

Practitioner Perspectives of Disaster Resilience in International Development

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Key words: disaster; resilience; development; science-practice interface; boundary object

Abstract

Disaster resilience is now the subject of countless scientific and policy publications and initiatives within the international development sector, yet little insight is available on the perspectives and experiences of the practitioners tasked with implementing it. If disaster resilience is going to contribute to arresting growing disaster risk, it is essential that the expert insight, realities and needs of practitioners are amplified in the discourse. Through in-depth interviews with INGO staff working on disaster resilience across the developing world, we seek to understand how the concept is being understood and used in practice. We compare practitioner perspectives to scientific and policy-oriented goals for, and critiques of, resilience in the disaster and development space. We find that practitioners perceive the resilience paradigm to be driving a genuine shift towards better programming. At the same time, the concern that resilience is a vague buzzword which reinforces the status quo cannot be discredited. The usefulness of resilience as a boundary object within the science-practice interface, and the success of resilience in achieving its goals, is dependent upon scientists, policy-makers, and donors more actively engaging with the insights and experience of practitioners. We identify a number of avenues for this interaction that have high salience for practitioners.

Keywords: disaster; resilience; development; science-practice interface; boundary object

1. Introduction

Disaster resilience is increasingly promoted as a concept possessing the potential to drive the much-needed integration of disaster risk management (DRM) and development (UN, 2015) in the international development space. Donors are playing a significant role: we are witnessing an explosion of international development funding specifically calling for ‘resilience building’ (Gostelow et al., 2016). Disaster resilience has become an issue at the interface of science, policy, and practice - potentially a boundary object. This means that the idea of disaster resilience is continuously being interpreted not only by scientists and policy experts, but also by practitioners working directly to implement it. As a boundary object, each of these communities adds their own values and interests to the concept, ideally improving research, communication, and implementation, but also creating room for misunderstandings which can in turn lead to inefficient or even ineffective use of the mounting investments purporting to be guided by it. If disaster resilience is to contribute to tackling the growing disaster risk threatening development gains, then it is essential that the respective realities and needs of all users are reflected in the discourse.

Currently, practitioner expert insight, i.e. the voices of those working directly on implementation of ‘disaster resilience building’ initiatives, is largely missing from the disaster resilience discourse. The body

of published knowledge on disaster resilience is almost exclusively dominated by scientists and scholars, and experts such as policy advisors in large international non-government organizations (INGOs), aid agencies, and multilateral organizations. Conceptual frameworks, definitions of, and approaches to disaster resilience have been developed by the big players in the disaster and development sectors (e.g. ADB, 2013; DFID, 2011; IFRC, 2012; IPCC, 2012a; UNISDR, 2011; we discuss definitions further in section 2.1). The scholarly discourse has reached a point where it has generated an extensive literature of reviews, analyses and critical debates (among many others see Alexander, 2013; Béné et al., 2012; Brown, 2013; Frankenberger et al., 2014; Mitchell, 2013; Stumpp, 2013; Winderl, 2014; Zhou, 2010). On the other hand, beyond NGO promotional material, there are very few available studies exploring the on-the-ground expertise and implementation experience of the people tasked with implementing ‘disaster resilience building’ initiatives (Miller et al., 2010). This paper contributes to filling this gap by exploring the practitioner side of the science-policy-practice interface (discussed in section 2.2 below). This paper is a direct attempt to bridge the science-policy-practice interface; the authors themselves are researchers, and as such are writing about practice from the scientific perspective in a scientific forum.

In order to achieve this, we explore the extent to which practitioners perceive that disaster resilience is fulfilling the hopes of its proponents, in shifting both thinking and practice. The shift or change is defined as a movement away from, or expansion of, traditional DRM thinking and practice. Investment in DRM in international development has been severely dominated by a focus on crisis response and *ex-post* recovery following disaster events, neglecting *ex-ante* risk reduction (Kellett and Caravani, 2013). Critically, the prevailing operational environments of the DRM and development fields have inhibited the integration required to arrest growing disaster risk (Keating et al., 2017). By reviewing the literature from researchers and policy experts we identify that disaster resilience is perceived to hold the potential to deliver on a number of interconnected benefits; we call these the three hopes or promises of resilience¹ (Béné et al., 2012; Davoudi, 2012; Frankenberger et al., 2014; Mercy Corps, 2013; Mitchell, 2013; Mitchell and Harris, 2012; Pasteur and McQuistan, 2016; Sudmeier-Rieux, 2014):

Hope 1: Disaster resilience focuses on development outcomes including tackling vulnerability, rather than DRM per se.

This is not to say that DRM is not part of resilience, but that resilience is more than DRM and is focused on altering system outcomes as opposed to a narrower focus on hazards. This focus on development outcomes including vulnerability is achieved, in theory, because:

Hope 2: Disaster resilience links the development and DRM (primarily humanitarian response) fields, which contributes to the sustainability of program outcomes.

The linking of development² and DRM contributes to the sustainability of NGO program impacts beyond

¹ Resilience is a concept being applied in many fields. Here we are specifically referring to resilience to disasters, or ‘disaster resilience’. We use disaster resilience and resilience interchangeably. We do not apply any single definition of disaster resilience in the paper, because we explore the multiple definitions being applied across science and practice.

² Disaster resilience is a concept which has been argued to have the potential to link DRM and ‘development’ in

the life of the program because it helps avoid the destruction of development gains by disaster, and risk-blind development which increases disaster risk (the disaster-development system). This linking requires that:

Hope 3: Disaster resilience takes an integrated or systems-based approach which understands and acts within the complex system driving development and disaster risk, in particular by bridging across sectors.

A number of key concerns and critiques have also been identified in our review, largely from the academic literature (Béné et al., 2012; Berkes and Ross, 2013; Brown 2012; Davoudi, 2012; Grove, 2014; Levine, 2014; MacKinnon and Derickson, 2012; Mitchell, 2013; Nelson et al., 2007). We explore whether we can detect these scholarly critiques of resilience in practitioners' understanding of the concept, and to what extent practitioners perceive these critiques to be manifesting in practice. One of the first points raised in many discussions of resilience is that:

Critique 1: Resilience lacks an agreed definition and conceptual clarity.

Related to this concern regarding conceptual disagreement and fuzziness is the notion that it is applied very broadly and imprecisely, not engendering a meaningful change in practice, therefore:

Critique 2: Resilience is merely a buzzword for business as usual practice.

At a deeper level, scholars have argued that in practice resilience is prone to being blind to power and inequalities, and hence:

Critique 3: Resilience reinforces the status quo, ignores vulnerabilities and is unlikely to foster transformation.

In this paper we explore the perspectives of practitioners tasked with implementing disaster resilience programming and contrast them with the perspectives of scholars and high level policy-makers as exemplified in the three hopes and critiques. In order to do this we asked practitioners 1) what do they understand by disaster resilience?; 2) how do they see the disaster resilience discourse manifesting in their work?; and 3) to what extent (if any) do they perceive that resilience is living up to the hopes of scientists and policy-makers, or falling prey to its critics? We then highlight practical impediments to operationalizing the concept raised by practitioners themselves. These relate to key operational issues in the field regarding the structures and processes of the international development sector, in particular the typical donor-funding model. Our findings testify as to whether resilience is a useful tool for communication between science, policy, and practice - a boundary object, or whether it is indeed only a buzzword. Finally, we identify key foci for scholars, policy-makers and in particular donors wanting to improve the operationalization of the disaster resilience concept in international development, that

both 'developed' and 'developing' countries. In developed countries the hope is that it links land-use, infrastructure and growth policies with disaster risk and crisis management. This paper focuses on disaster resilience in international development NGOs.

have high salience for practitioners.

2. Background

2.1. What resilience means in science and practice

The modern understanding of resilience has its roots in engineering, ecology, and psychology (Alexander, 2013; Djalante et al., 2011; Welsh, 2013). Disaster resilience has now been defined countless times and in multiple ways by scientists, multilateral organizations, aid agencies and other donors, and NGOs. The cornucopia of definitions has spawned a substantial literature in and of itself reviewing, comparing and critiquing these definitions (e.g. Bahadur et al., 2010; Béné et al., 2014; Brown 2012; Fekete et al., 2014; Keating et al., 2017; MacAskill and Guthrie, 2014; Manyena, 2006; Patel et al. 2017; Zhou et al., 2010). Despite all this activity, the definitions developed by large key players in the field have emerged as leaders. In particular from science:

International Panel on Climate Change (IPCC, 2012b): The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

From high level policy we present the definition from the UK Department For International Development (DFID), who have been at the front of the 'resilience pack' in terms of thinking and projects, particularly in Africa:

DFID (2011): Disaster Resilience is the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses - such as earthquakes, drought or violent conflict - without compromising their long-term prospects.

