with SC 4 (p = 0.000, tau = -0.224) and with SC 5 (p = 0.033, tau = -0.116).

In addition to the Kendall's-tau-Test, an ordinal regression model was conducted for the satisfaction with (1) the house recovery, (2) mental health recovery and (3) village recovery.

(1) The model improves the prediction of house recovery satisfaction (p = 0.001,Chi-Square = 20.465). The Pearson goodness-of-fit-test (p = 0.577; Chi-Square = 774.659) and the Deviance goodness-of-fit-test (p = 1.000; Chi-Square = 582.784) indicate that the model is a good fit. The effect size is medium (f = 0.339). As for (1), the tests show that only SC 4 has a statistically significant effect on the satisfaction with house recovery (p = 0.017; Wald Chi-Square = 5.711)

(2) The model does not improve the prediction of mental health recovery satisfaction (p = 0.232, Chi-Square = 6.844). The Pearson goodness-of-fit-test (p = 0.411; Chi-Square = 788.185) and the Deviance goodness-of-fit-test (p = 1.000; Chi-Square = 542.791) indicate that the model is a good fit. The effect size is small (f = 0.193). The tests show that only SC 4 has a statistically significant effect on the satisfaction with mental health recovery (p = 0.021; Wald Chi-Square = 5.287)

(3) The model improves the prediction of village recovery satisfaction (p = 0.005,Chi-Square = 16.779). The Pearson goodness-of-fit-test ,(p = 0.378; Chi-Square = 794.644) and the deviance goodness-of-fit-test (p = 1.000; Chi-Square = 575.217) indicate that the model is a good fit. The effect size is medium (f = 0.307). Also for case (3) the tests show that only SC 4 has a statistically significant effect on the satisfaction with the village recovery (p = 0.002; Wald Chi-Square = 9.740)

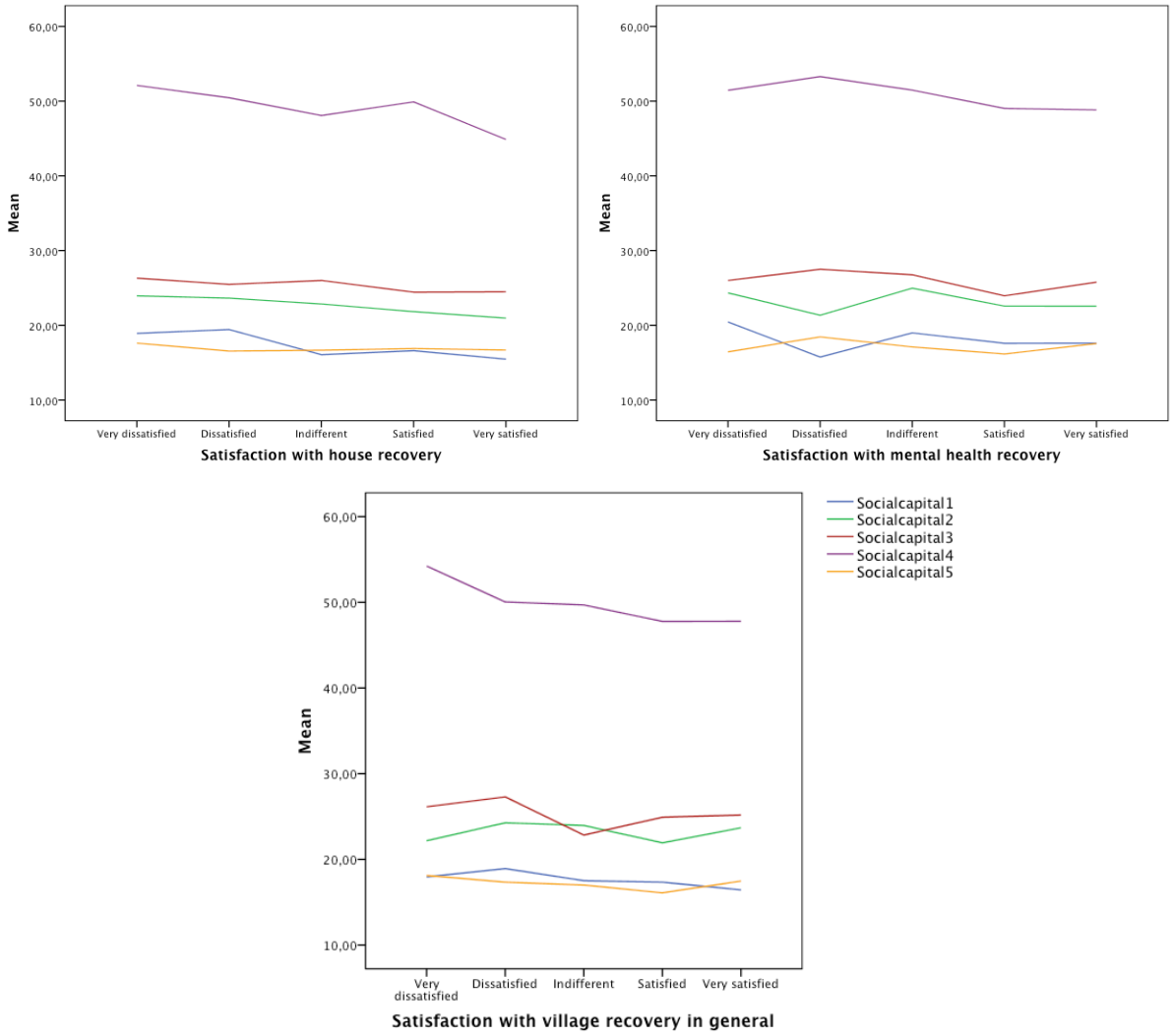


Figure 29: Correlation between Social capital and Recovery satisfaction. Results are shown for (A) Satisfaction with house recovery, (B) Satisfaction with mental health recovery, (C) Satisfaction with village recovery in general (lower numbers of social capital stand for higher levels of social capital)

4.2.8. Differences in expert's and the affected population's perspectives

In this subchapter differences between the perspective of experts and affected people concerning (1) recovery satisfaction, (2) changes in networks during the earthquake, (3) horizontal trust and (4) access to authority figures are presented. In the annex, the results are presented in more detail (cf. annex B).

4.2.8.1. Satisfaction

Both, the experts and the affected people were equally satisfied with the house recovery. While the affected people were more satisfied with the mental health recovery, the experts were more satisfied with the village recovery (cf. annex B).

4.2.8.2. Changes in networks

Table 14: Ratings for change of vertical networks from experts and affected people (median) (n experts= 83; n affected population = 203)

	Median expert	Median affected people
Religious org.	2.5 (between same as before and stronger)	3 (same as before)
NGO	2 (stronger)	3 (same as before)
Local council	3 (same as before)	4 (weaker)
National gov.	2 (stronger)	3 (same as before)

There is no significant difference in the rating of the experts and the affected people for the change in horizontal networks. However, the ratings differ for the change in vertical networks. While the experts rated the networks with religious organisations, the NGO and the national government as *stronger* after the earthquake than before the earthquake, the affected people rated these networks as *same as before.* The experts rated the network with the local council as *same as before*, while the affected people rated it as *weaker than before* (cf. table 15).

4.2.8.3. Horizontal trust

While trust in family members was rated as stronger by the affected people (*totally*) than by experts (*a lot*), trust in people of the village was rated stronger by the experts (*somewhat*) than by the affected people (*little*).

4.2.8.4. Vertical social capital (access)

Access to authority figures (neighbourhood president, local council, national government and NGOs) was rated better by the experts than by the affected people during all the stages (before the earthquake, during the earthquake and after the earthquake).

4.3. Qualitative results

The aim of this subchapter is to examine the results from the earlier parts of this chapter in depth and to find causalities for the correlation between certain variables. It draws on the statements from the affected population and from the experts. These were obtained during the survey and through conversations from everyday life.

The first subchapter discusses the influence of the government's reconstruction plan on the recovery outcome as this topic came up frequently during conversations concerning the earthquake. Its effects on trust and collective action are especially considered.

The next subchapter deals with the interaction between social capital, disasters and disaster recovery. First, the results about the role of social capital in the recovery process are explained by using qualitative statements. Then, the changes in different social capital elements after the earthquake are laid out. Statements and opinions of the experts and the affected people are discussed together. However, comments by the experts are labelled as such.

4.3.1. Reconstruyo Ecuador

At the time of the survey, the government's reconstruction plan (cf. chapter 4.1) had created some problems that had an effect on social capital. Mistrust was generated within communities as well as towards authority figures and in some cases collective action was undermined.

Due to the reconstruction plan, people had high expectations from the government. During the research, several issues were found with the recovery plan: (1) Many houses were still not allotted, (2) houses got allotted when they were only halfway finished and (3) the distribution of houses was unfair. Therefore, many people were disappointed, dissatisfied or even angry.

Issue (1) was found many times. The government had promised that houses would be constructed, but people were still waiting to know whether they would get a house or not. A person claimed: *"MIDUVI da casas a los que ya tienen!"* (LM 191) *("MIDUVI gives the houses to people who already have enough!"* (translated from Spanish after LM 191))

People got more annoyed when the government started to construct the houses. Issue (2) mostly created a lot of dissatisfaction: *"Los de las casas hacen firmar antes de terminar!"* (LM 179) ("*The ones who are constructing the houses make the beneficiaries sign before they even finish the house."* (translated from Spanish after LM 179)). Similar statements were made by different persons. Even people who got help to reconstruct but did not get an entirely new house were not satisfied. A woman explained:

"A mi me ayudaron solo a reconstruir la parte arriba de la casa. Me ayudaron con 4,000 US$. Yo prefiero tener una casa nueva mira […] (is pointing towards the neighbour's house, that was newly constructed by the government)" (LM 182)

("They only helped me to reconstruct the upper part of the house. They helped me with 4,000 US$. I prefer to have a new house, look […] (is pointing towards the neighbour's house, that was newly constructed by the government)." (translated from Spanish after LM 182))

Due to these issues, mistrust within the population and towards the government grew. An employee of the local council (P 6) explained that people felt unable to participate in the government's reconstruction plans as "*hay muchas mentiras*" (P6) ("*there are many lies*" (translated from Spanish after P 6)) However, he also mentioned that this is often not attributable to the government's but to the persons and institutions acting between the government and the population (e.g. construction companies). In addition to the generation of mistrust towards the government, self-initiative of the people and collective action within communities was undermined in some cases as people waited for the houses to be built or allotted. Many people in camps, for example, stated that they stayed there so that they could be considered for the government's houses. They did not even try to recover on their own.

Another issue of the recovery plan was the allocation of houses to people who did not own land. Many people lived on the same land for generations, but did not own official documents that proved their ownership. Apart of this land was declared as a risk prone zone after the earthquake. People were not allowed to live there anymore. Others had lived on land that belonged to the local council. They were only tolerated there before the earthquake. Some people had rented apartments before the earthquake but after the earthquake there was no possibility to rent again, as many houses had collapsed. Several people feared that they would neither get a house nor any land where they could live. Much different and sometimes even contrasting information regarding this issue was circulating among the affected population. At

the time of the survey, these people were living in temporary shelters such as official and unofficial camps.

4.3.2. Interactions between social capital and disaster recovery

4.3.2.1. Social capital in disaster recovery

This subchapter discusses the (1) help of individual networks (SC 1: family, friends and neighbours) (2) help of vertical networks (SC 4: neighbourhood president, local council, national government and NGOs) (3) help of organisational networks (SC 3: groups and organisations) and (4) collective action and participation and community social capital (SC 2 and SC 5) in the earthquake recovery.

(1) Figure 20 shows that more than half of the people stated that the individual networks were, after the vertical networks, the ones that helped the most in the earthquake recovery. Conversations with people confirmed these findings. Help from the individual networks was mainly asked for the living situation. Many people moved in with family members for weeks or months after the earthquake. Some also moved in with friends but these cases were rare. In addition to the living situation, individual networks sometimes helped with food and psychological support. However, in this regard help from horizontal networks was less as in many cases people's entire individual networks were also affected by the earthquake. Therefore, people from individual networks were often not able to help.

It is noticeable that family was the most important help within individual networks. People trust their families more than they trust their friends and neighbours. Especially in the first instance after the earthquake, people took care of their families before helping other people: "*Ahí* (pointing towards the house under construction next to them) *se murió nuestra vecina. La escuchamos gritar que le ayudan […] Porque no ayudamos? Usted no se puede imaginar un terremoto! Era una desgracia! Cada uno cogió a su familia y se fue*." (LM 158) ("*Our neighbour died there* (pointing towards the house under construction next to them). *We heard her scream for help […] Why we did not help? You can not imagine an earthquake! It was a disgrace! Everyone took care of his family and left.*" *(*translated from Spanish into English after LM 158)). An expert explained: "*La familia siempre viene primero"* (P 6) (*"The family always comes first."* (translated from Spanish into English after P 6)).

(2) The vertical networks, mainly NGOs and the national government, helped most in the earthquake recovery. However, members of the affected population have varied opinions on the national government. While some were pleased with the government's help, others were rather disappointed. Even though in figure 20 the national government is represented as the institution, which helped, the most, more people are against it than in favour. However, when people were probed for longer, almost all of them admitted that the government has helped in the recovery. Nevertheless, mistrust for the government had increased and some people even claimed that the national government had not helped at all. This dissatisfaction mainly derived from mistrust in the government and rumours among the affected population before the earthquake and due to a lack of knowledge about how to access the government. The following example, drawn from informal conversations with local people, illustrates one of these rumours. As the government was coordinating the aid distribution it collected and checked all the relief goods before delivering them. Many people were displeased by this gesture and the rumour started that the government was only pretending to help. The long wait for the promised houses tensed the relation between the affected population and the national government further. Even though the national government and NGOs were supposed to have helped the most during the earthquake recovery (cf. figure 20) people who did not live in a camp felt that they were difficult to access. Many people explained that they lacked the knowledge how to access these institutions.

According to the affected people in Jama as well as in Pedernales, the local council and the mayor were not available to help. This is also reflected in figure 20. Statements such as *"El alcalde es accesible pero no ayuda."* ("*It is possible to access the mayor, but he doesn't help*." (translated from Spanish)) or *"El alcalde no esta, no ayuda!"* ("*The mayor is not around, he doesn't help!*" (translated from Spanish)) were heard many times in informal conversations as well as during the implementation of the survey. Trust in the local council and the mayor was even lower than trust in the national government. Even a surveyed expert from the military confirmed: "

"*El cantón de Jama no se levanta bien, falta mucho de hacer (*habla de canalización, tubería de agua etc.*). El municipio no se preocupa*." (M 18) ("*The canton of Jama is not recovering well; there are still many things to do* (speaks about canalisation, water pipes etc.). *The local council does not care.*" (translated from Spanish after M 18)).

In many villages, neighbourhood presidents had no real influence. Most of the people did not even know who the president was.

(3) In the affected area, few CBOs exist and these helped only to a little extent in the recovery process. According to an expert from the local council, the lack of CBOs is mainly a question of culture: "*La falta de organizaciones civiles es también pregunta de la cultura. La zona de la costa no es muy fuerte en organización.*" (P 8) ("*The lack of organisation can also a question of the culture. The coastal zone is not very good at organisation.*" (translated from Spanish after P 8)).

Another expert from the local council explained that the existing CBOs were not prepared to help in the recovery. These findings lead to the next point- collective action and participation.

