

University of Groningen

The role of local communities in a global risk landscape

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DOI:
[10.33612/diss.131472776](https://doi.org/10.33612/diss.131472776)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Imperiale, A. J. (2020). *The role of local communities in a global risk landscape: Using Social Impact Assessment to understand, recognise, engage and empower community resilience in vulnerable regions*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.131472776>

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Chapter 1

Introduction to the PhD thesis



Introduction to the PhD thesis

Building resilience in a global risk landscape

Over the last 20 years, 4.5 billion people have been directly impacted by natural hazards, and over 2.5 million people were killed by the negative consequences of disasters (Wallemacq and House, 2018). Floods and droughts affected the largest number of people (3.5 billion). However, earthquakes, representing only 3% of the total number of natural hazards that have occurred, had the most fatalities (747,234). The average number of disasters has increased from 165 per year (for the period 1978-1997) to over 329 per year (for the period 1998-2017), in other words, almost one per day. Climate-related disasters are a prominent and increasing component of these disasters. Over 90% of all disruptive events between 1998 and 2017 were climate related disasters (Wallemacq and House, 2018).

In a recent interview to *The Guardian*, the United Nations Secretary-General's Special Representative on Disaster Risk Reduction, Mami Mizutori, declared that climate-related disasters are occurring much faster than predicted (Harvey, 2019). Recent reports have described the dramatic effects of climate change all around the globe, including: abnormal weather events such as extreme heat and droughts (e.g. IPCC, 2018); loss of biodiversity (e.g. IPBES, 2019; IPCC, 2019); rising sea level (e.g. Church et al., 2013); negative impacts on human health (e.g. Mora et al., 2017; EASAC, 2019); and climate-induced displacement and migration (e.g. IOM, 2008; Rigaud et al., 2018). All this comprises the global climate crisis (Pelling, 2011; Pelling et al., 2015; IPCC, 2015, 2018, 2019; IPBES, 2019; UNDRR, 2019), which, together with other global stressors (e.g. globalization and financial crises, resource scarcity, and demographic pressure), constitutes the *global risk landscape* (WEF, 2018). The human cost of this global risk landscape is dramatic and "is there for all of us to see in the alarming numbers of people who are now internally displaced every year by disasters, often losing their homes and their livelihoods, in extreme weather events and earthquakes" (Wallemacq and House, 2018, p.1).

When the environmental, macroeconomic, technological, geo-political and societal risks comprising this global risk landscape turn into disasters, they create devastating impacts on local communities, their wellbeing, and on where they live, especially for the most vulnerable people (WB, 2017, 2018; Wallemacq and House, 2018; IPBES, 2019; UNDRR, 2019). Local communities are the societal arenas where crises and disasters are perceived and experienced in all their disruptive consequences, where the negative impacts must be mitigated, and where the risks of the negative consequences of future disasters must be reduced. Local vulnerability negatively influences the likelihood, extent, and intensity of crises and disaster risks and impacts, while local capacity can contribute to the enhancement of wellbeing, disaster risk reduction (DRR) and resilience, both at the local community level and other levels of society. Local vulnerabilities are negatively influenced by social risks (e.g. rent-seeking, elite capture, organized crime infiltration, disaster capitalism, corruption, inequity, social exclusion, poverty), which are the local 'root causes of disasters' (Oliver-Smith, et al. 2017). Social risks arise from the local history of development processes and associated social changes and impacts, and affect the multiple dimensions of community wellbeing. They negatively influence local vulnerabilities, exacerbating lack of capacity and hazard exposure, and the extent, intensity, and frequency of disaster risks and impacts. Conversely, local community resilience is the agency (i.e. the set of cognitive and interactional processes) that enables members of affected communities to collectively learn from crises and disasters, and transform towards reducing local vulnerabilities, social risks and associated disaster risks and impacts, and enhancing DRR, community wellbeing and local people's capacities.

Depending on how planned interventions are conceived, decided, designed, and implemented, they may reinforce both positive and negative trends within affected local communities. They can worsen local social risks and vulnerabilities, thus exacerbating disaster risks and impacts; or they can enhance local people's capacities to learn and transform, thus building resilience at the local community level and at other levels of society. Recognition of the role that local communities – with their negative and positive trends and their vulnerabilities, capacities, and resilience (i.e. capacity to learn and transform) – play in a global risk landscape has led, more than 30 years ago, to the United Nations (UN) establishing a DRR and resilience paradigm that should be the basis of every planned intervention, both before and after disasters. This paradigm advocates for genuine local community engagement and empowerment, and for community-based strategies to reduce local vulnerability, the root causes of disasters, and associated disaster risks and impacts, and for strategies to strengthen resilience at all levels of society (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005, 2015). This paradigm also advocates for considering crises and disasters, and any disaster management or development intervention, as windows of opportunity to learn and transform and 'build back better', not only housing and infrastructure, but also, and more importantly, more resilient, and sustainable societies (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005; 2015). The adoption of *Transforming Our World: The 2030 Agenda for Sustainable Development* reaffirmed the urgent need to build the resilience of local communities, especially the most vulnerable. Resilience is embedded in a wide range of sustainable development goals (SDGs) and targets, and is considered, together with DRR, as being a cross-cutting issue, which will impact progress towards the achievement of the SDGs (UN, 2015; UNECOSOC, 2018).

In social-ecological systems (SES) and sustainable natural resource management (NRM) theories and approaches, resilience is the adaptive and transformative capacity of systems, especially social systems, to learn and transform following a disturbance (e.g. Carpenter and Gunderson, 2001; Berkes et al., 2003; Folkes, 2006; Pahl-Wostl, 2006, 2007; Pahl-Wostl et al., 2008). A disturbance, such as a crisis or a disaster, represents a window of opportunity for social actors to learn and transform, bringing about innovative changes that can improve SES management and resilience in the future (Carpenter and Gunderson, 2001; Berkes et al., 2003; Folkes, 2006; Pahl-Wostl, 2006; Cole and Nightingale, 2012; Berkes and Ross, 2013, 2016). In such a global risk landscape, understanding how to build resilience in social systems means understanding how people individually and collectively learn from crises and disasters to transform within their communities and institutions – at multiple levels of social organization – towards reducing the risks and impacts created by a disturbance, and enhancing community wellbeing and the sustainability of the local people's living environment. However, in the SES and NRM literature, and in disaster management and development theory and practice, still little is said about the agency of, and constraints to enhancing social learning and transformation and building resilience at all levels of society in times of crises and disasters. In social systems, a disturbance refers to any natural or human event (e.g. crises, disasters, unwanted changes, planned interventions) that creates negative risks and/or impacts threatening the multiple dimensions of local community wellbeing, and changing local people's perceptions and daily experiences.

Social Impact Assessment (SIA) is a field of research and practice (Vanclay, 2003; Esteves et al., 2012; Vanclay et al., 2015), which is aligned with sustainable development studies (Aucamp and Lombard, 2019) and relates to the processes of: (i) reducing the negative risks and impacts created on local community wellbeing by disturbances (i.e. *mitigation*); (ii) monitoring the mitigation measures implemented to ensure the effectiveness, maintenance, and sustainability of such activities (i.e. *monitoring*); (iii) enhancing the benefits for local people that may derive from disturbances and the mitigation strategies adopted (i.e. *enhancement*). Because SIA includes the processes of identifying, analysing and managing the intended and unintended negative (and positive) impacts on local community wellbeing that derive from disturbances (Vanclay, 2003; Vanclay et al. 2015), SIA has great potential to contribute to enhancing local community capacities to learn and transform from the negative risks and impacts created by such

disturbances, and to building resilience at all levels of society. Recent advances in disaster studies emphasize the need for SIA to accompany post-disaster interventions, especially post-disaster reconstruction and re-development (Benson and Twigg, 2007; Jah et al., 2010), in order to “understand the social and economic context, incorporate the perspectives and interests of those whom the project is intended to assist, anticipate the project’s social impacts (both positive and negative), and prepare to mitigate them, when necessary” (Jah et al., 2010, p.74). The Sendai Framework advocates the need for applying “economic, social, structural, technological and environmental impact assessments” in any post-disaster and development intervention both before and after disasters (UNISDR, 2015 p.19). However, although for more than 30 years the United Nations have advocated for enhancing DRR and resilience in any planned intervention, and although international guidelines recommend that all countries apply SIA to better integrate DRR and resilience, SIA is rarely used in planning disaster management and development interventions.

Structural failures in the way such interventions are carried out keep occurring everywhere, in both high, and low-income countries around the world (Bates, 1982; Oliver-Smith, 1990; 2000; 2002; Cutter et al., 2006; Elliot and Pais, 2006; Button and Oliver-Smith, 2008; Schuller and Maldonado, 2016; Harvey, 2017). Although SIA has made advances in the conceptualisation of social changes and impacts (Slootweg et al., 2001; Vanclay, 2002), it still lacks of a coherent conceptualisation of local vulnerabilities and social risks (e.g. rent-seeking, elite capture, inequity, social exclusion, organised crime infiltration, disaster capitalism and corruption) associated with planned interventions. Social development outcomes (DRR and resilience), community social processes, and the cognitive and interactional capacities of *social learning* and *transformation* (i.e. resilience) at all levels of society are largely not yet conceptualised by SIA. Despite evolutionary progress in thinking (Vanclay, 2014, 2019), SIA has been little deployed in disaster management and development practice. It keeps being considered only as a sub-field of environmental impact assessment (EIA), resulting in its being a mere add-on to pre-determined projects, and ingrained within the institutional environmental licensing procedures and arrangements, or top-down social protection measures (O’Faircheallaigh, 2009; Suopajarvi, 2013; Aucamp and Lombard, 2018). This undermines the potential of SIA to co-produce transformative knowledge with affected local communities, and to influence the conception, decision, design and implementation of planned interventions in order to enhance social learning and transformation, and build resilience before and after disasters.

The primary aim of this PhD was to enlarge the theoretical and practical domain of SIA, especially to better conceptualize the cognitive and interactional dimensions of local community resilience, and to consider how to build resilience at all levels of society. Achieving this would increase understanding of the social processes (i.e. individual and collective agency) that enable social learning and transformation at the local community level, and that make external actors capable of engaging and strengthening these processes at all levels of society. In the research for this PhD, an innovative SIA model was developed, *the SIA Framework for Action*. This model turns SIA into a process that is addressed to co-produce transformative knowledge with affected local communities in order to enhance social learning and transformation and build resilience at the local community level and at other levels of society, in any planned intervention before and after disasters. This PhD thesis also provides an opportunity to reflect on the main scientific, institutional, and socio-cultural constraints in the 4 Key Priority Areas recommended by the United Nations that still hamper disaster management and development practice to build resilience and meet the 2030 Agenda. This research was conducted by undertaking a detailed analysis of the 6 April 2009 earthquake in L’Aquila, Italy, and of the disaster management and development activities conducted by the national and local authorities both before and after the disaster. The 6.3 Mw earthquake damaged more than 35,000 buildings. In this earthquake, 309 people died, some 1,600 people were injured, and more than 70,000 people were rendered homeless.

Understanding resilience in disaster management and development planning: What is the problem?

Although the resilience construct has many definitions and a long history across multiple scientific disciplines (Adger, 2000; Davidson, 2010; Alexander, 2013a; Berkes and Ross, 2013, 2016; Brown, 2014), strengthening resilience of local communities was advocated by the United Nations for the first time in the Yokohama strategy (IDNDR, 1994, p.9), where it was stated that: “there is a strong need to strengthen the resilience and self-confidence of local communities to cope with natural disasters through recognition and propagation of their traditional knowledge, practices and values as part of development activities”. The rapid rise of the resilience construct in disaster and sustainable development studies was triggered by the adoption of the Hyogo Framework for Action 2005–2015 (HFA) at the World Conference on Disaster Reduction held in Kobe (Hyogo Prefecture, Japan) in January 2005. The subtitle of the HFA was: ‘Building the Resilience of Nations and Communities to Disasters’. The HFA placed ‘enhancing community resilience’ as the core objective of every phase of disaster management and sustainable development. For more than 30 years, various international declarations (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005, 2015) have contributed to the evolution of a DRR and resilience paradigm that should be the basis of any post-disaster and development intervention in all countries. The DRR and resilience paradigm advocates building community resilience and supporting local communities to reduce local vulnerabilities and enhance local wellbeing and capacities to better manage disaster risks and impacts before and after disasters.

The United Nations (UN, 2016, GA 71/276, p.22) define resilience as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management”. The increasing number of disasters and economic and social crises that destabilize vulnerable areas has resulted in the concept of resilience gaining currency in the discourses of regional development (OECD, 2011, 2013; McManus et al., 2012; Scott, 2013; Schouten et al., 2013), disaster risk reduction (Tobin, 1999; Paton and Johnston, 2001; Adger et al., 2005; Norris et al., 2008; Brown and Westaway, 2011), and climate change adaptation (Pelling, 2011; Khailani and Perera, 2013; Arnold et al., 2014; Dale et al., 2015; Pelling et al., 2015). Policy discourses around the world also reflect this trend (e.g. UNISDR, 2005, 2007; 2015b; Mitchell, 2013; GFDRR, 2014; EC, 2013, 2014; WB and GFDRR, 2015). More recently, the *Sendai Framework for Disaster Risk Reduction 2015-2030* (UNISDR, 2015) further emphasised the need for “investing in the economic, social, health, cultural and educational resilience of persons, communities and countries and the environment” (UNISDR, 2015, p.11).

The 2030 Agenda explicitly mentions resilience in a variety of sustainable development goals and targets, such as SDG1, whose aim is to end poverty in all its forms everywhere, and, more specifically, Target 1.5, which represents the core resilience target, advocating for building “the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disaster” (UN, GA, A/RES/70/1, p.15). Building sustainable and resilient societies is currently understood as a “multidimensional challenge and a cross-cutting issue that will impact progress towards the SDGs and the achievement of the 2030 Agenda for Sustainable Development”, and it is “central to eliminating poverty, augmenting shared prosperity and leaving no one behind” (UNECOSOC, 2018, p.1). Overall, the 2030 Agenda, together with the Addis Ababa Action Agenda, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction 2015-2030, and the New Urban Agenda, are intended to represent a solid base for the formulation of national and local resilience strategies (UNECOSOC, 2018).

The problem is, however, how do people *adapt* and *transform* in times of crises and disasters to enhance DRR, wellbeing and resilience? As stated by Gall et al. (2014a, p.4), “disasters are signs of failures, failures of preparedness, response, and recovery. Most often, however, disasters are failures of long-term development and risk reduction planning”. In this sense, understanding resilience as the ability to reduce the risks and impacts of crises and disasters at the local level requires much more than understanding the capacity of social systems to adapt. It is hard to say that societies must ‘adapt’ to the failures that contribute to making the disaster happen at the local level. If not considered carefully, adaptation can represent a new form of social determinism that ignores the importance of reducing the root causes of disaster, and may result in a downward spiral of vulnerability and disaster risk exacerbation (O’Brien, 2012). In such a global risk landscape, *learning* from the negative impacts of crises and disasters and from the past failures of disaster management and development interventions, is crucial for external actors and local communities to *transform* towards more effective reduction of local vulnerabilities and the root causes of disaster, and to building resilience at all levels of society, during the conception, design and implementation of any disaster management, or development intervention (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005, 2015).