We also highlight the significance of the increasing alignment between the Sendai Framework for Disaster Risk Reduction (SFDRR) (UN, 2015) and disaster resilience. The SFDRR aims to reduce disaster risk and loss, taking a broad and holistic view of assets; in particular it is concerned with tackling the underlying drivers of risk. While only SFDRR priority 3 specifically mentions the term 'resilience', there is significant alignment between SFDRR objectives and targets, and a resilience-inspired conceptualization of DRR and DRM, and the interconnected nature of these and sustainable development. Keating (in press) links the conceptualization and measurement of community flood resilience by the Zurich Flood Resilience Alliance to the goals of the SFDRR, showing significant overlap and the potential of a resilience-based approach to contribute to achieving SFDRR goals.

A number of issues have emerged within the scientific and high-level policy literature on resilience which are the subject of substantial theorizing and debate. Conceptually, the relationship between disaster resilience and vulnerability has been discussed extensively (Adger, 2006; Béné et al., 2012; Cannon and Müller-Mahn, 2010; Fekete et al., 2014; Gaillard, 2010; Manyena, 2006; Miller et al., 2010), as has the relationship between disaster resilience and transformation (Brown, 2013; Cretney and Bond, 2014; MacKinnon and Derickson, 2012; Matyas and Pelling, 2014; Nelson, 2010; Pelling, 2011; Pelling and Manuel-Navarrete, 2011). From a more practical angle, measuring resilience is seen by some as essential to operationalizing the concept (Frankenberger et al., 2014; Levine, 2014; Schipper and

Langston, 2015; Winderl, 2014), while others caution that measurement can be counterproductive if not applied carefully (see for example Quinlan et al., 2015). Decision-making in disaster resilience program design and the use of tools such as cost-benefit analysis has also generated attention (Cabot-Venton et al., 2011; Chadburn et al., 2013; Mechler et al., 2008; Mechler et al., 2014).

Except perhaps with regard to policy-makers, we find Miller et al.'s 2010 statement to still hold true: “[a]lthough there is a growing body of research developing our understanding of resilience, there are few documented cases of how this understanding is adopted and applied by practitioners, managers, community leaders, and policy makers” (Miller et al., 2010, pg. 12-13). In the grey literature we find³ four reports which discuss disaster resilience in international development from the perspective of practitioners and/or in practice. Frankenberger et al. (2014) explores a collection of NGO case studies; their main finding is that “[r]esilience building relies on integrated programming” (pg. v) including longer time commitments, linking a wide variety of stakeholders and sectors, and the need for comprehensive context analysis. Similarly, ISDR (2007) presents 16 case studies of ‘good practice’ disaster resilience programming. While each case identifies lessons learned, the report does not draw any generalizable conclusions. These collections of case studies from NGOs are an important contribution to the field as they demonstrate the translation of the concept of resilience into NGO programming.

Mitchell (2013) draws conclusions from two in-depth case studies of how resilience is manifesting in the development sectors in Niger and the Philippines. He finds that resilience is more than a buzzword, already generating a shift in thinking and having meaningful impact on the ground, and with much inherent potential. He argues that resilience requires integrated programming, breaking down traditional hazard and sector silos. Furthermore, guidance materials and capacity support are needed for operationalizing resilience. He emphasizes the essential role donors can play in resilience achieving its potential. Gregorowski et al. (2016) utilize NGO submitted case studies and a workshop to identify “key challenges and lessons of operationalizing resilience measurement” (pg. 3). Their findings are grouped into conceptual, technical, and practical challenges, the most relevant to our discussion being staff analytical capacity.

Most academic work on practitioner perspectives of disaster resilience is based on individual case studies. Aldunce et al. (2015) present an in-depth case study of a resilience initiative in Australia, finding that practitioners understand social learning as essential to resilience. Olwig (2012) presents an in-depth case study of flooding in Ghana, which finds that differing local and global perceptions of community resilience interact to both limit and enable local agency in practice. In landslide affected communities in Nepal, Sudmeier-Rieux (2014) explores how resilience is understood and impacting the development sector. She finds it has the potential to foster an integrated approach, while at the same time finding evidence that in this context resilience is at risk of diverting attention away from sustainable development and vulnerability reduction, instead focusing on restoring the status quo following a landslide.

³ We conducted a thorough search of the grey literature via Google and Google Scholar, via keywords ‘resilience’ and ‘practice’ or ‘practitioner’ or ‘staff’ or ‘case study’ or ‘program’. We then identified results which presented practitioner experiences of implementing ‘disaster resilience’ initiatives.

Looking beyond the disasters field and international development to other uses of the term also yields a number of examples of resilience thinking in practice that are relevant here. Walker and Salt's (2012) book *Resilience Practice* presents a number of in-depth case studies highlighting the process by which practitioners can understand, assess, and manage resilience. They explore the application of 'resilience thinking', which entails a holistic perspective that links across domains and scales. Similarly, Sellberg et al. (2015) find that the application of the resilience concept in urban planning "bridged longer term sustainable development and shorter term crisis management, allowing these two sectors to develop common strategies" (Sellberg et al., 2015, pg. 43).

2.2. *Resilience as a boundary object*

The concept of resilience was adopted in the physical and social sciences throughout the 20th century (Alexander, 2013). Policy-makers and donor organizations are increasingly incorporating resilience into their strategic plans and funding requirements. Practitioners are in turn obliged to apply the concept in practice in their programming despite trailing evidence regarding effective methods for implementation of the concept and monitoring and evaluation frameworks. Joint efforts of researchers, policy-makers, practitioners, and stakeholders (including communities) to operationalize resilience make it an issue of what researchers sometimes term the 'science-practice interface'.

'Boundary work' takes place at the science-practice interface, and refers to any activities simultaneously coordinating and separating the worlds of actors on any side of this interface (Hoppe et al., 2013, Gyerin 1995). Boundary work can become very consuming when trying to grapple with the different values, approaches, and interests of different actors (Kasperson and Berberian 2011). Guston (2001, 2000), suggests that 'boundary objects' stabilize the boundary between the different sides of the interface, in order to preserve their internal integrity, values, and interests. In practice boundary objects can be as diverse as scenarios, risk maps or simulation games (van Pelt et al., 2015; Lynch et al., 2008). However, boundary objects derive their materiality "from action, not from a sense of prefabricated stuff or "thing"-ness" (Star 2010, p. 603). This means that a boundary object is not defined by its attributes, but rather by how it is utilized within the science-practice interface.

The idea of resilience as a boundary object between science and practice has not been a key feature of the resilience discourse. Several authors argue that resilience may be a boundary object between academic disciplines (Baggio et al. 2015, Brand and Jax 2007), rather than between science and practice. Brown (2016) implies that resilience indicators are boundary objects, while Fekete et al. (2014) imply that the conceptual vagueness that characterizes resilience makes it a boundary object. We argue that within the context in which disaster resilience is used jointly by scientists, policy-makers and practitioners in the international development sector as described above, it fits the description of a boundary object extremely well. Indeed, resilience fits most characteristics of boundary objects as set out by Star and Griesemer in 1989 (adapted from p. 393):

- Resilience inhabits several intersecting social worlds (e.g. Miller et al. 2010, Vogel et al. 2007).
- Resilience is both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites (e.g. Fekete 2014).

- Resilience is weakly structured in common use, but may become strongly structured when used for specific cases and purposes, such as measuring resilience (e.g. Carpenter et al., 2001).
- Resilience may have different meanings in different social worlds but their structure is common enough to make them recognizable, a means of translation. We note considerable overlap in the conceptualizations of resilience from science and high level policy, yet we know far less about how practitioners understand resilience.
- Resilience is able to satisfy the informational requirements of each of these worlds. We explore this from practitioner s' perspectives in this paper.

Our point of departure is that disaster resilience has become a boundary object at the science-practice interface in international development. In order to unfold its full potential in becoming a useful boundary object we need a better understanding of the practitioner side of the boundary. In particular, there is an urgent need to understand practitioner s' perspectives on the meanings ascribed to resilience by scholars and policy-makers - as expressed by the three hopes and three critiques of resilience - and to open a space for practitioners to voice their challenges within the discourse. We propose that resilience would be a useful boundary object were it to fulfil the hopes and overcome the critiques.

