Conceptualizing community resilience and the social dimensions of risk to overcome barriers to disaster risk reduction and sustainable development

Angelo Jonas Imperiale | Frank Vanclay

Faculty of Spatial Sciences, Urban and Regional Studies Institute, University of Groningen, Groningen, The Netherlands

Correspondence
Angelo Jonas Imperiale, Faculty of Spatial Sciences, Urban and Regional Studies Institute, University of Groningen, Landelev 1, Groningen 9700 AB, The Netherlands. Email: a.j.imperiale@rug.nl

Abstract
Crises and disasters are windows of opportunity to learn and transform toward enhancing disaster risk reduction (DRR) and resilience. However, a poor understanding of community resilience and the social dimensions of risk, the lack of a methodology to engage and empower resilience in society, and business-as-usual together limit the implementation of effective DRR and resilience-building strategies. In this reflection paper, we discuss the main elements of the DRR and resilience paradigm. By analyzing the failures in disaster management, we identified the cultural and political barriers to enhancing DRR and community resilience as being: a paternalistic social protection culture; and the command-and-control approach to knowledge and resources for risk reduction. We reflect on the implications of this for sustainable development and argue that building a glocal culture of community wellbeing and resilience and a socially sustainable risk governance is needed to overcome the cultural and political barriers to DRR and sustainable development.

KEYWORDS
community wellbeing, disaster risk governance, resilience, social sustainability, sustainable development goals, transformation toward sustainability

1 | INTRODUCTION

The risk of disasters is increasing in terms of their extent, intensity, and frequency, disproportionately affecting the regions and people who are most vulnerable (UNDRR, 2019; Wallemacq & House, 2018). To address this increasing risk, since the 1980s various international declarations, principles, and guidelines have contributed to establishing a disaster risk reduction (DRR) and resilience paradigm that should be the basis of disaster management and development in all countries (IDNDR, 1994; UNDRO, 1982; UNISDR, 2005, 2015). In these documents, the United Nations has called upon all states to express their commitment to reduce vulnerabilities and associated disaster risks, and to strengthen capacity and resilience at all levels of social-ecological governance, before and after disasters (Imperiale & Vanclay, 2019a, 2019b). Consistent with earlier declarations, the Sendai Framework for Disaster Risk Reduction 2015–2030 (UNISDR, 2015) recommended that, to enhance DRR and build community resilience, all states should enhance effort in four Priority Areas: (a) understanding risk in all its multiple dimensions; (b) strengthening disaster risk governance; (c) investing in DRR for resilience; and (d) enhancing preparedness and build back better in response, recovery, and reconstruction actions.

Aligning all investments and planned interventions with the Four Priority Areas of the Sendai Framework is a key strategy that should inform not only disaster management, but also development policies, plans, programs, and projects (4P), especially if development is meant to be sustainable and contribute to reducing the risk of future disasters (Holcombe & Anderson, 2010; Staupe-Delgado, Kruke, Ross, &
Glantz, 2018). The 2030 Agenda for Sustainable Development (United Nations, 2015) reaffirmed the need to enhance DRR and community resilience in all development 4P, a concept that is embedded in the sustainable development goals (SDGs) and their corresponding targets (Le Blanc, 2015). Although not yet fully implemented in disaster management practice, the DRR and resilience paradigm have prompted a shift in disaster management thinking from “managing disasters” to “reducing disaster risks and building resilience” (IDNDR, 1994; UNISDR, 2005, 2015).

Integrating effective DRR and community resilience-building strategies into development 4P demands a similar shift in development theory and practice, from managing the impacts, to reducing the risks of development and building resilience. According to the DRR and resilience paradigm, crises and disasters should be seen as windows of opportunity to “build back better,” not only housing and infrastructure, but also more sustainable and resilient societies (Collodi, Pelling, Fraser, Borie, & Di Vicenzo, 2021; Gyawali, Tiwari, Bajracharya, & Skotte, 2020; Imperiale & Vanclay, 2020b). Similarly, every development 4P should be seen as windows of opportunity to learn from past failures, and to transform towards building back better, enhancing DRR, and strengthening community resilience (Imperiale & Vanclay, 2016a, 2016b; Manzini & M’Rithaa, 2016).

Too often, however, disaster management and development interventions are used as opportunities to perpetuate business-as-usual and facilitate rent-seeking, elite capture, organized crime, disaster capitalism, and corruption at local, national, and international levels (Escaleras, Anbarci, & Register, 2007; Gunewardena & Schuller, 2008; Klein, 2007; Lewis, 2011, 2017; Lyons, 2009). This results in disaster management and development interventions that, rather than build back better, create further environmental, social and human rights risks and impacts, exacerbate the social pre-conditions of disaster, create second disasters and a downward spiral of public debt, inequality, and vulnerability to future disasters (Imperiale & Vanclay, 2019b, 2020a, 2020b, 2020c). For these reasons, too often, recovery and development keep being missed opportunities to learn from past failures and to positively transform toward sustainability.

The shift in disaster management and development theory and practice prompted by the DRR and resilience paradigm, demands that states enhance efforts at international, national, regional, and local levels in: (a) the knowledge production concerning risks and resilience; and (b) the governance strategies (i.e., institutional, financial, risk management, participation, and physical planning strategies) that should orient planned interventions toward reducing risks and enhancing resilience in society. However, there are still barriers that hinder states from understanding the multiple dimensions of risks and resilience (especially their social dimensions), and from building effective governance to enhance DRR and achieve the SDGs in disaster management activities (Imperiale & Vanclay, 2020a). Similarly, transition to sustainable development is alarmingly slow (Chang et al., 2017; Newman, 2007), with barriers still hindering states from facilitating social learning from failures created by past development processes, and from pursuing transformation toward sustainability in development 4P (Burch, 2011; de Paiva Duarte, 2015).

The dramatic impacts of new pandemics and of ever-increasing climate-related disasters have made understanding these barriers, how to overcome them, and how to create sustainable transitions toward building back better more urgent than ever. This is even more urgent in less-favored regions where past development processes have created vulnerabilities and risks, and have made these areas disproportionately exposed to the negative impacts of crises and disasters (Barca, 2009; Barca et al., 2014; Klein et al., 2019). This paper is part of a larger research project which looked at the social dimensions of the April 6, 2009 L’Aquila earthquake (Abruzzo, Italy), and the failure to enhance DRR and community resilience created by the national and local governments and civil protection authorities at each disaster management phase, before and after the earthquake (Imperiale & Vanclay, 2016a, 2016b, 2019a, 2019b, 2020a, 2020b, 2020c).

Using the DRR and resilience paradigm and elaborating on the evidence of these failures, which we provided in previous work, in this paper, we argue that there still are cultural, political, and institutional barriers to integrating DRR and community resilience-building strategies in disaster management practice. These barriers are: (a) a poor understanding of community resilience and of the social dimensions of risk and (b) a lack of adequate strategies and methodologies to enhance DRR and build resilience in society. This leads to a perpetuation of business as usual and a worsening of pre-disaster vulnerabilities. Using our research following, the 2009 L’Aquila earthquake, and drawing on the literature in the fields of disaster studies, sustainability science, and social-ecological systems (SES), in this paper, we clarify the theoretical constructs underpinning the DRR and resilience paradigm, including: community resilience, the social dimensions of disaster risk and of resilience-building strategies. We also elucidate the main cultural and political barriers to integrating DRR and community resilience-building strategies into planned interventions and we discuss how to overcome these barriers. Finally, we reflect on the implications of all this for sustainable development theory and practice.