Although a wide range of national and international policies increasingly advocate for building resilience as a key strategy to achieve the SDGs and meet the expectations of the Sendai Framework and Paris Agreement (Twigg and Calderone, 2019), at a theoretical level the concept is still vague and ill-defined (Gaillard, 2010; Manyena, 2014; Matyas and Pelling, 2015). It is still not clear what resilience means in social terms “beyond the simple assumption that it is good to be resilient” (Davoudi, 2012, p.299). Many articulations of resilience inadequately address its social dimensions, and even progressive interpretations (e.g. ‘bouncing forward’) are often little more than clichés (O’Hare and White, 2013; McEvoy et al., 2013). The many international policy recommendations and government and non-government reports, providing ready-made, off-the-shelf toolkits (Davoudi, 2012) describe resilience in social terms vaguely as a ‘set of capacities’ or as ‘the ability’ of society to cope with the impacts of a disaster or crisis (UNISDR and UNDP, 2007; Mitchel, 2013; OECD, 2013). However, what this ‘ability’ is in social systems, and how to strengthen it, is still under-theorised (Berkes and Ross, 2013, 2016).

Current understandings of resilience are generally too weak to provide planning practice with the tools and methodologies needed to engage and strengthen the agency of people in resilient communities (Mitchell, 2013). Too often, resilience is understood only in mere engineering or economic terms as the resistance of physical systems (e.g. concrete buildings, dams or other infrastructure) to external shocks (e.g. earthquakes, floods, etc), or as the economic capacity of individuals, companies, organizations, regions, and entire industry sectors to cope with the negative economic impacts of disasters. Too often, ‘building community resilience’ is understood only as implementing financial programs, public tenders, post-disaster short-term loans, or insurance arrangements addressed to assist individuals economically. More recently, various attempts have tried to analyse resilience at the country level by measuring indicators other than income, economic assets and infrastructure, such as the ability to consume (Hallegatte, 2017, 2018), or more sophisticated indicators and variables (Cutter et al., 2008). However, resilience in society is much more than all of this. Understanding resilience in society only in terms of assets and capacities (e.g. Tobin, 1999; Pfefferbaum et al., 2007; Norris et al., 2008), or outcomes (Cutter et al., 2008; Forjaz et al., 2011; Armitage et al., 2012, McCrea et al., 2014, 2016) is inadequate.

The challenge in fully understanding the resilience construct is that it is a *process* (i.e. social learning and transformation) rather than as a set of pre-conditions for such a process to come into action, or as a set of outcomes that such a process is intended to achieve (Engeland et al., 1993; Berkes and Ross, 2013, 2016; Matarrita-Cascante et al., 2017).

Understanding resilience in societies thus implies understanding positive agency, meaning the *health* and *quality* of the social processes which enable individual and collective learning and transformation at all levels of society. Understanding resilience thus requires a triple task:

- (i) understanding the agency of resilience at the local community level, and how people collectively learn (or do not learn) from local vulnerabilities, risks and impacts, and how they collectively transform (or not) towards reducing these features and enhancing community wellbeing and resilience to future crises and disasters;
- (ii) understanding the agency of external actors and how they learn (or do not learn) from the resilience of local communities, and how they transform (or not) to improve any planned intervention towards reducing local vulnerabilities and the root causes of disasters, and towards enhancing community wellbeing, capacities, and resilience;
- (iii) understanding what are the main drivers and constraints at the cognitive and interactional level that: (a) enable or undermine local communities to enact social learning and transformation; and (b) make external actors capable of recognising or ignoring, engaging or excluding, strengthening or weakening resilience at all levels of society.

Unfortunately, too often disaster management and development interventions exacerbate local vulnerability and the root causes of disasters, and, instead of ‘building back better’ more resilient societies, these interventions themselves become second disasters (e.g. Hoffmann and Oliver-Smith, 2002; Schuller and Maldonado, 2016; Harvey, 2017; Yamada et al. 2018; Yee, 2018). Crises and disasters keep being used as windows of opportunity to facilitate rent-seeking, elite capture, disaster capitalism, organised crime infiltration and corruption at the local, regional, national, and international levels. All of these are social risks that worsen local inequity and social exclusion and exacerbate vulnerability and disaster risks and impacts at all levels of society (e.g. Klein, 2007; Escaleras et al., 2007, 2016; Gunewardena and Schuller, 2008; Lewis, 2011, 2017; Kyriacou et al., 2015). While the pathologies produced by a top-down command-and-control approach in relation to the environment have been highlighted (Holling and Neffe, 1995; Holling et al. 2002), little has been said about the social pathologies a top-down approach produces.

In SES and NRM theories and approaches to resilience, as well as in disaster management and development thinking and practice, little is said about which methodologies empower social learning and transformation (i.e. the agency of resilience) in times of crises and disasters at multiple levels of society and at different temporal, spatial and cultural scales (Ross et al., 2010; Robards et al., 2011; O’Brien, 2012; Armitage et al., 2012; Cote and Nightingale, 2012; Davoudi, 2012; Wilson et al., 2013; Berkes and Ross, 2013, 2016; Ross and Berkes, 2014; Fabinyi et al., 2014; Brown, 2014; Walsh-Dilley et al., 2016). *How do people learn and transform towards sustainability in times of crises and disasters? How can external interventions enact, enable, engage, and empower the capacity of people and local communities to learn and transform towards sustainability?* Crucial for the future is to answer these questions using the lens of resilience to enhance understanding about how to achieve positive social development outcomes at all levels of society, including at the local community level.

The research aim, research objectives and research questions

As indicated earlier, the primary aim of this PhD was to enlarge the theoretical and practical domain of social impact assessment (SIA), especially to better conceptualize the cognitive and interactional dimensions of local community resilience, and to consider how to build resilience at all levels of society. To progress this research aim, three main objectives were established: (i) to understand resilience and how it comes into action at the local community level; (ii) to improve SIA theory and practice and explore how it can enhance local community resilience; and (iii) to identify and address the main constraints that undermine resilience-building at the local community level and other levels of society.

The main research question considered by this PhD is: *What role should Social Impact Assessment play in disaster management and development interventions so that social development outcomes, such as community resilience, are achieved?* Answering this research question requires considering four sets of sub-questions, which are addressed across the papers that comprise this PhD:

- What is community resilience?
 - Community resilience of what to what?
 - How does community resilience come into action?
 - What are counterproductive actions and how can they be avoided?
 - Resilience to what ends?
 - Resilience for whom?
- How can SIA enhance community resilience in practice?
 - What is SIA?
 - What are appropriate social development outcomes and how can they be realised?
 - How can SIA be improved so that it can be used to enhance community resilience?
- What are the main counter-productive actions to build resilience?
 - What are the main constraints at the scientific level?
 - At the institutional level?
 - At the socio-cultural level?
- What can be learned by the fields of disaster management and development and what needs to be transformed in these fields?

As is typical in the sociology of disasters field (Rodriguez et al., 2007), this research considered disasters, in all their tragedy, to be opportunities for social scientists to understand and analyse basic social processes and structures in crisis conditions, during which adaptation, resilience and innovation are often more clearly revealed than in 'normal' situations. The whole PhD research was based on an analysis of the 6 April 2009 earthquake in L'Aquila, Italy. I used participant observation, an ethnographic approach, action anthropology, and analytic auto-ethnography in a combined overarching epistemological approach. I also used retrospective in-depth interviews with key actors and members of local communities affected by the earthquake, and retrospective sociological analysis of data, and document and media analysis to triangulate data, provide further empirical evidence, and build a general conceptualisation of the findings (see *Chapter 2, 9 and 10*).

This research sits at the intersection of anthropological studies and sociological studies. More precisely, it refers to and aligns with the fields of *anthropology of disasters* (Oliver-Smith, 1977; 1990; 2002; Gunewardena and Schuller, 2008; Choudhury and Haque, 2016; Oliver-Smith et al., 2017) and *sociology of disasters* (Quarantelli and Dynes, 1977; Quarantelli, 1995; Quarantelli, 1998; Drabek and McEntire, 2003; Perry and Quarantelli, 2005; Tierney et al., 2006; Alexander, 2007; Rodriguez et al., 2007; Tierney, 2007, 2012; Solnit, 2009).

This PhD research is intended to be an inter-disciplinary, transformative, practice-oriented, social scientific contribution to the broader discourses on disaster management and sustainable development and to the scientific fields of: rural sociology, sociology of disasters, anthropology of disasters, SES, NRM, SIA and impact assessment generally. It seeks to bring these disciplines together to improve understanding of: (1) resilience in society; (2) what is the role SIA (and impact assessment, generally) can play to enhance planned interventions, build resilience at all levels of society, and meet the 2030 Agenda; and (3) what are the main drivers and constraints to achieving all this.

By adopting an integrated SES perspective (Berkes et al., 2003; Cutter et al., 2008; Ross et al., 2010; Berkes and Ross, 2013, 2016; Ross and Berkes, 2014; Jones et al., 2011, 2014, 2016; McCrea et al., 2014, 2016), below I elaborate on the concept of resilience. Resilience is a construct that has its roots in physical and ecological systems theory, whose social translation can be enhanced by recent advances in SES theory (Walker et al., 2004; Magis, 2010; Armitage et al., 2010, 2017 Brown and Westaway, 2011; Berkes and Ross, 2013, 2016) and the behavioural sciences (Pfefferbaun, et al., 2007; Norris et al., 2008; Twigg, 2007; Goldstein, 2008; Manyena, 2014). I elaborate on the gaps in the understanding of resilience in the SES and behavioural sciences, and on the main challenges to understanding resilience as a process of social learning and transformation in society. I also consider issues of transparency and accountability, inclusiveness and fairness, deliberativeness, justice, power geometries, and institutional arrangements, all of which are intrinsically associated with resilience and the governance of social learning and transformation (i.e. resilience) in society. Finally, I elaborate on SIA and its potential contribution to enhance resilience in disaster management and development practice.

Resilience as a process in physical, biological, and ecological systems

The term ‘resilience’ has a wide range of definitions in the scientific literature and a long and diverse history (Alexander, 2013a; Matyas and Pelling, 2015). The mechanistic understanding of resilience considers it as the force that makes a physical system return to a pre-designated state or function (Davoudi, 2012; Matyas and Pelling, 2015). According to this approach, the resistance to disturbance and the speed by which the system returns to equilibrium is the measure of resilience (Davoudi, 2012; Alexander, 2013a). This mechanistic understanding of the resilience construct, however, draws from deductive mathematical theory, or physics tradition, or from ‘small-scale quadrat experiments in nature’ that are inadequate to coherently understand and interpret real-world social-ecological interactions and processes (Holling and Meffe, 1995; Matyas and Pelling, 2015). According to this perspective (i.e. classical probabilistic dynamic), a system trajectory is always predictable in that it is influenced by the second principle of thermodynamics and determined by those symmetries within the properties of the system’s components that establish the linearity of system development towards its degradation (i.e. production of *positive entropy*) (Prigogine and Stengers, 1984; Matyas and Pelling, 2015). To simplify, we may say that, according to this approach, how the system components interact with each other, or with the surrounding environment, is not influential in determining the trajectory of the whole system towards its equilibrium state (i.e. *maximum entropy*).

This deterministic view was already challenged in the 1970s by non-equilibrium physics (Nicolis and Prigogine, 1977; Prigogine and Stengers, 1979; Prigogine and Stengers, 1984) suggesting that, in order to understand (or predict) the behaviour of a real-world physical system in a transition phase – far from the equilibrium point (i.e. maximum entropy) – what was needed were non-linear equations capable of acknowledging not only the properties of the single components of a system and their symmetries, but also the interactions among the components that contribute to determining the system’s behaviour across space and over time (Prigogine and Stengers, 1984).

In order to explain the ability of living systems to counter the second principle of thermodynamics, maintain life and self-organize when they were far from the equilibrium state (i.e. production of *negative entropy*, von Bertalanffy, 1968), since the 1960s, system and evolutionary biology has drawn from non-equilibrium physics to emphasize the relevance of analysing, not only the properties of the inner components of a living system and their symmetries, but also the interactions among these components that influence the processes of evolution of living phenomena (von Bertalanffy, 1968). General System Theory (GST) defines a system as a “complex of interacting elements” (von Bertalanffy, 1968, p.55) and recognises that systems, especially living units, are organized objects that are determined by the kind of interactions that occur among its internal components. In GST terms, ‘interaction’ means that “elements, p , stand in relations, R , so that the behaviour of an element p in R is different from its behaviour in another relation, R_1 ” (von Bertalanffy, 1968, p.55-56). To summarize, from a GST point of view, the statement that “the whole is greater than the sum of its part”, far from being a mystical expression, means that the constitutive characteristics of a system are not explainable only from the characteristics of its isolated parts, but also from how these parts interact between each other and with the environment and across multiple levels of organization and different temporal and spatial scales (von Bertalanffy, 1968; Mitchell, 2006).

Grounded in evolutionary biology, the ecological approach to resilience, differently from the mechanistic perspective, suggested to focus, not only on the ability of systems (and of the system’s components) to *persist*, but also on their ability to internally change the interactions among their internal components (bio-physical and human) in order to adapt and transform across multiple levels of organization and temporal and spatial scales (Holling et al., 2002; Folke et al., 2002; Ager, 2003; Folke, 2006; Davidson, 2010; Davoudi, 2012). The Panarchy model was developed by Holling et al. (2002, see Figure 1.1) as an attempt to better conceptualise these sets of dynamic, nested, inter-level interactions and adaptive capacities. The analytical tools provided by the Panarchy model help better understand that ecological systems are characterised by multiple and semiautonomous scales, formed by the interactions among variables, and that:

“Each level experiences its own change cycle, but slower and larger scales set conditions for faster, smaller ones, whereas the faster, smaller ones are the sites of variation that can generate functional shifts at higher scales. This dynamic interaction feeds evolution: As long as there is interaction across scales, a crisis or adaptive variation on one level can trigger dynamism in smaller and larger scales” (Davidson, 2010, p.1138).

The Panarchy model proposed by Holling et al. (2002, see Figure 1.1) openly criticised the traditional approach to systems, which interpreted hierarchies among different layers of organization as vertical top-down systems of command-and-control interactions exercised by larger and slower levels of organization that control smaller and faster ones (Gunderson and Holling., 2002).

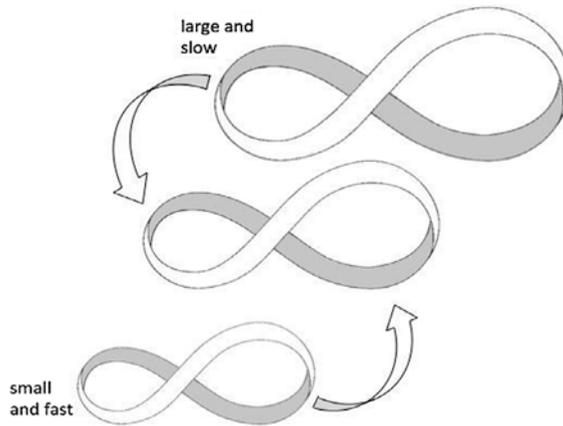


Figure 1.1: The Panarchy model: Ecosystems consist of a nested set of adaptive cycles (Source: Berkes and Ross, 2016)

What the Panarchy model pointed out was that this traditional top-down epistemological (and managerial) interpretation of systems tends to fail in understanding the dynamic and adaptive nature of such nested structures, and that larger and slower levels of organization are (and need to be) “sensitive to change from the small and fast ones” (Holling et al., 2002, p.73). In ecological systems, if the asymmetry between different levels of organization would have been only the one that brings slower and larger levels of organization controlling smaller and faster ones, then “hierarchies would be static structures, and it would be impossible for organisms to exert control over slower environmental variables” (Holling et al., 2002, p.72).