(4) Within the affected population, only a little bit of collective action to recover from the earthquake was carried out. One expert, however, felt that Pedernales did recover with collective work (P 10). Other experts explained that neighbours worked together and some new voluntary groups emerged but this happened only at the very beginning. Collective action decreased after some days. Different reasons were mentioned for the lack of collective action: (1) The people in the affected area are used to waiting until aid gets to them, (2) people tire easily and (3) lack of trust among the people.

(1) As people in the affected areas are used that aid gets to them, only few people had the ambition to recover by themselves. (2) It might be for the same reason that people also tire easily. Different groups were formed after the earthquake but most of them failed or fell apart because people lost the ambition to continue. (3) Trust among the members of the communities was low. Therefore, many people tried to get the most out of the aid deliveries only for themselves and their family without showing consideration for others. A woman claimed during the survey that some people got a lot of food but "*repartieron la comida solo entre ellos* (the family networks and close friends*), por eso se daño."* (LM 140) ("*they distributed the food only among themselves* (the family networks and close friends) *and therefore it went bad*" (translated from Spanish after LM 140)).

4.3.2.2. *Changes in social capital during and after the earthquake*

The horizontal networks did not significantly change during and after the earthquake with the exception of the number of friends, which decreased after the event (cf. chapter 4.2.4) as many people moved away. However, many family members also moved away but the survey shows that the networks with family did not decrease significantly. People explained that the contact with family members generally remained intact even with the distance.

Security decreased during the earthquake and at the time when the survey was conducted it was still lower than before the earthquake (c.f. table). Especially during the earthquake, when people left their houses, there were a lot of robberies. However, this can not be directly correlated to a change in local norms and behaviour but rather to three other reasons: (1) People from outside came into the area, (2) many people live in tents, which makes them more susceptible to robberies (counts only for people outside of official camps), (3) people who had to move into tents were usually confronted with a new environment and new neighbours. People from the military who were in charge of camps confirmed the last issue. Violence between new tent neighbours was a problem when the camps were opened.

About one half of the people stated that trust and networks among the people of the village and neighbourhood had increased. The other half said the opposite- that trust and networks had decreased:

"La gente es mucho más unido ahora" (LM 72) ("*The people are a lot more united now than they were before*" (translated from Spanish to English after LM 72))

"*Era una desgracia! Nadie nos ayudó. Yo no confío en nadie*" (LM 72) ("*It was a disgrace! Nobody helped us. I do not trust anybody*" (translated from Spanish after LM 72))

Vertical social capital has changed with the earthquake as access to NGOs got easier during the first couple of months after the disaster, while the access to the local council got more difficult after some months of the earthquake until the time of the survey (c.f. table 15). Access to NGOs was mostly related to first aid (mattresses, food and shelter) and to psychological help. The affected population in general did not talk a lot about NGOs though. People found it difficult to access the local council. As described in the previous subchapter, people claimed that the local council was not available or it was available to talk but did not want to help. Only very few people felt that the local council supported them.

4.3.2.3. Satisfaction with the village recovery

In chapter 4.2.2 it was discussed that the satisfaction with village recovery differs significantly between the cantons of Jama and Pedernales. The experts explained that the canton of Jama did not recover well because a lot of facilities were missing (canalisation, water, tarred streets etc.). Jama was already less developed than Pedernales before the earthquake. This could be the reason for the lower recovery satisfaction in Jama than in Pedernales (M 18). Another expert also explained that economically Pedernales was recovering better than Jama (P14).

5. Discussion

This chapter discusses the main findings of the study and answers the research questions. The first part summarises general findings about the government's reconstruction plan, social capital in the surveyed area and people's satisfaction with the reconstruction. In the second part, the first research question '*How has social capital influenced the recovery after the 2016 earthquake in Ecuador?'* is discussed. To do this, the networks that helped in the recovery the aspect of trust and, the connection between social capital and recovery satisfaction were investigated. Then, the question '*What was the impact of the earthquake on social capital?'* is examined by studying the changes in social capital during and after the earthquake. The last research question '*Are social capital and the earthquake recovery process perceived similar by experts like by the affected population?'* is discussed by comparing the expert survey and the household survey. Finally, this chapter presents the limitations of this study, recommendations for practice and research based on the results of this study.

5.1. General findings: Reconstruction plan, social capital and recovery satisfaction in the surveyed area

5.1.1. Reconstruction plan

The national government was the leading institution in the recovery process after the 2016 earthquake. It has, therefore, launched several measures like reception camps as well as social, psychological and medical assistance to support the affected communities. The most important part of the long-term recovery program is the government's reconstruction plan "Reconstruyo Ecuador". It includes repairing of damaged houses and the building of new houses for people who either became homeless or lived in a risk prone zone (cf. chapter 4.1). The short-term as well as the long-term measures have contributed to a large extent to the affected area's recovery. However, the government's reconstruction measures worked with almost no local inclusion. The recovery program, therefore, followed a top-down approach. This is in contrast to the actual state of research and to the international guidelines which recommend working with bottom-up recovery programs that focus not only on the physical but also on the social reconstruction of communities (UNISDR 2015; Berke et al. 1993; Nakagawa & Shaw 2004; Sanyal & Routray 2016; Murphy 2007), to consider the affected communities as "*active participants rather than helpless victims*" (Berke, Kartez and Wenger,

1993: 93). Based on this case study, it can be concluded that the government's top-down recovery approach had an impact on the recovery satisfaction, on trust towards authority figures and on collective action at the community level. During this chapter these points will be discussed in detail.

5.1.2. Social capital

Social capital is generally low in the surveyed area. SC 1 (individual social capital) has an average score of medium to high. The results show that the ties among and trust in family members are much higher than among friends and neighbours.

The average score of SC 2 (informal community social capital) is medium. It has to be taken into account though that this score mainly derives from the variables "security" and "willingness to participate" which were rated high, whereas trust among community members was rated low. Even though people stated that they were *very willing* to participate in community activities, in practice hardly any community participation was observed. So in reality, SC 2 may be lower than the results that the study depicts.

SC 3 (formal social capital) has an extremely low average score because few CBOs exist. The CBOs that exist were not prepared to deal with a disaster event and therefore could not provide adequate help in the earthquake recovery especially in terms of food.

The average score of SC 4 (vertical social capital) is also low in the surveyed area. People don't trust authority figures and find it difficult to access them. Trust in the local council is especially weak.

The category SC 5 (collective action and participation) includes the collective activities of the affected communities in the recovery process. The average score of SC 5 is low, which means in practice few people participated in community recovery activities. This is in contrast to SC 2, community social capital, for which most people stated that they are willing to participate in collective activities. The low level of collective action could be traced back to different reasons: (1) People did not act because they were waiting for the government aid (c.f. Reconstruyo Ecuador), (2) the level of social capital, for example, trust between people, is low in the affected area, (3) people living in the surveyed area are not used to organising themselves (c.f. chapter 4.3).

It is important to be aware of differences in the levels of social capital to understand the local social structures. Therefore, this paragraph briefly presents the main differences that were found in the levels of social capital. Overall the results point out that men have higher social capital than women (accounts for SC 1, SC 2 and SC 3) and rural areas have higher social capital than urban areas (accounts for SC 4, SC 5). The gender-based difference in social capital has also been found in other studies. However, the results of this thesis contrast with findings of other studies, which reported that women had higher individual and community social capital (SC 1 and SC 2) (Moore 1990: 733-734; Lin 2000: 787; Molyneux 2002: 177). Like the present case study, other studies also concluded that rural areas generally have higher social capital than urban areas (see for example Durston 2003: 165-168).

5.1.3. Recovery Satisfaction

Satisfaction with the recovery had been low at the time of the survey. The satisfaction with the house recovery was the lowest followed by the satisfaction with the village recovery. Many times, the dissatisfaction with the house recovery was associated with the government's reconstruction plan (cf. chapter 4.3). It can, therefore, be concluded that the top-down recovery approach influenced people's satisfaction with the state of recovery. Other possible factors for the low satisfaction were not investigated. However, a study about post-flood recovery in the United States also found that the people's satisfaction with the recovery highly correlates with their perception of participation. People who feel that they were a part of the recovery process are more satisfied with the overall recovery (Kweit & Kweit 2004). A further assumption that people's recovery expectations increased with the government's reconstruction plan and satisfaction was therefore lower than expected for the state of recovery can be drawn.

The level of satisfaction was different for men and women when it came to village and mental health recovery; men were more content than women with the recovery state. Interestingly, this finding is similar to the level of social capital, which is higher for men than women. It is possible that men are more content with the recovery state because they have higher levels of social capital.

5.2. Influence of social capital on disaster recovery

5.2.1. Networks that helped

Vertical networks played the most important role in the earthquake recovery followed by individual networks. Organisational and community networks helped only to a small extent. It is surprising that vertical networks were rated more important than horizontal networks because vertical social capital was low in the surveyed area. A possible reason for the high significance of the vertical networks is the government's top-down approach.

Within the horizontal social capital it was the individual networks, mainly the family members that provided the greatest assistance. Community and organisational networks played a negligible role in the recovery process. Little mutual assistance and collective action was observed among community members. These results reflect the levels of each social capital category in the surveyed area as discussed in the previous chapter. Based on these findings it can be assumed that high social capital and tight networks lead to higher levels of mutual support in disaster recovery. It is reflected in literature that high social capital leads to mutual support and collective action while in regions with low social capital they are almost absent (Coleman 1988; Grootaert 1996; Dudwick et al. 2006; Putnam et al. 1993; Portes 1998; Woolcock 1998). The results from other studies in the field of disaster recovery also undermine this assumption. For example, through their study in India and Japan, Nakagawa and Shaw (2004) found that high social capital leads to collective action and mutual support during the recovery process. So the communities with high social capital recovered more quickly and efficiently from disasters. Similarly, Sanyal and Routray (2016) found that high social capital like tight networks and trust were the basis for mutual support in disaster recovery. In case of Jama and Pedernales, the lack of CBOs and low community trust led to weak mutual support. In the following paragraphs, these findings are further elaborated.

Vertical networks, especially the national government and NGOs, were declared as the actors, that helped the most in all the stages of the earthquake recovery. The local council was seldom counted as a source of aid. People's statements about vertical networks are contradictory. They feel that the national government and NGOs have helped the most in the earthquake recovery but they still have a general mistrust for authority figures and rate vertical networks as very weak. Several conclusions can be drawn from these findings. It is

assumed that the top-down recovery approach had a major impact on people's trust towards authority figures. The negative attitude towards authority figures may have derived because of the little local inclusion in the recovery process. Hence, even though most of the support came from the national government and NGOs people felt that they could not trust them. Similar results were found by Alipour *et al.* (2015: 697-698) in their case study in post-disaster Iran. They observed that the lack of local inclusion in the recovery process led to mistrust in authority figures. Additionally, the government's reconstruction plan left little responsibility to the local council. Like in the present case study, people were dissatisfied with the local council's role in the recovery process, which led to an increased mistrust towards it. Murphy (2007) emphasises in her review about social capital in emergency management that the role of the local council is especially important. Communities are difficult to define as the borders are not necessarily of geographical nature. The local council, however, can act as an intermediary between the national government and local communities (Murphy, 2007: 300). In summary, these findings reinforce the common idea that top-down approaches without the inclusion of the local council and local communities usually do not lead to an overall successful recovery (Berke et al. 1993; Ingram et al. 2006; Nakagawa & Shaw 2004; Sanyal & Routray 2016; Murphy 2007; UNISDR 2015).

Individual networks were reported as the second most important source of help in the recovery phase. Chapter 2.3 discussed several case studies that observed all categories of horizontal social capital (individual, community and organisational) play an important role after disasters (Shaw & Katsuihciro 2004: 21; Sanyal & Routray 2016: 104). However, in Jama and Pedernales, most support came from the family members while support from neighbours and friends was insignificant. This correlates with the result that networks among family members are strong, while networks between neighbours and people of the communities are weak. It can be inferred from these findings that the strength of networks have an influence on the recovery phase. As community networks are weak in Jama and Pedernales, community social capital did not play a significant role.

The exclusion of people who were not a part of a certain network was also observed especially in the response phase. Several people claimed that people in charge of distributing aid only shared it with their family and the closest friends. These results show that social capital can have positive as well as negative impacts on disaster recovery. Strong networks can lead to mutual assistance among members of the network; however, people who are not a

part of it can get easily excluded. Similar findings from Minamoto (2010: 549-562), Murphy (2007: 303) and Sanyal & Routray (2016: 105) support this result. They state that strong networks can have a disadvantage for outsiders and so disaster recovery can widen the existing social gaps.

Organisational networks were not a considerable factor in the earthquake recovery. This is mostly due to the lack of CBOs (c.f. chapter 4.2.3).

Chapters 2.1 and 2.3 presented that strong social capital can lead to *collective action and mutual support* (Putnam 2001: 1-2; Putnam et al. 1993: 164-171; Woolcock 1998: 155; Portes 1998: 6). However, in the investigated case, little collective action was observed. It is assumed this is due to the mistrust among community members. This supports the findings of Sanyal & Routray (2016: 109) who stress that trust among the community members is one of the most important drivers for mutual support. Putnam et al. (1993: 164-171) also emphasise that collective action is not possible without mutual trust.

It was outlined in the chapters 2.1 and 2.3 that social capital is an important source of information (Coleman 1988; Burt 2000). Similar findings were made in Jama and Pedernales, as many people stated that they were partly informed by their families, friends and neighbours about the recovery process. "*Chatting with people*" was the most important channel of information after television. In some cases, rumours were circulated and it led to confusion as it was difficult for people to differentiate between facts and rumours. This could also have been one of the reasons that led to dissatisfaction with the recovery.

5.2.2. Social capital and recovery satisfaction

Generally, the results of the present case study suggest that high social capital leads to higher recovery satisfaction. Similar findings were made by Nakagawa & Shaw (2004: 27). Satisfaction with house recovery correlates significantly with SC 1, SC 2 and SC 4, while mental health recovery only correlates with SC 4 and village recovery correlates with SC 4 and SC 5. However, most of the model effects are small. Only the correlation between satisfaction with the village recovery and vertical social capital reports a medium effect. Through the correlations between recovery satisfaction and social capital, it can be observed that (1) vertical social capital has the biggest influence and (2) formal community social capital does not have any influence on the earthquake recovery satisfaction.

(1) Vertical social capital correlates with all the three dimensions of recovery satisfaction. The impact of vertical social capital on recovery satisfaction emphasises the importance of these institutions in the recovery process of Jama and Pedernales. This may be due to the government's top-down recovery approach (cf. previous subchapter).

(2) Formal community social capital does not have an influence on the recovery satisfaction. This is not surprising because only few local organisations exist. The lack of CBOs might be considered as a major weakness in the recovery process because CBOs can foster trust, establish norms and coordinate collective action. So they are often one of the main drivers for successful recovery (Nakagawa & Shaw 2004: 17; Murphy 2007: 94-96).

Physical recovery was advanced at the time of the survey but people's overall satisfaction with the state of recovery was low. This could be explained by the focus on physical recovery. The rehabilitation of social measures such as trust was missing. It is important to consider that the satisfaction with the earthquake recovery is based on people's perception and not on the actual state of recovery. People's perception is influenced by social aspects to a great extent. To get more information about recovery perception, Kweit & Kweit (2004) can be consulted.

5.2.3. The influence of social capital on disaster recovery

In summary, it can be said that vertical networks played the most important role in the earthquake recovery even though vertical social capital was rather low. This is probably related to the government's reconstruction plan and the predominant correlation between recovery satisfaction and vertical social capital. The reconstruction plan is based on a top-down approach that considers NGOs and the national government as the main stakeholders. Unfortunately, this led to little local inclusion and hence collective action and participation from the affected communities was low. The current state of research suggests including communities to foster trust between the affected population and authority figures and thus reach higher acceptance of the recovery measures and foster local empowerment (UNISDR 2015; Nakagawa & Shaw 2004; Joshi & Aoki 2014; Aldrich 2010).