Resilience as a boundary object would then manifest in (1) DRM mainstreamed in development programs and measured in terms of development outcomes; (2) and in turn in DRM funded as part of development projects and not separately; and (3) systems approaches used and encouraged both in program and project design as well as in research - this can be as simple as using system diagramming and as complex as running quantitative system models. Resilience definitions and conceptual frameworks would be available as appropriate for either side, but handled flexibly for communication and joint projects.

3. Methods

This study focuses on the perceptions of international development NGO staff members working on disaster resilience building initiatives in developing countries. Purposeful sampling was used, with potential participants identified via author contacts from working in the NGO sector and on disaster research over a number of years. These first interviewees then provided referrals (snowball sampling). Criteria for participation was that the respondent a) be working for an international development NGO or humanitarian organization on programming with the concept 'disaster resilience' featuring prominently; b) has direct influence on program or project design and/or responsibility for implementation; and c) is confident conversing in English. Because of the scoping nature of this study we focused on practitioners who were working specifically on disaster resilience (although the majority had a dual focus of disasters and development). Future research could explore how disaster resilience is perceived by other development practitioners, for example in the education or WASH sectors, and/or humanitarian responders.

Sixteen staff from seven large INGOs anonymously participated in the research, representing their own views as development professionals. We interviewed 10 field office staff based in eight countries across Africa, Asia, and Central and South America, and six NGO headquarters staff based in five OECD

countries. All headquarters staff and three field staff hail from the global north, the remaining field staff are from the global south. In regards to role of the participant, we classified all headquarters staff and two country staff as ‘coordination staff’, meaning that they provide programming support and have intermittent contact with communities; the remaining eight field staff were classified as implementers, and have frequent contact with communities. In Table 1 below we show how many participants fall into each classification category.

Table 1: Participant classifications

Classification description	Classification categories	# participants
Origin of the participant	Global North (N)	9
	Global South (S)	7
Location of the participant	Field/country office (F)	10
	Headquarters (H)	6
Role of the participant	Coordination (C)	8
	Implementation (I)	8
Gender of the participant	Female	6
	Male	10
Sectoral experience of the participant	0-5 years	3
	5-10 years	4
	10+ years	7
	Unknown	2
Role focus of the participant	Disaster focus	6
	Development focus	1
	Dual focus	9

Letters in parentheses indicate classifications which are shown with quotes reported in the results section.

Over September and October 2016 we collected data via semi-structured telephone interviews, which have been shown to be an acceptable alternative to in-person interviews, producing valid qualitative data (Sturges and Hanrahan, 2004). Each interview took between one and two hours. We developed interview protocols following guidance from the literature on survey process, question design and order, and ethics considerations (Longhurst, 2010; Trochim, 2000; Whiting, 2008). The semi-structured interview format allowed for an appropriate balance between eliciting researcher-directed feedback, and providing participants space to raise issues.

Interview questions were specifically designed to elicit practitioner perspectives on a) the concept of disaster resilience, and b) the practice of disaster resilience programming. We did not directly query participants on their views regarding the three hopes and critiques of resilience as this would be considered too leading; instead we aimed to get a picture of how disaster resilience is viewed by our interviewees, to later compare and contrast with perspectives of scholars and high level policy-makers.

It is important to note that we did not seek to independently evaluate the *practice* of disaster resilience building, rather practitioners' *perspectives* on that practice. Interviews varied slightly depending on whether the participant was classified as coordination or implementation staff. In some cases questions for coordination staff touched on the surge in resilience rhetoric across the NGO and within the development sector, whereas for implementers the focus was on resilience within program delivery with communities. See the interview protocol, provided in the Appendix, for further details.

All interviews were conducted by the same interviewer, and data saturation - the point where additional data does not yield new information (Saunders et al., 2017) - was perceived to be reached after 6-8 interviews. After this point the same themes were independently raised by participants despite the open questions and interview format. This is in line with interview experience documented in the literature: Guest et al. (2006) reach saturation after 12 qualitative in-depth interviews. Mason (2010) finds that many researchers go beyond the point of data saturation to "be on the safe side".

We analyzed the interviews by taking a grounded theory approach and using the qualitative data analysis software NVIVO 10. Interviews were transcribed and uploaded into the software, then we applied a two-stage coding process. Participant's statements were first coded into the following categories (with multiple sub-categories within each group): a) perspectives on what resilience is; b) the perceived benefits of resilience; c) the challenges or negative aspects of resilience; and d) perspectives on experiences of resilience in practice. We reviewed the data multiple times to identify the recurrent perspectives expressed by participants. We then applied the second round of coding, which categorized responses according to whether they concurred with or contradicted the three hopes and three critiques, while at the same time retaining other key messages coming out from the data. The analysis focuses on themes which were raised by at least five respondents, and more usually at least eight. Points raised by fewer respondents are only highlighted when they provide a contrary perspective.

4. Results

Our results are grouped into four themes which emerged from the data analysis process. In terms of whether disaster resilience is resulting in a shift in thinking from a DRM focus, we report on how practitioners understand resilience. While it is challenging to identify a shift in thinking by analysing perspectives at one point in time, our interview questions explored how the field has *changed* over time, and what they consider *new or innovative* about resilience. In terms of how disaster resilience is manifesting in practice, we present practitioners perceptions about resilience programming, support for resilience program design, and the donor-funding model. We indicate the interview questions whose responses fed most into each finding (where applicable), the number of participants who raised each sub-finding, and some exemplary quotes. Interview questions and their corresponding question numbers are provided the Appendix, and additional quotes are provided in the Supplement. We use consistent language regarding the number of participants who raised each point: 'most' means 12 or more participants raised the point, 'many' means 8-11, 'several' means 5-7, and 'some/few' means 2-4.

4.1. Practitioner understandings of resilience

Practitioners understand resilience in terms of development outcomes and an integrated approach

Questions three and four asked about when and how resilience became related to their work, and

question five asked what outcomes resilience programming would achieve. These questions were asked to gauge how interviewees understand resilience. We preferred an indirect approach because it discouraged respondents from responding with pro-forma definitions. The two prominent themes emerged. Firstly, most respondents reported that resilience relates to focusing on development outcomes, including addressing vulnerability. Secondly, most respondents also stated that resilience requires an integrated or systems approach (see also section 4.2). DFID's BRACED resilience framework (Bahadur et al., 2015 and Béné et al., 2012) which is centered on absorptive, adaptive and transformative capacities was also indirectly referenced by several respondents.

NHC13: It would help achieve the development goal that it setup to achieve...so you would see the development goal maintained beyond the life of the project.

NFI03: For us resilience is the integrated approach. To build the capacity we need to work on many aspects. When I think of resilience the second thing I think of is integrated approach.

However, we infer from several interviewees that their understanding of disaster resilience does not go beyond traditional DRM capacities.

SFI16: They're not completely protected but at least enabling them to cope and recover to a normal situation.

Respondents view their colleagues' understanding as basic and DRM focused

We asked respondents what they believe their colleagues based in NGO offices of the recipient country, undertaking direct program delivery, understand by resilience (Q6). Several respondents said they believed their colleagues' understanding of resilience was on the whole quite basic, and several that it varied a lot. A similar number suggested that their colleagues did not make a meaningful distinction between disaster resilience and traditional DRM, in particular preparedness and coping; with one exception, all these respondents were classified as from the global north.

NFI08: They are DRR people, preparedness and response in particular...[they] take it as the capacity to recover from a disaster.

Different understandings of resilience were seen as a significant challenge by many respondents, with a few querying whether differing understanding is a problem.

NHC05: The amount of discussions we've had about what resilience is! It's exceedingly frustrating...I find it hard to get everyone to see it my way!

Resilience seen as vague and difficult to operationalize

Over the course of the interviews another theme recurred: practitioners perceive resilience to be vague and not practically oriented. Many respondents pointed out that because resilience is such an all-encompassing term, and understandings vary considerably, that it runs the risk of meaning everything and nothing. Additionally, because resilience is a broad term which integrates across sectors, several

practitioners suggested that it may end up promising too much.

NHC04: It's so broad it spans the whole of development – how do you claim one thing builds resilience or not?

Several practitioners suggested that the broad framing and theoretical roots mean resilience is not practically oriented. The vague and broad understanding of resilience also led several respondents to suggest it is a rebranding of business as usual.

SFI09: At the end of the day maybe we're not doing anything different.

Vulnerability and transformation are seen as central to resilience

Throughout the interviews, without prompting, respondents touched upon vulnerability and transformation - we report these because they are frequently discussed in resilience debates by scholars and policy-makers. Several respondents raised vulnerability as a central component of how they understand resilience, and none as a contested or problematic concept in relation to resilience.