As recognised by Holling and Meffe (1995), the equilibrium definition of resilience reinforces the pathology of equilibrium-centered command-and-control: “they carry an implicit assumption that there is global stability that there is only one equilibrium steady-state, or, if other operating states exist, they should be avoided with safeguards and regulatory controls. They transfer the command-and-control myopia of exploitive development to similarly myopic demands for environmental regulations and prohibitions” (Holling and Meffe, 1995, p.333). The Panarchy model underlined the environmental pathologies of typical top-down epistemological (and managerial) approaches that tend to dominate theory and application, and are “reinforced by the proper, everyday dictionary definition of hierarchy that is vertical authority and control” (Holling et al., 2002, p.73).

Resilience in social-ecological system theory and behavioural sciences

According to the ecological approach to resilience, far from being fixed, static structures, hierarchies among different levels of organization in ecological systems, are evolutionary, dynamic, adaptive, and maintained by the interactions of changing processes across multiple states of equilibria that combine learning and transformation with continuity (Holling et al., 2002). The ecological approach to resilience rejected the existence of a single, ‘stable equilibrium’, and acknowledged the existence of ‘multiple equilibria’, and the possibility of systems to flip into alternative stability domains (Holling, 1996). Both the ecological perspective and the mechanistic perspective, however, adopt what has been defined an *engineering understanding* of resilience, which is theoretically influenced by an ‘equilibristic view’ that grounds its assumptions on notions such as ‘stability’, ‘steady-state’, ‘equilibrium’, or ‘new state’ and/or ‘multiple equilibria’, that still say little about real-world processes in social and ecological systems (Davoudi, 2012).

These terms say very little, especially when referred to resilience in social systems in which understanding resilience means understanding the human agency; the intentionality of human actions; those cognitive and interactional processes that drive members of a community to learn and transform; and the associated issues of inclusiveness, justice, fairness, deliberativeness, power geometries and institutional arrangements, all of which are intrinsically associated with social learning, transformation and resilience in society at multiple levels of societal organization and at different temporal, cultural and spatial scales (Davoudi, 2012). Understanding all this, demands understanding the health and quality of social processes needed both at cognitive and interactional levels that enable people at multiple levels of social organization to learn from disturbances and transform towards reducing vulnerabilities, risks and impacts and enhancing local community wellbeing disaster risk reduction (DRR) and the management and resilience of their resources.

In the last two decades, two research strands have greatly contributed to further advances in understanding resilience in societies, especially at the local community level. The first derives from ecological sciences and focusses on resilience in communities through a SES theory perspective (e.g. Carpenter and Gunderson, 2001; Folke et al., 2002; Berkes et al., 2003; Folke, 2006; Berkes and Ross, 2013), the second developed within behavioural sciences and derives from individual developmental psychology (e.g. Ryan and Deci, 2000) and mental health tradition, and focusses on the capacities and resilience of communities after disasters (e.g. Pfefferbaum et al., 2007; Twigg, 2007, 2009; Norris et al., 2008; Magis, 2010). In the following sub-sections, I provide a review of the SES theory and approach to resilience and of community resilience as described by the research strand in behavioural sciences on post-disaster community resilience.

The social-ecological systems and natural resource management theories of resilience

For almost two decades, relevant advances in the conceptualisation of social-ecological processes and interactions among human and biophysical systems have been made in the ecological sciences and sustainable natural resource management (NRM) theory thanks to the emergence of the social-ecological approach to resilience (SES), also called “new ecology” or “disequilibrium ecology” (e.g. Carpenter and Gunderson, 2001; Folke et al., 2002; Berkes et al., 2003; Folkes, 2006; Armitage, 2007, 2010; Ross et al., 2010; Armitage et al., 2017; Cole and Nightingale, 2012; Ross and Berkes, 2014; Berkes and Ross, 2013, 2016). Drawing from Gunderson and Holling (2002) and the social implications of the Panarchy model, and moving beyond the traditional engineering understanding of resilience, SES emphasises the necessity for institutions that manage SESs exposed to the risk of impacts that may be produced by changes, crises or disasters, to *learn by change* and *transform* (Folke et al., 2002; Berkes et al., 2003; Folke, 2006). It also stresses the key role that individuals, small groups and local communities play in this context to enhance sustainable management of local SESs and natural and cultural heritage (Carpenter and Gunderson, 2001; Berkes et al., 2003; Kinzig et al., 2003; Folke, 2006).

According to the SES and NRM approaches, the resilience of the system is positively influenced by: (i) the ability of smaller and faster systems to self-organize and cope with disturbances and changes; and (ii) the ability of larger systems to a) ‘be sensitive’ to; b) learn from, and c) include and strengthen the emerging capacities of smaller and faster systems in a new co-shaped trajectory (i.e. co-evolutionary trajectory) (Carpenter et al., 2001; Folke et al., 2002; Berkes et al., 2003; Folke, 2006; Davidson, 2010, Ross et al., 2010; Cole and Nightingale, 2012; Berkes et al., 2013; Berkes and Ross, 2013, 2016; Ross and Berkes, 2014). In such nested SES organization, the resilience is determined not by the capacity of larger and slower levels of organization to control change in systems assumed to be stable, but rather by their adaptive capacity to manage the ability of smaller and faster systems to cope with, adapt to and shape change (Folke, 2006; Davidson,

2010). The resilience of a SES can be understood not only as the amount of disturbance a system can absorb, but also as the degree to which the system is capable of self-organization at the local level (vs. lack of organization, or organization forced by external factors), and as the degree to which the system can build and increase the capacity of learning and transformation at all levels of SESs (Folkes, 2006).

Central to this SES approach to resilience is the recognition that in SESs, a disturbance can represent a window of opportunity during which social actors can learn and transform, bringing about innovative changes that can improve SES management and resilience in the future (Scheffer, 2009; Chapin et al., 2009; Berkes and Ross, 2013). Acknowledgement of the relevance of social learning and transformation has led SES thinking to reflect on the cognitive dimensions through which social actors produce knowledge, orient actions, and learn from experiences, and on how these cognitive dimensions shape the interactions between human and ecological systems, ultimately enhancing the resilience of SESs (Jones et al., 2016).

Understanding the way people perceive the environment in which they live is crucial to better understand people's interactions with natural systems, and further enhance the understanding of how SES function (Jones et al., 2016). How people perceive their environment, act and learn is filtered through knowledge production processes, practices and beliefs (Berkes et al., 2000), schema (Markus and Zajonc, 1985; Harris, 1994), mental models (Eckert and Bell, 2005; Baynes et al., 2011; Jones et al., 2011, 2014; Fiske and Taylor, 2013); social memory (McIntosh et al., 2000; DiGiano and Racelis, 2012; Olsson et al., 2004); values (Reser and Bentrupperbaumer, 2005; Larson et al., 2013; Ives and Kendal, 2014; Jones et al., 2016). All this creates sophisticated ethics and orient people's behaviours, individual and collective actions, transformational learning, and changes in the social-ecological interactions (Sinclair et al. 2008, Jones et al. 2016).

The study on cognition and intentionality in SESs, however, is a relatively neglected area of research (Hukkinen, 2012; Jones et al., 2011, 2014, 2016) and the number of constructs that have been used to study the intentionality of human actions only refers on how humans cognitively relate to their environment, and how this shapes the interactions between people and their environment (Jones et al., 2016). Still little is said about the individual and collective cognitive processes that enable social learning and transformation and build resilience in society, among members at the local community level and at other levels of society, and how all this influences SES management and resilience outcomes.

For over two decades, an extensive literature has advocated for SES resilience management, or SES adaptive co-management to counter the social and ecological pathologies of traditional top-down, command-and-control approaches to natural resource management (NRM) and SESs (Beratan, 2007). This adaptive management aims at making external actors (i.e. decision-makers, investors, and proponents) more capable to *include* changes and surprises rather than seeing social and ecological emergent processes as exceptions or 'noise' that must be analytically suppressed, or that a 'good', natural management institutions should 'command-and-control' (Cole and Nightingale, 2012). These more inclusive approaches towards local communities in SES and NRM management include, as noted by Beratan (2007): enhancing stakeholders involvement and public participation (e.g., Wondolleck and Yaffee, 2000; Bouwen and Taillieu, 2004; Olsson et al., 2004; Carlsson and Berkes, 2005; Folke, 2006; Pahl-Wostl, 2006); building more networked organizational structures and sustainable governance (e.g., Schneider et al., 2003; Ivey et al., 2004; Folke, 2006; Cutter et al., 2008; Mclean et al., 2014); and enhancing trust among actors and organizations (e.g. Olsson et al., 2004; Lebel et al., 2006).

Community resilience in behavioural sciences

The literature in the field of behavioural sciences, which, since almost two decades, explored and elaborated on local communities' abilities to cope with disasters (Paton et al., 2001; Maynena, 2006; Maguire and Hagan, 2007; Pfefferbaum et al., 2007; Norris et al., 2008; Buikstra et al., 2010) is also of particular relevance for enhancing the understanding of the agency of resilience in social systems (Berkes and Ross, 2013, 2016; Mclean et al., 2014). Drawing from the psychology of personal development, self-determination (developmental psychology, e.g. Ryan and Deci, 2000) and the mental health tradition, which focussed on building resilience on the individual's strengths rather than on deficits, the developmental psychology approach to community resilience elaborates on the nature of community's strengths and capacities, and how these contribute within a collective process of facing disasters and developing resilience (e.g. Walker et al., 2004; Pfefferbaum, et al., 2007; Norris et al., 2008; Manyena, 2014). These advances served as a basis to develop the community resilience construct in disaster literature (Walker et al., 2004; Pfefferbaum, et al., 2007; Norris et al., 2008; Brown and Westaway, 2008; Goldstein, 2008; Twigg, 2007, 2009; Magis, 2010; Armitage et al., 2010; Manyena, 2014).

According to Pfefferbaum et al. (2007, p.349), community resilience is "the ability of community members to take meaningful, deliberate, collective action to remedy the effect of a problem, including the ability to interpret the environment, intervene and move on". Norris et al. (2008, p.131) defined community resilience as a "process linking a set of networked adaptive capacities to a positive trajectory of functioning and adaptation in constituent populations after a disturbance". Economic Development; Social Capital; Information and Communication and Community Competence are considered four primary networked resources, capacities and competences which a community needs to have in order to be resilient (see Norris et al., 2008, p.136). Understanding all this clearly demands a "shift in understanding resilience ... not only in its reorientation to change, but in its perception of a community's ability to take planned action and effect change, that is, its agency" (Magis, 2010, p.404).

Main challenges to understanding resilience as learning and transformation

Following the integrated approach to SES resilience and management suggested by Berkes and Ross (2013, 2016), a wide range of studies on community resilience convene that: local understanding of risk; self-organization; problem solving; sense of agency; sense of place and belonging; social networks; social support and inclusion; leadership; collective efficacy and empowerment; outlook on life; readiness to accept change; lifestyles and livelihoods; good natural and built environment and other features of local people's wellbeing such as infrastructure and support services; good governance; and a diverse and innovative economy are all crucial for building resilience at the local community level and at other levels of society (Norris et al., 2008; Hegney et al., 2008; Goldstein, 2008; Cutter et al., 2008; Magis, 2010; Kulig et al., 2010; Buikstra et al., 2010; Berkes and Ross, 2013; Mclean et al., 2014; McCrea et al., 2014, 2016). However, focussing on the pre-conditions – or on the desired outcomes – of resilience is not enough to properly understand resilience as a process that occurs in societies in times of crises and disasters.

What still needs to be understood is the individual and collective agency, meaning the cognitive (i.e. human intentionality) and interactional processes (i.e. the complex set of inter-subjective and multi-level interactions), drivers and constraints, that makes local communities and external actors capable (or incapable) to collectively learn from the 'disturbance', and transform towards reducing local vulnerability and building resilience at all levels of society. The problem – or the challenge – of understanding the resilience construct, is that resilience, rather than a set of pre-conditions or desired outcomes, represents the *process* of social learning and transformation that enables resilient communities and external actors to harness these pre-conditions and achieve

such desired outcomes at multiple levels of social organization (Engeland et al., 1993; Cutter et al., 2008; Berkes and Ross, 2013, 2016; McCrea et al., 2014, 2016; Matarrita-Cascante et al., 2017). How local communities during adversity, or in times of crises and disasters, harness material, physical, socio-political, socio-cultural, and psychological resources (i.e. pre-conditions) to learn and transform and better cope with risks and impacts (i.e. desired outcomes), still needs to be explored more and be better conceptualised in SES and NRM theories about, and approaches to resilience and in community development and behavioural sciences research fields (Magis, 2010; Davidson, 2010; Armitage et al., 2012; Cote and Nightingale, 2012; Fabinyi et al., 2014; Brown, 2014; Walsh-Diley et al., 2016; Berkes and Ross, 2013, 2016; Cavaye and Ross, 2019).

In her influential paper, *Resilience: A bridging concept or a dead end?* Davoudi (2012) provided a review of the concept of resilience and identified four critical issues that were still unclear in the literature and must be taken into account when translating resilience thinking from the natural to the social world. These issues relate to: (i) the system's boundaries, *resilience of what to what?* (i.e. inclusiveness); (ii) the intentionality of human actions, *how can counter-productive actions be avoided?* (i.e. accountability and transparency); (iii) the outcomes or purpose of resilience, *resilience to what end?* (i.e. deliberativeness); (iv) *resilience for whom?* (i.e. justice and fairness). By outlining the relevance of these issues, Davoudi (2012) reflected on resilience-building in planning, and advocated for further efforts in SES theory and approaches to conceptualise resilience as a process in social systems, which is driven by the agency and intentionality of human actors at multiple levels of social organization (i.e. *how can positive actions be enhanced and counter-productive actions be avoided?*), and which necessarily implies consideration and scientific analysis of issues of inclusiveness and fairness (i.e. resilience of what to what?), justice (i.e. resilience for whom?), institutional arrangements, power geometries, inclusiveness and deliberativeness.

The emergent research strand on transformation in society (O'Brien et al. 2006; Pohl et al, 2010; O'Brien, 2012, 2016; Patterson et al, 2015, 2017; Pelling et al., 2015; Sharpe, 2016; Brown et al, 2017, Biermann et al., 2017; Kanie and Biermann, 2017; van der Hel and Beirmann, 2017) emphasises that understanding resilience in societies demands understanding a set of social issues including: (i) what social learning and transformation towards sustainability means in social terms, especially in terms of desirable future and desirable outcomes (Miller, 2007; Feola, 2014; Parsons and Nalau, 2016; Coloff et al, 2017); (ii) the main social and institutional drivers and constraints (Gall et al, 2014a, 2014b; Pursch et al, 2017); (iii) the deliberativeness implied by learning, transformation, and resilience (Miller, 2007; Chapin et al, 2009; Irwin, 2010; O'Brien, 2012); (iv) the governance and politics of these processes in society (Young, 2009; Birkmann et al, 2010; Patterson et al, 2017; van der Hel and Beirmann. 2017; Wilson, 2013; Fenton and Gustafsson, 2017); (v) the transformational knowledge and the transformative social (and institutional) learning processes they require (O'Brien et al, 2010; Pohl et al., 2010; Patterson et al., 2015; Sharpe, 2016; Brown et al, 2017) and, consequently, (vi) the kind of science-based initiatives, assessment processes and set of actions they demand (Cornell et al., 2013; Patterson et al, 2015; Cook and de Lourdes Melo Zurita, 2016; van der Hel and Beirmann, 2017).