2 | UNDERSTANDING THE SOCIAL DIMENSIONS OF RISK AND DISASTERS

A disaster is a social disturbance that has multiple dimensions: (a) the characteristics of the hazard; (b) the social dimensions of risks and impacts, including how they are perceived, experienced and distributed; (c) the social pre-conditions of disaster; (d) the capacity of local people to learn from past failures and disasters, and to transform towards sustainability at all levels of social-ecological governance; (e) the principles, goals, and methods embedded in disaster risk management and post-disaster interventions; and (f) the effectiveness of the social processes, services, and support available to a community before and after disaster.

By definition, disasters always have severe social impacts on the multiple dimensions of local community wellbeing. Drawing on the Social Framework for Projects (Smyth & Vanclay, 2017), these impacts can be categorized as affecting people’s (see Figure 1):
• health (e.g., loss of life; physical and psychological wellbeing; access to healthcare services);
• community (e.g., social inclusion; social cohesion; and the effectiveness of community services and local social and political networks, institutions, and governance);
• culture (e.g., local cultural and religious structures and shrines; local customs, beliefs, language and ceremonies; and tangible and intangible cultural heritage);
• livelihoods (e.g., assets, jobs, and occupations; and access to credit);
• infrastructure (e.g., roads, bridges, factories, public facilities, utilities, and services, including education and healthcare facilities);
• housing (e.g., family homes, buildings for farms or other business activities);
• environment (e.g., the liveability and quality of the environment); and
• land (e.g., natural resource assets; natural heritage; ecosystem services; protected areas).

The social impacts that are perceived and experienced vary from disaster to disaster and are unequally distributed between the regions of the world and within local communities. Understanding vulnerability in social terms is crucial to appreciating the unequal distribution of impacts in different places and communities, and within the same community (Weichselgartner & Kelman, 2015). Vulnerability is commonly defined as "a measure of the propensity of an object, area, individual, group, community, country, or other entity to incur the consequences of a hazard" (Coppola, 2015, p. 33). Although, potentially all people can be vulnerable to disasters, some groups of people are more vulnerable than others. Local vulnerabilities include the cognitive (e.g., psychological susceptibility to fear, anxiety, panic; lack of sense of community; lack of sense of place; lack of sense of risk) and interactional weaknesses (e.g., lack of social inclusion; lack of social cohesion; weak local governance; poor housing and infrastructure; poor land use) that affect the multiple dimensions of local people's wellbeing, and that increase their exposure to, and experience of, the negative social impacts of disasters. These weaknesses are products of the local history of past development processes and associated social changes and impacts (Gaillard & Mercer, 2012; Miller et al., 2010; Vanclay, 2002). They can exacerbate or be exacerbated by social risk processes (e.g., rent-seeking, elite capture, inequity, social exclusion, organized crime infiltration) and risk outcomes (e.g., impoverishment risks, institutional risks, political economy risks, see Cernea, 1997).

Social risks are the likely impacts that are experienced and the processes that create impacts. They are the likely undesirable impacts that people perceive and/or experience in the multiple dimensions of their wellbeing. They can also be the negative social processes (e.g., rent-seeking, elite capture, organized crime infiltration, disaster capitalism, corruption) that threaten individuals, or the social sustainability of a planned intervention, or of a community as a whole. Social risk processes and outcomes negatively influence each other. They are produced by and exacerbate local vulnerabilities, worsening the risk of disaster at the local level (Escaleras et al., 2007; Lewis, 2011, 2017). Overall, the local root causes of disaster are the history of past development and associated social change processes and impacts; and the local vulnerabilities and social risk processes and outcomes that emerge over time. Together with insufficient capacity to reduce local vulnerabilities, risks and hazard exposure, these root causes are also the social pre-conditions of disaster (see Figure 2).

Disaster risk is commonly understood as the interaction between the impacts (consequence) and the likelihood (probability) of a hazard (Coppola, 2015; Miller et al., 2010). A hazard can be an event, an agent (e.g., vector, factor), or the physical conditions that have potential to cause fatalities or injuries, or to affect the multiple dimensions of community wellbeing. Hazards can be classified as natural (e.g., earthquakes, floods, typhoons), socio-natural (e.g., bushfires, droughts, landslips, famine, climate change), medical/health (e.g., epidemics), industrial (e.g., explosions, collisions, leakages), infrastructural (e.g., collapse of buildings or bridges, power outages, building fires), technological (e.g., exposure to radiation or carcinogenic substances from the use of
technology), and socio-political (e.g., war, terrorism, ethnic conflict). What determines whether a hazard is experienced and/or becomes perceived as a disaster (realized actuality or impact) are risk (i.e., hazard exposure and likelihood/susceptibility) and vulnerability. The risk associated with a hazard is determined by the characteristics of the hazard itself, hazard exposure, and susceptibility. Hazard exposure and susceptibility are exacerbated by local vulnerability.

Overall, the intensity and extent of risk are influenced by the physical, social, economic, and environmental vulnerabilities of a community, which worsen the social impacts from and likelihood of

---

**FIGURE 2** The social preconditions of disaster.
Source: This paper [Colour figure can be viewed at wileyonlinelibrary.com]

**FIGURE 3** The multiple dimensions of risk.
Source: This paper [Colour figure can be viewed at wileyonlinelibrary.com]
disaster (Adger, 2006; Gallopín, 2006; Miller et al., 2010; Oliver-Smith, Alcántara-Ayala, Burton, & Lavell, 2017). Local vulnerability to the negative impacts of disasters is negatively influenced by the local root causes of disaster and by any past or ongoing planned intervention that exacerbate them. Conversely, hazard exposure, and susceptibility are reduced by local capacity and community resilience, which is local people's capacity to learn from past failures, crises and disasters (i.e., social learning) and to transform toward reducing the social pre-conditions of disaster and enhancing community wellbeing (i.e., transformation toward sustainability). In other words, the extent, intensity, and frequency of the risk of a hazard to become a disaster is given by the hazard itself. It is directly proportional to the extent of local vulnerability and the root causes of disaster; and is inversely proportional to the extent of local capacity and community resilience.

In Figure 3, we provide a conceptualization of the multiple dimensions of risk (i.e., hazard, hazard exposure, likelihood/susceptibility, vulnerability, the local root causes of disaster, capacity, and community resilience). Figure 3 also includes a conceptualization of the planned interventions enacted by local communities and external actors (i.e., decision-makers, investors, and proponents). As depicted in Figure 3, planned interventions can perpetuate business-as-usual, thus exacerbating local pre-disaster vulnerability, or can lead to social learning and transformation toward sustainability and strengthening community resilience and local capacity, thus reducing disaster risk.

As depicted in Figure 3, vulnerability is not the direct opposite of community resilience. As outlined in previous research (Gallopín, 2006; Imperiale & Vanclay, 2016a, 2016b; Miller et al., 2010), even the most vulnerable communities can have extraordinary resources for resilience in times of crises and disasters. Every community potentially has vulnerabilities and capacities at the same time, and has negative and positive processes that differentially influence capacity and vulnerability. These processes are the internal cognitive and interactional components of resilience (see below) and of social risks (e.g., rent-seeking, elite capture, organized crime infiltration, inequity, social exclusion) that respectively influence a community to be capable of harnessing its resources, or to be forced into a downward spiral of socially produced vulnerability and disasters. As depicted in Figure 3, what can be considered as the opposite of community resilience comprises: (a) perpetuation of business-as-usual (i.e., disaster capitalism) and (b) the social risks and root causes of disasters, which threaten local people's capacities of social learning and transformation toward sustainability (Escaleras et al., 2007; Imperiale & Vanclay, 2020b, 2020c; Lewis, 2011, 2017).