SFC10: How we attack flood resilience is to look at underlying vulnerabilities which influence long term development.

Transformation of the system was raised by several respondents as an integral aspect of resilience; however, the capacity to facilitate transformative change was raised by most of those as a key challenge.

NFC01: Absorb, adapt, transform sequence of programming, which means a minimum of seven years – longer term investments. Investment in governance - transformation, as well as household capacity to absorb shocks.

SFI06: We don't necessarily support everything in the community resilience plan, we are only there for three years so we can't do transformation activities.

4.2. Practitioners perceptions about resilience programming

Questions seven and eight asked practitioners what they perceive to be the key benefits and challenges for programming brought by the rise of resilience. Question 13 asked about challenges in resilience program design. These were designed to understand how interviewees perceived resilience to be manifesting in practice. Responses to these and other questions throughout the interview fell into the following recurrent themes.

Resilience puts the program focus on longer term development outcomes

Many respondents reported that they saw the resilience agenda shifting the focus of programming from traditional DRM to development outcomes. Relatedly, several respondents highlighted linking humanitarian response and development initiatives.

SFI07: Understanding resilience helps visualizing where development and DRR focus should be. Resilience

helps us and communities visualize the positive side of where we want them to be. For example if there is flood risk, low production etc., with resilience thinking we can visualize strong infrastructure, access, capacity, DRR and development helping each other – we can visualize the future scenario of where we want to go.

NFC01: Linking humanitarian and development...People in the humanitarian context are forced to sit down and do a decent analysis in terms of what's happening with livelihood systems, wellbeing indicators and how they relate – this is something they would not do.

Many respondents reported the long-term focus, coupled with an integrated approach, as contributing to more sustainable outcomes beyond the life of programs.

SFI16: It comes with longer term accountability, it's not something which is done and if tomorrow it doesn't have positive impact, it makes no sense.

Resilience programming takes an integrated approach

Most respondents suggested that resilience programming requires an 'integrated', 'holistic' or 'systems' approach in their thinking and practice, and that this is a key benefit. Relatedly, many noted that the rise of resilience has facilitated at the very least positive discussions between previously siloed teams. Many also specifically mentioned linking across sectors. We note that a few respondents suggested that an integrated approach as not necessarily new, but something which has been encouraged by resilience.

SFI07: The other benefit is really promoting integrated thinking, thinking beyond the box, stretching your idea to connect to others, breaking the silos.

SFI06: But with resilience we are dealing with that the community is complex and different sectors are connected. We need to analyze how different components are interconnected.

An integrated or systems approach was also raised by many respondents as a challenge.

NHC11: Also the complexity because it's hard to decide what to focus on in the end if you have a result on all the different areas that could be improved.

Resilience programming needs in-depth analysis

Most respondents pointed out that designing and implementing a resilience-oriented project necessitates an in-depth systems analysis, ideally before the program is designed. Respondents saw resilience as helpful in highlighting the need for good quality analysis.

NHC05: How these power dynamics [operate] and how they interface with vulnerability – it's brilliant that we're focusing on these in a more consistent way – resilience is helping that come out more clearly because we're more focused on driving analysis of vulnerability to understand inequalities and how we could address them.

Several respondents identified lack of staff capacity, and many identified a lack of time and money, as

key impediments to undertaking the in-depth analysis required for resilience programming.

NHC12: And the mentality. One out of 15 local staff are analytical, [the rest lack] the ability to analyze and reflect, so we go forward like little robots.

SFI14: I would prefer this being done before applying for the grants. There is a call for grants, why don't we do a baseline? Because of meagre resources it's not easy to do this.

4.3. Support needs for resilience program design

Questions nine, 10, 11, 13, 14 and 15 asked about the program design process and guidance materials for informing this process, in order to understand how respondents design resilience programs and to shed light on how the resilience agenda was manifesting in practice. Interestingly, many responses related to the donor-funding model (see section 4.4). Here we report what respondents would like to see in terms of support for resilience program decision-making. From the outset we note that a few respondents expressed skepticism that written guidance or manuals could meaningfully support resilience program design.

Practitioners want practical support for systems analysis

After having identified that resilience is enhancing staff capacity to undertake systems-thinking - understanding disasters and development in an in-depth and integrated way - some saw the need for support and/or guidance to reinforce this. Support for undertaking in-depth systems analysis to inform program design was the most frequently raised theme, with several respondents mentioning this.

NFC01: What is the role of systems analysis in PRA [participatory rural appraisal]?...Can systems analysis help us identify causal loop relationships, which relationships are most important, and can they be measured? Linked social-ecological systems are very complex.

While systems analysis was seen as valuable, several also emphasized that practicality and simplicity are paramount. We found a somewhat contradictory demand for simple guidance to undertake complexity analysis.

NHC04: There is a dearth of real practical guidance for doing context/system analysis which doesn't need you to fly in an expert. The teams should be able to do it themselves.

SFI07: Would like to see practice-oriented guidelines. But I would like to build them based on practice knowledge sharing, rather than from theory.

Very little demand for CBA in resilience programming

We asked the interviewees in coordination roles about their thoughts on cost-benefit analysis (CBA) and multi-criteria analysis (MCA) for disaster resilience projects. Respondents referred only to CBA, which seemed to be more familiar to them. A few country staff independently brought up CBA when discussing demand for decision-support tools. While several respondents said they saw analysis of return on investment as important and potentially useful, many were very skeptical. Several respondents identified a number of challenges relating to undertaking this type of analysis, including staff capacity,

complexity, taking the focus off community priorities, and inconsistency of outcomes. Some respondents also argued that CBA-type approaches, with a perceived focus on economic considerations, miss the critical social aspects central to NGO work and resilience.

NHC11: I always am a bit critical of these experts because...you are always able to see the project from a particular angle... CBA might make sense to help you lose a bit of the complexity, but it might make life much harder for those people who have to explain it to the community, because it might not be what they perceive as the biggest need.

SFI16: If we use cost-benefit we don't see the social benefit. We're not doing heavy or detailed cost-benefit, we're looking at something longer term, or bigger social impact.

Measuring resilience important but not key

While not queried directly, measuring resilience, or measuring the impact of NGO programs on resilience, was raised by several interviewees who suggested that measurement is an important part of resilience. These same respondents identified a need for further guidance and support on measuring resilience. Measuring resilience or the impact of resilience programs was highlighted as a particular challenge by only a few respondents.

NHC13: Practical approaches to resilience measurement and impact is really helpful.

NFI03: When you have to try to define some indicators and at the end how is it possible to measure indicators for a process, something like resilience is not so easy to measure.

4.4. *The donor-funding model*

We explicitly addressed the role of donor preferences in program design with coordination staff only (Q12), yet the donor-NGO relationship was raised by all interviewees.

Donors play a significant role in the surge in resilience

A few respondents explicitly stated that they perceived resilience to be quite attractive to donors. Some stated that they see it as bringing a very positive shift in donor focus which is leading to better donor-funded programs. Some others however, suggested that donors are simply rebranding or even double-counting.

NHC04: The benefit is that donors are genuinely trying to be better agencies. It is a genuine attempt for them to improve the way they distribute funding, and join up thinking on how they fund.

NFI03: Donors can be promoters of resilience, but they have to change something otherwise it's just filling the paper with nice words because nothing changes because we keep on destroying the social connections and dynamics.

The donor-funding model does not enable high quality resilience programming

The way donors understand and approach resilience is particularly important because, as many

respondents reported, donors have significant influence on program design.

SFI09: We design within the donor requirements, we are bound by them, we have to fit in a certain box. We might want to have an integrated project which does livelihoods, health, WASH, and child protection, but the donor says no we just want livelihoods.

Overwhelmingly interviewees reported concerns with the way the donor-funding model could influence programs: a) many said that donors provide inadequate funding and time to undertake much-needed in-depth analysis before programs are designed; b) some said that prescriptive donor funding meant they are required to deliver programs that do not meet the greatest resilience need of the community; and c) some said that they perceive donors to be inflexible once a program has been agreed, and as such they are unable to be responsive to changing environments and needs. In relation to flexibility, it should be noted that a few respondents from the global north suggested that the concern about flexibility in program design and activities may in fact be over-exaggerated in the minds of field staff.

SFC01: You can't do investment in detailed assessment until you get the funding, but when you've got the funding the donor has already put in their preferences.

NHC13: We often want to design around long term horizons but we have to show short term results; achieving short term results sometimes undermines longer term impacts.

SFI14: Most of the donors do not understand resilience – when they give you money and tell you to spend on x, they want to see x happening, if it doesn't happen they start asking. They don't understand that resilience varies according to context and the changing environment.