Fully understanding resilience as the process of social learning and transformation in society through an integrated approach combining SES and community development perspectives (Berkes and Ross, 2013, 2016; Cavaye and Ross, 2019) demands addressing Davoudi (2012)'s questions and the social issues raised by the research strand on sustainable transformation in society. Furthermore, when addressing these issues, it is important to bear in mind that resilience is not a process that occurs only at one level of social organization (e.g. local community level), but that (ideally) occurs at multiple levels of society (Berkes and Ross, 2013, 2016). In the resilience literature, as synthesized by Matarrita-Cascante et al. (2017), the term 'social resilience' refers to the general ability of human systems to mitigate the impacts of unexpected changes,

learn, and transform at all levels of society and across different temporal and spatial scales, building the resilience of the whole social system to future disturbances while acknowledging the multiple dimensions of development (e.g. bio-physical, sociocultural and economic). Consequently, the term ‘community resilience’ can be considered as a subfield of social resilience, and refers to the specific ability of smaller social sub-systems (i.e. families, households, neighbourhoods, and local communities) to cope with these impacts at the local level (Adger et al., 2005; Folke, 2006; Wilson, 2012; Matarrita-Cascante et al., 2017).

From a SES and a community development perspective, understanding the agency of resilience that emerges at the local community level in times of crises and disasters (i.e. community resilience) is crucial for larger social systems if they aim to build resilience at all levels of society (i.e. social resilience). Understanding how larger social systems are ‘sensitive to’, and learn from the agency of local community resilience, and change or transform accordingly, is necessary to achieve a full understanding of social resilience in its whole. Understanding *how* (i.e. the institutional, financial, and planning arrangements conducive to) enacting, enabling, including and strengthening the agency of local resilient communities is crucial to enhance understanding about how to build social learning and sustainable transformation at all levels of society (i.e. social resilience). Lessons learned about main cognitive/cultural, social/interactional, institutional, political, economic constraints to build resilience at the local community level and at other levels of society help develop pragmatic reflections about how external actors can overcome these constraints and better contribute to build resilience and achieve the SDGs. However, although recent advances have been made by those advocating an integrated approach to resilience (Ross et al., 2010; Berkes and Ross, 2013, 2016; Ross and Berkes, 2014; Mclean et al., 2014; Cavaye and Ross, 2019), Davoudi’s questions and the issues raised by the current research strand on sustainable transformations in societies remain still largely unanswered.

While advances have been made in understanding learning for sustainability (e.g. Sinclair et al., 2008; Cornell et al., 2013; Sharpe et al., 2016), these advances have not yet included adequate conceptualisation of resilience in terms of the individual and collective agency that enables social learning and transformation in society at multiple levels of social organizations and at different temporal, spatial and cultural scales in times of crises and disasters. The Panarchy model does not provide adequate detail to identify and conceptualise the complex structure of nested inter-subjective and inter-level cognitive, ecological, and social interactions, that (ideally) organise and structure the agency of social resilience at all levels of society, enabling social learning and transformation in times of crises and disasters among both local communities and external actors. Little is said about the institutional arrangements and power geometries within and across multiple levels of social organization and different temporal, spatial and cultural scales that enable or undermine building resilience at all levels of society, including at the local community level. Furthermore, although having made advances in conceptualising new adaptive and sustainable natural management approaches, or the skills, resources and competences of resilient communities after disasters, SES and community development theories and approaches still say little about the kind of individual and collective intentionality and the complex set of nested inter-subjective and inter-level interactions that enact, enable, and strengthen social learning and transformation and build resilience at all levels of society.

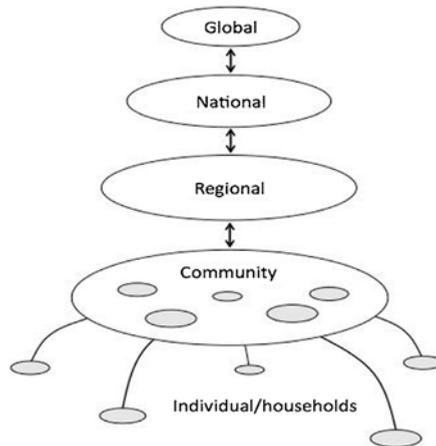
Filling the gaps in the literature to understand resilience in society

Overall, the cognitive and interactional dimensions of human agency in resilient SESs are little conceptualised, and the models provided (e.g. the Panarchy model) are inadequate to grasp the main cognitive and interactional components that constitute the agency of resilience at all levels of society, including at the local community level. Furthermore, how power geometries influence social system's outcomes in terms of resilience, and which methodology can enhance social learning and transformation and strengthen resilience in practice at all levels of society is still under-theorised (Berkes and Ross, 2013). Below, adopting an integrated approach to resilience (Ross et al., 2010; Berkes and Ross, 2013, 2016; Ross and Berkes, 2014; McCrea et al., 2014, 2016), and drawing from the most recent literature on learning for sustainability and transformation, I critically review the four issues raised by Davoudi through the lens of understanding resilience as being a process of social learning and transformation in societies in times of crises and disasters (i.e. disturbances). Drawing from a conceptualisation of the main cognitive processes outlined by SES, NRM, and sustainability literature about social learning (e.g. Sinclair et al. 2008; Cornell et al. 2013; Sharpe et al. 2016), and from recent advances made in system and evolutionary biology (e.g. (Bailly and Longo, 2003, 2008; Longo and Montevil, 2012, 2013), I briefly introduce the conceptual models through which I will analyse the findings throughout the chapters, and answer the research subquestions concerning resilience in society, how it can be enhanced and what are the main constraints to resilience-building in planned interventions.

Resilience of what?

Understanding resilience at the local community level through a SES perspective in terms of 'resilience of what', means, first, and foremost, understanding what is a community and how 'community' is defined in SES theory and approach to resilience. From a SES perspective, this requires a clarification of the different social-ecological 'hierarchies' among multiple levels of the social-ecological organization and of the specific level, or unit of analysis, the term 'community' refers to. Social systems are nested systems in that they exist at multiple levels and at different scales, with outer systems influencing (but not controlling) inner systems (Binder et al., 2013). In social systems, however, scales do not refer to any rigid or unique ontologies, but, instead, to 'situational ontologies' which acknowledge that scales in social systems, rather than being rigid and fixed, instead are social constructions and the products of localized daily practices resulting into a specific built and cultural environment, which functions as an ordering force in relation to the practices of humans arranged in conjunction with it (see Marston et al., 2005).

Communities exist both physically and psychologically. They can be defined as entities composed of built, natural, economic, and social environments, with the latter made up by individuals with their own needs, desires and capacities, and their own system of myths, values and beliefs that altogether orient feelings, attitudes and behaviours and make people feeling to belong to a community (Pfefferbaum et al., 2007; Eachus, 2014). There are 'communities of place' and 'communities of interest' (Berkes and Ross, 2016). A community of place refers to an entity composed by individuals living in a common space that they shape through their daily activities and lifestyles into a common place where they live and orient their agency (La Cecla, 1993, 2000). A community of interest is composed by individuals that recognise themselves as psychologically or culturally part of a community, even beyond a specific place, because of sharing certain cognitive features such as, for example, common habits, interests, or passions. Individuals, families, households, neighbourhoods, villages, communities, even regions and nation states, and intergovernmental and/or international organizations are systems. To understand all this, we draw from Berkes and Ross (2016) who adopted a panarchy approach (see *Chapter 1*), and conceptualised the community-level social-ecological organization and the vertical linkages across multiple levels of social resilience (see Figure 1.2).



**Figure 1.2: A hierarchy of levels in social resilience
(Source: Berkes and Ross, 2016)**

Drawing on Berkes and Ross (2016), we consider communities as SESs and focus on communities of place. We recognise and keep in mind, however, that understanding communities is a process that not only refers to the analytical capacities of the observer (i.e. social scientist) of identifying people and places (i.e. socio-cultural landscapes), but also, and foremost, to the ability of people to perceive themselves as living in a common place and sharing a ‘same fate’ (i.e. a common landscape at risk). In the context of pre-disaster (i.e. prevention and preparedness) and post- disaster interventions (i.e. response, recovery, reconstruction and re-development) the term ‘community’ typically refers to “an entity that has geographical boundaries and shared fate...[being] composed of built, natural, social and economic environments that influence one another in complex ways” (Norris, 2008, p.128).

The identification of system boundaries is also a political question, not one that can be answered by the ontological theories of the natural sciences or systems theory (Porter and Davoudi, 2012). This is arguably true irrespective of the nature of the system under consideration, but it is especially true for social systems. However, the dramatic context of a crisis or a disaster situation makes the issue of defining resilience ‘*of what to what*’ extremely real and particularly pertinent – it is local communities (and often rural communities in the so-called less-favoured regions) that live on the frontline of disaster risks and impacts and have to deal with the tragedy and the multidimensionality of crises and disasters, or other unwanted changes. Beyond any political issue, what actually defines the boundaries of an affected landscape are: (i) the extent to which local communities perceive and experience the negative consequences of the same hazards and disaster risks and impacts, and (ii) the way the occurrence of past development processes, crises and disasters shaped a local landscape at the social, cultural and ecological levels.

Resilience to what?

Discourses about resilience in social systems in terms of ‘to what’ relate to any disturbance that creates risks and impacts affecting the multiple dimensions of local community wellbeing (e.g. crises, disasters, unwanted changes, planned interventions). A disturbance, such as crises and disasters, as they occur in society, they intrinsically have a social dimension. Drawing from the sociology of disaster, which, since more than three decades, thoroughly conceptualised the social dimensions of disasters (e.g. Bolin and Bolton, 1983; Dombrowsky, 1981; Pelanda, 1981; Quarantelli, 1982; Bolin, 1986; Peacock et al., 1987; Oliver-Smith and Goldman, 1988; Oliver-

Smith, 1990; Awotona, 1977; Quarantelli, 1998; Quarantelli, 1999; Quarantelli, 2003; Perry and Quarantelli, 2005; Quarantelli, 2006; Quarantelli et al. 2007; Tierney and Oliver-Smith, 2012), we consider that a 'disturbance' in social systems must be understood within the context of socially-produced vulnerability, rather than of simple environmental forces.

Depending on the vulnerabilities characterising a society, a disturbance, or any other social-ecological change process at inner or outer level of the social system, may (or may not) turn into a disastrous event affecting the multiple dimensions of people's wellbeing at the local, sub-local, regional, national, and international scales. In this sense, the vulnerability of social systems directly influences both the exposure, the likelihood, and the intensity of the negative impacts of a disturbance as perceived and experienced at local community level and at other levels of society. Vulnerabilities are the product of the local history of past-development processes and associated social changes and impacts and negatively influence and are influenced by social risks, all of which are the local root causes of disasters (Oliver-Smith et al., 2017).

Furthermore, fully understanding how to answer the question *resilience of what to what* requires understanding also of how other levels of society (different from local communities) learn and transform, and whether they include and strengthen the resilience of local communities and their ability to learn and transform while perceiving and experiencing the negative risks and impacts of crises and disasters. We define 'external actors' the decision-makers (the state, civil protection authorities and inter-governmental organizations) and all other actors different from local people and communities who directly perceived and experienced the negative consequences of disaster risks and impacts (e.g. investors, proponents, NGOs, members of professional orders and other volunteers). These external actors conceive, decide, design, and implement external interventions, in times of crises and disasters, and are usually coordinated by the state and the civil protection authorities of a country. Because of belonging to the same social system (i.e. the nation and inter-governmental organizations) their resilience is also towards local disaster risks and impacts and their social dimensions. Overall, understanding resilience of what to what in terms of social learning and transformation at multiple levels of society means understanding how both local communities living in an affected local landscape, and external actors planning to support local communities to cope with disaster risks and impacts, learn from crises and disasters and their social dimension, and transform towards reducing the root causes of disasters at the local community level and at other levels of society.

How does community resilience come into action (i.e. human intentionality)? And how can counter-productive actions be avoided?

Local people and communities, even the most vulnerable, have individual and collective agency: they do play a crucial role to reduce (or worsen) (disaster) risks and impacts. In common terms, human agency is driven by human intentionality. Intentionality is a person's cognitive processes of identifying a purpose, and orienting their feelings, attitudes, and behaviors towards that purpose (Searle, 1980). These feelings, attitudes and behaviours influence, and are influenced by the production of a local knowledge, beliefs, values, and narratives, all of which reinforce, and are reinforced by the perception of individual and shared needs, desires, and capacities. All these cognitive components constitute the intentionality of people underpinning and orienting their agency. Furthermore, the human agency of members of a community within a society is organised through interactions which tie people with each other (i.e. social interactions), with their biophysical environment, (i.e. ecological interactions) with their economic environment (i.e. economic interactions) and with their semiotic world and their dimension of local meanings and values (i.e. cognitive/cultural interactions). Overall, human agency includes a cognitive and an interactional dimension. The former refers to all those cognitive components that constitute the intentionality which drives and orients people's agency.

The latter refers to the ecological interactions people have with their environment and resources, to the cultural interactions and to all those social interactions, including power geometries, institutional arrangements, and management models, that organise and structure people’s agency within their communities and at multiple levels of social organization. External actors have an agency too, and this is characterised by a cognitive and an interactional dimension as well. Understanding the agency of *community resilience* means understanding the cognitive and interactional dimensions of the agency that enables local communities to be resilient in times of crises and disasters. Understanding the agency of *social resilience* means understanding the cognitive and interactional dimensions of the agency of external actors that enable them to learn from disaster risks, impacts and the agency of resilient communities, and transform towards including and strengthening this agency, while building resilience at all levels of society. Finally, understanding counterproductive actions in terms of resilience means understanding the counterproductive actions enacted by local community members and external actors both at the cognitive and interactional levels that undermine the processes of social learning and transformation towards sustainability.

The cognitive dimension of the agency of resilience in societies

Drawing from the literature on learning and sustainability (e.g. Sinclair et al., 2008; Cutter et al., 2013; Sharpe et al., 2016) and enriching it through an integrated SES perspective on resilience (Ross et al., 2010; Berkes and Ross, 2013; Ross and Berkes, 2013), we define social learning as the *cognitive processes* that enable members of a community and external actors to individually and collectively learn from a disturbance, and thereby to pro-actively change their: (i) individual and collective feelings and attitudes; (ii) (perceptions of) individual and collective needs, desires and capacities; and (iii) knowledge, beliefs, values, narratives and myths, all of which constitute the intentionality of members of resilient communities that orient their actions towards learning how to address the negative impacts of any disturbance, including crises and disasters (Figure 1.3).