In all communities, there will be both negative and positive features, elements, and processes. There will be pre-disaster vulnerability and various social risks, but there will also be positive capacities and community resilience (Adger, 2006; Gaillard & Mercer, 2012; Imperiale & Vanclay, 2016a, 2016b). The more vulnerable local communities are the more likely it is that a hazard will turn into a disaster. Conversely, the more capable communities are of learning, transforming, and being resilient, and of reducing the social pre-conditions, the less likely it is that a hazard will become a disaster. In all contexts, but especially in times of crises and disasters, planned interventions can perpetuate business-as-usual and worsen the social pre-conditions of disaster, but can also lead to understanding, recognizing, engaging, and strengthening community resilience. In this sense, all planned interventions are a risk, and also an opportunity for community wellbeing.

3 | CONCEPTUALISING COMMUNITY RESILIENCE AND RESILIENCE-BUILDING

3.1 | Defining resilience in social terms

Resilience has many definitions and a long history across several disciplines (Berkes, Colding, & Folke, 2003; Berkes & Ross, 2013, 2016; Davidson, 2010; Folke, 2006; Imperiale & Vanclay, 2016a; Norris, Stevens, Pfefferbaum, Wych, & Pfefferbaum, 2008). While technoscientific and mechanistic approaches to resilience in physical systems (e.g., technologies, infrastructure) have emphasized that resilience is the capacity of systems to maintain and return to the status quo (Holling & Meffe, 1996), SES theory has outlined that, rather than persist in the way that artifacts do, systems in nature, especially social systems, learn and transform following a disturbance (Berkes et al., 2003; Berkes & Ross, 2013, 2016; Carpenter & Gunderson, 2001; Folke, 2006; Holling & Meffe, 1996; Imperiale & Vanclay, 2016a; Pahl-Wostl et al., 2008).

In society, disturbances can be seen as windows of opportunity for social actors to learn and transform, bringing about innovative changes that can improve SES management and resilience. However, it is still unclear how the agency of resilience occurs in society and how it can be strengthened at all levels of social-ecological governance (Berkes & Ross, 2013, 2016; Cote & Nightingale, 2012; Davidson, 2010; Davoudi, 2012; Magis, 2010). Previous conceptualizations of resilience have tended to be theoretical rather than practical, and they have primarily focused only on the set of pre-conditions (e.g., abilities and resources) that enable communities to be resilient, or on the desired outcomes for a community to be resilient (Cutter et al., 2008; Matarrita-Cascante, Trejos, Qin, Joo, & Debner, 2017; Norris et al., 2008). Very little has been said about the individual and collective agency that people enact to harness these abilities and resources, address the negative impacts of crises and disasters, and achieve desired outcomes (Berkes & Ross, 2013, 2016; Brown, 2014; Imperiale & Vanclay, 2016a, 2016b; Magis, 2010; O'Brien, 2012).

In our previous work (Imperiale & Vanclay, 2016a, 2016b, 2020b), we defined community resilience as the social processes (cognitive and interactional) that occur within places and that are put into action by local people to collectively learn and transform toward enhancing community wellbeing and addressing the negative risks and impacts they perceive and experience as common problems. Social resilience refers to social learning and transformation in society that leads local communities and external actors to learn from unexpected changes (crises, disasters, and other social disturbances) and to transform toward empowering local capacities, mitigating risks and impacts, and enhancing wellbeing and resilience at all levels of social-ecological governance (Berkes & Ross, 2013, 2016; Cavaye & Ross, 2019; Matarrita-Cascante et al., 2017).
Drawing on sustainability science and natural resource management (Brown, 2014; Cornell et al., 2013; Miller et al., 2014; O’Brien, 2012; Pahl-Wostl et al., 2008; Reed et al., 2010; Scholz, Dewulf, & Pahl-Wostl, 2014; Sharpe, Hodgson, Leicester, Lyon, & Fazeley, 2016), we define social learning as the individual and collective processes at the cognitive level that come from perceiving and/or experiencing the social and environmental context, including the negative consequences of past failures and crises. These processes lead to changes in: perceptions of shared needs, desires, and capacities; feelings (emotions, affections); attitudes; actions; behaviors; and in the production of local knowledge, values, and narratives. These changes lead people to learn from past failures, crises and disasters, develop their sense of community, their sense of place and their sense of risk, and to recognize vulnerabilities, risks, impacts and the social pre-conditions of disaster in their locality. Transformation can only occur when there is social learning, and when it leads to longer-term changes in: the individual and collective cognitive capacities (i.e., cultural transformations); the social interactions among social actors within and across all levels of social-ecological governance (i.e., social transformations); and in the interactions between social actors and their living environment (i.e., ecological transformations).

In a resilient society, when a crisis or a disaster occurs (or is perceived by many people), the operation of the processes of social learning and transformation will always mean that external actors together with local communities will learn from the crisis and past failures that led to it, and will positively transform. This mutual transformation will be toward: (a) reducing local vulnerabilities, risks, impacts and the social pre-conditions of disaster; and (b) enhancing community wellbeing and the local capacities to reduce risks and build resilience to future disasters. These two goal-oriented processes together can be regarded as “transformation towards sustainability.” Social learning and transformation toward sustainability can be activated in each of the eight dimensions of community wellbeing (see Figure 1).

Overall, we consider that “social learning” and “transformation towards sustainability” are crucial intertwined processes that are at the very core of resilience in society, and of any DRR and resilience-building practice. Therefore, they are essential to any attempt to build back better, pursue sustainable development, or to achieve the SDGs. Using an integrated approach to resilience (Berkes & Ross, 2013, 2016) and drawing on our previous research (Imperiale & Vancay, 2016a, 2016b), below we conceptualize the cognitive and interactional dimensions through which the agency of resilience (i.e., social learning and transformation toward sustainability) comes into action at the local community level (i.e., community resilience) and at multiple levels of social-ecological governance (i.e., social resilience).

### 3.2 Recognizing the cognitive and interactional dimensions of resilience in society

Community resilience comprises the social processes (cognitive and interactional) that enable social learning at the local community level, and result in transformation towards sustainability. Like all human agency, community resilience has cognitive (e.g., intersubjective intentionality) and interactional dimensions (e.g., mutual aid, cooperation, social sustainability) that people use to collectively learn and transform. The cognitive dimension orients their intentionality toward reducing local vulnerabilities, risks, and impacts and enhancing community wellbeing. Intentionality is a person’s cognitive process of identifying a purpose that emerges from and oriented their feelings, attitudes, and behaviors toward that purpose (Searle, 1980). In resilient communities, shared intentionality emerges among people living in an environment of perceived and/or experienced crises. As shown in previous research (Imperiale & Vancay, 2016a, 2016b), local people perceive, observe, and reflect on their environment and community at risk, and develop a shared intentionality that feeds and is fed by:

1. a feeling of empathy towards the most vulnerable and those most in danger;
2. a perception of shared local vulnerabilities and needs;
3. a perception of shared desires and capacities related to: enhancing local wellbeing; meeting the needs of local people, especially the most vulnerable; and reducing vulnerabilities, risks, and impacts;
4. an attitude of social responsibility towards reducing local vulnerabilities and associated disaster risks and impacts; and
5. a culture of resilience (i.e., local knowledge, tools, beliefs, values, narratives, a sense of community, a sense of place, and a sense of risk).

The perception and experience of the negative risks and impacts of crises and disasters lead to changes in the perceptions of individual and collective vulnerabilities, needs, desires, and capacities, and in the individual and collective feelings, attitudes, actions, behaviors, knowledge, beliefs, values, and narratives. This learning process leads affected people to: share suffering, grief, and sorrow; feel empathy, caring and social responsibility; perceive shared needs, desires, and capacities; and to develop a culture of resilience that reinforces local people’s sense of community, sense of place, and sense of risk (Imperiale & Vancay, 2016a, 2016b). This culture, in turn, helps people overcome grief and increase their empathy, perception of shared vulnerabilities, needs, desires, and capacities, and their sense of social responsibility. All these are the components (or cognitive drivers) of the intersubjective intentionality that comprise the cognitive dimension of the agency of resilience in society. They lead members of a resilient community to perceive the reduction of local vulnerabilities and the enhancement of community wellbeing and capacities as common problems and desired outcomes that need shared effort (Figure 4).