5. Discussion

The discussion first looks at the extent to which the three hopes and three critiques of resilience are reflected in practitioners' understanding of disaster resilience and perspectives on disaster resilience programming in the international development sector. We then discuss the key challenges and opportunities in resilience programming which emerged as critical for practitioners. Finally, we explore how these challenges speak directly to the usefulness of resilience as a boundary object.

5.1. Is resilience delivering on its promises?

To what extent is resilience shifting the focus of programming away from traditional DRM and towards more development outcomes including vulnerability?

We find that resilience is indeed changing the focus or objective of NGO programming; a shift that practitioners see as overwhelmingly positive. At the conceptual level, a focus on development outcomes including vulnerability features prominently in practitioners understanding of resilience and their perception of its benefits. Practitioners perceive that resilience is resulting in a shift in focus of disaster programming beyond traditional DRM to facilitating the protection and promotion of development goals. Similarly, practitioners see a move towards incorporating risk considerations in development-oriented programming. While implementing this focus into practice lags behind the shift in thinking, we also find many examples of where long-term development outcomes are the central objective of disaster resilience programming.

In relation to vulnerability, practitioners regard the resilience agenda as enabling a more explicit and in-depth focus on the role vulnerability plays in disaster risk and development outcomes. Addressing vulnerability - an underlying driver of disaster risk - is central to practitioners' understanding of what resilience building means. The promotion of in-depth systems analysis (discussed below) incorporating vulnerability is seen as especially positive. This is because a focus on vulnerability is something which many practitioners have been striving to achieve in their work, yet was somewhat neglected in the DRM space. The resilience agenda is opening the space for practitioners to engage in this best-practice development approach.

Is resilience linking development and DRM initiatives?

Practitioners see the growing links between development and DRM initiatives - which they have long seen as needed - as a key benefit of the surge in resilience. Like Walker and Salt (2012) and Sellberg et al. (2015), we find that practitioners positively view resilience as promoting both lateral and cross-scale conversations. In this case this is experienced as a linking between humanitarian and development arms of their organizations, the interconnectedness of which practitioners had not previously had the opportunity to recognize and discuss. Moreover, a positive flow-on benefit of these links is that NGO program outcomes are ultimately more sustainable. This is because development achievements were less likely to be destroyed by disasters, and humanitarian initiatives were more likely to positively contribute to development. Despite the positivity, implementing this linking in practice is a challenge due to the added complexity.

Is resilience engendering an integrated or systems-based approach?

Like others who have explored practitioner understandings and experiences of resilience (Frankenberger et al., 2014; Mitchell, 2013; Sudmeier-Rieux, 2014; Walker and Salt, 2012), we find that resilience is facilitating practitioners and their colleagues to shift their thinking towards a systems perspective, helping them recognize that their actions in one sector have effects throughout the system. This translates practically into support for multi-sector approaches, which look at the interconnections between for example WASH (water and sanitation for health), livelihoods, and DRM. Under resilience programming, sector specialists are required to work together, rather than narrowly focusing on their own sector. Resilience has revitalized this best practice principle and is resulting in much-needed greater participation. The integrated or systems approach was also identified as a practical challenge, in particular because implementation requires in-depth analysis (discussed below).

5.2. Are the critiques of resilience being realized in practice?

Does resilience lack conceptual agreement and clarity?

We find that practitioners strongly perceive that resilience lacks conceptual agreement and clarity, and view this as a challenge. Not only are different understandings of resilience perceived to be a problem, we find that resilience can be so broad as to be meaningless. On the other hand, the all-encompassing nature of resilience is also beneficial because it opens the space for cross-disciplinary discussions, allowing people from different perspectives to come together under a common goal. This common goal appears to be the principle of working in an integrated way with a whole-of-system view. While this may

be broad, it appears coherent enough to have allowed for progress.

Is resilience a buzzword for business as usual practice?

We find some support for this critique: many practitioners told us that they did not believe their colleagues were making a meaningful distinction between disaster resilience and traditional DRM, in particular preparedness and coping. Similarly, we also found a not-insignificant proportion of interviewees who themselves expressed a DRM-centered conceptualization of disaster resilience. This is not necessarily surprising, considering that it is often those with disaster risk management expertise and experience who are first tasked with developing and implementing disaster resilience programs.

In practice, we find that some practitioners perceive resilience to be a rebranding of previous programming, with a donor-attractive buzzword attached. It is interesting that the respondents who argued that resilience is a rebranding of the status quo in some instances also argued that it is bringing meaningful change in other instances. This speaks to the fact that resilience is being experienced in many different ways throughout the NGO sector. The same respondents see that resilience can be both a rebranding and a meaningful change, depending on donor framing and other influencing factors. We acknowledge that the findings presented here could be seen to be contradicting those outlined in section 5.1 above, where we argue that resilience is in fact generating a genuine shift in thinking and practice. This is discussed in section 5.4 below.

Does resilience reinforce the status quo and existing vulnerabilities?

If - as some scholars have hypothesized and discussed above - the concept and practical application of resilience is leading to a reinforcement of the status quo while neglecting vulnerabilities and transformation, then it is unlikely that the people undertaking this resilience-oriented work would recognize and raise this issue. What follows should be considered in the context of this limitation. As discussed above addressing vulnerability appears central to practitioners' understanding of disaster resilience. Practitioners do not perceive programming to be neglecting vulnerability considerations or reinforcing existing vulnerabilities. A focus on the inclusion and empowerment of vulnerable groups appears to be a mainstay of contemporary development practice and practitioners do not perceive this to be being shifted by the entry of resilience.

In regards to whether resilience reinforces the status quo and by extension avoids facilitating transformative change in the system, we find that in terms of practitioner thinking, transformation appears to be a significant element of practitioners' understanding of resilience. This can perhaps be at least partially credited to the BRACED initiative; we infer this by the fact that respondents repeatedly used the BRACED terminology of 'absorptive, adaptive and transformative capacities.' However, we also find that practitioners perceive the transformative aspect of resilience to be the most difficult to operationalize. They cite staff capacity and short funding cycles as key impediments to working on transformation.

5.3. Resilience programming: challenges and opportunities

Throughout the course of the interviews practitioners highlighted a number of challenges they face in

implementing resilience thinking in practice.

Resilience is not practically oriented

While practitioners feel they understand resilience adequately, they struggle to implement this thinking in practice. We find that the translation of resilience theory (science) into policy and then practice is yet to be satisfactorily achieved. This is a clear blockage in the implementation of resilience building initiatives. Resilience materials (literature, guidelines etc.) developed by researchers and policy-makers aimed at practitioners should prioritize providing examples of resilience programming in action, and practical guidance on designing and implementing resilience programming.

Realizing the hopes of resilience requires in-depth analysis

We find that in-depth context analysis is required in order to understand the interconnected system driving disaster risk and development outcomes for resilience work, something which is seen as overwhelmingly positive by practitioners (see also Frankenberger et al. 2014). While not new in the development sector, practitioners perceive that resilience encourages this important activity, particularly amongst teams who may have been less likely to undertake it in a meaningful way. Practitioners are however frustrated by a lack of time and money to undertake in-depth resilience analysis, particularly at the design phase when it is needed most (see section 5.4).

Like Gregorowski et al. (2016), we find staff expertise and analytical competencies to undertake this in-depth analysis, particularly with the new resilience framing, to be a key gap inhibiting the practical uptake of resilience thinking. There is a need for straightforward and practical guidance on undertaking this type of systems analysis. Scientists and researchers can contribute by providing such straightforward and practice guidance, and require funding to do so. It is important to note that practitioners expressed more demand for support for in-depth analysis than for measurement (see below), which supports Quinlan et al.'s (2015) argument that reductive measurement in place of, instead of in addition to, in-depth analysis may render some of the key benefits of the surge in resilience impotent.

Measurement is a challenge, but not the most important one

Considering the investment in measurement by scholars and policy-makers, one could conclude that within this field measurement is one of the central approaches to the operationalization of resilience, with measurement frameworks, critiques of those frameworks, and meta-analyses exploding in the literature over the last few years (Constas and Barrett, 2013; Levine, 2014; Mitchell, 2013; Schipper and Langston, 2015; Winderl, 2014). In contrast to the surge in literature on measuring resilience, practitioners did not identify measurement as a primary concern in relation to their resilience work. They did however suggest that measurement is important, and that they see demand for practically oriented support to measure resilience.