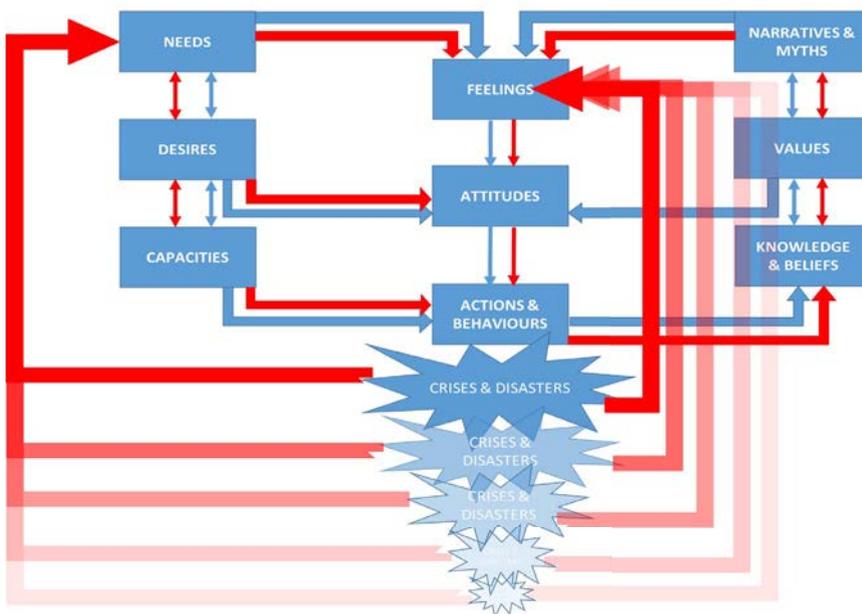


Figure 1.3: Social learning and the cognitive dimension of resilience towards Disaster Risk Reduction
 Source: This Paper

Figure 1.3 provides a conceptualisation of the cognitive components constituting the intentionality and cognitive dimension of human agency, and, therefore would help better understand: (i) how, in times of crises and disasters, resilience comes into action at the cognitive level both among members of affected local communities and other external actors (e.g. the state, national and local authorities, disaster agencies, national and international organizations); (ii) what are the counter-productive actions that undermine community resilience and resilience-building at the cognitive level; and (iii) how these counter-productive actions can be avoided at the cognitive level.

The interactional dimension of resilience in societies

Because resilience is a process, in order to translate it in social terms, what needs to be understood is not only the kind of cognitive components of human agency in resilient communities which orient individual and collective intentionality (i.e. cognitive dimension of resilience), but also the kind of actions and interactions among members of a resilient community and at multiple levels of social organization that influence and are influenced by such a cognitive dimension and enable local people to collectively learn and transform towards reducing local vulnerabilities and associated disaster risks and impacts.

Recent conceptual advances in system and evolutionary biology (Bailly and Longo, 2003, 2008; Longo and Montevil, 2012, 2013; Korenic et al., 2019) arguably may suggest better epistemological tools than the panarchy model (Holling, 2002) to conceptualize the human agency in resilient communities as a complex set of nested inter-subjective social interactions that enable social learning and transformation at all levels of social (and ecological) organization. This strand of research underlines that the resilience and evolutionary development within a living unit is determined by an ‘extended criticality’ that represents the continuous processes of symmetry breakings, integrations and regulations that occur within and across the multiple levels of the living unit’s organization as the mechanism of survival, prosperity, and evolution of a living unit. Although this research strand in system and evolutionary biology has not tied its discourse to SES and NRM theory and approach to resilience yet, it perfectly aligns with the perspective suggested in SES and NRM by the disequilibrium ecology or new ecology discourses, which substantially extend (even if still not explicitly) the concept of extended criticality to SESs at multiple level of organization (i.e. complexity) and across times and different social-cultural-ecological landscapes (e.g. Berkes et al., 2000, 2003; Carpenter and Gunderson, 2001; Folke et al., 2002; Kinzig et al., 2003; Berkes et al., 2003; Folkes, 2006; Ross et al., 2010; Cole and Nightingale, 2012; Ross and Berkes, 2014; Berkes and Ross, 2013, 2016).

According to the concept of *extended criticality* in system and evolutionary biology (e.g. Longo and Montevil, 2011), a living system is constituted by: a) a continuous change in symmetries at lower levels of organization, in that each mitosis can be understood as a symmetry-breaking process and represents the continuous critical movement (i.e. *positive entropy*) of the underlining levels of the living system’s organization; and b) a continuous inclusion and regulation performed by the higher levels of the system’s organization of these changes, in co-shaped trajectories (i.e. *negative entropy*). In this sense, system’s changes and transformations are enacted by the complex set of *intra-level interactions* (i.e. *horizontal interactions*) among the sub-components of the living unit, and enabled, included and strengthened by the *inter-level interactions* (i.e. *upwards integrations* and *downwards regulations*) among different levels of the living unit’s organization.

As simplified by the diagram proposed by Bailly and Longo (2003, p.5, see Figure 1.4), in which the circles represent the living unit; the squares the organs; the horizontal arrows the *horizontal interactions* between the organs and the cells; the upwards arrows and the horizontal brace, respectively the *upwards integrations* of cells into the organs, and of organs into the individuals; and the downwards arrows the *downwards regulations*:

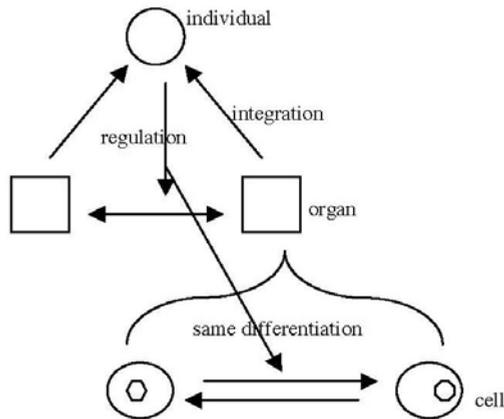


Figure 1.4: Extended criticality in a living unit
Source: Bailly and Longo (2003, p.5)

Understanding the intricate net of interactions within the components of a living unit that constitute its evolutionary development, as depicted by the diagram proposed by Bailly and Longo (2003), means understanding the relationships between *local changes* made by lower level components and '*generic trajectories*' that ensure the recovery of new symmetries based on those same local changes (Longo and Montevil, 2011). What suggested by this diagram (Figure 1.4) is that *higher levels of organization continuously learn* from and through the symmetry breakings occurring at lower levels of organization, and the upwards integrations that result from them, and *transform accordingly* by managing (reinforcing, empowering) the horizontal interactions among lower components. This approach helps better conceptualise what also Holling et al. (2002) noticed, and that hierarchies among different levels of organization within a system are far from being fixed, static structures but are dynamic and adaptive in that they are (and they need to be) sensitive to small disturbances and local changes.

Community resilience to what ends?

Answering the question *community resilience to what ends?* means reflecting on the outcomes of the agency of members in a resilient community. This implies also reflections on the means and principles that respectively enable this agency at the local community level and orient it towards achieving that specific outcomes. As noted by Davoudi (2012) in ecological literature, the desirable outcome of resilience is sustainability, which is often defined uncritically. In social systems the desirable outcome of resilience is *social sustainability*, which is achieved through social learning and transformation at all levels of society, including at the local community level. How people individually and collectively learn and transform within their communities and at multiple levels of social organization is always tied to normative judgements, inclusiveness and deliberativeness (Davoudi 2012). Understanding what are the normative judgments, and the kind of inclusiveness, deliberativeness, and culture that enables members of a resilient community and external actors to learn and transform towards social sustainability and achieving desired outcomes at the local community level and of other levels of social organization is crucial to better understand how to build resilience at all levels of society.

In times of crises and disasters, achieving social sustainability for resilient communities means reducing local vulnerabilities, risks and impacts and the root causes of disasters, and enhancing

local community wellbeing and capacities. Crucial to understand are the principles (e.g. normative judgments, culture) and means (deliberativeness, institutional, financial and planning arrangements) through which local communities achieve desirable outcomes (i.e. social sustainability), including how they understand and learn from disasters and their social dimensions (i.e. local vulnerabilities, risks, and impacts, and the root causes), and transform towards enhancing DRR and resilience to future crises and disasters. Finally, understanding *resilience to what ends* at multiple levels of social organization also requires understanding of how external actors understand and recognise local communities' needs, priorities, desires, capacities and desirable outcomes (i.e. social sustainability), and the principles and means that should drive their agency so that they can effectively support local communities achieving their desired outcomes.

Community resilience for whom?

The fourth issue raised by Davoudi (2012) relates to “power and politics and the conflict over questions such as, what is a desired outcome, and resilience for whom?” Differently from the ecological literature, the literature on resilience in social system must consider the institutional arrangements and power geometries that enable people to individually and collectively learn from any disturbance and transform towards desired outcomes. As remarked by Davoudi (2012, p.306): “we cannot consider resilience without paying attention to issues of justice and fairness in terms of both the procedures for decision-making and the distribution of burdens and benefits”. Who should learn? Who should transform? Towards what ends local communities and external actors should learn and transform?

In such literature, issues of inclusiveness, fairness, justice, deliberativeness, power geometries, institutional arrangements, community empowerment and development strategies, and how all this do relate to the processes of social learning and transformation and SES management and resilience outcome at all levels of society, including at the local community level, have still little explored and conceptualised in the SES approach to resilience (Ross et al., 2010; Robards et al., 2011; O'Brien, 2012; Armitage et al., 2012; Cote and Nightingale, 2012; Davoudi, 2012; Wilson et al., 2013; Berkes and Ross, 2013, 2016; Fabinyi et al., 2014; Brown, 2014; Ross and Berkes, 2014; Walsh-Dilley et al., 2016; Cavaye and Ross, 2019). Along this perspective, deepening the intended social development outcomes advocated by regional, national and international principles, declarations, policies and recommendation, the mechanisms through which such outcomes are traditionally pursued, and how all this relates (or not) to building resilience in social system is also crucial to better understand issues of fairness and justice and orient the agency of both local communities and external actors towards better achieving shared desirable outcomes and meet the 2030 Agenda.

Social protection approach and social development outcomes

For more than three decades, recognition of the risks brought about by globalization and other development-induced global stressors has led to the emergence of the development studies field. This field has sought to design and implement social protection measures to enhance social development outcomes in development policies, plans, programs and projects (4P) (Holzmann and Jorgensen, 1999). Social protection is commonly understood as “all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks and enhance the social status and rights of the marginalised; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalised groups” (Devereux and Sabates-Wheeler, 2004, p.i). The social protection approach is based on the use of social welfare and pro-poor strategies – e.g. job creation, public education, public health, public transportation – to enhance the wellbeing of poor people. These measures, however, all focus primarily on income levels and on the capacities of individuals to properly function in society (Holzmann and Jorgensen, 1999, Sen, 1999, 2000; Aucamp and Lombard, 2018). They have a limited perspective that only considers income indicators as the major factor influencing the outcomes of social risk management (Holzmann and Jorgensen, 1999; Aucamp and Lombard, 2018). Such an approach still says little about the capacities of local communities and vulnerable people to learn, transform, and take meaningful individual and collective action to reduce the negative risks and impacts of disturbances that affect their perceptions and daily experiences, and the multiple dimensions of their wellbeing.

While being focussed primarily on income-related issues and on the assistance provided to vulnerable people, too often the social protection approach results into top-down planning and pre-determined scheme implementation that neglect some crucial issues, including the issues that: (i) local people, even the most vulnerable, do have cognitive and interactional capacities and agency to cope with crises and disasters they perceive and experience in their daily life; (ii) they do have needs, priorities, capacities, knowledge, beliefs, values, narratives and ideas to develop, and desirable outcomes to achieve, which are associated with reducing the negative risks and impacts affecting their wellbeing; (iii) within local communities and among vulnerable people, there are positive, but also negative trends, there can be resilience but there is also potential for negative social risks to arise, which worsen local vulnerabilities and disaster risks and impacts; and (iv) the institutional, financial and physical planning arrangements and the culture through which social protection measures are implemented and benefits distributed at the local level may reduce these negative trends or worsen them exacerbating local vulnerabilities and associated disaster risks and impacts.

The social protection approach does not help understand how vulnerable people learn and transform to reduce their vulnerabilities, in times of crises and disasters. Too often such an approach produces ‘counterproductive help’ (Illich, 1976, 1978; Esman and Uphoff, 1984; Ellerman, 2006), creating at the local level dependency on external support and the help provided (i.e. *learned disability*, Illich, 1972; see Ellerman, 2006), increasing inequity and vulnerability within affected local communities, and exacerbating local disaster risks and impacts. Issues of deliberativeness, social inclusion, power geometries, institutional arrangements, equity, vulnerability, and how all this can enhance pro-social behaviours, or exacerbate anti-social behaviours within local communities, while implementing social protection measures have been little investigated in the social protection field. All this, with social protection measures and the social protection agencies in charge of implementing these measures being “mostly outside the realm of social scientific analysis and critique because their activities were seen as morally worthy and the issues they grappled with were seen as exceptional”, and with the media coverage and academic writing remaining “entrapped in an untheorized consensus that relief and rehabilitation are good things beyond rebuke” (de Waal, 2008, p.xiii).

While income, education, health and transportation risks are individual risks, effectively tackling these risks, including the risks of the negative impacts of future crises and disasters at the local level, is largely a cooperative and social process that should be enacted at the local community level and across multiple levels of society (Holzmann and Jorgensen, 1999). Moreover, how these risks are created is largely social, and they depend on multiple factors, including: how local people interacted, interact and will interact with each other and with the eco-systems in which they live; how the risks that were created by global stressors and macro social and ecological changes, were reduced, are being reduced or will be reduced at the local level; and how (and whether) these risks were turned, are being turned or will be turned into opportunities for local development and for the enhancement of local peoples' wellbeing in the future. The extent of vulnerability of local communities influences the level of risk they must cope with (i.e. intensity of likely social impacts and their likelihood). The greater the vulnerability, the more local people are exposed to, and negatively affected by risks and impacts. The more there is poverty in local communities, the more there are local vulnerabilities and vulnerable people who are over-exposed to the risks of likely future crises and disasters. The more there are inequity and social exclusion in a community, the more poverty there is, the more local vulnerability there is, and the more local people are over-exposed to the negative consequences of likely future crises and disasters.

In the current discourse concerning social development, poverty is understood as a multidimensional concept that can be explained both by 'a basic needs perspective', and a 'capability perspective' (Sen, 1999, 2000; Aucamp and Lombard, 2018). The basic needs perspective defines poverty, not only in relation to private income and to whether a private income ranks above or below the defined poverty line within a country, it also considers essential public services, and whether the basic requirements for the minimally-acceptable fulfilment of human needs are present or not (UNISDR and UNDP, 2007; Aucamp and Lombard, 2018). These basic requirements relate to food security, water, public health, education, participation in community life, and other essential services a community must provide to prevent people from being poor (UNDP 1997; Aucamp and Lombard, 2018). As noted by Aucamp and Lombard (2018, p.175), according to this capability perspective:

“a poor person lacks the opportunity to achieve minimally acceptable levels of this [social] functioning. The functioning can vary from physical aspects like being well nourished, adequately clothed and sheltered, to complex social functions such as participating in community life (UNDP 1997).