At the interactional level, the individual and collective actions and behaviors represent the interactional dimension through which resilience comes into action at the local community level. These actions and behaviors are grounded on the interactions local people have with each other (i.e., social interactions) and with their living environment (i.e., environmental interactions). Before disasters, learning about the interconnections between the worsening of local vulnerabilities and disaster risks at the local level leads people to transform towards taking individual and collective actions to reduce them (or to demand
their reduction), and to enhance (or demand the enhancement of) local wellbeing and preparedness (Imperiale & Vanclay, 2019a).

After disasters, learning from disaster impacts and how they are distributed—and from how these impacts are perceived and experienced by the most vulnerable—leads local people to re-orient their individual and collective intentionality and actions toward mutual aid, cooperation, and social sustainability, and toward collectively reducing risks and impacts and enhancing community wellbeing (Imperiale & Vanclay, 2016a, 2016b). Rather than any counterproductive action or anti-social behavior, the shared need to find solutions to common problems brings local people to undertake positive, cooperative behavior. Overall, mutual aid and social sustainability (i.e., equity, inclusion, community wellbeing, and awareness for DRR, resilience and sustainability) comprise the interactional dimension of local community resilience (Imperiale & Vanclay, 2016a, 2016b).

3.3 | Building resilience at all levels of social-ecological governance

When external actors intervene, they bring their own knowledge, beliefs, values, myths, feelings, and attitudes toward affected local people and local living conditions. This cognitive dimension influences their perceptions about local communities, disaster risks and impacts, and the activities that would be effective in reducing them. It orients their intentionality and the interactional dimension of their agency, thus influencing the outcomes of planned interventions (Imperiale & Vanclay, 2019a, 2019b). The interactional dimension of their agency comprises the governance strategies (i.e., institutional, financial, physical planning, community participation and risk management strategies) they use to organize knowledge, technologies, resources, and responsibilities for risk and impact mitigation and monitoring activities, and to design and implement disaster management and development interventions (Jha et al., 2010).

According to SES theory, the resilience of a system is positively influenced by many factors, especially by the ability of systems to self-organize and cope with disturbance and change. In nested systems, resilience is not determined by the capacity of larger and slower levels of organization (e.g., cities, network of rural municipalities) to control change (in systems that are assumed to be stable), but rather by their ability to be sensitive to, learn from, include, and strengthen the capacities of smaller sub-systems (e.g., neighbourhoods; rural villages) to cope with disturbances, learn and transform toward sustainability (Armitage et al., 2009; Armitage, Béné, Charles, Johnson, & Allison, 2012; Beratan, 2007; Berkes & Ross, 2013, 2016; Cox, 2016; Davidson, 2010; Folke, 2006). Ideally, to build resilience at all levels of social-ecological governance, the cognitive (i.e., culture) and interactional (i.e., governance strategies) dimensions through which states conceive, decide, design, and implement planned interventions must lead external actors to understanding, recognizing, engaging, and empowering the positive cognitive and interactional capacities of...
community resilience (Ross et al., 2010; Imperiale & Vanclay, 2016b; Cavaye & Ross, 2019).

At the cognitive level, external interventions should strengthen empathy, caring, and social responsibility toward: (a) the most vulnerable who need to be supported; (b) the multiple dimensions of wellbeing and capacities that must be enhanced; and (c) the vulnerabilities, risks, impacts, and pre-conditions of disaster that must be reduced. All this should lead to strengthening a local sense of community, sense of place and sense of risk (see Figure 4). At the interactional level, the strategies used by states should strengthen the complex set of adaptive, intra-level and inter-level dynamics within communities of place (Berkes & Ross, 2016), and among local communities and external actors to enable social learning and transformation at multiple levels of society, and across time, space, and cultures.

Drawing on the advances in system and evolutionary biology (Bailly & Longo, 2011; Korenić, Pervić, Ćirković, & Miquel, 2020; Longo & Montévil, 2013; Longo, Montévil, & Pocheville, 2012) and the hierarchy of levels conceptualized in SES theory (Berkes & Ross, 2016), in Figure 5 we depict the complex set of nested, inter-subjective, and inter-level interactions that enact, enable, and empower resilience at all levels of social-ecological governance.

In Figure 5, three basic, nested, inter-level dynamics are depicted: horizontal interactions; upward integrations; and downward regulations. The horizontal interactions are mutual aid and social sustainability that enable resilience in society and that must be recognized and strengthened. The upward integrations are the processes that lead lower levels of social organization to contribute to prevention, mitigation, monitoring, and enhancement activities. They also lead to external actors being informed about the outcomes of positive learning and transformation toward sustainability at lower levels of organization. The downward regulations are the processes of empowerment that, rather than be directed to individuals (or authority figures), must be directed to the horizontal interactions that facilitate inclusive social learning and transformation towards sustainability in society.

4 | OVERCOMING BARRIERS TO DRR AND COMMUNITY RESILIENCE-BUILDING

For over 40 years, the social sciences have revealed how recovery and reconstruction processes create structural failures by facilitating elite capture, organized crime infiltration, disaster capitalism, and corruption that together exacerbate the social pre-conditions of disaster (Escaleras et al., 2007; Gunewardena & Schuller, 2008; Lewis, 2011, 2017; Oliver-Smith, 1977, 1990). From a DRR and community resilience perspective, a “structural failure” can be regarded as the failure of external actors to recognize, engage, and empower the main local cognitive and interactional drivers of social learning and transformation toward sustainability. In times of crises and disasters, this leads external actors to provide counterproductive help (Ellerman, 2006; Esman & Uphoff, 1984; Illich, 1972, 1976, 1978). In our previous work, we identified the mechanism that states enact to facilitate disaster capitalism and protect the economic interests of the elites (Imperiale & Vanclay, 2020c). We also identified the negative consequences of this mechanism on the cognitive and interactional dimensions of community resilience.

At the cognitive level, this mechanism creates counterproductive learning that exacerbates dependency on external technical assistance, thus retarding the emergence of community resilience, and contributing to the building of a culture of individual profiteering and disaster capitalism. At the interactional level, the mechanism creates counterproductive transformations that worsen the social risks, impacts, and pre-conditions of disaster, affecting the interactional social dynamics of community resilience, and creating second disasters at the local level. This counterproductive learning and counterproductive transformation are created by cultural and political barriers that hinder states from effectively understanding the multiple dimensions of disaster, recognizing community resilience, and building transformation toward sustainability at all levels of governance. Drawing on our analysis of these barriers, and the failures these barriers bring about (Imperiale & Vanclay, 2019a, 2019b, 2020a, 2020b, 2020c), and using the DRR and resilience paradigm,
below, we reflect on how to overcome these barriers and failures. We also reflect on how to better integrate DRR and resilience into the planning culture and governance strategies that orient planned interventions before and after crises and disasters. Finally, we reflect on the implications that all this has for development thinking, policy, and planning and the achievement of the SDGs in vulnerable regions.