Low social capital led to some consequences during the recovery process. Due to the lack of formal as well as informal CBOs people are neither used to collective decision-making nor are they organised. These conditions made collective action extremely difficult. The lack of trust among community members additionally hindered collective action and mutual support

in the communities. The networks among family members are strong compared to neighbourhood and community networks. This led to strong support within families. Unfortunately, in some cases it also led to the exclusion of people who were not a part of such networks.

5.3. Impact of the disaster and recovery policies on social capital

The rupture of social networks can be a major consequence of disasters (Alipour et al. 2015: 700; Ingram et al. 2006: 609). However, in Jama and Pedernales, this was only observed in small parts. A possible explanation for this is the low level of social capital before the earthquake. While the number of friends decreased because many people moved away, networks with family and friends got slightly stronger. Community norms did not change significantly. Security decreased. This was not because of a change in norms but because of strangers who moved from other areas and people who had moved to tents after becoming homeless. This increased their vulnerability. Only people living in the camps reported a decrease in security due to the rupture of neighbourhood networks.

It is striking to note that vertical social capital mainly changed only for the local council. Networks got weaker, trust decreased and access got more difficult. Other studies show that strong local leaders are important to foster community-based activities (Nakagawa & Shaw 2004: 29). Access to NGOs got easier but only at the beginning. It is surprising that trust in and access to the national government did not increase considering the government's reconstruction plan and all the help that it gave. Again, this might be due to the top-down approach of the reconstruction plan and the little local inclusion.

In summary, it can be said that the disaster itself did not have a great impact on social capital, while the recovery policies did. At the time of the survey, the government's reconstruction plan had created some problems that affected the social capital adversely. This was mainly due to the little local inclusion and the focus on the physical part of recovery: Mistrust was generated within communities as well as towards the authority figures and in some cases collective action was undermined.

5.4. Differences in expert's and the affected population's perspectives

The perception of the experts differed from that of the affected population on some topics related to the recovery satisfaction and social capital in Jama and Pedernales. The affected population rated mental health recovery higher. The experts rated village recovery higher despite being aware of the difficult housing situation. However, both the parties rated the house recovery satisfaction equally.

Changes in horizontal networks were rated equally by the experts and the affected population. Only trust in family members was rated better by the affected population, while trust in the people from the village was rated better by the experts.

The biggest difference in the experts' and the affected population's ratings was observed for vertical networks. The experts rated the changes in the networks with NGOs, the local council and the national government better than the affected population. Experts also rated the access to authority figures (before as well as after the earthquake) better.

These findings lead to the conclusion that experts are not adequately informed about social structures and they perceive the accessibility to authority figures especially differently than the affected population. However, for a successful recovery, it is crucial to be aware of such social structures (Nakagawa & Shaw 2004: 11-12; Sakamoto & Yamori 2009: 50).

5.5. Summary

Generally, social capital is quite low in the surveyed area and helped only to a little extent in the earthquake recovery. Most of the support came from the national government, NGOs and family members. CBOs were almost absent in the recovery process. Collaboration within the community to collectively recover from the earthquake was very low. However, most people stated that they would participate if there was a community activity.

It is striking to note that the majority of the affected people claimed that the local council did not play a significant role in the recovery process. Therefore, people lacked trust in the local council. As a consequence, an important part of the vertical networks is missing, as it is the local council's task to act as a link between the local population and the national government. People, therefore, find it difficult to access authority figures, while the national government

lacks information about local conditions and cannot adapt the recovery plan and policies as per the local needs.

The top-down approach of the government's reconstruction plan had an adverse impact on people's trust in authority figures and on collective action. It led to little acceptance of the recovery program and to the emergence of social issues like envy and mistrust among the affected population and towards authority figures.

The experts rated vertical social capital much higher than the affected population. As social capital is an important part of the recovery process, the understanding of social structures is crucial for a successful recovery planning.

5.6. Outlook

5.6.1. Limitations

There are several limitations to the study. This chapter starts by discussing the technical limitations. It then focuses on limits of investigating social capital and recovery.

In this paragraph, the technical limitations are addressed. A random sampling method was chosen for this research. However, the randomness of the sampling was subject to several other external limitations. Only places that were accessible by public transportation or through a snowball sampling were included in the study. However, the distribution of the characteristics of the surveyed people is good enough to be representative to be included in this study (cf. annex B). It is important to bear in mind that very remote areas were not included in the study. A further limitation was that only non-parametric testing was possible as all variables except SC 1 violated several assumptions for parametric testing.

Qualitative methods were applied spontaneously in this research. It would have been interesting to have a broader and a more comprehensive insight in the results of qualitative research (e.g. interviews, focus groups etc.). However, due to limited timeframe and financial resources this was not possible for this thesis.

The study was analysed by aggregating different questions into categories. This is the main limitation to the investigation of social capital in this study The categorisation was based on a broad literature review (cf. chapter 2.1). However, it could be critically scrutinised whether a different classification of social capital would produce other results. It should also be taken into account that bridging social capital (c.f. chapter 2.1) was not considered in this study.

The phase after an earthquake is further divided into response, recovery and restoration or emergency, restoration and reconstruction (cf. chapter 2.2). However, in this study recovery was observed from the first instance (emergency) until the time of the survey without distinguishing between the states of recovery.

When analysing the results, it is crucial to bear in mind that the researcher has a certain role towards the questioned people. Even though the neutrality of the researcher was communicated, some people might have assumed that the survey was conducted for an NGO or for a political agenda. The last limitation worth mentioning is that the results reflect only

the state of recovery within a specific timeframe. However, the recovery after a disaster is a long process. Therefore, people's perception of social capital and the state of recovery might change over time.

5.6.2. Recommendations

To conclude, some recommendations for praxis and research are given based on the results of this study.

5.6.2.1. Recommendations for praxis

Drawing on the results of this thesis, if a similar event occurs in the future it is recommended to (1) work with bottom-up policies, programs and plans, which include the local council as well as the local communities, (2) plan ahead for such a possible future event, (3) strengthen social capital in Jama and Pedernales, (4) include more social structures in the recovery program and (5) be aware of social capital as a source of information and use it as an information channel.

Considering the results of this and other studies (Berke et al. 1993; Nakagawa & Shaw 2004; Sanyal & Routray 2016; Murphy 2007), it seems reasonable to (1) work with recovery policies and programs that follow a bottom-up approach and include the affected communities in the decision-making as well as in the implementation of the recovery process. Different studies show that this leads to a greater acceptance of recovery programs and to a quicker and more sustainable recovery (Berke et al. 1993; Nakagawa & Shaw 2004; Sanyal & Routray 2016; Murphy 2007). This recommendation counts for both the recovery phase and DRM in general. (2) To implement a bottom-up approach for the recovery after a disaster it is recommended to plan ahead and to prepare recovery plans before a disaster strikes. This enables decision-makers to be flexible and to act quickly and better adapt to the local conditions.

(3) In chapter 2.1, it was discussed that high social capital fosters collective action and participation. However, only little collective action and participation was observed in the recovery process of Jama and Pedernales. It is, therefore, suggested to take measures to strengthen community social capital. This could foster collective action and thus have a positive impact on the community's capacity to cope with such future events.

Further, it is recommended to (4) analyse social structures before the event and to incorporate more of them in the recovery programs. Many experts, for example, rated trust and networks between community members stronger than the affected people, while trust within families was rated stronger by the affected population. Being aware of such social structures is crucial for a sustainable DRM. In case of Jama and Pedernales, the distribution of the relief goods shows how social structures influence the recovery process. Several people stated that NGOs and governmental officials assigned one person in their neighbourhood to distribute the relief goods. Unfortunately, often these goods were not distributed evenly within the communities but instead circulated within the family networks of the respective person. This issue could be prevented if NGOs and governmental officials were better informed about such social structures. Additionally, (5) social capital could be used as a channel of information. Being aware of how information flows among the affected population can help the leaders to eliminate misinformation to a certain extent.

5.6.2.2. Recommendations for further research

It would be valuable to (1) do further research about social capital in the surveyed area and in other parts of Ecuador, (2) investigate how to enhance social capital in the surveyed area, (3) do a similar study in a recovery process with a bottom-up recovery approach and (4) replicate the study at a more advanced state of the recovery

(1) Conducting more in-detail research about social capital in the area and comparing it to other parts of Ecuador can help to understand how DRM programs should differ and adapt according to the region. (2) Investigating how to enhance social capital in the affected area could strengthen social capital. (3) As a final recommendation, research at different points in time could help to understand how social capital and recovery satisfaction change over time.

6. Conclusion

This thesis has identified the role of social capital in the recovery process after the 2016 earthquake in the cantons Jama and Pedernales, Ecuador. The results show that social capital was not a decisive factor in the earthquake recovery. This may be traced back to low levels of social capital in the area. The top-down approach of the government's reconstruction plan can be another factor. Furthermore, the findings of this thesis indicate that the recovery policies had some adverse impacts on social capital and collective action.

It was observed that social capital in the study area was rather low. Individual social capital exists mostly within networks among families, while networks with friends and neighbours don't have high social capital. Community social capital is low in the surveyed cantons as hardly any CBOs exist and trust between community members is weak. Hence, little collective action was taken and not much mutual support was given within communities during the recovery phase after the earthquake. Vertical social capital is also weak in Jama and Pedernales. Most people don't trust NGOs, community leaders, the local council and the national government and claimed that access to these institutions was very difficult. The local council especially scored badly in relation to trust and access.

However, most of the support for the earthquake recovery came from vertical networks followed by individual networks, while the contribution of community networks was negligible. Within vertical networks, the national government and NGOs were the main sources of recovery assistance and within individual networks the main support for the earthquake recovery came from family members. The reason for the high importance of vertical networks in the earthquake recovery could be the government's reconstruction plan which follows a top-down recovery approach.

Findings from prior studies that suggested high levels of social capital lead to high recovery satisfaction were validated. However, apart from the correlation between vertical social capital and satisfaction with village recovery, all correlations were weak. Based on this it can be said that individual and community social capital did not contribute to recovery satisfaction to a large extent. Again, this may be attributed to low levels of social capital as well as the lack of communities' inclusion in the government's recovery plan.

Changes in social capital were observed through a rupture of neighbourhood networks and hence, a decrease in security. Additionally, it was observed that the affected population became hostile towards the local council. The change in neighbourhood networks is a typical consequence of disasters as homeless people have to move into camps or into new homes. The affected communities' feelings of mistrust towards the local council might be traced back to disaster policies. The government's reconstruction plan involved local communities as well as the local council only to a small extent. Due to such little involvement of the affected people and the local council in the recovery process, mistrust was generated towards the local council. Additionally, collective action and local participation were, to some degree, undermined by the top-down recovery approach.

The results of this thesis show that experts rated recovery satisfaction and social capital in the affected area differently from the affected population. This was found especially true for the vertical social capital (trust in and access to authority figures) and for trust between community members. It can, therefore, be concluded that experts lack information about local social structures. However, including social aspects in the recovery plans and programs is crucial for a sustainable long-term recovery. It is, therefore, important that experts stay well informed.

Based on the results of this thesis, it is recommended to strengthen the local council and enhance social capital in the affected area. The local council is an important part of the vertical networks. It helps people to gain better access to authority figures and can provide the national government with information about local conditions. Hence, it is a crucial stakeholder in the development of disaster management policies.

A strengthening of social capital may lead to higher levels of trust between the people in the area and to better coordination. It is, therefore, recommended to strengthen CBOs in particular. This may improve the communities' capacity to cope with future adverse events by fostering collective action and participation.

Based on these recommendations, it is also suggested to develop bottom-up recovery policies that put a stronger focus on local inclusion, local conditions and social aspects. If this is implemented, it may lead to a simultaneous empowerment of the local communities and the local council.

It is recommended to conduct further research about the complex forms of social interactions in the area. This will help in including these structures in disaster management policies and at the same time in strengthening social capital. Further, it would be beneficial to compare levels of social capital in the coastal area with the mountainous area in order to adjust DRM policies as per the respective area.

7. Literature

Aldrich, D.P., 2010. Fixing Recovery: Social Capital in Post-Crisis Resilience. *Journal of Homeland Security*, pp.1–16. Available at: http://docs.lib.purdue.edu/pspubs/3/.

Alipour, F. et al., 2015. Social issues and post-disaster recovery: A qualitative study in an Iranian context. *International Social Work*, 58(5), pp.689–703. Available at: http://journals.sagepub.com/doi/10.1177/0020872815584426.

Baker, W.E., 1990. Market Networks and Corporate Behavior. *American Journal of Sociology*, 96(3), pp.589–625. Available at: http://www.jstor.org/stable/2781065?seq=1#page_scan_tab_contents.

Berke, P., Kartez, J. & Wenger, D., 1993. Recovery after Disaster: Achieving Sustainable Development, Mitigation and Equity. *Disasters*, 17(2), pp.93–109. Available at: http://cidbimena.desastres.hn/docum/crid/Marzo2004/pdf/eng/doc4333/doc4333-a.pdf.

Bolin, R. & Stanford, L., 1998. The Northridge earthquake: Community-based Approaches to Unmet Recovery Needs. *Disasters*, 22(1), pp.21–38. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9549171.

Bourdieu, P., 1986. The Forms of Capital. In I. Szeman & T. Kaposy, eds. *Cultural theory: An anthology*. Chichester: Wiley-blackwell, pp. 81–93.

Brune, N.E. & Bossert, T., 2009. Building social capital in post-conflict communities: Evidence from Nicaragua. *Social Science and Medicine*, 68(5), pp.885–893. Available at: http://www.sciencedirect.com/science/article/pii/S0277953608006680.

Bryman, A., 1992. Quantitative and Qualitative Research: Further Reflection on their Integration. In J. Brannen, ed. *Mixing Methods: Quantitative and Qualitative Research*. Aldershot: Avebury Publishing, pp. 57–80.

Burt, R.S., 2000. *Structural holes versus network closure as social capital*, Chicago. Available at: http://faculty.chicagobooth.edu/ronald.burt/research/files/shnc.pdf [Accessed May 6, 2017].

Cohen, J., 1992. A power primer. *Psychological Bulletin*, 112(1), pp.155–159. Available at: http://doi.apa.org/getdoi.cfm?doi=10.1037/0033-2909.112.1.155.

Cohen, J., 1988. *Statistical power analysis for the behavioural sciences* 2nd ed., New York: Academic Press.

Coleman, J.S., 1988. Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94, pp.95–120. Available at: http://www.jstor.org/stable/2780243?seq=1#page_scan_tab_contents.

CRRP, 2016. Plan Reconstruyo Ecuador - Informe Trimestral de Gestión (mayo-agosto de 2016). Available at: http://www.eltelegrafo.com.ec/especiales/Documentos/Informe-trimestral-de-Gestion-mayo-agosto-de-2016-Comite-para-Reconstruccion-y-Reactivacion-Productiva.pdf [Accessed April 23, 2017].

Davis, I. & Alexander, D., 2016. *Recovery from Disaster*, London: Routledge.

Denzin, N., 1978. *The research act*, New York: McGraw Hill.

Denzin, N.K., 1989. *The Research Act* 3rd ed., Englewood Cliffi, NJ: Prentice Hall.