Strictly associated with the broader capability perspective is the concept of inequality. Inequality can be understood by income inequality as well as by inequality of opportunities amongst members of a community (Aucamp and Lombard, 2018). Income inequality describes how income is distributed among a population, while inequality of opportunities describes how opportunities to have access to goods and services are distributed (Aucamp and Lombard, 2018). Income inequality is expressed in terms of income gaps between the rich and the poor, while, from a capability perspective, the inequality of opportunities can be expressed as the rate of social exclusion from basic goods and services and from acceptable levels of functioning. The more social exclusion there is in a community, the more inequality of opportunities there is, the more poverty there is. The more inequality and poverty there are, the more vulnerability there is and the higher will be at the local level the social cost of the risks and impacts comprising the global risk landscape. While inequality is primarily understood as economic inequality, the inequality of opportunities is better understood with the term of 'inequity', which refers to the “unfair, avoidable differences arising from poor governance, corruption or cultural exclusion” (Santana et al., 2017, p.241). While inequity is a well-established concept in health and health impact assessment (HIA), little is said about how inequity influences inequalities, poverty, vulnerability, and community-resilience building strategies, ultimately influencing the risks of the negative consequences of likely future crises and/or disasters at the local level. Little is said in DRR and resilience discourse about how much reducing inequity within a community is crucial to reduce local vulnerabilities and associated disaster risks and impacts, and build resilience.

The policies of building resilience in vulnerable regions

European policies concerning local development carried out in the so called ‘less favoured areas’ (i.e. vulnerable regions) show an increasing concern towards local communities (Barca, 2009). The 1998 Vitoria-Gasteiz declaration suggested that rural development policies should generate income and employment that “protects physical and socio-cultural environment, biodiversity and landscape, which promotes balanced land management and contributes to overall development through maintaining the unique cultural values and lifestyles of the area” (Vanclay, 1999, p.379). The Common Agricultural Policy (European Commission 1999) traced the first institutionalized criteria for delimiting less favoured areas (LFAs) as an instrument of financial support that was addressed to farms in areas where agricultural production was hampered by unfavourable natural conditions so as to “ensure the continuity of agricultural land use, and thereby, to maintain the vitality of the rural areas, preserve the landscapes and maintain sustainable farming, taking into consideration the environmental aspects” (Kowalczyk et al., 2014, p.18). In the EU Rural Development Policy, social protection measures were created to tackle socio-economic handicaps and rural depopulation through income improvement, job creation, better quality of life in rural areas, and the building of local capacity for growth and jobs (European Commission, 2006). Since 2005, in conjunction with other measures, “building local capacity” and “engaging local communities” have been seen as fundamental processes that need to be activated within rural development interventions to reverse the negative social trends characterizing less favoured areas (e.g. population decline, unemployment, increasing poverty, decreasing services, persistent social exclusion and social fragmentation).

The Barca Report (2009) introduced the concept of “persistent social exclusion” because of awareness of the failure of past development policies, due to these policies only considering personal income levels, without considering other features of wellbeing. “Changes in the income dimension of social exclusion say little about what is happening to other aspects of well-being” (Barca, 2009, p.XIV). Barca (2009) describes social inclusion as a set of multidimensional outcomes, and the processes to achieve these outcomes, relating to people’s abilities to have a substantive opportunity to live according to their values and choices, and to overcome their adverse circumstances. This requires that all persons and groups are able to enjoy essential public services and at least minimum standards of living, that the disparities among persons and groups are socially acceptable, and that the processes through which these outcomes are achieved are participatory and fair. Social exclusion is normally understood as the opposite of social inclusion, and therefore should be regarded as the processes by which people are denied the ability to participate fully in community, social and political life.

The social inclusion approach that is now influencing European Cohesion Policy puts emphasis on the need for a better understanding of the multiple dimensions of wellbeing, that, “especially for policy purposes, should not be addressed solely by income indicators” (Barca, 2009, p.9). It also puts emphasis on the need for building locally, through participatory and fair processes, the social acceptability of the proposed development. The Barca report has contributed to reforming EU Cohesion Policy by emphasising the limits of place-blind, top-down development, and by highlighting the potentialities of a place-based development approach (Barca et al., 2010). Such intended social development outcomes are crucial to achieve in any planned intervention, especially in vulnerable and disaster prone-areas, such as mountain regions. Of particular interest for this PhD thesis is understanding how social development outcomes are advocated by international policies and recommendations concerning sustainable development in mountain eco-systems and post-disaster/disaster-prone regions.

Mountain areas cover approximately one-quarter of the world’s land surface, they are important sources of freshwater and of other goods such as energy, biological diversity, forest and agricultural products to which almost half of the world population depends (Ives, 1992; Messerli

and Ives, 1997; Price and Kim, 1999; FAO, 2015). Mountain communities have a prior role in providing environmental goods to downstream communities and are key to maintaining mountain ecosystems, but they are among the world's poorest and hungriest, and they live "far from the centers of commerce and power, so they have little influence on the policies and decisions that affect their lives, and their voices often go unheard" (FAO, 2011: 5). Since the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro in 1992, considerations about the relevance and the ecological fragility of mountains have always been accompanied by a specific concern towards local communities living in these regions.

Chapter 13 of Agenda 21, together with defining mountains as important but fragile eco-systems, underlined also that "among mountain dwellers, there is widespread unemployment, poverty, poor health and bad sanitation", remarking that "the proper management of mountain resources, and the socio-economic development of the people need immediate action". Socio-political issues such as "empowering local communities in decision-making processes"; "practical education and training for mountain people on conservation and development"; "conservation of traditional knowledge" and "promotion of cultural diversity and identity", are considered as priorities of a high relevance for a sustainable mountain development (SMD), together with ecological issues (e.g. conservation of biodiversity of mountain ecosystem; conservation of watershed, maintenance of health of mountain ecosystems, etc) (see Price and Kim, 1999). Established at the World Summit on Sustainable Mountain Development in 2002 in Johannesburg, and grew up throughout world meetings held in Merano, Italy (2003), Cuzco, Peru (2004), and in Rio de Janeiro on the margins of the 2012 'Rio+20' UN Conference on Sustainable Development, the International Partnership for Sustainable Development in Mountain Regions, now known as the Mountain Partnership (MP), in September 2013 during the Fourth Global Meeting held in Erzurum, Turkey, redefined its goals and revitalized its activities by developing and finalizing a document entitled "Mountain Partnership. Strategy and governance 2014-2017".

The document, signed by 213 members (51 governments, 13 International Organizations, 17 Global Civil Society Organizations, 132 Civil Society Members) is based on the experiences and lessons learned from the last 10 years and details MP's vision about SMD. According to MP, SMD, together with addressing ecological issues, should also: "improve the social and economic well-being and livelihoods of, and opportunities for, both mountain people – particularly the most vulnerable – and those who live in the larger geographic regions which include mountains; and empower and enable mountain people to be fully engaged in the decision-making processes that determine the future of mountain communities and ecosystems, particularly in light of global change and globalization processes". Including social issues within SMD discourse has enriched, over the last decades, the vision fostered by traditional environmental protection and rural development policies and programs. Recent rural development policies at the EU level, for example, increasingly recognize the role local communities can play in reversing negative trends in less-favoured areas (including mountain territories) and call for effective strategies to address social and economic inequalities within regions, reverse population decline, promote territorial and social cohesion for a more "inclusive growth", and strengthen people's proactive role in natural and cultural heritage management (e.g. EU Cohesion Policy, 2014-2020).

In a world currently facing multiple dramatic global stresses, mountain environments as fragile eco-systems, and local communities living in these regions, as vulnerable and marginalized, are disproportionately affected by the impacts of these global processes (FAO, 2011). Recognizing the role that mountain and rural communities have in preserving and maintaining their own eco-system so to bring about positive bio-physical and social change is crucial: "mountain communities need to be empowered and their livelihoods improved, to enable them to take responsibility for the preservation of natural resources and to fulfill their role as mountain stewards" (FAO, 2011).

The ecological fragility of mountain environments (e.g. land degradation, susceptibility to soil erosion, landslides, avalanches, forest fires, hydrogeological instability, melting glaciers, shifting tectonic plates, steep slopes, and other destructive natural processes, (FAO, 2011) has resulted in 'resilience' gaining currency in the discourses of regional development in less-favoured areas, including mountain regions (OECD, 2011, 2013; McManus et al., 2012; Scott, 2013; Schouten et al., 2013; Kelly et al., 2015; Wilson, 2015).

The governance of building resilience in vulnerable regions

For more than 30 years, recognition of the role local communities living in vulnerable and disaster-prone areas play in such a global risk landscape led the United Nations to advocate for genuine local community engagement and empowerment in post-disaster and development interventions in order to reduce local vulnerabilities and inequities, build local capacities and strengthen resilience at the local community level and other levels of society (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005; 2015). More recently, the *Sendai Framework for Disaster Risk Reduction 2015-2030* (UN, 2015), which was adopted at the Third United Nations World Conference on DRR, further remarked the need to enhance DRR and resilience at all levels of society, including at the local community level, by emphasising that:

“Governments should engage with relevant stakeholders, including women, children and youth, persons with disabilities, poor people, migrants, indigenous peoples, volunteers, the community of practitioners and older persons in the design and implementation of policies, plans and standards. There is a need for the public and private sectors and civil society organizations, as well as academia and scientific and research institutions, to work more closely together and to create opportunities for collaboration, and for businesses to integrate disaster risk into their management practices.” (UN, 2015, p.10)

Aligned with previous United Nations declarations (UNDRO, 1982; IDNDR, 1994; UNISDR, 2005), the Sendai Framework acknowledged that DRR “requires empowerment and inclusive, accessible and non-discriminatory participation paying special attention to people disproportionately affected by disasters, especially the poorest” (UN, 2015, p.11). It underlined the need for “investing in the economic, social, health, cultural and educational resilience of persons, communities and countries and the environment” (UN, 2015, p.11). It highlighted the need for focused action within and across sectors by government at all levels in *4 key priority areas*: (1) understanding disaster risk; (2) strengthening disaster risk governance to manage disaster risk; (3) investing in disaster risk reduction for resilience; (4) enhancing disaster preparedness for effective response, and to build back better in recovery, rehabilitation and reconstruction (UNISDR, 2015).

Enhancing DRR and resilience at the local community level and other levels of society, requires a closer link between knowledge and action, which demands that scientific practices become more oriented towards the societal arenas in which sustainability problems, including disaster risks and impacts, are tackled (Cornell et al., 2013). Understanding knowledge through the concept of knowledge systems helps in visualising how Science can support societies to address sustainability. Knowledge systems are “made up of agents, practices and institutions that organize the production, transfer and use of knowledge” (Cornell et al., 2013, p.61). While Science is a necessary element of a knowledge system, on its own it is not sufficient to bring knowledge systems into action. Cornell et al. (2013, p.61) argue that “relationships within knowledge systems shape the flows of knowledge, credibility and power within those systems” and, consequently, the effectiveness of any actions that are undertaken. From a sustainability perspective, a knowledge system is “a network of actors connected by social relationships, formal or informal, that dynamically combine knowing, doing, and learning to bring about specific actions for sustainable development” (Cornell et al., 2013, p.61).

By being problems that affect societies at all levels, sustainability issues (including DRR and resilience) require learning processes where the more the members of society are included within the knowledge system, the more people can better know, act and orient towards desired outcomes. Building knowledge systems oriented towards sustainable development goals means understanding sustainability as a social learning process (Cornell et al., 2013). The common purpose of achieving sustainable development goals, such as enhanced DRR and resilience, demands opening-up knowledge systems at all levels of society to allow a broader constituency to participate in the processes of knowledge production, the implementation of actions, and in learning. Ensuring that knowledge systems are open means enabling all of society to participate in better knowing and acting, and in learning from actions. From a sustainability perspective, learning represents a transformational process that brings about major changes in the feelings, attitudes and associated actions and behaviours that orient actors in the knowledge systems towards better achieving desired outcomes (Sharpe, 2016).

Governance recently emerged in the literature as a concept that recognizes the roles and functions of a diverse set of actors in managing SESs (Tengö et al., 2014; Bakema et al., 2017). Beyond governmental institutions, these actors also include private sector and civil society entities (Parra and Moulaert, 2016). From an analytical perspective, the term ‘governance’ helps in better framing those functions that may formerly have been carried out by public entities and that are now dispersed among diverse actors at different scales of society (Tierney, 2012). From a SES perspective, the governance construct aims at better understanding the interplay between these different actors and their living environments, and how this interplay influences their way of living and prosperity.

Achieving sustainable development goals requires the building of goal-oriented governance of SESs at all scales, which demands an inclusive goal-setting process (Biermann et al., 2017; Kanie and Biermann, 2017). Building governance to achieve goals also requires the sharing of social responsibility among all actors and effective social and institutional learning processes that can help the governance of SESs learn from past experiences and better achieve its goals in the future. Disaster governance “consists of the interrelated sets of norms, organizational and institutional actors, and practices (spanning predisaster, transdisaster, and postdisaster periods) that are designed to reduce the impacts and losses associated with disasters” (Tierney, 2012, p.344). The paradigm of disaster governance rose in opposition to the typical top-down, emergency-centric, command-and-control approach, whose performance in achieving DRR outcomes has been poor (Ammann, 2006; Gall et al., 2014a, 2014b). Instead of being focused only on disaster response, the aim of disaster governance is to mainstream DRR into development planning (Pelling 2011; Gall et al., 2014b; Boyer-Villemaire et al. 2014; Johnson and Mamula-Seadon 2014) through collaborative, multi-party and multi-level platforms (Gall et al., 2014a, 2014b).

“Disaster governance encourages collective actions and expands the stakeholder coalition (e.g. governmental, private businesses, non-governmental entities, academia) across all scales — from local to global. In addition, disaster governance aims at re-organising government functions (e.g. administrative, managerial, regulatory) across a variety of state and non-state actors to facilitate vertical as well as horizontal disaster risk management and to foster and increase local capacities, establish trust and enhance cooperation” (Gall et al. 2014a, p.10).

Collaboration among different sets of actors in disaster governance is built around the ‘public purpose’ of reducing disaster-related risks (Tierney, 2012). At the core of the disaster governance knowledge system is disaster-related risk analysis and assessment (i.e. disaster risk management). Disaster risk management implies understanding and recognising disaster risks while together designing and implementing disaster risk mitigation and monitoring strategies at all scales, in order to enhance the multiple dimensions of local community wellbeing and resilience. A sustainable disaster governance system would be one where different actors share responsibility

for DRR outcomes and would learn by engaging all actors in learning from disturbances, and transforming towards better reducing local vulnerabilities and associated disaster risks and impacts at the local community level and other levels of society.

Learning enables the whole disaster governance system to understand and recognize past failures and better achieve DRR and resilience outcomes in the future. Understanding how disaster governance can learn is crucial, yet it is little explored in the disaster literature (Gall et al., 2014a, 2014b). As indicated above, learning is a process that occurs within a specific knowledge system. How a knowledge system is created determines the effectiveness of the ways of knowing, doing and, thus, learning. Adapting the definition of van Kerkhoff and Slezák (2010), we define a knowledge system in disaster governance as the networks of actors who are connected at the local community level and other levels of society, by social relationships, formal and informal, that dynamically combines knowing, doing and learning to bring about specific DRR actions at all levels of society, especially at the local community level. To ensure social learning and transformation from any disturbance, and build resilience at all levels of society, sustainable, collaborative disaster governance must include in all the different actors so that all spheres and levels of societies can learn from the risks and impacts created by the disturbance and the experience of past-failures, by having access to and being part of the knowledge production accompanying the implementation processes of vulnerability and disaster risk-reduction activities at the local community level and other levels of society.