4.1 | Beyond a paternalistic culture of social protection: Building a glocal culture of resilience

States that rely on centralized, emergency-centered civil protection systems are still negatively influenced by a paternalistic culture of social protection, which considers that disaster risks and impacts are external to communities and something from which communities must be saved and protected (Imperiale & Vanclay, 2019a, 2019b). This culture holds various disaster myths (Imperiale & Vanclay, 2016a, 2019b; Tierney, Bevc, & Kuligowski, 2006) and has techno-scientific knowledge that together lead to a failure to recognize community resilience and a failure to understand the social dimensions of risk and disaster. The myths (i.e., prejudices and assumptions) underpinning this culture include:

1. risks and impacts are external to local communities, and local people must be saved or protected from them;
2. affected communities are victims who are overly emotional, in shock, incapable of acting appropriately, unprepared and untrained, and inclined to anxiety, alarmism and panic;
3. their autonomous behavior is a threat to themselves, the wider community, and to the proper functioning of disaster management interventions;
4. people will abandon their public responsibilities in favor of their personal interests;
5. local people are incapable of providing useful knowledge, and of contributing to recovery operations, and therefore the involvement of the public is time-wasting and pointless;
6. before disasters, the sharing of knowledge concerning local vulnerabilities and associated risks and impacts is a source of collective anxiety that can create social disorder;
7. after disasters, there will be lawlessness and looting, and therefore militarization of the disaster area and strict surveillance are required;
8. in post-disaster operations, time is a matter of life and death, therefore “the quicker, the better”;
9. normal laws, governance oversight and community engagement retard emergency and recovery operations and have to be bypassed;
10. to be efficient, there needs to be a single “man in charge” (sic) who has authority to make quick decisions; and
11. disaster management officers and volunteers are heroes who are saving people and property, and their actions are beyond rebuke.

These myths are often amplified by local, national, and international media, with media agencies often trapped by the mechanism's communication strategy, and actively contributing to the heroization of certain actors, the victimization of other actors, the mediatization of the disaster, and to the reification of the disaster myths (Farinosi & Treré, 2014; Imperiale & Vanclay, 2016a, 2019b; Tierney et al., 2006; Tierney & Bevc, 2007).

As shown and discussed in previous research (Imperiale & Vanclay, 2020a), this paternalistic mindset leads states to first deny the existence of any risk. Second, states accept the existence of risk, but seek to reassure the population that everything is under control, while ignoring the local vulnerabilities that must be reduced and the local capacities that must be strengthened. Third, when disaster occurs, this mindset leads states to over-react, while completely neglecting community resilience and ignoring the impacts such an over-reaction produces on human rights and the multiple dimensions of community wellbeing. This over-reaction creates second disasters, partly because it is accompanied by the promulgation of disaster myths and it is only informed by techno-scientific knowledge. The concept of “techno-scientific knowledge” refers to the narrow framing of traditional science and especially to its failure to consider the social dimensions of knowledge and knowledge production. It ignores community resilience and the social dimensions of risk, disaster, and disaster management interventions (Tierney & Oliver-Smith, 2012).

Rather than be transformative and co-produced with local communities, this techno-scientific knowledge is produced only in the form of technical advice intended to serve the interests of political leaders and/or to build social acceptance for pre-determined mitigation and monitoring strategies (Imperiale & Vanclay, 2019a, 2019b, 2020b).

In the Sendai Framework for Disaster Risk Reduction 2015–2030, the United Nations recommended that all countries increase effort to understand risk in all its multiple dimensions, specifically vulnerability, capacity, exposure, and hazard characteristics (UNISDR, 2015). However, the paternalistic social protection culture works against this obligation. Being focused only on techno-scientific and technical operational issues, the knowledge produced by traditional science does not provide any assessment of: (a) the social impacts or pre-conditions of disaster and associated needs, or how they are perceived, experienced and distributed among the affected local population; (b) the multiple dimensions of risk; (c) the cognitive and interactional capacities of community resilience; or of (d) the social, environmental, health and human rights risks and impacts that may arise from disaster management interventions (Imperiale & Vanclay, 2019a, 2019b, 2020a, 2020b, 2020c).

To implement the Sendai Framework and to understand the multiple dimensions of risk, there must be a change in the knowledge production concerning vulnerabilities, risks, impacts and mitigation and monitoring activities, and in the culture accompanying planned interventions. Political leaders and disaster management agencies must avoid being influenced by disaster myths and only using techno-scientific knowledge. There must be an insightful understanding of the social dimensions of risk and disasters, and of the cognitive and interactional dimensions of social learning, transformation, and
resilience in society. To counteract the disaster myths and avoid counterproductive learning, this understanding must be transdisciplinary and co-produced with local communities, be transformative, and bring about (and be reinforced by) positive narratives and a glocal culture of wellbeing and resilience. Such a glocal culture, rather than lead to denying the existence of risk, reassuring the local population, and overreacting, instead must lead local communities and external actors to building a common vision about community wellbeing and how to enhance local capacities and services for DRR and resilience in localities. This glocal culture of community wellbeing and resilience must strengthen the positive cognitive capacities of resilience at all levels of social-ecological governance, thus enhancing empathy and social responsibility towards reducing vulnerabilities and risks and enhancing community wellbeing and resilience.

4.2 | Beyond a command-and-control approach to risk reduction: Building a socially-sustainable risk governance

Despite the command-and-control approach having been severely criticized in the field of disaster studies for over 40 years (Cox, 2016; Drabek & McEntire, 2003; Imperiale & Vanclay, 2019b; Jozaei, Mitchell, & Clement, 2020; Quarantelli, 1998; Quarantelli & Dynes, 1977; Tierney & Bevc, 2007), states and their emergency-centered civil protection systems still tend to use a top-down, military-type, command-and-control approach in their disaster management practice. Such an approach and the worldview behind it (Imperiale & Vanclay, 2019b) negatively influence the institutional, financial, risk management, community participation, and physical planning strategies (i.e., the governance strategies) through which states conceive, decide, design, and implement disaster management interventions. Before and after disasters, use of this approach leads states and their civil protection agencies to centralize control over knowledge, technologies, resources and responsibilities, resulting in the worsening of inequity and social exclusion to the detriment of local communities (Clark-Ginsberg, 2020; de la Poterie & Baudoin, 2015; Gaillard & Mercer, 2012; Imperiale & Vanclay, 2020a).

As shown in previous research (Clark-Ginsberg, 2020; Finucane, Acosta, Wicker, & Whipkey, 2020; Imperiale & Vanclay, 2019a, 2019b, 2020a, 2020b, 2020c; Jozaei et al., 2020), in times of crises and disasters, the institutional strategy is to declare a State of Emergency, and to use emergency procedures and derogation from normal regulation (e.g., public procurement, anti-mafia control, public health, and environmental safeguards). Furthermore, local and national political leaders and civil protection authority figures are provided with emergency powers and protected by state secrecy provisions. The financial strategy is designed to ensure that political leaders have direct access and control over emergency and recovery funds and other financial arrangements. Both at the local and national levels, a strict command chain is used in decision-making related to the management of these financial resources. No-bid contracts are used to engage experts, consultancy and building firms, and other suppliers. The risk management strategy does not involve any assessment of the social, environmental, health and human rights risks and impacts that might arise from the technical assistance provided. It also does not consider the social pre-conditions of disaster that may be exacerbated by emergency actions or recovery interventions. The only social risks considered are possible deviant behavior by members of the affected local population that is considered likely to threaten the functioning of disaster management interventions (e.g., alarmism, panic, lawlessness, looting). All this means that risk reduction is not seen as a matter of public health, community wellbeing and resilience, but rather only a matter of police action, militarization, exclusion areas, and surveillance (Imperiale & Vanclay, 2019a, 2019b).