Dudwick, N. et al., 2006. *Analyzing social capital in context : a guide to using qualitative methods and data*, Washington, DC. Available at: http://documents.worldbank.org/curated/en/601831468338476652/Analyzing-social-capital-in-context-a-guide-to-using-qualitative-methods-and-data.

Durston, J., 2003. Capital social: parte del problema, parte de la solución, su papel en la persistencia y en la superación de la pobreza en América Latina y el Caribe. In R. Atria et al., eds. *Capital social y reducción de la pobreza en América Latina y el Caribe: en busca de un nuevo pradigma*. Santiage de Chile: Naciones Unidas; CEPAL; Michigan state University, p. 590. Available at: https://books.google.com.mx/books/about/Capital_social_y_reducción_de_la_pobrez.html?id=gvkZeSMCsHgC&pgis=1.

Eiser, J.R. et al., 2012. Risk interpretation and action : A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, 1, pp.5–16. Available at: http://www.sciencedirect.com/science/article/pii/S2212420912000040.

Flick, U., 2009. *An Introduction To Qualitative Research* 4th ed., Sage.

Flick, U., 1991. Triangulation. In U. Flick et al., eds. *Handbuch qualitative Sozialforschung : Grundlagen, Konzepte, Methoden und Anwendungen*. München: Beltz, pp. 432–434. Available at: http://www.ssoar.info/ssoar/handle/document/3732.

George, B.P., 2008. Local community's support for post-tsunami recovery efforts in an agrarian village and a tourist destination: A comparative analysis. *Community Development Journal*, 43(4), pp.444–458. Available at: https://academic.oup.com/cdj/article/43/4/444/274138/Local-community-s-support-for-post-tsunami.

GFDRR, 2014. Country Program Update May 2014: Ecuador. Available at: https://www.gfdrr.org/sites/gfdrr/files/region/EC.pdf [Accessed October 13, 2016].

Gobierno de Ecuador, 2016. PDNA - Reconstrucción y Reactivación de las zonas afectadas por el terremoto del 16 de Abril Ecuador. Available at: http://www.redhum.org/documento_detail/gobierno-de-ecuador-pdna-reconstruccion-y-reactivacion-d-elas-zonas-afectadas-por-el-terremoto-del-16-de-abril-ecuador [Accessed April 15, 2017].

Grootaert, C., 2001. *LLI 10 - Does Social Capital Help The Poor? A Synthesis of Findings From the Local Level Institutions Studies in Bolivia, Burkina Faso and Indonesia*,

Grootaert, C. et al., 2004. *Measuring Social Capital: an integrated questionnaire*, Washington, DC. Available at: http://documents.worldbank.org/curated/en/51526146.

Grootaert, C., 1996. *Social Capital: The missing link?*, Washington, DC. Available at: http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-03.pdf.

Grootaert, C. & Bastelaer, T. Van, 2002. *Instruments of the social capital assessment tool*, Available at: http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Assessment-Tool--SOCAT-/annex1.pdf.

Hanifan, L.J., 1916. The Rural School Community Center. *American Academy of Political and Social Science*, 67(1), pp.130–138. Available at: http://ann.sagepub.com/cgi/doi/10.1177/000271621606700118.

Ingram, J.C. et al., 2006. Post-disaster recovery dilemmas: challenges in balancing short-term and long-term needs for vulnerability reduction. *Environmental Science and Policy*, 9(7), pp.607–613. Available at: https://www.researchgate.net/profile/Bijan_Khazai/publication/258495058_Post-disaster_recovery_dilemmas_Challenges_in_balancing_short-term_and_long-term_needs_for_vulnerability_reduction/links/02e7e52852281263bf000000/Post-disaster-recovery-dilemmas-Chall.

IPCC, 2012. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, New York. Available at: http://ebooks.cambridge.org/ref/id/CBO9781139177245.

Joshi, A. & Aoki, M., 2014. The role of social capital and public policy in disaster recovery: A case study of Tamil Nadu State, India. *International Journal of Disaster Risk Reduction*, 7, pp.100–108. Available at: http://dx.doi.org/10.1016/j.ijdrr.2013.09.004.

Khan, H., Vasilescu, L. & Khan, A., 2008. Disaster Management cycle – A theoretical approach. *Journal of Management & Marketing*, 6(1), pp.43–50. Available at: www.ceeol.com.

Kreps, G. & Lovegren Bosworth, S., 2007. Organizational Adaptation to Disaster. In H. Rodríguez, E. Quarantelli, & R. Dynes, eds. *Handbook of disaster research*. New York: Springer, pp. 297–315.

Kweit, M.G. & Kweit, R.W., 2004. Citizen Participation and Citizen Evaluation in Disaster Recovery. *The American Review of Public Administration*, 34(4), pp.354–373.

Lin, N., 2000. Inequality in Social Capital. *Contemporary Sociology*, 29(6), pp.785–795. Available at: http://www.jstor.org/stable/2654086.

Méndenez, T., 2016. Gobierno crea institución para afrontar reconstrucción por terremoto. *Ecuavisa*. Available at: http://www.ecuavisa.com/articulo/terremoto/noticias/149911-gobierno-crea-institucion-afrontar-reconstruccion-terremoto.

MIDUVI, 2016. *Instrumentos para la recuperación HABITACIONAL - Damnificados del terremoto*, Available at: http://reliefweb.int/sites/reliefweb.int/files/resources/Plan-construyo-Ecuador-MIDUVI-20160603-MP-18560.pdf.

Minamoto, Y., 2010. Social capital and livelihood recovery: post-tsunami Sri Lanka as a case. *Disaster Prevention and Management: An International Journal*, 19(5), pp.548–564. Available at: http://www.emeraldinsight.com/doi/10.1108/09653561011091887.

Molyneux, M., 2002. Gender and the Silences of Social Capital : Lessons from Latin America. *Development and Change*, 33(2), pp.167–188. Available at: https://www.researchgate.net/profile/Maxine_Molyneux2/publication/227726256_Gender_and_the_Silences_of_Social_Capital_Lessons_from_Latin_America/links/559fbfb708aea7f2ec5822a0/Gender-and-the-Silences-of-Social-Capital-Lessons-from-Latin-America.pdf.

Moore, G., 1990. Structural Determinants of Men's and Women's Personal Networks. *American Sociological Association*, 55(5), pp.726–735. Available at: http://www.jstor.org/stable/2095868.

Murphy, B.L., 2007. Locating social capital in resilient community-level emergency management. *Natural Hazards*, 41(2), pp.297–315. Available at: http://courseweb.ischool.illinois.edu/~katewill/fall2009-lis590co/Murphy_2007_LocalCommuEmergencyMgmt.pdf.

Nakagawa, Y. & Shaw, R., 2004. Social Capital: A Missing Link to Disaster Recovery. *International Journal of Mass Emergencies and Disasters*, 22(1), pp.5–34. Available at: http://ijmed.org/articles/235/download/.

OCHA, 2016a. *Earthquake Ecuador - Situation Report No. 15*, Available at: https://www.humanitarianresponse.info/system/files/documents/files/ocha_sit_rep_15_english_final.pdf.

OCHA, 2016b. *Ecuador Llamamiento: Terremoto ocurrido el 16 de abril de 2016*, Available at: http://reliefweb.int/report/ecuador/ecuador-llamamiento-terremoto-ocurrido-el-16-de-abril-de-2016-periodo-abril-julio-de.

Oliver-Smith, A., 2005. Communities after Catastrophe. In S. Hyland, ed. *Community Building in the Twenty-First Century*. Santa Fe: School of American Research Press, pp. 45–70.

Ostrom, E., 2000. Social capital: a fad or a fundamental concept? In P. Dasgupta & I. Serageldin, eds. *Social Capital - A Multifaceted Perspective*. Washington, DC: The World Bank, pp. 172–214.

Portes, A., 1998. SOCIAL CAPITAL: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology*, 24, pp.1–24. Available at: http://www.jstor.org/stable/223472?seq=1#page_scan_tab_contents.

Putnam, R., 2001. Social capital: Measurment and consequences. *Canadian Journal of Policy Research*, 2(1), pp.41–51. Available at: https://search.oecd.org/edu/innovation-education/1825848.pdf.

Putnam, R.D., Leonardi, R. & Nanetti, R.Y., 1993. Social Capital and Institutional Success. In *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press, pp. 163–185.

Quarantelli, E.L., 1985. What is Disaster? The Need for Clarification in Definition and Conceptualization in Research. *Disasters and Mental Health Selected Contemporary Perspectives*, pp.41–73.

Sakamoto, M. & Yamori, K., 2009. A Study of Life Recovery and Social Capital regarding Disaster Victims- A Case Study of Indian Ocean Tsunami and Central Java Earthquake Recovery. *Journal of Natural Disaster Science*, 31(2), pp.49–56. Available at: https://www.jstage.jst.go.jp/article/jnds/31/2/31_2_49/_pdf.

Sanyal, S. & Routray, J.K., 2016. Social capital for disaster risk reduction and management with empirical evidences from Sundarbans of India. *International Journal of Disaster Risk Reduction*, 19, pp.101–111. Available at: http://dx.doi.org/10.1016/j.ijdrr.2016.08.010.

SENPLADES, 2016. *Evaluación de los Costos de Reconstrucción*, Available at: https://www.humanitarianresponse.info/fr/system/files/documents/files/evaluacion_costos_de_la_reconstruccion_-_libro_completo_1.pdf.

SENPLADES, 2014a. *Ficha de cifras generales, cantón Jama*, Available at: http://app.sni.gob.ec/sni-link/sni/Portal SNI 2014/FICHAS F/1320_JAMA_MANABI.pdf.

SENPLADES, 2014b. *Ficha de cifras generales, cantón Pedernales*, Available at: http://app.sni.gob.ec/sni-link/sni/Portal SNI 2014/FICHAS F/1317_PEDERNALES_MANABI.pdf.

Serageldin, I. & Grootaert, C., 1999. Defining social capital: an integrating view. In P. Dasgupta & I. Serageldin, eds. *Social Capital - A Multifaceted Perspective*. Washington, DC: The World Bank, pp. 40–58.

SGR, 2014. *Agenda Sectorial de Gestión de Riesgos*, Quito. Available at: http://biblioteca.gestionderiesgos.gob.ec/items/show/25.

SGR, 2016a. *Informe de situación N°65 - 16/05/ 2016- Terremoto 7.8° - Pedernales*, Available at: http://www.gestionderiesgos.gob.ec/wp-content/uploads/downloads/2016/05/Informe-de-situación-n°65-especial-16-05-20161.pdf.

SGR, 2016b. *RESOLUCIÓN No SGR-051-2016*, Ecuador: Secretaría de Gestión de Riesgos, Ecuador. Available at: http://www.gestionderiesgos.gob.ec/wp-content/uploads/downloads/2016/05/Resolución-No-SGR-051-2016.pdf.

Shaw, R. & Katsuihciro, G., 2004. From Disaster to Sustainable Civil Society: The Kobe Experience. *Disasters*, 28(1), pp.16–40. Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.0361-3666.2004.00241.x/full.

Silva, E.B. & Edwards, R., 2004. *Operationalizing Bourdieu on Capitals: A Discussion on "The Construction of the Object,"* Available at: http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Operationalizing+Bourdieu+on+Capitals:+A+Discussion+on+"The+Construction+of+the+Object"#0.

Smith, G. & Wenger, D., 2007. Sustainable Disaster Recovery: Operationalizing An Existing Agenda. In H. Rodríguez, E. Quarantelli, & R. Dynes, eds. *Handbook of disaster research*. New York: Springer, pp. 234–257.

SNGR, 2012. *Informe de gestión 2012*, Available at: http://www.gestionderiesgos.gob.ec/wp-content/uploads/downloads/2014/03/Informe_de_Gestion_2012.pdf.

Son, J. & Lin, N., 2008. Social capital and civic action: A network-based approach. *Social Science Research*, 37(1), pp.330–349. Available at: http://courses.washington.edu/pbafadv/examples/social capital networks.pdf.

Telesur, 2016. Reconstrucción de Ecuador tras terremoto ha sido impresionante. Available at: http://www.telesurtv.net/news/Reconstruccion-de-Ecuador-tras-terremoto-ha-sido-impresionante-20161016-0017.html.

UNISDR, 2015. *Sendai Framework for Disaster Risk Reduction - UNISDR*, Available at: http://www.unisdr.org/we/coordinate/sendai-framework.

UNISDR, 2009. *UNISDR Terminology on Disaster Risk Reduction*, Available at: http://www.unisdr.org/we/inform/publications/7817.

University of Zürich, 2016. Methodenberatung Universität Zürich. Available at: http://www.methodenberatung.uzh.ch/de.html [Accessed June 25, 2017].

Uphoff, N., 2000. Understanding social capital: learning from the analysis and experience of participation. In P. Dasgupta & I. Serageldin, eds. *Social Capital - A Multifaceted Perspective*. Washington, DC: The World Bank, pp. 215–249.

Wikipedia, 2017. L. J. Hanifan. Available at: https://en.wikipedia.org/wiki/L._J._Hanifan [Accessed April 29, 2017].

Winter, S., 2000. Quantitative vs. Qualitative Methoden. , pp.1–4. Available at: http://nosnos.synology.me/MethodenlisteUniKarlsruhe/imihome.imi.uni-karlsruhe.de/nquantitative_vs_qualitative_methoden_b.html [Accessed June 20, 2017].

Wisner, B. et al., 1994. *At Risk- natural hazards, people's vulnerability and disasters* 2nd ed., London and New York: Routledge.

Wisner, B., Gaillard, J. & Kelman, I., 2011. Framing Disaster. In *Handbook of Hazards and Disaster Risk Reduction*. pp. 18–33. Available at: http://www.routledgehandbooks.com/doi/10.4324/9780203844236.ch3.

Woolcock, M., 1998. Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society*, 27(2), pp.151–208. Available at: http://www.jstor.org/stable/657866?seq=1#page_scan_tab_contents.

Woolcock, M., 2002. Social capital in theory and practice: where do we stand? In J. Isham, T. Kelly, & S. Ramaswamy, eds. *Social capital and economic development*. Cheltenham: Edward Elgar, pp. 18–39.

8. Annex

Annex A: Surveys

Household survey English

UNIVERSIDAD ANDINA SIMON BOLIVAR Ecuador

University of Zurich[UZH]

Household survey about the 2016 Earthquake in Jama and Pedernales

This questionnaire is part of a project of the Universidad Andina Simon Bolívar in collaboration with the University of Zürich, Switzerland. The project analyses the recovery project after the earthquake that hit Ecuador in April 2016, especially the recovery process in Jama and Pedernales. All data will be treated confidentially and discretely. We really appreciate your participation in this project.

1. Block 1: General information

DEMOGRAPHIC DATA

Survey Number:	Date:	Name:	Address:	Camp ☐ Yes ☐ No
Village:	Parish:	Neighbourhood:		Canton:
Gender: ☐ female ☐ male	Age:	Education: ☐ None ☐ Primary ☐ Secondary ☐ University	Occupation:	
Monthly Household income in US$:	Size of Household:	Number of children (under 16) living in the HH:	Relationship status: ☐ Single ☐ Divorced ☐ Married ☐ In a relation	

DAMAGE

	How severe was the damage of the following assets? Specify in US$ if possible!		**How severe was the damage of the following assets? Specify in US$ if possible!**
Housing	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all *Damage in US$ ____*	Housing assets (such as furniture)	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all *Damage in US$ ____*
Physical health	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all ☐ Fatalities *Damage in US$ ____*	Mental health	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all *Damage in US$ ____*
Basic services (drinking water, canalisation etc.)	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all *Damage in US$ ____*	Infrastructure (Education, hospitals, roads etc.)	☐ Very severe ☐ Severe ☐ Affected ☐ A little affected ☐ Not at all *Damage in US$ ____*

SATISFACTION AND STATUS OF RECVOERY

When looking at your house how satisfied are you with the recovery?	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied
When looking at the mental health of your family how satisfied are you with the recovery	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied
When looking at the physical health of your family how satisfied are you with the recovery?	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied
When looking at the village in general how satisfied are you with the recovery?	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied
Who helped you most in the recovery process?	☐ Family ☐ Friends ☐ Neighbours ☐ NGO ☐ Cantonal government ☐ National government ☐ CBO ☐ Religious organisation ☐ Neighbourhood president ☐ Other (Specify)

Laura Merki, 11.01.2017 1

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2. Block 2: Social capital

In this block I will ask some questions about the community of this village and about things that have changed after the earthquake.