Little demand for CBA in the disaster resilience context

While scholars and policy-makers have suggested the utility of CBA for resilience building (see for

example Mechler et al., 2014; Kull et al., 2013), we find very little demand from practitioners. CBA is largely seen as complex and difficult to effectively implement. We find that practitioners are concerned that CBA might shift focus away from community priorities – which have the greatest chance of community ownership and sustainability – towards expert or externally imposed priorities. Compounding this finding is the judgement by many practitioners that the CBA logic is antithetical to their objectives surrounding community empowerment and social development.

The current funding/donor model is not wholly conducive to resilience programming

We find that donor funding processes heavily influence how resilience is manifesting in practice. Practitioners acknowledge donor focus and investment in resilience to be a step in the right direction. However, like Mitchell (2013), we find that the hype around resilience has not been accompanied by changes to the typical operation of funding agreements. In addition to challenges around staff capacity, practitioners argue that donor grants do not provide adequate time or money for the in-depth analysis required to effectively implement resilience thinking. A typical scenario reported was that funding calls are responded to with what little analysis is on hand, and written to match donor preferences as closely as possible. When funding is awarded there is immense pressure to start delivering activities immediately. This scenario does not provide adequate time to undertake in-depth analysis to understand the integrated system, or build this into program design, which would facilitate better resilience programming.

The problem of lack of time or money for in-depth analysis is compounded again by a perceived lack of flexibility on the part of donors in terms of what funding can be spent on. In the unusual situation where staff capacity, time, and money *are* available for in-depth analysis, without flexibility to redesign programs in response to insights, the analysis loses value. This is particularly concerning considering the complex and integrated nature of resilience building. It should be noted that a number of practitioners agreed that donors were perceived by country staff to be inflexible, but that this perception may be too rigid. If it is indeed the case that donors are more flexible than country staff give them credit for, then this points to the need for donors to be more explicit about their expectations, and for this to be thoroughly communicated to implementation staff.

5.4. Resilience as a boundary object

In light of the above, we find that resilience has the potential to be a useful boundary object, bridging science and practice. This goes beyond fulfilling the general characteristics set out in the literature on boundary objects (section 2.2), and shows in the fulfillment of the hopes and the defiance of most critiques. It is reflected in practitioner's ability to appreciate the flexibility of the concept, while at the same time seeing its concrete potential and need for application in the field (available but flexible definitions). The usefulness of resilience as a boundary object specifically manifests in its achievements to date in shifting thinking to bridge development and DRM, and to encourage an integrative systems approach that is rooted in science and backed by policy makers and donors. However, in order to sustainably establish resilience as a boundary objective, fundamental systemic changes will still be needed. We identify two key ways in which the usefulness of resilience as a boundary object could be improved.

On the conceptual side, resilience as a boundary object could be further improved by an acknowledgement from all actors in the science-practice interface that understandings of resilience vary, and that there is a need for managing the balancing act between agreed and specific definitions of resilience, and flexible use of the term. Despite - and perhaps because of - conceptual fuzziness and/or conceptual pluralism, resilience has been able to bring diverse expertise together to work in an integrated way. It may simply be a matter of time needed to gain confidence in the use and operationalization of resilience by all parties involved. Indeed, contradictions in respondent's perceptions may be an indicator for exactly this lack of confidence and experience.

Operationalizing the bridging of DRM and development in international development is more challenging because the current modus operandi of the development sector is not conducive to longer term, analytically driven integrated programming. If resilience is to truly be a useful boundary object then there is a need for investment in enabling the institutional processes, capacities, and resources required for undertaking DRM and development programming in ways that build disaster resilience. This is ultimately a question of the structure and processes of NGOs and donors within the development sector, including how different aspects of programming are funded. Resilience requires a substantial shift in the way in which donors, NGOs, and communities work together, and achieving this type of institutional change is not a simple task. Relatedly, the tools produced by scientists must meet the needs of practitioners more closely; this requires corresponding funding for such research.

For this study we explored disaster resilience as a boundary object in international development by assessing its perceived usefulness in communicating across the science-policy-practice interface. Further research could conceive of approaches testing its usefulness as a boundary object by measuring whether the use of this term, as compared to another term, generates more efficient (faster) or more effective (better outcomes) communication. This would require resource intensive controlled environments that can only be created in experiments.

6. Conclusion and way forward

This paper explored how international development practitioners see disaster resilience in theory and practice, and whether and to what extent they perceive it to be fulfilling the hopes and critiques of scientists and policy-makers. This research is an essential but preliminary step in understanding how the concept of resilience is playing out in practice. Our research explored practitioner perspectives of practice; an important research avenue for the future may be a somewhat more impartial evaluation of that practice via a robust assessment methodology.

We found that just as scientists and policy-makers hoped, practitioners perceive a genuine shift to be occurring in thinking and practice towards focusing on development outcomes, linking the DRM and development fields, and integration across sectors. Unsurprisingly, practitioners report that the shift in thinking is comparatively easier to achieve than the shift in practice, which requires substantial institutional change. At the same time, the critical concern that resilience is a vague buzzword which reinforces the status quo cannot be discredited. The likelihood of overcoming this lies in future interaction between scientists, policy-makers, donors and practitioners at the resilience science-practice interface. From the perspective of these practitioners, resilience is more than a buzzword. While

challenges remain, resilience is still a useful boundary object.

There is a problematic weighting towards the scholarly and policy expert side of the resilience science-practice interface. The experience and expert, on-the-ground insights of practitioners must be raised to an equal footing if resilience is to be a more useful boundary object and achieve its goals. This means researchers and policy-makers listening and acting when practitioners indicate that the current discourse on resilience is not practically oriented. It means researchers and policy-makers actively seeking to work collaboratively with practitioners to co-generate much-needed support for practically oriented systems analysis and integrated programming. It means researchers and policy-makers prioritizing the reality and experience of practitioners before developing guidance on program design such as CBA tools or measurement frameworks.

The role of project and research donors cannot be underestimated. By listening to practitioners, donors have the capacity to take resilience from a buzzword to a useful boundary object engendering improved programming. This will require working with NGOs - both policy and field staff - to amend funding processes to better enable resilience building. We have identified significant demand for research that generates straightforward and practical tools for practitioners. Furthermore, there is an urgent need for time and resources to undertake systems analysis before activities are agreed. Longer funding cycles are also needed to allow practitioners to work on the more complex substantive issues which underlie resilience, namely transformation. Finally, flexibility on the part of donors, in regards to program design and changes over the life of the program, can enable practitioners to deliver resilience building more effectively.

References

1. Adger, N. (2006) 'Vulnerability' *Global Environmental Change* 16: 268–281.
2. Aldunce, P., Beilin, R., Howden, M., Handmer, J. (2015) 'Resilience for disaster risk management in a changing climate: Practitioners' frames and practices' *Global Environmental Change* 30: 1-11.
3. Alexander, D. E. (2013) 'Resilience and disaster risk reduction: an etymological journal' *Nat. Hazards Earth Syst. Sci.* 13: 2707–2716, doi:10.5194/nhess-13-2707-2013
4. Asian Development Bank (ADB) (2013) *Investing in Resilience: Ensuring a disaster resistant future*. Manila: Asian Development Bank.
5. Baggio, J., Brown, K. and Hellebrandt, D. (2015) 'Boundary Object or Bridging Concept? A Citation Network Analysis of Resilience' *Ecology and Society* 20 (2). doi:10.5751/ES-07484-200202.
6. Bahadur, A.; Ibrahim, M. and Tanner, T. (2010) *The Resilience Renaissance? Unpacking of Resilience for Tackling Climate Change and Disasters*, Strengthening Climate Resilience Discussion Paper 1, Brighton: IDS.
7. Bahadur, A., Peters, K., Wilkinson, E., Pichon, F., Gray, K., and Tanner, T. (2015) *The 3As: Tracking Resilience Across Braced*, BRACED Knowledge Manager working paper, Overseas Development Institute, London.
8. Béné, C., Godfrey Wood, R., Newsham, A., and Davies, M. (2012) Resilience: new utopia or new tyranny? Reflection about the potentials and limits of the concept of resilience in relation to vulnerability reduction programmes, Institute of Development Studies, Brighton.
9. Béné, C., Newsham, A., Davies, M., Ulrichs, M. Godfrey-Wood, R. (2014) 'Review Article: Resilience, Poverty and Development' *Journal of International Development* 26: 598-623.
10. Berkes, F. and Ross, H. (2013) Community resilience: toward an integrated approach, *Soc. Nat. Resour.*, 26, 5–20.
11. Brand, F. and Jax, K. (2007) 'Focusing the Meaning(s) of Resilience: Resilience as a Descriptive Concept and a Boundary Object' *Ecology and Society* 12 (1). doi:10.5751/ES-02029-120123.
12. Brown, K. (2012) 'Policy discourses of resilience' in *Climate change and the crisis of capitalism: a chance to reclaim self, society and nature*. Eds. M. Pelling et al. Routledge.
13. Brown, K. (2013) 'Global Environmental Change 1: A social turn for resilience?' *Progress in Human Geography* 38(1): 107-117.
14. Brown, K. (2016) *Resilience, Development and Global Change*, Routledge.
15. Cabot-Venton, C., Siedenburg, J., Faleiro, J. and Khinmaung, J. (2011) *Investing in communities: a cost-benefit analysis of building resilience for food security in Malawi*, Tearfund, http://www.droughtmanagement.info/literature/TEARFUND_investing_in_communitites_malawi_2010.pdf.
16. Cannon, T. and Müller-Mahn, D. (2010) 'Vulnerability, resilience and development discourses in context of climate change' *Natural Hazards* 55(3): 621–635, doi:10.1007/s11069-010-9499-4
17. Conostas, M. and Barrett, C. B. (2013) *Principles of Resilience Measurement for Food Insecurity: Metrics, Mechanisms, and Implementation Plans*, presented at Expert Consultation on Resilience Measurement Related to Food Security sponsored by Food and Agricultural Organization and World Food Programme, 19– 21 February 2013, Rome, 2013.