With the objective of aligning the EU strategic approach to regional development and cooperation with the 2030 Agenda, the Addis Ababa Action Agenda, the Paris Agreement on Climate Change and the Sendai Framework, *the New European Consensus on Development* highlighted the commitment of all EU Member States to “strengthen resilience, particularly of vulnerable populations in the face of environmental and economic shocks, natural and man-made disasters, conflicts and global threats to health” (EC, 2017, p.17). By focusing primarily – and almost exclusively – on the income and capacities of individuals to properly function in a society, pro-poor strategies and social protection oriented actions consider vulnerable people and communities as mere recipients of the social protection measures carried out, while they say little about how the resilience of local people and communities can be effectively recognised, engaged and strengthened in order to reduce risks, including the risks of disasters and crises, at the local level.

The rise of the resilience construct has further prompted the paradigm shift in thinking about social development outcomes from merely focusing on individual incomes and capacities to more broadly focusing on collective agency and on the social processes that local communities put in action to collectively learn and transform, or demand transformation to reduce disaster impacts and the negative consequences of likely future crises and/or disasters at the local level and build resilience at all levels of society. According to the current understanding of resilience in SESs, local people and communities, even the most vulnerable, instead of being considered as just mere recipients of social protection measures carried out, they should be recognised as individuals and collective actors capable of individual and collective agency: they do play a crucial role to reduce (or worsen) local inequity and vulnerability and, therefore, the associated risks they perceive and experience, and the impacts they may suffer in such a global risk landscape, thus directly influencing SES resilience and management.

While ‘protection’ implies looking at poor and vulnerable people and local communities as mere recipients of social development and protection measures carried out, strengthening local community resilience means recognising that poor and vulnerable people and local communities have an agency. Therefore, rather than protecting local communities and vulnerable people, and see them as mere recipient of the activities carried out, external actors (i.e. decision-makers, investors and proponents) should recognise, engage and strengthen their capacity and resilience. Within local communities, however, there are positive and negative social processes and trends:

there can be resilience (see *Chapter 3 and 5*), but there can also be the space for elite capture, rent-seeking, organised crime infiltration, disaster capitalism and corruption to arise even within the same local communities (see *Chapter 6, 7, and 8*).

Moreover, the cognitive and interactional ways through which external actors intervene to support local communities to respond to disaster risks and impacts, may reduce, or reproduce (or even exacerbate) local vulnerabilities and inequities and do have influence on local DRR and resilience outcomes before and after disasters, both in the short and long-term. The internal social dynamics that, in past development and post-disaster interventions, have created local inequity, vulnerability and associated disaster risks and impacts at the local level must be carefully understood. External approaches oriented to genuinely engage and empower the agency of resilient local communities in times of crises have a crucial double task to accomplish: while they should be capable to strengthen the local cognitive and interactional dimensions of resilience, they also should carefully recognise and prevent and/or avoid negative local social processes and trends (i.e. social risks), such as elite capture, disaster capitalism, mafia infiltration and corruption which can flourish also at the local community level and at all levels of society (see *Chapter 7*).

Too often, social development and protection measures are intendedly or unintendedly enacted through the same processes that, in the past, have worsened social exclusion, inequity and vulnerability and associated disaster risks and impacts at the local level. Current understanding in social development and protection approaches, by focusing primarily on individuals' income and capacities (Holzmann and Jorgensen, 1999), still say little about the broader cognitive and interactional social processes that, in time of crises, are enacted by members of local communities and external actors (i.e. decision-makers, investors and proponents), and that lead to collectively learn and transform towards reducing (or worsening) local inequity and vulnerability, enabling (or undermining) resilience to emerge at the local community level. In social development and protection theories, approaches and practical measures, still little attention is paid to those healthy social processes that make local communities functioning well and effectively reducing vulnerabilities, risks and impacts at the local level. Overall, the paradigm shift prompted by the community resilience construct in the social development discourse, and in the broader practice of planning post-disaster and development interventions, would require a crucial shift from top-down social protection measures to more effective local community empowerment strategies. However, such a paradigm shift is still far to be realized in social development theory and practice. How to genuinely engage and empower local communities and reduce social risks (e.g. rent-seeking, elite capture, organised crime infiltration, disaster capitalism and corruption), vulnerability and the associated risks and impacts of planned interventions, unwanted changes, crises or disasters, and how to enhance resilience *while carrying out* post-disaster and development interventions is still little clear. The extent to which, inclusion, fairness and equity are respected as principles, and are used as means in conceiving, deciding, designing, and implementing interventions also influences social development outcomes. Equity and social inclusion should not only be seen as social development outcomes by which to evaluate external interventions, but also as principles and means that should be used in, and orient post-disaster and development interventions.

Arguably, the lack of a methodology to strengthen resilience at all levels of society is because of there is still a lack of conceptualization of the healthy social processes and dynamics at multiple levels of social organization that are able to prevent social risks, while enabling resilience to emerge in local communities, both at the cognitive (i.e. empathy, care, social responsibility, local knowledge, beliefs, values and narratives) and at the interactional levels (i.e. mutual aid, equity and social inclusion). The lack of such a methodology is further due to scientific, institutional and socio-cultural constraints which undermine effective community resilience-building during post-disaster and development interventions. To build resilience at all levels of society, including at the local community level, such constraints must be understood and overcome.

Social Impact Assessment and the challenge of building resilience

SIA (see *Chapter 4*) includes the processes of analyzing, monitoring, and managing the social consequences of planned interventions, and by logical extension the social dimension of development in general (Esteves, et al., 2012; Vanclay 2003a). The corpus of practitioners and scholars who profess this field, have an established body of knowledge and their professional values and understandings have been codified in the 1994 report of the Inter-organizational Committee for Guidelines and Principles, *Guidelines and Principles for Social Impact Assessment*, which was developed for the USA/NEPA context; in the 2003 *International principles for social impact assessment* (Vanclay, 2003a); in the core literature on SIA (e.g. Vanclay, 2002, 2003, 2006, 2012, 2014; Vanclay and Esteves, 2011; Esteves et al., 2012); and in the more recent international guidance entitled: *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects* (Vanclay et al., 2015). SIA is an interdisciplinary and/or trans-disciplinary social science (Esteves et al., 2012). A thorough analysis of all social impacts is discussed in *Conceptualizing social impacts* (Vanclay, 2002).

Drawing from the conceptual framework based on environmental function evaluation of Sloomweg et al. (2001), Vanclay (2002) distinguished social impacts from social change processes, and clarified the relationship between first-order changes and impacts (also those occurring in the bio-physical setting), which result directly from an intervention, and second and higher-order change processes and impacts which result from first order ones. The paper conceptualized 7 categories of social change processes and 7 categories of likely related social impacts, identifying around 80 potential social impacts. SIA practice, however, is always context-specific and the key social issues to be considered in a SIA study have always to be determined in conjunction with input from local communities (Vanclay, 2002) through the process defined 'cooperative discourse' (Webler et al., 1995). In fact, "social impacts likely to be significant will vary from place to place, from project to project, and the weighting assigned to each social impact will vary from community to community and between different groups within a given community" (Vanclay, 2002, p.184).

In the SIA practice is thus essential involving affected people and other stakeholders in the analysis of impacts and in the planning of mitigation and of benefit strategies (Vanclay et al., 2015, p.2). SIA and public participation, however, are not the same thing: while SIA always implies participation and the engagement of local affected people, participation does not always imply the analysis, the identification, and management of social impacts and changes, and it rarely does more than an attempt to legitimate pre-determined outcomes or conform with regulatory requirements in a perfunctory, box-ticking manner (Vanclay et al., 2015, p.20). Core values professed by the overarching philosophy of SIA are: commitment to social sustainability; openness and accountability; fairness and equity; preservation of human rights; empowerment of local people, especially women, minority groups and disadvantaged; capacity building; acceptance of multiple value systems (Vanclay, 2003).

SIA, in fact, is more than a technique or step, it is a philosophy about development and democracy (Vanclay, 2003, Vanclay 2004; Vanclay and Esteves, 2011) and ideally it considers: pathologies of development (i.e. harmful impacts); goals of development (clarifying what is appropriate development, improving quality of life); and processes of development (e.g. participation, building social capital) (Vanclay, 2003). Core values, fundamental principles for development, and specific principles to SIA practice are clarified and deepened in the 2003 *International Principles for Social Impact Assessment*. Together with other guiding principles, they orient the SIA process, whose tasks are summarized in Figure 1.6. The 26 SIA tasks are detailed and well explained in Vanclay et al. (2015).

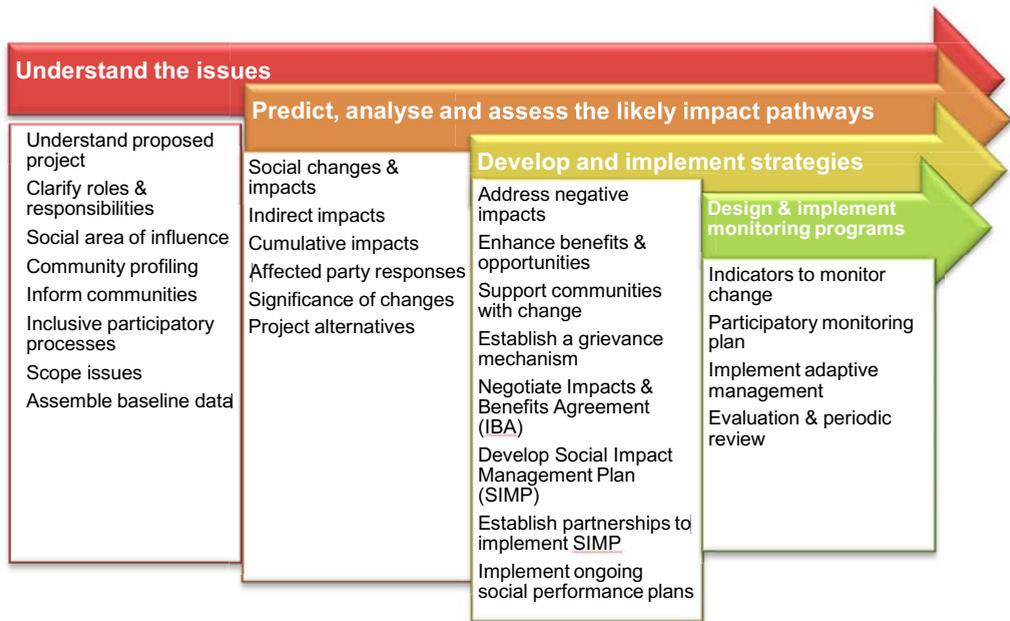


Figure 1.5: The phases of social impact assessment (Vanclay et al., 2015)

SIA practitioners around the world, use the methodological approach or framework proposed by the SIA body of knowledge, in order to work with communities to achieve better development outcomes for communities: SIA, in fact, “would also assist a community in visioning its future, and in implementing ways of coping with the change that a planned intervention could bring about” (Vanclay, 2014, p.xviii). SIA also works with public development agencies, financial bodies, and private sector companies to design better projects and policies and better align the investments to social development needs and outcomes (Esteves et al., 2012). SIA also works with regulatory agencies to provide information for the development approval process and ongoing regulation of projects. Originally a regulatory assessment tool for large scale projects, SIA can also be a positive activity for the adaptive management of social issues (Vanclay and Esteves, 2011) and the enhancement of social development outcomes in any p[lan]ned intervention (Esteves and Vanclay, 2009; João et al., 2011; Esteves et al., 2012; Aucamp and Lombard, 2018).

Identifying and professing SIA as a philosophy and a process has led to a fundamental switch in understanding SIA practice: “changing the orientation of SIA from predicting and mitigating the negative consequences of projects towards facilitating positive social development outcomes within a sustainable development framework, is consistent with the philosophy expressed in the International principles of SIA” (Esteves and Vanclay, 2009, p.137). Recent advances in the SIA field have enlarged the SIA domain and practice from being only a mitigation tool of development project’s impacts, to becoming a more holistic process addressed to inform development policies, plans, programs and projects since their conception in order to enhance social development outcomes in any development intervention (Esteves and Vanclay, 2009; João et al., 2011; Vanclay and Esteves, 2011; Esteves et al., 2012; Vanclay, 2017; Aucamp and Lombard, 2018). In fact, “ideally, impact assessment should be a proactive agent in sustainable development and not just a regulatory hurdle” (João et al., 2011, p.170). Recent developments in SIA have contributed to underlining the effective role SIA can play as a process of managing social issues in all phases of development projects, since their conception until and after their closure (Vanclay, Esteves, Aucamp and Franks, 2015, p.6) for the enhancement of development outcomes (João et al., 2011).

Even if the majority of SIA practice has been at the project level (Vanclay and Esteves, 2011), SIA is also applicable to the assessments of development policies, plans and programs and of gradual change (Anis et al., 2011, Schirmer, 2011); to reduce local vulnerabilities and associated social risks and impacts, and to enhance the resilience of individuals, households, neighbourhoods, and communities in post-disaster and development interventions (Benson and Twigg, 2007; Jah et al., 2010; João et al., 2011; Vanclay and Esteves, 2011; Cottrell and King, 2011; Mahmoudi et al., 2013, Esteves et al., 2017). Recent research has outlined the relevance of current development practices underpinning SIA theory and approach, including: community-based agreement making processes and deliberative democracy (Nish and Bice, 2011; Hartz-Karp and Pope, 2011); impact and benefit agreements, community development agreements, and social impacts management plans (Gibson and O'Faircheallaigh, 2010; Nish and Bice, 2011; Esteves et al., 2012; Franks and Vanclay, 2013); human rights impact assessment (van der Ploeg and Vanclay, 2017, 2018), social risks assessment (Mahmoudi et al., 2013; Esteves et al., 2017), the free prior and informed consent (Hanna and Vanclay, 2016), the social license to operate (Dare et al., 2014; Bice and Moffat, 2014; Jijelava and Vanclay, 2014 and 2014b), stakeholder engagement, and associated issues of representativeness, deliberativeness, and influence (Gulakov and Vanclay, 2019). Aligning SIA efforts to the 2030 Agenda (UN, 2015), however, means that the SIA community should work harder to make SIA and these current development practices more effective to support the reduction of local vulnerabilities and the root causes of disasters and associated disaster risks and impacts, and foster the enhancement of local DRR and community wellbeing, thus contributing to 'build back better' more sustainable and resilient societies.

Aligning SIA efforts to the DRR and resilience paradigm would mean including consideration of how to turn SIA tools into effective actions that would enable social learning and transformation towards better reducing local vulnerabilities, risks, impacts, and the local root causes of disasters, and building resilience at the local community level and other levels of society. The SIA community should work harder to better tie together – both in theory and in practice – the aforementioned practices to issues of DRR and community-resilience building strategies, transformative knowledge co-production processes, and to issues of power, deliberativeness, equity, justice, vulnerabilities, social risks, and social development, all of which are social issues still little explored in SIA theory and practice (Howitt, 2011). SIA should ensure that there would be transparency and accountability and that any SIA activity would enact inclusive social learning processes, and would lead to building socially sustainable transformations towards preventing social risks, reducing local vulnerabilities, enhancing DRR and community wellbeing, thus strengthening resilience at all levels of society. However, SIA theory and practice still lacks of a conceptualization and a pragmatic framework that would clarify the set of actions that SIA practitioners should carry out to ensure that the cognitive and interactional dimensions of resilience (i.e. social learning and transformation) are adequately recognised, engaged, and empowered.