GROUPS AND NETWORKS

Are you member of any formal group, organisation or association (listed below, if yes select all)?	☐Yes* ☐No				
☐Working cooperation (Fisherman's group / Farmer's group etc.) ☐Neighbourhood/Village association ☐Sports club ☐Women's association ☐School committee ☐National NGO ☐Parent group	☐Religious group ☐Political group ☐Youth group ☐Cultural association ☐Health committee ☐International NGO ☐Other				
*How many groups, organisations or associations are you part of?	☐1 ☐2-3 ☐4-5 ☐>5				
*Consider the group, organisation or association you are most active in (you invest most effort in terms of time). Which organisation is this? _____					
*Were you part of this organisation before the earthquake already?	☐Yes ☐No	*How many meetings a year do you attend in this organisation?	☐Never ☐1-5 times a year ☐6-11 times a year ☐1 a month ☐2-3 a month ☐1 a week ☐More	*What role do you have in this organisation?	☐Leader ☐Very active member ☐Active member ☐Rather passive member ☐Very passive member
*Has this organisation helped you in the earthquake recovery?				☐Yes** ☐No	
**How has it helped you?	☐Money or resources ☐Food ☐Reconstruction of housing ☐Shelter (temporary) ☐Advice ☐Medical help ☐Psychological help ☐Other ...				
How many close friends did you have before the earthquake? People you feel at case with, can talk about private matters or call on for help (No relatives).					☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
How many close friends do you have now, after the earthquake? People you feel at case with, can talk about private matters or call on for help (No relatives).					☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
How many close relatives did you have before the earthquake? People you feel at case with, can talk about private matters or call on for help.					☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
How many close relatives do you have now, after the earthquake? People you feel at case with, can talk about private matters or call on for help.					☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
Since the earthquake in April 2016, how many times have you gotten together with people of the village (to eat, talk, dance etc.)?					☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10

This part of the survey is concerned with networks to other people or institutions and how theses networks have changed during and after the earthquake. The term network includes giving and receiving assistance, materials and money, talking to each other and helping each other.

How have your networks changed during the earthquake (first 2 weeks)?	**How have your networks changed after the earthquake (2 weeks after earthquake until today)?**
... networks with **friends and family members?**	... networks with **friends and family members**?
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker
... networks with **neighbours?**	... networks with **neighbours**?
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker
... networks with **religious organisations?**	... networks with **religious organisations?**
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker
... networks with **NGOs?**	... networks with **NGOs**?
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker
... networks with **local council**?	... networks with **local council**?
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker
... networks with **national government**?	... networks with **national government**?
☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker	☐Much stronger ☐Stronger ☐Same as before ☐Weaker ☐Much weaker

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Have you or are you planning to borrow money for the recovery from the earthquake (buying resources for the house reconstruction, buying furniture etc.)?	☐Yes* ☐No

*If yes, who would you first ask for help in terms of borrowing money? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children) ☐Relatives or friends ☐Neighbours ☐Religious associations (e.g. church)
☐Other community association ☐Neighbourhood pres. ☐Local council ☐National government
☐NGO ☐Bank ☐Other (specify)…

Have you or are you planning to ask for assistance in the recovery from the earthquake (construction of the house, information, how to build back better etc.)?	☐Yes* ☐No

*If yes, who would you first ask for assistance in terms of reconstruction of the house, information how to build back better etc.? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children) ☐Relatives or friends ☐Neighbours ☐Religious associations (e.g. church)
☐Other community association ☐Neighbourhood pres. ☐Local council ☐National government
☐NGO ☐Institutions (e.g. school) ☐Other (specify)…

Have you or are you planning to ask for psychological assistance to recover from the earthquake?	☐Yes* ☐No

*If yes, who would you first ask for help in terms of borrowing money? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children) ☐Relatives or friends ☐Neighbours ☐Religious associations (e.g. church)
☐Other community association ☐Neighbourhood pres. ☐Local council ☐National government
☐NGO ☐Hospital ☐Institutions (e.g. school)
☐Other (specify)…

Did you need medical assistance after the earthquake (injuries)?	☐Yes* ☐No

*If yes, who did you ask first for help? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children) ☐Relatives or friends ☐Neighbours ☐Religious associations (e.g. church)
☐Other community association ☐Neighbourhood pres. ☐Local council ☐National government
☐NGO ☐Hospital ☐Institutions (e.g. school)
☐Other (specify)…

TRUST

	To what extend did you trust… before the earthquake?	**To what extend do you trust… now, after the earthquake?**
Your relatives	☐Fully ☐A lot ☐Somewhat ☐A little ☐Not at all	☐Trust more ☐Trust equally as before ☐Trust less
Your friends	☐Fully ☐A lot ☐Somewhat ☐A little ☐Not at all	☐Trust more ☐Trust equally as before ☐Trust less
Your neighbours	☐Fully ☐A lot ☐Somewhat ☐A little ☐Not at all	☐Trust more ☐Trust equally as before ☐Trust less
People in this neighbourhood in general	☐Fully ☐A lot ☐Somewhat ☐A little ☐Not at all	☐Trust more ☐Trust equally as before ☐Trust less
People in this village in general	☐Fully ☐A lot ☐Somewhat ☐A little ☐Not at all	☐Trust more ☐Trust equally as before ☐Trust less

NORMS

In general, how safe from crime and violence did you feel when you were alone at home **before** the earthquake?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe	In general, how safe from crime and violence did you feel when you were alone at home **during** the earthquake (first 2 weeks)?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe	In general, how safe from crime and violence do you feel when you are alone at home now, **after** the earthquake (after 2 weeks until now)?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe
In general, how safe from crime and violence did you feel when you were alone in the street **before** the earthquake?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe	In general, how safe from crime and violence did you feel when you were alone in the street **during** the earthquake?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe	In general, how safe from crime and violence do you feel when you are alone in the street now, **after** the earthquake?	☐Very safe ☐Moderately safe ☐Neither safe nor unsafe ☐Moderately unsafe ☐Very unsafe
Before the earthquake: If a community project did not directly benefit you but			☐Time to it ☐Both		

has benefits for many other in the village/neighbourhood, would you have contributed…?	☐ Money to it ☐ None
Now, after the earthquake: If a community (reconstruction) project did not directly benefit you but has benefits for many other in the village / neighbourhood, would you contribute…?	☐ Time to it ☐ Both ☐ Money to it ☐ None
After the earthquake: Concerning damages, which led to problems that affected the entire village (such as drinking water, canalisation, defect roads) who worked together to deal with the situation? (select all)	☐ Each household individually ☐ Neighbours among themselves ☐ The entire neighbourhood ☐ The entire village ☐ Local council ☐ No damage ☐ National government ☐ Others…

COLLECTIVE ACTION AND COOPERATION

Since the earthquake has happened in April 2016 have you participated in any communal activities, in which people came together to do some work for the recovery of the community?	☐ Yes* ☐ No	*How many activities? _____
*What was the purpose of this activity? ☐ Political purpose ☐ Collecting money ☐ Repairing infrastructure ☐ Building houses ☐ Education & health of the community ☐ Planning of the reconstruction ☐ Giving psychological help ☐ Other …		
*Was it successful?	☐ Very successful ☐ Successful ☐ Fairly successful ☐ Not very successful ☐ Not successful at all	
Would you participate again / for a first time in such a community activity to do some work for the recovery of the community?	☐ Yes, for sure ☐ Probably ☐ Maybe ☐ Probably not ☐ No	
Have you been part of a volunteer group (where you do work, without being paid for it for the benefit of the community) before the earthquake?		☐ Yes ☐ No
Are you part of a volunteer group (where you do work, without being paid for it for the benefit of the community) now, after the earthquake?		☐ Yes ☐ No

PARTICIPATION, INFORMATION AND COMMUNICATION

Are you able to influence the decision-making of the recovery process?	☐ Totally able to influence the decision-making ☐ Mostly able to influence the decision-making ☐ Neither able nor unable ☐ Mostly unable to influence the decision-making ☐ Totally unable to influence the decision-making
Are you willing to participate in decision-making of the recovery process?	☐ Very willing to participate in the decision-making ☐ Moderately willing to participate in the decision-making ☐ Neither willing nor unwilling ☐ Moderately unwilling to participate in the decision-making ☐ Very unwilling to participate in the decision-making
What are your three main sources of information about what the government is doing concerning the recovery process? ☐ Family and friends ☐ neighbours ☐ Community bulletin board ☐ Public announcements ☐ Television ☐ National newspaper ☐ Local Newspaper ☐ Local market ☐ Local groups or associations ☐ Neighbourhood president ☐ Internet (social networks) ☐ Radio ☐ Leaflets ☐ NGOs ☐ Other (specify) …	
In general, how well would you say are you informed about what the government is doing in the recovery process?	☐ Very well informed ☐ Well informed ☐ Moderately well informed ☐ Not very well informed ☐ Not informed at all

VERTICAL SOCIAL CAPITAL

	How much did you trust… before the earthquake?			**How mucho do you trust … now, after the earthquake?**	
Neighbourhood presidents	☐ Fully ☐ A little	☐ A lot ☐ Not at all	☐ Somewhat ☐ Inexistent	☐ Trust more ☐ Trust less	☐ Trust equally as before ☐ Inexistent
Local government officials	☐ Fully ☐ A little	☐ A lot ☐ Not at all	☐ Somewhat ☐ Inexistent	☐ Trust more ☐ Trust less	☐ Trust equally as before ☐ Inexistent
National government officials	☐ Fully ☐ A little	☐ A lot ☐ Not at all	☐ Somewhat ☐ Inexistent	☐ Trust more ☐ Trust less	☐ Trust equally as before ☐ Inexistent
NGOs	☐ Fully ☐ A little	☐ A lot ☐ Not at all	☐ Somewhat ☐ Inexistent	☐ Trust more ☐ Trust less	☐ Trust equally as before ☐ Inexistent

	How accessible were… before the earthquake?	How accessible were … during the earthquake (until 2 weeks after the earthquake)?	How accessible are… now, after the earthquake (from 2 weeks after the earthquake until today)?
Neighbourhood presidents	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
Local government officials	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
National government officials	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
NGOs	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
Since the earthquake in April 2016, how many times have people in this village got together to jointly petition government officials or political leaders for something benefiting the community?			☐ Never ☐ 5-6 ☐ 1-2 ☐ >6 ☐ 3-4

Household survey Spanish

UNIVERSIDAD ANDINA SIMON BOLIVAR Ecuador

University of Zurich[UZH]

Encuesta de hogares sobre el terremoto 2016 en Jama y Pedernales

Esta encuesta es parte de un proyecto de la Universidad Andina Simón Bolívar en colaboración con la Universidad Zürich, Suiza. El proyecto analiza la reconstrucción después del terremoto del Abril 2016 en Ecuador, en especial la reconstrucción en Jama y Pedernales.
Toda la información será tratada de manera confidencial. Le agradecemos mucho su participación en este proyecto.

1. Parte 1: Información general

DATOS DEMOGRAFICOS

Número de la encuesta:	Fecha:	Nombre y apellido:	Dirección:	Campamento: ☐ Si ☐ No
Pueblo:	Parroquia:	Barrio:	Cantón:	

1.3 Género: ☐ femenino ☐ masculino	1.4 Edad:	1.5 Educación: ☐ Ninguna ☐ Primaria ☐ Secundaria ☐ Universidad / Colegio	1.6 Ocupación:
1.7 Ingresos mensuales por hogar: _____ US$	1.8 Tamaño del hogar (Cantidad de personas viviendo aquí):	1.9 Cantidad de niños viviendo en este hogar (menos que 16 años):	1.10 Estado civil: ☐ Soltero ☐ Divorciado ☐ Casado ☐ En una relación

DAÑOS DEL TERREMOTO

	¿Qué tan severos fueron los daños de las siguientes cosas en su hogar? Especifique en US$!		**¿Qué tan severo fueron los daños de las siguientes cosas en su hogar? Especifique en US$!**
Casa / Apartamento	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo *Daños en US$* ____	Activos de vivienda (por ejemplo muebles)	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo *Daños en US$* ____
Salud física	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo ☐ Perdida humana *Daños en US$* ____	Salud psíquica (salud mental)	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo *Daños en US$* ____
Servicios básicos (agua potable, canalización etc.)	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo *Daños en US$* ____	Infraestructura (hospitales, calles, escuelas etc.)	☐ Muy grave ☐ Grave ☐ Afectado ☐ Un poco afectado ☐ No afectado de ningún modo *Daños en US$* ____

SASTISFACCION Y ESTADO DE LA RECUPERACION DESPUES DEL TERREMOTO

¿En relación a su casa, cuál es su grado de satisfacción con la recuperación?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿En relación a la salud mental de su familia, cuál es su grado de satisfacción con la recuperación?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿En relación a la salud física de su familia, cuál es su grado de satisfacción con la recuperación?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿En relación al pueblo en general, cuál es el grado de recuperación del pueblo después del terremoto?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿Quién le ha ayudado más en la recuperación después del terremoto en abril 2016? (Elige los 3 más importantes, 1= primero, 2= segundo, 3= tercero)	☐ Familiares ☐ Vecinos ☐ Gobierno local ☐ Organización civil ☐ Dirigente de la aldea	☐ amigos ☐ ONG ☐ Gobierno nacional ☐ Asociación religiosa (e.g. iglesia) ☐ Otro (Especifique) _____

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2. Parte 2: Capital social

En esta parte les voy a realizar unas preguntas sobre la comunidad de este pueblo y sobre cosas que se han cambiado después del terremoto.