The command-and-control approach is not designed to be inclusive or intended to implement any community engagement strategy (Imperiale & Vanclay, 2019b). Participation is reduced to very limited consultation-command-and-control procedures that lack transparency and accountability, with local political leaders being provided with emergency powers. This results in the exclusion of a broader constituency of local communities from the processes of conceiving, deciding, designing, and implementing disaster management interventions, and in the perpetuation of business-as-usual and disaster capitalism. The physical planning strategy results in top-down planning that leads to technical assistance and over-engineered solutions, which are typically hijacked by local and national elites. This technical assistance fails to reflect community needs; impairs the building of resilience; increases public debt; worsens the social, environmental, health and human rights risks and impacts; and exacerbates dependency on external support (Imperiale & Vanclay, 2019b, 2020b, 2020c). Rather than facilitate genuine community engagement and empowerment, and enhance DRR and resilience at all levels of social-ecological governance, the mechanism used by states in times of crises and disasters leads external actors to consider disaster management interventions as being only the business of a select few. This mechanism undermines the capacities of the broader public to learn from past failures, crises, and disasters and to transform toward sustainability. It also creates counterproductive transformation that facilitates rent-seeking, elite capture, organized crime infiltration, disaster capitalism, corruption, thus exacerbating social impacts and the pre-conditions of disaster at all levels of social-ecological governance (Figure 6; Imperiale & Vanclay, 2019b, 2020b, 2020c).

According to the DRR and resilience paradigm, reducing the risk of disasters is everyone’s business, not just the business of a select few (Clark-Ginsberg, 2020). Increasing recognition of the role of local communities in DRR and of the failures of centralized interventions has led to a change in thinking about responsibility for resilience building from government to a governance approach (Beratan, 2007; Clark-Ginsberg, 2020; Manuamorn, Biesbroek, & Cebotari, 2020; Tierney, 2012). In the Sendai Framework, the United Nations recommended that states strengthen disaster risk governance to better orient investments to enhance DRR and resilience and to build back better more sustainable and resilient societies, before and after disasters (see UNISDR, 2015, Priority Areas 2, 3 and 4). However, the perpetuation of a top-down, military-type, command-and-control
approach brings states and their civil protection systems to use: institutional strategies that contribute to worsening social exclusion rather than enhancing inclusive governance for DRR; financial strategies that lead to investments that facilitate disaster capitalism rather than resilience in society; and risk management, community participation, and physical planning strategies that lead to exacerbating the social impacts and pre-conditions of disaster, creating second disasters, rather than building back better more sustainable and resilient societies (Imperiale & Vanclay, 2019a, 2019b, 2020a, 2020b, 2020c).

To integrate the DRR and resilience paradigm and implement the Sendai Framework in disaster management practice, rather than be considered as the business of a select few, DRR and resilience should be considered as everyone’s business. To enhance inclusive social learning and transformation toward sustainability, the cognitive (e.g., empathy and social responsibility) and interactional capacities (i.e., mutual aid, cooperation and social sustainability) of resilience must be embedded in the governance strategies that orient any planned intervention. These capacities must be seen as principles to follow, tools to use, and desired outcomes to achieve. A shift is needed from the typical command-and-control approach to a socially sustainable risk governance that enables the sharing of knowledge, technologies, resources, and responsibilities for risk reduction, impact mitigation, and monitoring and enhancement strategies. Rather than facilitate rent-seeking, elite capture, organized crime infiltration and corruption, this socially sustainable risk governance should develop mutual aid and social sustainability (i.e., equity, inclusion, community wellbeing, and awareness for DRR and resilience) as its principles, means, and outcomes.

5 | INTEGRATING DRR AND RESILIENCE INTO SUSTAINABLE DEVELOPMENT

Recent intergovernmental declarations, including the Addis Ababa Action Agenda, the Paris Agreement on Climate Change, the New Urban Agenda, and the 2030 Agenda, have included DRR and resilience-building strategies as a fundamental component and pre-condition of sustainable development (Holcombe & Anderson, 2010; Staupe-Delgado et al., 2018). Enhancing DRR and building community resilience are cross-cutting issues that impact progress toward achieving the SDGs (Imperiale & Vanclay, 2020a). DRR and resilience are explicitly mentioned, for example, in SDG1 (end poverty in all its forms everywhere); SDG2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture); SDG9 (build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation); SDG11 (make cities and human settlements inclusive, safe, resilient and sustainable); and SDG13 (take urgent action to combat climate change and its impacts). Target 1.5 (SDG1) comprises the core resilience target, 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” (United Nations, 2015, p. 15).

Enhancing DRR and building community resilience are considered key development strategies to reverse the negative trends that affect vulnerable regions and make them overexposed to the impacts of crises and disasters. In recent decades, many regions around the world have become increasingly marginalized through population decline, job cutbacks, land degradation, reduction in public services, and degradation of cultural and natural heritage (Barca, 2009; Barca et al., 2014; Imperiale & Vanclay, 2016a, 2016b; Klein et al., 2019). These negative impacts were the products of past development interventions and associated social changes (e.g., urbanization, industrialization, coastalization, rural-to-urban migration, land abandonment, see Vanclay, 2002) and are now perceived and experienced as disasters by many people living in these regions. Since World War 2, top-down approaches in recovery and development planning have created “under-development traps,” which have created persistent poverty and social exclusion (Barca, 2009; Barca et al., 2014).

The risks and impacts produced at the local level by global stressors (e.g., climate change, financial crises, globalization) and by badly managed past recovery plans and development 4P have made these regions disproportionally vulnerable to the negative impacts of crises and disasters (Gurung et al., 2012; Imperiale & Vanclay, 2016,
To fully integrate DRR and resilience into development 4P, there must be a shift from “managing the impacts” to “reducing the risks and building resilience” in development thinking and practice, as well as in disaster management. To enable this shift in development practice, there must be: (a) adequate knowledge of resilience in society and of the social dimensions of the risks and impacts that may be created by planned interventions; and (b) adequate governance of development 4P to turn planned interventions from being a risk into being opportunities to reduce the social pre-conditions of disaster and to enhance community wellbeing and resilience in all localities.

To build adequate knowledge of the multiple dimensions of the risks and resilience, the cultural barriers imposed by a paternalistic culture of social protection must be overcome in development thinking and practice. The knowledge concerning risks and impacts of planned interventions and associated prevention, mitigation, and monitoring activities, rather than be only techno-scientific, must be transdisciplinary and include an insightful social scientific analysis. This social scientific analysis should relate to (a) understanding the multiple dimensions of community wellbeing and capacities that must be enhanced, and the social pre-conditions of disaster that must be reduced in the locality of intervention; and (b) recognizing the local cognitive and interactional processes and capacities of community resilience that must be engaged and empowered. Rather than be produced in the form of techno-scientific advice to serve the interests of decision-makers, this integrated, transdisciplinary knowledge must be co-produced with local communities. This should lead external actors and local communities to mutual learning and agreement about reducing the social pre-conditions of disaster and enhancing community wellbeing and resilience (Imperiale & Vanclay, 2016b). Rather than by disaster myths, the co-production of this knowledge must be reinforced by the building of a glocal culture of community wellbeing and resilience.

To build adequate governance, the political barriers imposed by a command-and-control approach in relation to knowledge, technologies, resources and responsibilities must be overcome, and the failures produced by such an approach must be avoided at all levels of social-ecological governance. Rather than be the business of only a select few, development 4P should become everyone’s business, and be oriented toward enhancing DRR and community resilience, and achieving the SDGs. This requires the building of a goal-oriented governance and an inclusive goal-setting process that must engage a wide range of actors in the conception, decision, design, and implementation of development 4P. Rather than centralize knowledge, technologies, resources and responsibilities, a socially sustainable governance should lead to share these resources among a wide range of actors within localities and at multiple levels of social-ecological governance. The institutional, financial, risk management, participation, and physical planning strategies orienting the conception, decision, design, and implementation of all development 4P should ensure equity, inclusion and consideration of community wellbeing and sustainability issues.