Advances made in conceptualising the multiple dimensions of local peoples' wellbeing (Smyth and Vanclay, 2017) help better visualise the dimensions in which social processes, including social risks and local people's capacities to individually and collectively learn and transform (i.e. community resilience) must be identified, analysed, and managed. However, conceptualisation of the multiple dimensions of local communities' wellbeing is still young, and important social issues are still under-theorised in the SIA field, including: understanding and reducing local vulnerabilities, risks, and the root causes of disasters; understanding and preventing social risks and negative trends within local communities (e.g. rent-seeking, elite capture, disaster capitalism, organised crime infiltration, corruption, inequity, social exclusion); and recognising, engaging, and empowering the cognitive and interactional dimensions of resilience at the local community level and other levels of social organization in each of the multiple dimensions of local community wellbeing.

Although recent advances in disaster studies emphasise the need for SIA to accompany disaster management and development interventions, including post-disaster reconstruction (Benson and Twigg, 2007; Jah et al., 2010, UNISDR, 2015 p.19), SIA studies still say little about the specific role SIA can have to enhance social development outcomes, such as enhanced DRR and resilience at the local community level and other levels of society, in any disaster management and development intervention. The SIA community has made still little effort to extend the theoretical and practical domain of SIA from being a regulatory assessment tool for large scale projects, especially deployed in the extractive industry sector, to becoming a proactive process of influencing disaster management and development governance, and any planned intervention, in vulnerable regions towards enhancing social development outcomes and empowering local communities for building resilience and achieving the Sustainable Development Goals at all levels of society.

The 2030 Agenda, together with the Addis Ababa Action Agenda, the Paris Agreement on Climate Change, the New Urban Agenda, and the Sendai Framework for Disaster Risk Reduction 2015-2030, together with the aforementioned international policies for social development outcomes in vulnerable regions are a solid base for the formulation of national and local DRR and resilience strategies (UNECOSOC, 2018). Crucial for the future of SIA theory and practice would be understanding how SIA can enhance community resilience and contribute to building resilience at all levels of society during any disaster management and development policy, plan, program, and project, to support them to align their efforts towards achieving the SDGs and meet the 2030 Agenda, before, during and after crises, disasters, and any other disturbance that affect the multiple dimensions of community wellbeing.

Outline of the thesis and main intended research contribution

This PhD research is intended to be an inter-disciplinary, transformative, practice-oriented, social scientific contribution to the broader discourses on disaster management and sustainable development and to the scientific fields of: rural sociology, sociology of disasters, anthropology of disasters, SES, NRM, SIA and impact assessment generally. The whole PhD research attempts to fill the gaps in these fields and contribute to improved understanding of: what is resilience in societies and how it comes into action; how disaster management and development interventions can enhance local community resilience, and build resilience at all levels of society; and the main drivers and constraints at the institutional, scientific and socio-cultural levels to achieving all this.

PART 1: Understanding local community resilience and how SIA can enhance it

This PhD research consists in three different parts. **Part 1** is called *Understanding local community resilience and how can SIA enhance it*. It provides the empirical results to answer the research sub-questions: *What is community resilience and how does it come into action? How can SIA enhance it?* It comprises four chapters, it analyses the main gaps in the literature and provides empirical evidence of what is community resilience, how it comes into action and how SIA can enhance it in sustainable rural development projects in mountain areas. In **Chapter 1**, *Introduction to this PhD thesis*, I have outlined the research problem, the gaps in the SES, NRM, behavioural science, developmental psychology and disaster management literature; the social development outcomes advocated by international development and disaster management policies and declarations; and the gaps in (regional) development studies, social protection, and SIA fields. **Chapter 2** provides an overview of the overall research methodology. **Chapter 3**, *Experiencing local community resilience in action: Learning from post-disaster communities*, provides the empirical evidence in relation to local community resilience and how it came into action among rural communities and at individual level in the immediate aftermath of the 6 April 2009 L'Aquila earthquake. This forms the empirical basis to answer the research questions: *What is Community Resilience? How does it come into Action?* By providing the empirical basis to answer such research questions, Chapter 3 is oriented towards filling the gap in the integrated approach to resilience combining SES and NRM literature with behavioural science, developmental psychology literature, and in disaster social science research field about local community resilience and its agency.

Chapter 4 *Using Social Impact Assessment to strengthen community resilience in sustainable rural development in mountain areas* shows how SIA can strengthen resilience at the local community level in sustainable rural development projects in mountain areas. It sketches the main literature concerning SIA and presents the *SIA Framework for Action* as an innovative tool to enhance social development outcomes in development. This fourth chapter demonstrates how SIA can be applied in development projects in mountain areas through the SIA Framework for Action to have a greater focus on enhancing social learning and empowering socially sustainable transformations, thus achieving social development outcomes, including local community resilience. It shows how this framework was adopted in the context of the action research conducted within the sustainable rural development project *Vie e Civiltà della Transumanza, patrimonio dell'Umanità* (Routes and Civilization of Transhumance World Heritage), in the mountain areas of the Abruzzo Region of central Italy. All this provides the empirical basis to answer the research question *How can SIA enhance community resilience in practice?* By providing the empirical basis to answer such research questions, Chapter 4 is oriented towards filling the gap in the SIA field.

PART 2: Understanding main scientific, institutional, and socio-cultural constraints

Part 2 of this PhD thesis is called *Understanding main scientific, institutional, and socio-cultural constraints*, and it is organized to understand the main gaps of traditional top-down disaster management in the 4 key priority areas to enhance DRR and resilience at all levels of society (UNISDR, 2015). It provides the empirical results from the disaster front to answer the research questions: *What are the main constraints that still undermine effective enhancement of DRR and resilience at the local community level and at all levels of society?* It comprises four chapters (*Chapter 5, 6, 7 and 8*) and analyses the top-down response to disaster risks and impacts in L'Aquila (Abruzzo region) that was enacted by the Italian state through its civil protection system both before and after disaster. It contrasts the Italian state civil protection top-down response to disaster risks and impacts with current understanding of resilience and resilience-building strategies, and with main international principles, recommendations and guidelines in disaster management that have established the DRR and resilience paradigm to be the basis of any post-disaster and development intervention. This part provides the empirical results, evidence and first conceptualization of: (i) the cognitive (e.g. techno scientific knowledge, disaster myths, and prejudices) and interactional dimensions (e.g. the institutional and financial strategy, the physical planning, community participation and risk management approaches) of the top-down agency and approach to disaster risks and impacts adopted by the state and the national and local civil protection authorities; (ii) the main failures of such an approach to respect the DRR and resilience principles and paradigm; (iii) the main social pathologies such an approach creates on local communities and their capacity to learn and transform both at the cognitive and interactional level, on the place of intervention, and on the multiple dimensions of local community wellbeing.

Chapter 5, *Reflections on the L'Aquila trial and the social dimensions of Disaster Risk*, describes the Italian state and the national and local civil protection authorities' top-down approach to the disaster risks perceived and experienced well before the 6 April 2009 earthquake by local communities living in L'Aquila. The 6 April 2009 earthquake and its aftermath triggered an unprecedented series of legal consequences: over 200 legal inquiries were initiated, with 20 or so court cases (Orsini, 2015) commenced primarily relating either to the collapse of key public buildings (e.g. the local hospital, the Faculty of Engineering) or to private buildings of concrete construction where most fatalities were concentrated (Alexander and Magni, 2010). Other court cases related to corruption and fraud in post disaster recovery and reconstruction (Lewis, 2011, 2017; Fidone, 2017). Various international reports (e.g. Sondergaard, 2013) and legal inquiries (DNA, 2016; Bindi, 2018) have revealed that there was organized crime infiltration as well as many other irregularities. However, what gained most international attention and has come to be known as 'the L'Aquila Trial' was the prosecution of 6 scientists and 1 government official. The trial was initiated because of a controversial meeting on 31 March 2009 of the Major Risks Committee (MRC), held under the auspices of the Italian Department of Civil Protection. The purpose of the meeting was to consider (prior to the fatal earthquake of 6 April 2009) disaster risk in the L'Aquila area, which was being affected by an earthquake swarm since October 2008. Drawing on a thorough analysis of the L'Aquila trial documents, of phone calls among public officials and civil protection authorities before and after the MRC meeting and on few in-depth interviews with key informants who were significant identities in L'Aquila and/or the trial, this chapter reflects on what can be learned about DRR and resilience building from the L'Aquila trial. This chapter provides evidence on the main scientific constraints to fully understand the social dimensions of risk (*key priority 1*, see UNISDR, 2015), understand resilience of what to what, and enhance it before disasters.

Chapter 6, *Command-and-control, emergency powers and the failures to follow United Nations disaster management principles following the 2009 L'Aquila earthquake*, using the DRR and resilience paradigm and United Nations principles for post-disaster interventions, analyses the actions of the Italian civil protection agency following the April 2009 earthquake in L'Aquila

(Abruzzo, Italy), especially the use of a command-and-control approach and of emergency powers. It considers the immediate response, the militarization of the emergency area, the establishment of red zones, the provision of emergency shelter and temporary housing, and the utilisation of disaster myths. It provides the empirical evidence of the failure of the top-down, command-and-control approach to respect internationally-agreed principles of disaster risk reduction and resilience, strengthen disaster risk governance and reduce disaster risk in post-disaster interventions (*key priority 2*, see UNISDR, 2015).

This chapter (and *Chapter 7*) shows that, rather than reducing risks and strengthening local disaster risk governance, typical top-down response to disaster impacts led by civil protection systems adopting a para-militaristic command-and-control approach, creates further social impacts, violates human rights, worsens local vulnerabilities and risk, allowing rent-seeking, disaster capitalism, corruption, and organized crime infiltration to prosper in post-disaster situations. This chapter provides empirical evidences of the mechanism (i.e. the cognitive and interactional dimensions – the institutional and financial strategy, and the physical planning, community participation and risk management approaches) of the top-down response enacted by external actors that brought to such a failure. It also provides first conceptualisation of the main scientific, institutional, and socio-cultural constraints that still undermine the implementation of effective community resilience building strategies in post-disaster interventions.

Chapter 7, *The mechanism of disaster capitalism and the failure to build community resilience in post-disaster situations: Learning from the 2009 L'Aquila earthquake*, using the DRR and resilience paradigm, further analyses post-disaster interventions implemented during the first three years following the 6 April 2009 earthquake, while the State of Emergency remained in force. More precisely, this chapter provides further empirical evidences of how the command-and-control approach and the emergency powers got transferred to local authorities in order to manage disaster rubble, safety measures implementation on public and private buildings and infrastructure, demolitions and allocation of apartments for temporary housing accommodation. This chapter shows how transferring the command-and-control approach and the emergency powers to local authorities disrupted the local democratic governance of the region, allowed derogations to anti-mafia controls, and any ordinary public procurement procedure.

Drawing from the L'Aquila case and its key findings, this chapter further advances the conceptualisation of traditional top-down response to disaster impacts, and of the mechanism (i.e. the cognitive and interactional dimensions – the institutional and financial strategy, the physical planning, community participation and risk management approaches) through which external and local actors implement post-disaster and development interventions, failing to enhance DRR and resilience at the local community level. It shows how this mechanism created the opportunity for rent-seeking, elite capture, organised crime infiltration and corruption to arise, rather than the opportunity to enhance social learning and socially sustainable transformations at the local community level, disrupting the democratic governance of the region, creating social and environmental impacts, violating human rights, worsening local inequities, vulnerabilities and the local root causes of disasters, and the associated disaster risks and impacts. This chapter further sheds light on the scientific institutional and socio-cultural constraints that still impede effective investment oriented to enhance DRR and build resilience (*key priority 3*, see UNISDR, 2015).

Chapter 8, *Top-down approach in post-disaster reconstruction and the failure to 'build back better' resilient communities after disaster: Lessons learned from the 2009 L'Aquila Italy earthquake* considers what happened in L'Aquila following the 6 April 2009 earthquake in terms of initial reconstruction policies, design and interventions. Using the DRR and resilience paradigm, Chapter 8 specifically focusses on first planned interventions on the damaged local built environment, and further discusses the cognitive and interactional failures of top-down approaches, analysing the main constraints to social learning, transformation and building back

better more resilient communities in post-disaster reconstruction. Drawing from participant observation, action anthropology and analytic auto-ethnography which was conducted during the reconstruction phase following the L'Aquila earthquake, and triangulating this data with systematic retrospective document analysis, media analysis and retrospective interviewing, this chapter provide empirical evidence of the cognitive and interactional failures of the civil protection system in building back better more resilient communities in post-disaster reconstruction. Most previous commentary on the disaster recovery and reconstruction following the L'Aquila earthquake has focussed on the top-down approach carried out by the national government and the Italian Department of Civil Protection. This chapter, together with Chapter 7, is unique in that it sheds light on how the command-and-control approach was also implemented by local authorities and on how all this undermined building back better more resilient communities. The findings reveal that the shift from civil defence to civil protection did not bring any advance in disaster management and development practice in terms of DRR and resilience. The militaristic command-and-control approach, which is still in vogue among civil protection systems, means that local political leaders become the civil protection authorities of a disaster area. As the L'Aquila case shows, this exacerbates local social and environmental risks and impacts, inhibits local communities from learning, and from taking part in post-disaster interventions. This chapter, further elaborate on social risks (i.e. rent-seeking, elite capture, organised crime infiltration, disaster capitalism, corruption, inequity and social exclusion) and on the shift evoked in Chapters 5 and 6 from centralised civil protection systems to decentralised community empowerment approaches to enhance social learning and transformation and build resilience at all levels of society, including at the local community level.

PART 3: Engaging and Empowering the role of local communities

Part 3 of this PhD thesis is called *Engaging and empowering the role of local communities in the global risk landscape: What can be learned from the disaster front and what needs to be transformed in disaster management, development and impact assessment thinking and practice?* It draws from findings and evidence reported in Part 1 and 2, and provides conceptual advances to answer the research questions in its title. **Chapter 9**, *From assessing impacts to reducing risks from planned interventions: Revolutionizing Impact Assessment to include Disaster Risk Reduction and Resilience to achieve the Sustainable Development Goals*, reflects on the profound implications findings in Part 1 and 2 have in development and impact assessment thinking and practice. It reflects on top-down approaches adopted in development and impact assessment practice and the main constraints that undermine also these fields to integrate DRR and resilience in development policies, plans and projects and achieve SDGs.

This last part of the PhD thesis advocates for a paradigm shift in development and Impact Assessment theory and practice, similar to the one prompted by the DRR and resilience thinking in disaster management. In this last chapter, we argue that such a paradigm shift in development can be fostered by a paradigm shift in Impact Assessment which can help IA become a more effective process to enhance social learning from past development processes and transformation towards social and environmental sustainability in development practice, foster a *Glocal Culture of Resilience*, and help decision-makers, proponents, investors and local communities better integrate the DRR and resilience paradigm in any planned intervention to achieve the Sustainable Development Goals. Finally, **Chapter 10** summarises the main contribution of this PhD research to the literature, the key findings and evidences reported in the previous parts of the thesis; it answers the research questions and provides recommendations both for future research and practice in disaster management, development, and impact assessment field. **Chapter 11** contains the main conclusions and final recommendations.

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