GRUPOS Y REDES

¿Es usted miembro de algún grupo, organización o asociación (listados a continuación, elige todos)?	☐Si* ☐No
☐Cooperación (Cooperación de pescadores / agricultores, etc.) ☐Asociación de vecinos / del pueblo ☐Grupo de deporte ☐Asociación de mujeres ☐Comité escolar ☐ONG nacional ☐Grupo de padres	☐Grupo religioso ☐Grupo político ☐Grupo de jóvenes ☐Asociación cultural ☐Comité de salud ☐ONG internacional ☐Otro …
*¿De cuántas organizaciones es usted parte?	☐1 ☐2-3 ☐4-5 ☐>5
*¿En qué organización participa más? (la organización en la cual usted invierta más tiempo). ¿Qué organización es? _____	

*¿Era usted parte de esta organización antes del terremoto?	☐Si ☐No	*¿A cuántas reuniones asiste usted al año en esta organización?	☐Nunca ☐1-5 veces al año ☐6-11 veces al años ☐1 vez al mes ☐2-3 veces al mes ☐1 vez la semana ☐Más	*¿Qué función tiene usted en esta organización?	☐Líder ☐Miembro muy activo ☐Miembro activo ☐Miembro más bien pasivo ☐Miembro muy pasivo

*¿Le ayudó esta organización en la recuperación después del terremoto?	☐Si** ☐No
** ¿Cómo le ayudó?	☐Dinero o recursos ☐Comida ☐Reconstrucción de Casas ☐Refugio ☐Consejo ☐Ayuda médica ☐Ayuda psicológica ☐Otra…

¿Cuántos amigos cercanos tenía usted antes del terremoto? Personas con quienes se siente bien, con quienes puede hablar de cosas privadas o llamar si necesita ayuda (Que no son de la familia).	☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
¿Cuántos amigos cercanos tiene usted ahora, después del terremoto? Personas con quienes se siente bien, con quienes usted puede hablar de cosas privadas o llamar si necesita ayuda (No de la familia).	☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
¿Cuántos familiares cercanos tenía usted antes del terremoto? Personas con quienes se siente bien, con quienes usted puede hablar de cosas privadas o llamar si necesita ayuda.	☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
¿Cuántos familiares cercanos tiene usted ahora, después del terremoto? Personas con quienes se siente bien, con quienes usted puede hablar de cosas privadas o llamar si necesita ayuda.	☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10
Desde el terremoto en abril 2016, ¿cuántas veces se reunió con personas del pueblo (para comer, conversar, bailar etc.)?	☐0 ☐1 ☐2-3 ☐4-6 ☐7-10 ☐>10

Esta parte de la encuesta se ocupa con las redes con otras personas o instituciones y como estas redes han cambiado durante el terremoto y después del terremoto. El termino redes incluye dar y recibir asistencia, recursos y dinero, comunicar y conversar, y ayudarse mutuamente.

¿Cómo han cambiado sus redes … durante el terremoto (primeras 2 semanas)?	**¿Cómo han cambiado sus redes … después del terremoto (desde las primeras 2 semanas hasta hoy)?**
… redes con **amigos y familia**	… redes con **amigos y familia**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes
… redes con **vecinos**	… redes con **vecinos**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes
… redes con **organizaciones religiosas**	… redes con **organizaciones religiosas**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes
… redes con **ONG**	… redes con **ONG**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes
… redes con el **gobierno local**	… redes con el **gobierno local**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes
… redes con el **gobierno nacional**	… redes con el **gobierno nacional**
☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes	☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

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¿Hizo usted un préstamo, o piensa hacer un préstamo para la recuperación del terremoto (comprar recursos para reconstruir la casa, comprar muebles etc.)?	☐ Si* ☐ No

*En caso de si, a quien le preguntaría usted primero para que le preste dinero? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)

☐ Familia cercana (padres/hijos) ☐ Familia o amigos ☐ Vecinos ☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal ☐ Dirigente de la aldea ☐ Gobierno local ☐ Gobierno nacional
☐ ONG ☐ Banco ☐ Otro (Especifique) _____

¿Pidió asistencia/ayuda o piensa pedir asistencia/ayuda para la recuperación después del terremoto? (construcción de casas, información como construir mejor etc.)	☐ Si* ☐ No

*En caso de si, ¿a quién le pediría asistencia primero para la recuperación del terremoto? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)

☐ Familia cercana (padres/hijos) ☐ Familia o amigos ☐ Vecinos ☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal ☐ Dirigente de la aldea ☐ Gobierno local ☐ Gobierno nacional
☐ ONG ☐ Instituciones (escuela por ejemplo) ☐ Otro (Especifique) _____

¿Pidió asistencia/ayuda psicológica o piensa pedir asistencia/ayuda psicológica, para recuperarse del terremoto?	☐ Si* ☐ No

*En caso de si, ¿a quién le pediría asistencia psicológica primero para recuperarse del terremoto? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)

☐ Familia cercana (padres/hijos) ☐ Familia o amigos ☐ Vecinos ☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal ☐ Dirigente de la aldea ☐ Gobierno local ☐ Gobierno nacional
☐ ONG ☐ Hospital ☐ Instituciones (escuela por ejemplo)
☐ Otro (Especifique) _____

¿Necesitó usted asistencia médica para recuperarse después del terremoto (heridas)?	☐ Si* ☐ No

*En ese caso, ¿a quién le pidió asistencia médica primero? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)

☐ Familia cercana (padres/hijos) ☐ Familia o amigos ☐ Vecinos ☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal ☐ Dirigente de la aldea ☐ Gobierno local ☐ Gobierno nacional
☐ ONG ☐ Hospital ☐ Instituciones (escuela por ejemplo)
☐ Otro (Especifique) _____

CONFIANZA (Hablar de cosas privadas, contar con esta persona en caso de necesidad)

	¿En qué medida confió usted en... antes del terremoto?	**¿En qué medida confía usted en... ahora, después del terremoto?**
En sus familiares	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada	☐ Confía más que antes ☐ Confía igual como antes ☐ Confía menos que antes
En sus amigos	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada	☐ Confía más que antes ☐ Confía igual como antes ☐ Confía menos que antes
En sus vecinos	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada	☐ Confía más que antes ☐ Confía igual como antes ☐ Confía menos que antes
En personas de este barrio en general	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada	☐ Confía más que antes ☐ Confía igual como antes ☐ Confía menos que antes
En personas de este pueblo en general	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada	☐ Confía más que antes ☐ Confía igual como antes ☐ Confía menos que antes

NORMAS

¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba en casa solo, **antes** del terremoto?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba en casa solo, **durante el** terremoto (primeras 2 semanas)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba en casa solo, **después** del terremoto (desde las primeras 2 semanas hasta hoy)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro
¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba solo en la calle, **antes** del terremoto?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba en solo en la calle, **durante el** terremoto (primeras 2 semanas)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Qué tan seguro de crimen y violencia (robos, violación etc.) se sintió usted cuando estaba en casa solo, **después** del terremoto (desde las primeras 2 semanas hasta hoy)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro

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					☐Muy inseguro

Antes del terremoto: ¿Si un proyecto comunitario no era directamente para su beneficio, pero tiene beneficios para muchas otras personas del pueblo, habría usted contribuido…?	☐Tiempo ☐Los dos ☐Dinero ☐Ninguno
Ahora, después del terremoto: ¿Si un proyecto comunitario (de la reconstrucción) no es directamente para su beneficio, pero tiene beneficios para muchas otras personas del pueblo, contribuiría usted…?	☐Tiempo ☐Los dos ☐Dinero ☐Ninguno
Después del terremoto: Respecto del daño, que generó problemas que afectaron todo el pueblo (como agua potable, canalización, calles dañadas), ¿quién trabajó juntos para hacer frente a la situación? (Elija todas las respuestas que apliquen).	☐ Cada hogar individualmente ☐ Vecinos entre ellos ☐ Todo el barrio juntos ☐ Todo el pueblo juntos ☐ Gobierno local ☐ No había daños ☐ Gobierno nacional ☐ Otros _____

ACCION COLECTIVA Y COOPERACION

Desde el terremoto en abril 2016, ¿participó usted en cualquier actividad comunal, en la cual personas se juntaron para hacer algún trabajo de recuperación del pueblo?	☐Si* ☐No	*¿Cuántas actividades? _____
*¿Cuál era el propósito de esta actividad? ☐Propósito político ☐Recolectar dinero ☐Reparación de infraestructura ☐Construcción de casas ☐Educación y salud de la comunidad ☐Planificación de la reconstrucción ☐Dar apoyo psicológico ☐Otro …		
*¿Esta actividad ha sido exitosa?	☐ Muy exitosa ☐ Exitosa ☐ Justo exitosa ☐ No muy exitosa ☐ Fracasó totalmente	
¿Participaría usted de nuevo / o por primera vez en una actividad comunitaria para la recuperación del pueblo?	☐ Sí, con seguridad ☐ Probablemente sí ☐ Tal vez ☐ Probablemente no ☐ Seguramente no	
¿Era usted parte de un grupo de voluntarios (en el cual hacen trabajo para el beneficio del pueblo sin recibir ningún dinero a cambio) antes del terremoto?	☐ Si ☐ No	
¿Es usted parte de un grupo de voluntarios (en el cual hacen trabajo para el beneficio del pueblo sin recibir ningún dinero a cambio) ahora, después del terremoto?	☐ Si ☐ No	

PARTICIPACION, INFORMACION Y COMUNICACION

¿Tiene capacidad de influir en la toma de decisiones del proceso de recuperación después del terremoto?	☐ Totalmente capaz de influir en la toma de decisiones ☐ Relativamente capaz de influir en la toma de decisiones ☐ Ni capaz ni incapaz de influir en la toma de decisiones ☐ Relativamente incapaz de influir en la toma de decisiones ☐ Totalmente incapaz de influir en la toma de decisiones
¿Está usted dispuesto a participar en la toma de decisiones en el proceso de recuperación?	☐ Totalmente dispuesto a participar en la toma de decisiones ☐ Relativamente dispuesto a participar en la toma de decisiones ☐ Indiferente a participar en la toma de decisiones ☐ Relativamente no dispuesto a participar en la toma de decisiones ☐ Totalmente no dispuesto a participar en la toma de decisiones
¿Cuál es su principal fuente de información acerca de lo que el gobierno está haciendo en el proceso de recuperación del terremoto? ☐Familia y amigos ☐Vecinos ☐Tablero comunitario ☐Anuncio público ☐Televisión ☐Periódico nacional ☐Periódico local ☐Mercado local ☐Grupos y asociaciones locales ☐Dirigente comunitario ☐Internet (redes sociales) ☐Radio ☐Folletos ☐ONG ☐Otro (Especifique) _____	
En general, ¿cuál es su grado de información sobre lo que el gobierno está haciendo en el proceso de recuperación del terremoto?	☐ Muy bien informado ☐ Bien informado ☐ Moderadamente informado ☐ No bien informado ☐ Totalmente desinformado

CAPITAL SOCIAL VERTICAL

	¿En qué medida confió usted en… antes del terremoto?	**¿En qué medida confía usted en… ahora, después del terremoto?**
Presidente del barrio	☐Totalmente ☐Mucho ☐Algo ☐Un poco ☐Nada ☐No hay	☐ Confía más ☐Confía igual que antes ☐Confía menos que antes ☐No hay
Funcionarios del gobierno local	☐Totalmente ☐Mucho ☐Algo ☐Un poco ☐Nada ☐No hay	☐ Confía más ☐Confía igual que antes ☐Confía menos que antes ☐No hay
Funcionarios del gobierno nacional	☐Totalmente ☐Mucho ☐Algo ☐Un poco ☐Nada ☐No hay	☐ Confía más ☐Confía igual que antes ☐Confía menos que antes ☐No hay

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ONG	☐ Totalmente ☐ Mucho ☐ Algo ☐ Un poco ☐ Nada ☐ No hay	☐ Confía más ☐ Confía igual que antes ☐ Confía menos que antes ☐ No hay	

	¿En qué medida eran… accesibles antes del terremoto?	**¿En qué medida eran… accesibles durante el terremoto (hasta 2 semanas después del terremoto)?**	**¿En qué medida son… accesibles ahora (desde 2 semanas después del terremoto hasta hoy)?**
Presidente del barrio	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
Funcionarios del gobierno local	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
Funcionarios del gobierno nacional	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
ONG	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ De fácil acceso, les puedo pedir algo y me escuchan ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder y para que escuchen mis pedidos ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
Desde el terremoto en abril 2016, ¿cuántas veces se reunieron personas de este pueblo para conjuntamente presentar una petición a funcionarios del gobierno, para algo que beneficie a la comunidad del pueblo?			☐ Nunca ☐ 5-6 ☐ 1-2 ☐ >6 ☐ 3-4

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Expert survey English

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Expert survey about the 2016 Earthquake in Jama and Pedernales

This questionnaire is part of a project of the Universidad Andina Simon Bolívar in collaboration with the University of Zürich, Switzerland. The project analyses the recovery project after the earthquake that hit Ecuador in April 2016, especially the recovery process in Jama and Pedernales. The survey will take about 15 minutes. All data will be treated confidentially and discretely. We really appreciate your participation in this project.

1. Block 1: General information

DEMOGRAPHIC DATA

Survey Number:	Date:	Place, where survey is filled out:	Name and surname:
Function (specify):	☐ Military (degree) ☐ Police officer (degree) ☐ NGO (name and function) ☐ Academy (function) ☐ Authority of the DRM unit (degree and function) ☐ Other political authority (degree and function) ☐ Other (Specify): _____		
Gender: ☐ female ☐ male	Place of occupation:	Level of function ☐ Communal ☐ Cantonal ☐ Provincial ☐ National	

SATISFACTION AND STATUS OF RECVOERY

When looking at the damaged houses how satisfied are you with the recovery?	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied	
When looking at the mental health of the inhabitants of the village/ of Jama and Pedernales how satisfied are you with the recovery?	☐ Very dissatisfied ☐ Dissatisfied ☐ Indifferent ☐ Satisfied ☐ Very satisfied	
When looking at the village in general, which is the level of recovery of the village?	☐ Very bad ☐ Bad ☐ Indifferent ☐ Good ☐ Very good	
Who do you think has helped the people of the village / of Jama and Pedernales most in the recovery process after the 2016 earthquake) (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)	☐ Family ☐ Neighbours ☐ Cantonal government ☐ CBO ☐ Neighbourhood president	☐ Friends ☐ NGO ☐ National government ☐ Religious organisation ☐ Other (Specify)

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2. Block 2: Social capital

GROUPS AND NETWORKS

How many people of this village [Jama/Pedernales] are member of any formal group, organisation or association (listed below)?	☐0 -20% ☐21-40% ☐41-60 % ☐61-80% ☐81-100%

Which type of organisation is most represented in this village [Jama/ Pedernales] (select all)?

☐Working cooperation (Fisherman's group / Farmer's group etc.)	☐Religious group
☐Neighbourhood/Village association	☐Political group
☐Sports club	☐Youth group
☐Women's association	☐Cultural association
☐School committee	☐Health committee
☐National NGO	☐International NGO
☐Parent group	☐Other ....

Are there any groups, organisations or associations that were formed after the earthquake?	☐Yes* ☐No

*What type of organisation?

☐Working cooperation (Fisherman's group / Farmer's group etc.)	☐Religious group
☐Neighbourhood/Village association	☐Political group
☐Sports club	☐Youth group
☐Women's association	☐Cultural association
☐School committee	☐Health committee
☐National NGO	☐International NGO
☐Parent group	☐Other ....

Are there any groups, organisations or associations that helped in the recovery process of this village [Jama/ Pedernales]?	☐Yes* ☐No
*How many people received help from local organisations, (the ones listed above)?	☐0 -20% ☐21-40% ☐41-60 % ☐61-80% ☐81-100%
*Which organisations helped most? (Select between 1 and 3)?	
*How did they help?	☐Money or resources ☐Food ☐Reconstruction of housing ☐Shelter (temporary) ☐Advice ☐Medical help ☐Psychological help ☐Other ...
Are there any local groups, organisations or association that assisted you in recovery projects?	☐Yes* ☐No
*How many organisations?	☐1 ☐2-3 ☐4-6 ☐7-8 ☐>8
*How did they assist you?	☐Money or resources ☐Information about the community ☐Reconstruction of houses ☐Planning of the recovery ☐Medical or psychological help ☐Other (specify) ...

This part of the survey is concerned with networks to other people or institutions and how theses networks have changed during and after the earthquake. The term network includes giving and receiving assistance, materials and money, talking to each other and helping each other.

¿How do you think have the networks of the affected people changed after the earthquake?