Overall, a socially sustainable risk governance and a glocal culture of community wellbeing and resilience should orient and accompany all development 4P since their conception. This should help strengthen the positive cognitive and interactional capacities of community resilience, including: (a) empathy, caring and social responsibility towards reducing local vulnerabilities and risks and (b) mutual aid and social sustainability toward enhancing DRR, community wellbeing and resilience, and achieving the SDGs. Positive narratives should strengthen local people’s perception of shared needs, desires and capacities associated with reducing local vulnerabilities and risks in their localities; while inclusive governance strategies should lead them to participating in learning from the history of local development processes and past failures, and transforming toward sustainability. Local and national media play a major role in building a glocal culture of community wellbeing and resilience, and their potential to positively influence the cognitive drivers of resilience at all levels of social-ecological governance must be valued and enhanced. Existing intermunicipal cooperation arrangements can play a major role in building a socially sustainable risk governance and orienting all development 4P toward enhancing DRR, community wellbeing and resilience and achieving the SDGs.

Building a glocal culture of community wellbeing and resilience, and having a socially sustainable risk governance, can contribute to overcoming the main cultural, political and institutional barriers to implementing DRR in development 4P. All this will prevent development interventions from becoming disasters at the local level, and will help turn vulnerability and risk reduction activities into opportunities for community development. The more that people are involved in the knowledge production processes and in the conception, design and implementation of development 4P, the more they will access knowledge, resources, technologies, and responsibilities to learn from past failures, crises and disasters, and transform toward sustainability.

6 | CONCLUSION

The dramatic impacts of pandemics and of ever-increasing climate-related disasters have made understanding the cultural, political, and institutional barriers to DRR and sustainable development more crucial than ever, especially in less-favored regions, which are disproportionately exposed to the negative impacts of crises and disasters. Drawing on the DRR and resilience paradigm, and on our analysis of the failures of traditional top-down approaches in disaster management practice, in this paper, we argued that, to overcome these barriers, a paradigm shift from “assessing the impacts” to “reducing the risks and building resilience” must occur, not only in disaster management, but also in development thinking and practice. This paradigm shift will only occur if there would also be changes in the knowledge...
concerning the multiple dimensions of risk and resilience, and in the governance strategies typically used by states to conceive, decide, design, and implement planned interventions. These changes would lead decision-makers to better appreciate community resilience and the social dimensions of risk and resilience-building strategies, and to share knowledge, technologies, resources, and responsibilities for development 4P with a broader constituency in local communities. These changes will also lead to moving from a paternalistic social protection culture to a glocal culture of community resilience, and from a centralized, military-type, command-and-control approach, to the socially sustainable risk governance of sustainable development in localities.

As was seen with the L'Aquila disaster, the perpetuation of a paternalistic social protection culture leads states to deny the existence of risk, neglect the social dimensions of risk and resilience, reassure communities that everything is under control, and overreact. This leads to a failure to pursue social learning and transformation toward sustainability, perpetuating business-as-usual and exacerbating the social pre-conditions of disasters in localities. Furthermore, the command-and-control approach leads political leaders to centralize knowledge, technologies, resources, and responsibilities for DRR and development, ignoring the potential roles and responsibilities of a broader constituency of society, and neglecting local people's capacities to learn from crises, disasters, and past development failures. Rather than empowering socially sustainable transformation at the local level, the command-and-control approach only empowers local political leaders, and facilitates rent-seeking, elite capture, organized crime infiltration, disaster capitalism, and corruption at all levels.

New global threats make more crucial than ever: (a) understanding the main barriers to DRR and sustainable development and how to overcome them and (b) formulating transparent and accountable strategies to help societies build transformations toward sustainability into development planning. In this paper, we argued that a paternalistic social protection culture and a command-and-control approach to risk reduction and development are the main barriers to understanding community resilience and the social dimensions of risk and resilience-building strategies, and to achieving the SDGs. To overcome these barriers, a glocal culture of community wellbeing and resilience, and a sustainable risk governance must be built. Such a transformation will require building decentralized community-empowerment systems that are capable of: (a) sharing knowledge, technologies, resources, and responsibilities for development and the achievement of the SDGs; and (b) ensuring new inclusive, transparent, and accountable deliberative spaces within localities and other levels of social-ecological governance. In these deliberative spaces, external actors, and local communities would engage in mutual learning and agreement-making to reduce local vulnerabilities and the social pre-conditions of disasters, enhance community wellbeing, and build community resilience, thus turning affected landscapes into landscapes of affect rather than carcasses to exploit.

**REFERENCES**

Adger, W. N. (2006). Vulnerability. *Global Environmental Change, 16*(3), 268–281.

Armitage, D., Béné, C., Charles, A. T., Johnson, D., & Allison, E. H. (2012). The interplay of well-being and resilience in applying a social-ecological perspective. *Ecology and Society, 17*(4), 15.

Armitage, D. R., Plummer, R., Berkes, F., Arthur, R. I., Charles, A. T., Davidson-Hunt, I. J., … McConney, P. (2009). Adaptive co-management for social-ecological complexity. *Frontiers in Ecology and the Environment, 7*(2), 95–102.

Bailly, F., & Longo, G. (2011). *Mathematics and the natural sciences: The physical singularity of life*. London: Imperial College Press.

Barca, F. (2009). An Agenda for a Reformed Cohesion Policy: A place-based approach to meeting European Union challenges and expectations. *Independent Report prepared at the request of Danuta Hübner.*

Barca, F., Casanova, P., & Lucatelli, S. (2014). A Strategy for Inner Areas in Italy: Definition, Objectives, Tools and Governance. *Materiali Uval Series 31*, Rome, Italy: Public Investment Evaluation Unit (UVAL).

Beratan, K. K. (2007). A cognition-based view of decision processes in complex social-ecological systems. *Ecology and Society, 12*(1).

Berkes, F., Colding, J., & Folke, C. (2003). *Navigating social-ecological systems: Building resilience for complexity and change*. Cambridge: Cambridge University Press.

Berkes, F., & Ross, H. (2013). Community resilience: Toward an integrated approach. *Society & Natural Resources, 26*(1), 5–20.

Berkes, F., & Ross, H. (2016). *Panarchy and community resilience: Sustainability science and policy implications*. *Environmental Science & Policy, 61*, 185–193.

Brown, K. (2014). Global environmental change I: A social turn for resilience? *Progress in Human Geography, 38*(1), 107–117.

Burch, S. (2011). Sustainable development paths: Investigating the roots of local policy responses to climate change. *Sustainable Development, 19*(3), 176–188.

Carpenter, S. R., & Gunderson, L. H. (2001). Coping with collapse: Ecological and social dynamics in ecosystem management: Like flight simulators that train would-be aviators, simple models can be used to evoke people's adaptive, forward-thinking behavior, aimed in this instance at sustainability of human–natural systems. *Bioscience, 51*(6), 451–457.

Cavaye, J., & Ross, H. (2019). Community resilience and community development: What mutual opportunities arise from interactions between the two concepts? *Community Development, 50*(2), 181–200.

Cernea, M. (1997). The risks and reconstruction model for resettling displaced populations. *World Development, 25*, 1569–1587.

Chang, R. D., Zuo, J., Zhao, Z. Y., Soebarto, V., Zillante, G., & Gan, X. L. (2017). Approaches for transitions towards sustainable development: Status quo and challenges. *Sustainable Development, 25*(5), 359–371.

Clark-Ginsberg, A. (2020). Disaster risk reduction is not ‘everyone’s business’: Evidence from three countries. *International Journal of Disaster Risk Reduction, 43*, 101375.