18. Carpenter, S., Walker, B., Anderies, J. M., and Abel, N. (2001) 'From Metaphor to Measurement: Resilience of What to What?' *Ecosystems* 4: 765–781.
19. Chadburn, O., Anderson, C., Cabot-Venton, C. and Selby, S. *Applying Cost Benefit Analysis at a Community Level: A review of its use for community based climate and disaster risk management*, Oxfam Research Reports, <http://oxfamlibrary.openrepository.com/oxfam/bitstream/10546/303558/12/rr-cost-benefit-analysis-tearfund-010313-en.pdf> .
20. Cretney, R. and Bond, S. (2014) "Bouncing back' to Capitalism? Grassroots autonomous activism 2 in shaping discourses of resilience and transformation following 3 disaster' *Resilience* 2(1): 18-31.
21. Davoudi, S. (2012) 'Resilience: A bridging concept or a dead end?', *Planning Theory and Practice* 13(2): 299–307.
22. DFID (2011) *Defining Disaster Resilience. A DFID Approach Paper*. London: Department of International Development.
23. Djalante, R., Holley, C., and Thomalla, F. (2011) 'Adaptive governance and managing resilience to natural hazards' *International Journal of Disaster Risk Science* 2: 1–14.
24. Frankenberger, T., Conostas, M. A., Nelson, S., and Starr, L. (2014) Resilience programing among nongovernmental organizations: Lessons for policy makers, Food Policy Report, International Food Policy Research Institute, Washington, D.C.
25. Fekete, A., Hufschmidt, G. and Kruse, S. (2014) 'Benefits and Challenges of Resilience and Vulnerability for Disaster Risk Management' *International Journal of Disaster Risk Science* 5(1): 3-20.
26. Gaillard, J. C. (2010) 'Vulnerability, capacity and resilience: Perspectives for climate and development policy' *Journal of International Development* 22(2): 218–232 doi: 10.1002/jid.1675.
27. Gostelow, L., Desplats, G., Shoham, J., Dolan, C., Hailey, P. (2016) *Nutrition and Resilience: A Scoping Study*, Undertaken for the ENN, <http://files.ennonline.net/attachments/2441/Resilience-report-FINAL-14th-Jan-2016.pdf>
28. Gregorowski, R., Dorgan, A., Hutchings, C. (2016) *Resilience Measurement-Mel Approaches in Practice: Challenges and lessons in operationalizing resilience measurement frameworks – experience and lessons from CoP stakeholders*, ITAD, http://www.measuringresilience.org/pdfs/ITAD_Report.pdf
29. Grove, K. (2014) 'Agency, affect, and the immunological politics of disaster resilience' *Environment and Planning D: Society and Space* 32(2): 240-256.
30. Guest, G., Bunce, A. and Johnson, L. (2006) 'How Many Interviews Are Enough? An Experiment with Data Saturation and Variability' *Field Methods* 18(1): 59-82.
31. Guston, David H. (2000) *Between Politics and Science: Assuring the Integrity and Productivity of Research*, Cambridge University Press.
32. Guston, D. H. (2001) 'Boundary Organizations in Environmental Policy and Science: An Introduction' *Science, Technology, & Human Values* 26(4): 399-408.
33. Gieryn, T. F. (1995) 'Boundaries of Science' in *Handbook of Science and Technology Studies*, ed. S. Jasanoff. Sage Publication.
34. Hoppe, R., Wesselink, A. and Cairns, R (2013) 'Lost in the Problem: The Role of Boundary

- Organisations in the Governance of Climate Change' *Wiley Interdisciplinary Reviews: Climate Change* 4(4): 283–300. doi:10.1002/wcc.225.
35. IFRC (2012) *Understanding Community Resilience and Program Factors that Strengthen Them: A comprehensive study of Red Cross Red Crescent Societies tsunami operation*. Geneva: International Federation of Red Cross and Red Crescent Societies.
 36. IPCC (2012a) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [C.B. Field; V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor and P.M. Midgley (eds)]. Cambridge: Cambridge University Press.
 37. IPCC (2012b) Glossary of terms. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 555-564.
 38. ISDR (2007) *Building Disaster Resilient Communities: Good Practices and Lessons Learned*, A publication of the "Global Network of NGOs" for Disaster Risk Reduction, United Nations, Geneva, http://www.unisdr.org/files/596_10307.pdf
 39. Kasperson, R.E., and Berberian, M. (eds.) (2011) *Integrating science and policy: Vulnerability and resilience in global environmental change*. London: Earthscan.
 40. Keating, A. (in press) 'Measuring and building community disaster resilience: essential for achieving Sendai' in *Disaster Risk Reduction and Resilience*, eds. M. Yokomatsu and S. Hochrainer-Stigler, Springer.
 41. Keating, A., Campbell, K., Mechler, R., Magnuszewski, P., Mochizuki, J., Liu, W., Szoenyi, M., and McQuistan, C. (2017) 'Disaster resilience: What it is and how it can engender a meaningful change in development policy' *Dev. Policy Rev.* 35: 65–91.
 42. Kellett, J. and Caravani, A. (2013) *Financing Disaster Risk Reduction: A 20-year story of international aid*. Washington, DC, and London: Global Facility for Disaster Reduction and Recovery (GFDRR) at the World Bank and the Overseas Development Institute.
 43. Kull, D., Mechler, R., and Hochrainer-Stigler, S. (2013) Probabilistic cost-benefit analysis of disaster risk management in a development context. *Disasters*, 37: 374–400. doi:10.1111/disa.12002
 44. Levine, S. (2014) *Assessing Resilience: Why Quantification Misses the Point*, Humanitarian Policy Group Working Paper, ODI, London.
 45. Longhurst, R. (2010) "Semi-structured Interviews and Focus Groups" chap. 8 in *Key Methods in Geography*, eds.: N. Clifford, S. French and G. Valentine, SAGE, pp. 545.
 46. Lynch, A.H., L. Tryhorn, and R. Ambramson. (2008) 'Working at the Boundary: Facilitating Interdisciplinarity in Climate Change Adaptation Research.' *Bulletin of the American Meteorological Society* 89 (2): 169–79. doi:10.1175/BAMS-89-2-169.
 47. MacAskill, K. and Guthrie, P. (2014) 'Multiple Interpretations of Resilience in Disaster Risk Management' *Procedia Economics and Finance* 18: 667-674.
 48. MacKinnon, D. and Derickson, K. D. (2012) 'From resilience to resourcefulness' *Progress in*

Human Geography 37(2): 253-270.