... networks with **friends and family members?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker
... networks with **neighbours?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker
... networks with **religious organisations?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker
... networks with **NGOs?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker
... networks with **local council?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker
... networks with **national government?**			
☐Much stronger	☐Stronger	☐Same as before	☐Weaker ☐Much weaker

Who do you think did the affected people who have or are planning to borrow money ask for help (buying resources for the house reconstruction, buying furniture etc.)? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children)	☐Relatives or friends	☐Neighbours	☐Religious associations (e.g. church)
☐Other community association	☐Neighbourhood pres.	☐Local council	☐National government
☐NGO	☐Bank	☐Other (specify)...	

Who do you think did the affected people who have or are planning to ask for assistance in the recovery ask for help (construction of the house, information, how to build back better etc.)? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)

☐Close family (parents / children)	☐Relatives or friends	☐Neighbours	☐Religious associations (e.g. church)
☐Other community association	☐Neighbourhood pres.	☐Local council	☐National government
☐NGO	☐Institutions (e.g. school)	☐Other (specify)...	

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Who do you think did the affected people who have or are planning to ask for psychological assistance ask for help? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)			
☐ Close family (parents / children)	☐ Relatives or friends	☐ Neighbours	☐ Religious associations (e.g. church)
☐ Other community association	☐ Neighbourhood pres.	☐ Local council	☐ National government
☐ NGO	☐ Hospital	☐ Institutions (e.g. school)	
☐ Other (specify)...			
Who do you think did the affected people who have or are planning to ask for medical assistance ask for help? (Select the 3 most important, numbers 1 = first, 2 = second, 3 = third)			
☐ Close family (parents / children)	☐ Relatives or friends	☐ Neighbours	☐ Religious associations (e.g. church)
☐ Other community association	☐ Neighbourhood pres.	☐ Local council	☐ National government
☐ NGO	☐ Hospital	☐ Institutions (e.g. school)	
☐ Other (specify)...			

TRUST

	To what extend do you think did the people of this village [Pedernales / Jama] trust... before the earthquake?	**To what extend do you think do the people of this village [Pedernales / Jama] trust... now, after the earthquake?**
Their families	☐ Fully ☐ A lot ☐ Somewhat ☐ A little ☐ Not at all	☐ Trust more ☐ Trust equally as before ☐ Trust less
Their friends	☐ Fully ☐ A lot ☐ Somewhat ☐ A little ☐ Not at all	☐ Trust more ☐ Trust equally as before ☐ Trust less
Their neighbours	☐ Fully ☐ A lot ☐ Somewhat ☐ A little ☐ Not at all	☐ Trust more ☐ Trust equally as before ☐ Trust less
People in this village in general	☐ Fully ☐ A lot ☐ Somewhat ☐ A little ☐ Not at all	☐ Trust more ☐ Trust equally as before ☐ Trust less

NORMS

Do you think this village [Jama/ Pedernales] was safe from crime and violence **before** the earthquake?	☐ Very safe ☐ Moderately safe ☐ Neither safe nor unsafe ☐ Moderately unsafe ☐ Very unsafe	Do you think this village [Jama/ Pedernales] was safe from crime and violence **during** the earthquake (first 2 weeks)?	☐ Very safe ☐ Moderately safe ☐ Neither safe nor unsafe ☐ Moderately unsafe ☐ Very unsafe	Do you think this village [Jama/ Pedernales] was safe from crime and violence now, **after** the earthquake (after 2 weeks until now)?	☐ Very safe ☐ Moderately safe ☐ Neither safe nor unsafe ☐ Moderately unsafe ☐ Very unsafe
Before the earthquake: If a community project did not directly benefit a person but had benefits for many other in the village/neighbourhood, do you think the majority of the people would have contributed...?				☐ Time to it ☐ Money to it	☐ Both ☐ None
Now, after the earthquake: If a community project did not directly benefit a person but had benefits for many other in the village/neighbourhood, do you think the majority of the people would have contributed...?				☐ Time to it ☐ Money to it	☐ Both ☐ None
After the earthquake: Concerning damages, which led to problems that affected the entire village (such as drinking water, canalisation, defect roads) who worked together to deal with the situation? (select all)			☐ Each household individually ☐ Neighbours among themselves ☐ The entire neighbourhood ☐ The entire village ☐ No damage ☐ Other _____		

COLLECTIVE ACTION AND COOPERATION

Do you think that people of this village [Jama/ Pedernales] have participated in communal activities, in which people came together to do some work for the recovery of the community?	☐ Yes* ☐ No
What was the purpose of this activity? ☐ Political purpose ☐ Collecting money ☐ Repairing infrastructure ☐ Building houses ☐ Education & health of the community ☐ Planning of the reconstruction ☐ Giving psychological help ☐ Other ... ☐ Otro ...	
Do you think people of this village [Jama/ Pedernales] would participate again / for a first time in such a community activity to do some work for the recovery of the community?	☐ Yes, for sure ☐ Probably ☐ Maybe ☐ Probably not ☐ No
Since the earthquake, have any new voluntary groups evolved in this village [Jama/ Pedernales]?	☐ Yes ☐ No
How many people of this village [Jama/ Pedernales], do you think are member of a volunteer group?	☐ 0 -20% ☐ 21-40% ☐ 41-60 % ☐ 61-80% ☐ 81-100%

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PARTICIPATION, INFORMATION AND COMMUNICATION

To what extent do you think do people feel able to influence the decision-making of the recovery process?	☐ Totally able to influence the decision-making ☐ Mostly able to influence the decision-making ☐ Neither able nor unable ☐ Mostly unable to influence the decision-making ☐ Totally unable to influence the decision-making
To what extent do you think are people willing to participate in decision-making of the recovery process?	☐ Very willing to participate in the decision-making ☐ Moderately willing to participate in the decision-making ☐ Neither willing nor unwilling ☐ Moderately unwilling to participate in the decision-making ☐ Very unwilling to participate in the decision-making

What do you think are the main sources of information of people about what the government is doing concerning the recovery process?

☐ Family and friends	☐ neighbours	☐ Community bulletin board
☐ Public announcements	☐ Television	☐ National newspaper
☐ Local Newspaper	☐ Local market	☐ Local groups or associations
☐ Neighbourhood president	☐ Internet (social networks)	☐ Radio
☐ Leaflets	☐ NGOs	☐ Other (specify) ...

In general, how well would you say are the people of the village [Jama/ Pedernales] informed about what the government is doing in the recovery process?	☐ Very well informed ☐ Well informed ☐ Moderately well informed ☐ Not very well informed ☐ Not informed at all

VERTICAL SOCIAL CAPITAL

	How accessible do you think were ... for the people of the village [Jama/Pedernales] before the earthquake?	**How accessible do you think were ... for the people of the village [Jama/Pedernales] during the earthquake (until 2 weeks after the earthquake)?**	**How accessible do you think are ... for the people of the village [Jama/Pedernales] now, after the earthquake (from 2 weeks after the earthquake until today)?**
Neighbourhood presidents	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
Local government officials	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
National government officials	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
NGOs	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easy accessible, can talk to them and they listen ☐ Difficult to access but not impossible ☐ Very difficult to impossible to get heard by them ☐ Inexistent	☐ Easier accessible as before the earthquake ☐ Equally accessible as before the earthquake ☐ More difficult to find access than before the earthquake ☐ Inexistent
Desde el terremoto de abril 2016, ¿en ocasiones se juntaron personas de esta comunidad [Jama / Pedernales] para conjuntamente presentar una petición a funcionarios del gobierno, para solicitar bienes o servicios que beneficien a la comunidad?			☐ Never ☐ 5-6 ☐ 1-2 ☐ >6 ☐ 3-4

Expert survey Spanish

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Encuesta de expertos sobre el terremoto 2016 en Jama y Pedernales

Esta encuesta es parte de un proyecto de la Universidad Andina Simón Bolívar en colaboración con la Universidad de Zürich, Suiza. El proyecto analiza la reconstrucción después del terremoto del Abril 2016 en Ecuador, en especial la reconstrucción en Jama y Pedernales. La encuesta dura alrededor de 15 minutos. Toda la información será tratada de manera confidencial. Le agradecemos mucho su participación en este proyecto.

1. Parte 1: Información general

DATOS DEMOGRAFICOS

Número de la encuesta:	Fecha:	Lugar de la encuesta:	Nombre y apellido:
Función (especifique):	☐ Militar (Grado) ☐ Policía (Grado) ☐ ONG (Nombre y función) ☐ Academia (Función) ☐ Autoridad política unidad gestión de riesgo (Grado y función) ☐ Otra autoridad política (Grado y función) ☐ Otro (Especifique): _____		
1.3 Género: ☐ femenino ☐ masculino	Lugar de ocupación:	Nivel de función: ☐ Comunal ☐ Cantonal ☐ Provincial ☐ Nacional	

SASTISFACCION Y ESTADO DE LA RECUPERACION DESPUES DEL TERREMOTO

¿En relación a las casas dañadas, cuál es su grado de satisfacción respecto a la recuperación?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿En relación a la salud mental e la gente del pueblo / de Jama y Pedernales cuál es su grado de satisfacción respecto a la recuperación?	☐ Muy insatisfecho ☐ Insatisfecho ☐ Indiferente ☐ Satisfecho ☐ Muy satisfecho	
¿En relación al pueblo en general, cuál es el grado de recuperación del pueblo después del terremoto?	☐ Muy mal ☐ Mal ☐ Indiferente ☐ Bien ☐ Muy bien	
¿Quién piensa usted, le ha ayudado más a la gente del pueblo / de Jama y Pedernales en la recuperación después del terremoto en abril 2016? (Elige los 3 más importantes, 1= primero, 2= segundo, 3= tercero)	☐ Familiares ☐ Vecinos ☐ Gobierno local ☐ Organización civil ☐ Dirigente de la aldea	☐ Amigos ☐ ONG ☐ Gobierno nacional ☐ Asociación religiosa (e.g. iglesia) ☐ Otro (Especifique) _____

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2. Parte 2: Capital social

GRUPOS Y REDES

¿En su opinión cuántas personas de esta comunidad [Jama/ Pedernales] son parte de un grupo / una organización / asociación (listados a continuación)?	☐0 -20% ☐21-40% ☐41-60 % ☐61-80% ☐81-100%

Cuáles son las organizaciones mas representadas en esta comunidad [Jama/ Pedernales] (elige todos)?

☐Cooperación (Cooperación de pescadores / agricultores, etc.)	☐Grupo religioso
☐Asociación de vecinos / del pueblo	☐Grupo político
☐Grupo de deporte	☐Grupo de jóvenes
☐Asociación de mujeres	☐Asociación cultural
☐Comité escolar	☐Comité de salud
☐ONG nacional	☐ONG internacional
☐Grupo de padres	☐Otro ...

Hay organizaciones que se formaron después del terremoto?	☐Si* ☐No

*Qué tipo de organizaciones?

☐Cooperación (Cooperación de pescadores / agricultores, etc.)	☐Grupo religioso
☐Asociación de vecinos / del pueblo	☐Grupo político
☐Grupo de deporte	☐Grupo de jóvenes
☐Asociación de mujeres	☐Asociación cultural
☐Comité escolar	☐Comité de salud
☐ONG nacional	☐ONG internacional
☐Grupo de padres	☐Otro ...

Hay organizaciones que contribuyeron con la tarea de recuperación en esta comunidad [Jama/ Pedernales] después del terremoto?	☐Si* ☐No
*A cuántas personas ayudaron las organizaciones civiles (listados arriba)?	☐0 -20% ☐21-40% ☐41-60 % ☐61-80% ☐81-100%
*Qué organizaciones ayudaron en mayor grado? (Elige entre 1 y 3)?	
*En que les ayudaban?	☐Dinero o recursos ☐Comida ☐Reconstrucción de Casas ☐Refugio ☐Consejo ☐Ayuda médica ☐Ayuda psicológica ☐Otra...
Hay grupos que trabajan con usted en proyectos de recuperación?	☐Si* ☐No
*Cuántas organizaciones?	☐1 ☐2-3 ☐4-6 ☐7-8 ☐>8
*En qué forma colaboraron?	☐Dinero o recursos ☐Información sobre la comunidad ☐Reconstrucción de Casas ☐Planificación de la recuperación ☐Ayuda médica o psicológica ☐Otra (Especifique) ...

Esta parte de la encuesta se ocupa con las redes con otras personas o instituciones y como estas redes han cambiado durante el terremoto y después del terremoto. El termino redes incluye dar y recibir asistencia, recursos y dinero, comunicar y conversar, y ayudarse mutuamente.

¿Cómo piensa usted, que han cambiado los redes ... después el terremoto (primeras 2 semanas)?

... redes con **amigos y familia**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

... redes con **vecinos**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

... redes con **organizaciones religiosas**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

... redes con **ONG**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

... redes con el **gobierno local**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

... redes con el **gobierno nacional**

☐Mucho más fuerte ☐Más fuerte ☐Igual como antes ☐Más débil que antes ☐Mucho más débil que antes

¿En su opinión, a quiénes han hecho o harían los damnificados un préstamo para la recuperación del terremoto (comprar recursos para reconstruir la casa, comprar muebles etc.)? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)

☐Familia cercana (padres/hijos)	☐Familia o amigos	☐Vecinos	☐Asociación religiosa (ej. iglesia)
☐Otra asociación comunal	☐Dirigente de la aldea	☐Gobierno local	☐Gobierno nacional
☐ONG	☐Banco	☐Otro (Especifique) _____	

¿En su opinión, a quiénes han pedido o pedirían los damnificados asistencia/ayuda para la recuperación después del terremoto? (construcción de casas, información como construir mejor etc.) (Elija los 3 más importantes, 1= primero, 2= segundo

☐Familia cercana (padres/hijos)	☐Familia o amigos	☐Vecinos	☐Asociación religiosa (ej. iglesia)
☐Otra asociación comunal	☐Dirigente de la aldea	☐Gobierno local	☐Gobierno nacional
☐ONG	☐Instituciones (escuela por ejemplo)	☐Otro (Especifique) _____	

Laura Merki, 23.02.2017

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¿En su opinión, a quiénes han pedido o pedirían los damnificados asistencia/ayuda psicológica para recuperarse del terremoto? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)			
☐ Familia cercana (padres/hijos)	☐ Familia o amigos	☐ Vecinos	☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal	☐ Dirigente de la aldea	☐ Gobierno local	☐ Gobierno nacional
☐ ONG	☐ Hospital	☐ Instituciones (escuela por ejemplo)	
☐ Otro (Especifique) _____			
¿En su opinión, a quiénes han pedido o pedirían los damnificados asistencia medica para recuperarse del terremoto? (Elija los 3 más importantes, 1= primero, 2= segundo, 3= tercero)			
☐ Familia cercana (padres/hijos)	☐ Familia o amigos	☐ Vecinos	☐ Asociación religiosa (ej. iglesia)
☐ Otra asociación comunal	☐ Dirigente de la aldea	☐ Gobierno local	☐ Gobierno nacional
☐ ONG	☐ Banco	☐ Otro…	

CONFIANZA (Hablar de cosas privadas, contar con esta persona en caso de necesidad)