Colloidi, J., Pelling, M., Fraser, A., Borie, M., & Di Vicenz, S. (2021). How do you build back better so no one is left behind? Lessons from Sint Maarten, Dutch Caribbean, following Hurricane Irma. *Disasters, 45*, 202–223.

Coppola, D. (2015). *Introduction to international disaster management* (3rd ed.). London: Butterworth-Heinemann.

Cornell, S., Berkhourt, F., Tuinstra, W., Tábara, J., Jäger, J., Chabay, I., … Otto, I. (2013). Opening up knowledge systems for better responses to global environmental change. *Environmental Science & Policy, 28*, 60–70.

Cote, M., & Nightingale, A. J. (2012). Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. *Progress in Human Geography, 36*(4), 475–489.

Cox, M. (2016). The pathology of command and control: A formal synthesis. *Ecology and Society, 21*(3).
Mananorm, O. P., Biesbroek, R., & Cebotari, V. (2020). What makes internationally-financed climate change adaptation projects focus on local communities? A configurational analysis of 30 adaptation fund projects. Global Environmental Change, 61, 102035.

Matarrita-Cascante, D., Trejos, B., Qin, H., Joo, D., & Debner, S. (2017). Conceptualizing community resilience: Revisiting conceptual distinctions. Community Development, 48(1), 105–123.

Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharwani, S., Ziervogel, G., ... Hinkel, J. (2010). Resilience and vulnerability: Complementary or conflicting concepts? Ecology and Society, 15(3).

Miller, T. R., Wiek, A., Sarewitz, D., Robinson, J., Olsson, L., Kriebel, D., & Loorbach, D. (2014). The future of sustainability science: A solutions-oriented research agenda. Sustainability Science, 9(2), 239–246.

Mizutori, M. (2019). From risk to resilience: Pathways for sustainable development. Progress in Disaster Science, 2, 100011.

Newman, L. (2007). The virtuous cycle: Incremental changes and a process-based sustainable development. Sustainable Development, 15, 267–274.

Norris, F., Stevens, S., Pfefferbaum, B., Wyche, K., & Pfefferbaum, R. (2008). Community resilience as a metaphor, theory, set of capacities and strategy for disaster readiness. American Journal of Community Psychology, 41, 127–150.

O'Brien, K. (2012). Global environmental change II: From adaptation to deliberate transformation. Progress in Human Geography, 36(5), 667–676.

Oliver-Smith, A. (1977). Disaster rehabilitation and social change in Yungay, Peru. Human Organization, 36(1), 5–13.

Oliver-Smith, A. (1990). Post-disaster housing reconstruction and social inequality: A challenge to policy and practice. Disasters, 14(1), 7–19.

Oliver-Smith, A., Alcántara-Ayala, I., Burton, I., & Lavell, A. (2017). The social construction of disaster risk: Seeking root causes. International Journal of Disaster Risk Reduction, 22, 469–474.

Pahl-Wostl, C., Tabara, D., Bouwen, R., Craps, M., Dewulf, A., Mostert, E., ... Taillieu, T. (2008). The importance of social learning and culture for sustainable water management. Ecological Economics, 64(3), 484–495.

Quarantelli, E. L. (Ed.). (1998). What is a disaster? Perspectives on the question. London: Routledge.

Quarantelli, E. L., & Dynes, R. R. (1977). Response to social crisis and disaster. Annual Review of Sociology, 3(1), 23–49.

Reed, M. S., Evely, A. C., Gundlach, G., Fazey, I., Glass, J., Lai, J., and Stringer, L. C. (2010). What is social learning? Ecology and Society, 15(4), 1.

Ross, H., Cuthill, M., Maclean, K., Jansen D., & Witt, B. (2010). Understanding, enhancing and managing for social resilience at the regional scale: opportunities in North Queensland. Report to the Marine and Tropical Sciences Research Facility, (pp. 186). Cairns: Reef and Rainforest Research Centre Limited.

Scholz, G., Dewulf, A., & Pahl-Wostl, C. (2014). An analytical framework of social learning facilitated by participatory methods. Systemic Practice & Action Research, 27, 575–591.

Searle, J. (1980). The intentionality of intention and action. Cognitive Science, 4, 47–70.

Sharpe, B., Hodgson, A., Leicester, G., Lyon, A., & Fazey, I. (2016). Three horizons: A pathways practice for transformation. Ecology and Society, 21(2), 47.

Slootweg, R., Vanclay, F., & van Schooten, M. (2001). Function evaluation as a framework for the integration of social and environmental impact assessment. Impact Assessment & Project Appraisal, 19(1), 19–28.

Smyth, E., & Vanclay, F. (2017). The social framework for projects: A conceptual but practical model to assist in assessing, planning and managing the social impacts of projects. Impact Assessment & Project Appraisal, 35(1), 65–80.

Staupe-Delgado, R., Kruke, B. I., Ross, R. J., & Glantz, M. H. (2018). Preparedness for slow-onset environmental disasters: Drawing lessons from three decades of El Niño impacts. Sustainable Development, 26(6), 553–563.

Tierney, K. (2012). Disaster governance: Social, political, and economic dimensions. Annual Review of Environment & Resources, 37, 341–363.

Tierney, K., & Bevc, C. (2007). Disaster as war: Militarism and the social construction of disaster in New Orleans. In Brunsma, D. L., Overfelt, D., & Picou, J. S., (Eds.), The sociology of Katrina: Perspectives on a modern catastrophe, (pp. 288). Plymouth: Rowman & Littlefield.

Tierney, K., Bevc, C., & Kuglowski, E. (2006). Metaphors matter: Disaster myths, media frames and their consequences in hurricane Katrina. Annals of the American Academy of Political & Social Science, 604(1), 57–81.

Tierney, K., & Oliver-Smith, A. (2012). Social dimensions of disaster recovery. International Journal of Mass Emergencies & Disasters, 30(2), 123–146.

United Nations. (2015). Transforming our World: The 2030 Agenda for Sustainable Development, A/RES/70/1. Retrieved from https://www.refworld.org/docid/57b6e3e44.html.

UNDRR. (1982). Shelter after disaster: Guidelines for assistance. Geneva: Office of the United Nations Disaster Relief Co-Ordonator. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/E4FE896AFFF16709C1256CB10056558E-undro-shelter1-jul82.pdf.

UNDRR. (2019). Global assessment report on disaster risk reduction. Geneva: United Nations Office for Disaster Risk Reduction. Retrieved from https://gar.unisdr.org/sites/default/files/reports/2019-05/full_gar_report.pdf.

UNISDR. (2005). Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters. United Nations Office for Disaster Risk Reduction. Retrieved from http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf.

UNISDR. (2015). Sendai framework for disaster risk reduction 2015–2030. Paris: United Nations Office for Disaster Risk Reduction. Retrieved from http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf.

Vanclay, F. (2002). Conceptualising social impacts. Environmental Impact Assessment Review, 22(2), 83–211.

Wallemacq, P., & House, R. (2018). Economic Losses, Poverty & Disasters: 1998–2017. Centre for Research on the Epidemiology of Disasters and United Nations Office for Disaster Risk Reduction. Retrieved from https://www.unisdr.org/files/61119_credeconomiclosses.pdf.

Weichselgartner, J., & Kelman, I. (2015). Geographies of resilience: Challenges and opportunities of a descriptive concept. Progress in Human Geography, 39(3), 249–267.

How to cite this article: Imperiale AJ, Vanclay F. Conceptualizing community resilience and the social dimensions of risk to overcome barriers to disaster risk reduction and sustainable development. Sustainable Development. 2021;29:891–905. https://doi.org/10.1002/sd.2182