49. Manyena, S. B. (2006) 'The concept of resilience revisited' *Disasters* 30(4): 433-450.
50. Mason, M., 2010. Sample Size and Saturation in PhD Studies Using Qualitative Interviews. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 11.
51. Matyas, D. and Pelling, M. (2014) 'Positioning resilience for 2015: the role of resistance, incremental adjustment and transformation in disaster risk management policy' *Disasters* 39(s1): s1-s18.
52. Mechler, R., and The Risk to Resilience Study Team (2008) *The cost-benefit analysis methodology*, Risk to Resilience Working Paper No. 1, M. Moench, E. Caspari, & A. Pokhrel (Eds.). Kathmandu, Nepal: Institute for Social and Environmental Transition-Boulder, Institute for Social and Environmental Transition-Nepal, & Provention Consortium, <http://i-s-e-t.org/resources/working-papers/risk-to-resilience.html>
53. Mechler, R., Czajkowski, J., Kunreuther, H., Michel-Kerjan, E., Botzen, W., Keating, A., McQuistan, C., Cooper, N. and O'Donnell, I. (2014) *Making Communities More Flood Resilient: The Role of Cost Benefit Analysis and Other Decision-support Tools in Disaster Risk Reduction*, White Paper, Zurich Flood Resilience Alliance, <http://opim.wharton.upenn.edu/risk/library/ZAlliance-decisiontools-WP.pdf> .
54. Mercy Corps (2013) *Resilience, development and disaster risk reduction*, September 2013, Mercy Corps, Oregon, USA, https://www.mercycorps.org/sites/default/files/TheConnectionBetweenResilienceDevelopmentDRR_Sept2013.pdf
55. Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharwani, S., Ziervogel, G., Walker, B., Birkmann, J., van der Leeuw, S., Rockström, J., Hinkel, J., Downing, T., Folke, C., Nelson, D. (2010) 'Resilience and Vulnerability: Complementary or Conflicting Concepts?' *Ecology and Society* 15, doi:10.5751/ES-03378-150311
56. Mitchell, A. (2013) *Risk and Resilience: From Good Idea to Good Practice—A Scoping Study for the Experts Group on Risk and Resilience*. Paris: Organization for Economic Co-operation and Development.
57. Mitchell, T. and Harris, K. (2012) *Resilience: A risk management approach*, ODI Background Note, January 2012, <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7552.pdf>
58. Nelson, D. (2010) 'Adaptation and resilience: responding to a changing climate' *Wiley Interdisciplinary Reviews: Climate Change* 2(1): 113-120 doi: 10.1002/wcc.91.
59. Nelson, D., Adger, W., and Brown, K. (2007) Adaptation to environmental change: contributions of a resilience framework, *Annu. Rev. Environ. Resour.*, 32, 395–419.
60. Olwig, M. E. (2012) 'Multi-sited resilience: The mutual construction of "local" and "global" understandings and practices of adaptation and innovation' *Applied Geography* 33: 112-118.
61. Pasteur, K., and McQuistan, C. (2016) *From risk to resilience: a systems approach to building long-term, adaptive wellbeing for the most vulnerable*, Rugby, UK: Practical Action Publishing.
62. Patel, S. S., Rogers, M. B., Amlôt, R., Rubin, G. J. (2017) 'What Do We Mean by 'Community Resilience'? A Systematic Literature Review of How It Is Defined in the Literature' *PLOS Currents Disasters* 1, doi: 10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2.

63. Pelling, M. (2011) *Adaptation to Climate Change: From resilience to transformation*, Routledge.
64. Pelling, M. and Manuel-Navarrete, D. (2011) 'From resilience to transformation: the adaptive cycle in two Mexican urban centers' *Ecology and Society* 16(2): 11.
65. Quinlan, A. E., Berbés-Blázquez, M., Haider, L. J. and Peterson, G. D. (2015) 'Measuring and assessing resilience: broadening understanding through multiple disciplinary perspectives' *Journal of Applied Ecology*, doi: 10.1111/1365-2664.12550.
66. Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., Jinks, C., (2017) 'Saturation in qualitative research: exploring its conceptualization and operationalization' *Qual Quant*, <https://doi.org/10.1007/s11135-017-0574-8>
67. Schipper, E. L. F. and Langston, L. (2015) *A Comparative Overview of Resilience Measurement Frameworks: Analysing Indicators and Approaches*, Overseas Development Institute Working Paper, Overseas Development Institute, London.
68. Sellberg, M. M., Wilkinson, C. and Peterson, G. D. (2015) 'Resilience assessment: a useful approach to navigate urban sustainability challenges' *Ecology and Society* 20(1): 43. <http://dx.doi.org/10.5751/ES-07258-200143>
69. Star, S. L. (2010) 'This is Not a Boundary Object: Reflections on the Origin of a Concept' *Science, Technology, & Human Values* 35(5): 601-617.
70. Star, S. L. and Griesemer, J. R. (1989) 'Institutional Ecology, 'Translations,' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907 – 1939.' *Social Studies of Science* 19: 387-420.
71. Stumpp, E. (2013) 'New in town? On resilience and "Resilient Cities"' *Cities* 32: 164-166.
72. Sturges, J. E. and Hanrahan, K. J. (2004) "Comparing Telephone and Face-to-Face Qualitative Interviewing: a Research Note" *Qualitative Research* 4(1):107-118.
73. Sudmeier-Rieux, K. I. (2014) 'Resilience – an emerging paradigm of danger or of hope?' *Disaster Prevention and Management* 23(1): 67-80
74. Trochim, W. (2000) *The Research Methods Knowledge Base*, 2nd Edition, Cincinnati, OH: Atomic Dog Publishing.
75. UN (2015) Sendai Framework for Disaster Risk Reduction 2015-2030. New York, NY: United Nations.
76. UNISDR (2011) *Global Assessment Report on Disaster Risk Reduction*. Geneva: United Nations International Strategy for Disaster Reduction.
77. van Pelt, S. C., Haasnoot, M., Arts, B., Ludwig, F., Swart, R. and Biesbroek, R. (2015) 'Communicating Climate (Change) Uncertainties: Simulation Games as Boundary Objects.' *Environmental Science and Policy* 45: 41–52. doi:10.1016/j.envsci.2014.09.004.
78. Vogel, C., Moser, S. C., Kaspersen, R. E., Dabelko, G. D. (2007) 'Linking Vulnerability, Adaptation, and Resilience Science to Practice: Pathways, Players, and Partnerships' *Global Environmental Change* 17 (3–4): 349–64. doi:10.1016/j.gloenvcha.2007.05.002.
79. Walker, B. and Salt, D. (2012) *Resilience Practice*, Island Press, Washington.
80. Welsh, M. (2013) 'Resilience and responsibility: governing uncertainty in a complex world' *The Geographical Journal*, doi: 10.1111/geoj.12012.

81. Whiting, L. S. (2008) "Semi-structured interviews: guidance for novice researchers" *Nursing Standard* 22(23): 35-40.
82. Winderl, T. (2014) Disaster Resilience Measurements: Stocktaking of ongoing efforts in developing systems for measuring resilience, United Nations Development Programme – UNDP, http://www.fao.org/fileadmin/user_upload/drought/docs/DisasterResilienceMeasurements.pdf
83. Zhou, H., Wang, J., Wan, J., and Jia, H. (2010) Resilience to natural hazards: a geographic perspective, *Nat. Hazards*, 53, 21–41.

Appendix - Interview protocol

The questions from our semi-structured interview protocol are set out below. Subject to the direct of interviewee responses, these questions were asked roughly in order after the interviewer provided the participant with information about the study, assurance of confidentiality, and obtained their consent for the interview. After these questions we provided additional space for respondents to raise any further issues. We have indicated where questions differed for participants in implementation versus coordination roles.

1. First up, could you please tell me a little about your role?
2. What do you see as the biggest challenges for projects trying to reduce disaster risk or working with disaster prone communities?
3. When and how did the idea of resilience become something related to your work with communities? (Or your organization's work?)
4. How is the idea of resilience being used in your team to help address the problems and challenges for disaster prone communities?
5. For implementers: In your personal opinion, what would a really resilient community look like?

For coordinators: In your personal opinion, what would a high quality resilience building program achieve?

6. What do you think your colleagues understand by resilience? (Is this a shared understanding or does it vary across the team?)
7. For implementers: What do you see as the biggest benefits of using the idea and word resilience?

For coordinators: What do you see as the biggest benefits of using the idea and word resilience? For implementation teams? For donors? For advocacy?

8. What do you see as the biggest challenges and problems of using resilience?
9. Once you and your team have been tasked to implement a resilience-building program or project, how do you decide what activities to do?
10. How do you prioritize activities?
11. For implementers: Do you use any guidance material when deciding upon activities? If so please describe.

For coordinators: Does [NGO] use any guidance materials for designing resilience building programs or projects?

12. For coordinators only: What role, if any, do donor preferences play in program/project/activity design?

13. Do you see any problems/issues with the current approach to program or project decision-making at the design or implementation stages? If yes, what are they?

14. What, if any, resilience decision-making or program/project design support would you like to see developed?

15. For coordinators only: What do you think about MCA/CBA for disaster resilience projects?