	¿En su opinión en que medida confió la gente de esta comunidad [de Pedernales / Jama] en… antes del terremoto?			**¿En su opinión en que medida confía la gente de esta comunidad [de Pedernales / Jama] en … ahora, después del terremoto?**	
En sus familiares	☐ Totalmente ☐ Un poco	☐ Mucho ☐ Nada	☐ Algo	☐ Confía más que antes ☐ Confía menos que antes	☐ Confía igual como antes
En sus amigos	☐ Totalmente ☐ Un poco	☐ Mucho ☐ Nada	☐ Algo	☐ Confía más que antes ☐ Confía menos que antes	☐ Confía igual como antes
En sus vecinos	☐ Totalmente ☐ Un poco	☐ Mucho ☐ Nada	☐ Algo	☐ Confía más que antes ☐ Confía menos que antes	☐ Confía igual como antes
En personas de este pueblo en general	☐ Totalmente ☐ Un poco	☐ Mucho ☐ Nada	☐ Algo	☐ Confía más que antes ☐ Confía menos que antes	☐ Confía igual como antes

NORMAS

¿Piensa usted que esta comunidad [Jama/ Pedernales] era segura respecto al crimen y la violencia **antes** del terremoto?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Piensa usted que esta comunidad [Jama/ Pedernales] era segura respecto al crimen y la violencia **durante el** terremoto (primeras 2 semanas)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro	¿Piensa usted que esta comunidad [Jama /Pedernales] es segura respecto al crimen y la violencia **después** del terremoto (desde las primeras 2 semanas hasta hoy)?	☐ Muy seguro ☐ Moderadamente seguro ☐ Ni seguro ni inseguro ☐ Moderadamente inseguro ☐ Muy inseguro

Antes del terremoto: ¿Si un proyecto no tenía directamente beneficio para una persona, pero tenía beneficios para la comunidad, la mayoría de la gente habría colaborado?	☐ Tiempo ☐ Dinero	☐ Los dos ☐ Ninguno
Ahora, después terremoto: ¿Si un proyecto no tiene directamente beneficio para una persona, pero tiene beneficios para la comunidad, la mayoría de la gente habría colaborado?	☐ Tiempo ☐ Dinero	☐ Los dos ☐ Ninguno
Después del terremoto: Respecto del daño, que generó problemas que afectaron todo el pueblo (como agua potable, canalización, calles dañadas), ¿quiénes trabajaron juntos para hacer frente a la situación? (Elija todas las respuestas que apliquen).	☐ Cada hogar individualmente ☐ Vecinos entre ellos ☐ Todo el barrio juntos ☐ Todo el pueblo juntos ☐ No había daños ☐ Otros _____	

ACCION COLECTIVA Y COOPERACION

¿En su opinión, desde el terremoto de abril 2016 participaron las personas de esta comunidad [Jama/ Pedernales] en alguna actividad comunal, en la cual personas se juntaron para hacer trabajos de recuperación para el pueblo?	☐ Si* ☐ No
*¿Cuál era el propósito de estas actividades? ☐ Propósito político ☐ Recolectar dinero ☐ Reparación de infraestructura ☐ Construcción de casas ☐ Educación y salud de la comunidad ☐ Planificación de la reconstrucción ☐ Dar apoyo psicológico ☐ Otro …	
¿En su opinión, las personas de esta comunidad [Jama/ Pedernales] participarían en una actividad comunitaria para la recuperación del pueblo?	☐ Sí, con seguridad ☐ Probablemente sí ☐ Tal vez ☐ Probablemente no ☐ Seguramente no
¿Se formaron nuevos grupos de voluntarios con habitantes de esta comunidad [Jama/ Pedernales] desde el terremoto?	☐ Si ☐ No
¿Cuántas personas de esta comunidad [Jama/ Pedernales], piensa usted que son partes de un grupo de voluntarios?	☐ 0 -20% ☐ 21-40% ☐ 41-60 % ☐ 61-80% ☐ 81-100%

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PARTICIPACION, INFORMACION Y COMUNICACION

¿En su opinión, la gente tiene la capacidad de participar en la recuperación del terremoto y tiene la capacidad de influir en la toma de decisiones del proceso de recuperación después del terremoto?	☐ Totalmente capaz de influir en la toma de decisiones ☐ Relativamente capaz de influir en la toma de decisiones ☐ Ni capaz ni incapaz de influir en la toma de decisiones ☐ Relativamente incapaz de influir en la toma de decisiones ☐ Totalmente incapaz de influir en la toma de decisiones
¿En su opinión, la gente está dispuesta a participar y colaborar en la recuperación del terremoto y en la toma de decisiones en el proceso de recuperación?	☐ Totalmente dispuesto a participar en la toma de decisiones ☐ Relativamente dispuesto a participar en la toma de decisiones ☐ Indiferente a participar en la toma de decisiones ☐ Relativamente no dispuesto a participar en la toma de decisiones ☐ Totalmente no dispuesto a participar en la toma de decisiones

¿En su opinión, cuál es la principal fuente de información acerca de lo que el gobierno está haciendo en el proceso de recuperación del terremoto?

☐ Familia y amigos	☐ Vecinos	☐ Tablero comunitario
☐ Anuncio público	☐ Televisión	☐ Periódico nacional
☐ Periódico local	☐ Mercado local	☐ Grupos y asociaciones locales
☐ Dirigente comunitario	☐ Internet (redes sociales)	☐ Radio
☐ Folletos	☐ ONG	☐ Otro (Especifique) _____

En general, ¿piensa usted que la gente está bien informada sobre lo que el gobierno está haciendo en el proceso de recuperación del terremoto?	☐ Muy bien informado ☐ Bien informado ☐ Moderadamente informado ☐ No bien informado ☐ Totalmente desinformado

CAPITAL SOCIAL VERTICAL

	¿En su opinión, la gente de la comunidad [Jama/Pedernales] pudo acceder fácilmente a ... antes del terremoto?	**¿En su opinión, la gente de la comunidad [Jama/Pedernales] pudo acceder fácilmente a ... durante el terremoto (hasta 2 semanas después del terremoto)?**	**¿En su opinión, la gente de la comunidad [Jama/Pedernales] pudo acceder fácilmente a ... ahora (desde 2 semanas después del terremoto hasta hoy)?**
Presidente del barrio	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
Funcionarios del gobierno local	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
Funcionarios del gobierno nacional	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay
ONG	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ De fácil acceso ☐ Difícil acceso pero posible de pedirles algo ☐ Muy difícil a imposible de acceder ☐ No hay	☐ Más fácil de acceder que antes del terremoto ☐ Igual de accesible que antes del terremoto ☐ Mas difícil de acceder que antes del terremoto ☐ No hay

Desde el terremoto de abril 2016, ¿en ocasiones se juntaron personas de esta comunidad [Jama / Pedernales] para conjuntamente presentar una petición a funcionarios del gobierno, para solicitar bienes o servicios que beneficien a la comunidad?	☐ Nunca ☐ 5-6 ☐ 1-2 ☐ >6 ☐ 3-4

Laura Merki, 23.02.2017 4

Annex B: Results from SPSS

Data distribution between cantons

Demographic and regional variables

Table 15: Data distribution shown for each canton in percent

Key characteristics	Pedernales (n=100)	Jama (n=103)
Camp		
Yes	27	35
No	73	65
Urban / Rural		
Urban	50	30,1
Rural	50	69,9
Sex		
Male	39	37,9
Female	61	62,1
Age		
0-15	0	1,9
16-20	7	10,7
21-30	22	21,4
31-40	22	11,7
41-50	25	21,4
51-65	19	23,3
>65	5	9,7
Education		
None	14	12,6
Primary	35	50,5
Secondary	37	33
University	14	3,9
Income class (in US$/month)		
0-100	11	25,2
101-200	15	31,1
201-375	26	18,4
376-500	23	16,5
501-1000	17	5,8
1000-2000	5	1,9
>2000	3	0

Median of Satisfaction

Table 16: Median of damage shown for each canton (1=Not affected at all, 2=A little, 3=Somewhat, 4=High, 5= Very high)

	Pedernales (n=100)	**Jama (n=103)**
House	5	4
Furniture	3.5	4
Basic services	3	4
Infrastructure	4	4
Mental health	3.5	3
Physical health	1	1

Changes in social capital after the earthquake

Changes in networks

Table 17: Changes in respective networks expressed through median and mean

	Median	Mean
Family and friends	3 (same as before)	2.5 (rather stronger)
Neighbours	3 (same as before)	2.7 (a little bit stronger)
Religious organizations	3 (same as before)	2.88 (rather the same)
NGOs	3 (same as before)	2.9 (rather the same)
Local council	4 (weaker than before)	3.7 (weaker)
National government	3 (same as before)	3.15 rather the same)

Changes in horizontal trust

Table 18: Changes in Horizontal trust, expressed through median and mean

	Median	Mean
Family	2 (same as before)	1.72 (a bit more)
Friends	2 (same as before)	1.91 (rather the same)
Neighbours	2 (same as before)	2.00 (exactly the same)
People of the neighbourhood	2 (same as before)	2.04 (rather the same)
People of the village	2 (same as before)	2.04 (rather the same)

Changes in vertical trust

Table 19: Changes in Vertical trust, expressed through median and mean

	Median	Mean
Neighbourhood president	2 (same as before)	2.04 (rather the same)
Local council	2 (same as before)	2.45 (weaker)
National government	2 (same as before)	2.13 (a little bit weaker)
NGOs	2 (same as before)	1.79 (a little bit stronger)

Differences in expert surveys and household surveys

Table 20: Differences in expert and household surveys (Man-Whitney-U-Test) (NP=Neighbourhood president; LC=Local council, NG=National government)

		P-Value	Median (Mean) Experts	Median (Mean) HH	Description
Satisfaction with recovery dimensions	House	0.321	3	2	
	Mental health	0.000 ***	3	4	Rated better by households (3= indifferent, 4=satisfied)
	Village	0.000 ***	4	3	Rated better by experts (3= indifferent, 4=satisfied)
Change in Networks	F&F	0.201	2	3	
	Neighb.	0.051	2	3	
	Rel. org.	0.001 **	2.5	3	Rated stronger by experts (2=stronger, 3= same as before)
	NGO	0.000 ***	2	3	Rated stronger by experts (2=stronger, 3= same as before)
	Local c.	0.000 ***	3	4	Rated stronger by experts (3= same as before, 4 = weaker than before)
	Nat. gov.	0.000 ***	2	3	Rated stronger by experts (2=stronger, 3= same as before)
Trust	Family	0.001 **	2	1	Rated stronger by households (1=totally, 2= a lot)
	Friends	0.426	3	2	
	Neighb.	0.527	3	3	
	Village p.	0.000 ***	3	4	Rated stronger by experts (3=somewhat, 4= a little)
Security	Before	0.023 *	3	2	Rated better by households than by experts (2=moderately safe, 3=whether safe nor unsafe)
	During	0.220	3	3	
	After	0.490	3	2	
Participation		0.816	1	1	
Information		0.036 *	3 (3.179)	3 (2.759)	Rated better by households (2=good informed; 3=moderately well informed; 4= not well informed)

Access (recoded: 4=not filled in)	NP *Before*	0.000 ***	1.5	2	Rated better by experts (2=difficult to access but possible; 3=almost impossible to access)
	NP. *After*	0.000 ***	2 (1.716)	2 (2.084)	Rated better by experts than by households (1=easier to access; 2=Equally accessible as before)
	LC *Before*	0.000 ***	2	3	Rated better by experts than by households (2=difficult to access but possible; 3=almost impossible to access)
	LC *After*	0.000 ***	2	3	Rated better by experts (2=Equally accessible as before; 3=More difficult to access)
	NG *Before*	0.000 ***	2	3	Rated better by experts (2=difficult to access but possible; 3=almost impossible to access)
	NG *After*	0.000 ***	2 (1.784)	2 (2.254)	Rated better by experts than by households (1=easy access; 2=difficult to access but possible)
	NGO *Before*	0.001 **	1	2	Rated better by experts than by households (1=easy access; 2=difficult to access but possible)
	NGO *After*	0.000 ***	1	2	Rated better by experts than by households (1=easy access; 2=difficult to access but possible)

Annex C: Data aggregation

Social capital classes

Table 21: Social capital classes, showing the topics and questions aggregated into one class and the methods used

New Variable	Topic	Questions	Methods used
SC 1	Number of relations	About how many close friends did you have before the earthquake? People you feel at ease with, can talk about private matters or call on for help (No relatives).	• *Scale transformation* • *Sum*
		About how many close friends do you have now, after the earthquake? People you feel at ease with, can talk about private matters or call on for help (No relatives).	
	Number of reunions	Since the earthquake in April 2016, how many times have you gotten together with people of the village (to eat, talk, dance etc.)?	
	Trust	To what extend did you trust your relatives before the earthquake?	
		To what extend did you trust your friends before the earthquake?	
		To what extend did you trust your neighbours before the earthquake?	
SC 2	Trust	To what extend did you trust people in your neighbourhood before the earthquake?	• *Scale transformation* • *Weighted sum: Questions about mutuality were double counted*
		To what extend did you trust people in this village before the earthquake?	
	Security	In general, how safe from crime and violence did you feel when you were alone at home before the earthquake?	
		In general, how safe from crime and violence did you feel when you were alone in the street before the earthquake?	
	Mutuality	Before the earthquake: If a community project did not directly benefit you but has benefits for many other in the village/neighbourhood, would you have contributed money or time to it?	
		Would you participate again / for a first time in such a community activity to do some work for the recovery of the community?	
SC 3	Organisations	Are you member of any formal group, organisation or association?	• *Scale transformation* • *Sum*
		What role do you have in this organisation?	
		Has this organisation helped you in the earthquake recovery?	
SC 4	Trust	How much did you trust your neighbourhood president before the earthquake?	• *Scale transformation* • *Weighted sum:*
		How much did you trust the local council before the earthquake?	

		How much did you trust the national government before the earthquake?	*Questions about access were double counted*
		How much did you trust NGOs before the earthquake?	
	Access	How accessible was the neighbourhood president before the earthquake?	
		How accessible was the local council before the earthquake?	
		How accessible was the national government before the earthquake?	
		How accessible were NGOs before the earthquake?	
SC 5	Collective action	Since the earthquake has happened in April 2016 have you participated in any communal activities, in which people came together to do some work for the recovery of the community?	• *Scale transformation* • *Weighted sum: Participation in community activity double counted*
		How many activities?	
		Was it successful?	
		Since the earthquake in April 2016, how many times have people in this village got together to jointly petition government officials or political leaders for something benefiting the community?	
	Participation	Are you able to influence the decision-making of the recovery process?	
		Are you willing to participate in decision-making of the recovery process?	

Calculations

Table 22: Scale that variables were transformed to in the respective classes an calculation used to form classes

Class	Scale		Calculation
SC 1	1-6		No. friends + No. relations + No. reunions + Trust family + Trust friends + Trust neighbours
SC 2	1-5		Trust neighbourhood + Trust village + Security at home + Security in the streets + (2* Willingness to contribute) + (2* Willingness to participate)
SC 3	Part of org	Yes: 0 No: 30	Part of organisation + Function + Org. helped in recovery
	Function:	1-5 (0 for people that are not part of an org.)	
	Org. helped:	1-5 (0 for people that are not part of an org.)	
SC 4	1-5		Trust N. president + Trust local council + Trust national gov. + Trust NGO + (2* Access N. president) + (2* Access local council) + (2* Access national gov.) + (2* Access NGO)
SC 5	The *variables Participation in community activity?/How many?/Exit?* were aggregated to the variable *Participation in community activity*, as they belong together. All variables have a scale of 1-5.		(2* Participation in community activity) + Political activity + ability to participate + willingness to participate

Personal declaration

I herby declare that the submitted thesis is the result of my own, independent work. All external sources are explicitly acknowledged in the thesis.

Place, Date: …….

Signature: ……....