GSDRC Applied Knowledge Services

Governance · Social Development · Humanitarian · Conflict

Disaster Resilience

Topic Guide

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Executive summary

Over the past decade, there has been an increase in the frequency and severity of hazards such as droughts, flooding and cyclones. The impacts of disasters on development, poverty and vulnerability have led to calls for improving disaster resilience – meaning the capacity of households, communities and countries to cope with and adapt to the shocks and stresses associated with natural hazards.

There is emerging evidence that disaster resilience has been effective in saving lives and protecting infrastructure, livelihoods, social systems and the environment, and that building disaster resilience is more cost-effective and sustainable than the present combination of disaster relief and development aid. While the terminology of disaster resilience is relatively new and remains debated, it is already embedded in international policy frameworks for humanitarian action.

This topic guide focuses on resilience to natural hazards, with emphasis on humanitarian action, in fragile and conflict-afflicted states as well as in other contexts. Although some principles are common to both contexts, there remains a high level of uncertainty about how to build resilience in adverse political economies.

In practical terms, resilience is neither an alternative to intervention nor a new paradigm that stands alone, but an increasingly important component of a holistic approach to reducing the impact of disasters on the most vulnerable. Evidence suggests that the following tools and approaches can be useful for building disaster resilience:

- ***Analysing and measuring resilience***: A number of tools are available, including DFID's (2011a) framework which highlights the relevance of exposure, sensitivity and adaptive capacity; and Twigg's (2009) indicators for governance, risk assessment, knowledge and education, risk management and vulnerability reduction, and disaster preparedness and response.
- ***Supporting the enabling environment and government action***: Disaster resilience can be strengthened when donors and governments adopt a multi-level, multi-stakeholder approach to risk governance. Connecting interventions that take place at different scales and levels has proven essential. National policies need to support equitable access to resources, strong risk management, long-term plans for resilience, and advocacy for the interests of at-risk populations.
- ***Supporting adaptive capacities***: Experience suggests that practitioners can draw on communities' disaster resilience most successfully when they tailor interventions to local contexts, ensure the meaningful participation of at-risk groups, and mainstream gender in programming. Inclusiveness and participation can be challenging and require a keen understanding of the opportunities and risks for less powerful social groups.
- ***Adapting to context*:** Different types of crises will involve different challenges and opportunities for intervention. However, common elements that enhance resilience include good governance, gender equality and engagement with a broad range of social groups, conflict resolution, livelihood diversification, and access to infrastructure and public services.
- ***Financing resilience***: A range of flexible funding mechanisms for support before, during and after hazards – insurance, borrowing, dedicated funds, remittances and multi-year aid – can be useful; their respective effectiveness varies by context.

1. The case for disaster resilience

1.1. What is disaster resilience?

Disaster resilience is the ability of individuals, communities, organisations and states to adapt to and recover from hazards, shocks or stresses without compromising long-term prospects for development (see examples of definitions in Box 1). According to the Hyogo Framework for Action (2005), disaster resilience is determined by the degree to which individuals, communities and public and private organisations are capable of organising themselves to learn from past disasters and reduce their risks to future ones, at international, regional, national and local levels.

Box 1: Definitions of disaster resilience

DFID (2011a, p. 6): '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'.

Hyogo Framework of Action (UNISDR, 2005b, p. 4): 'the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure'.

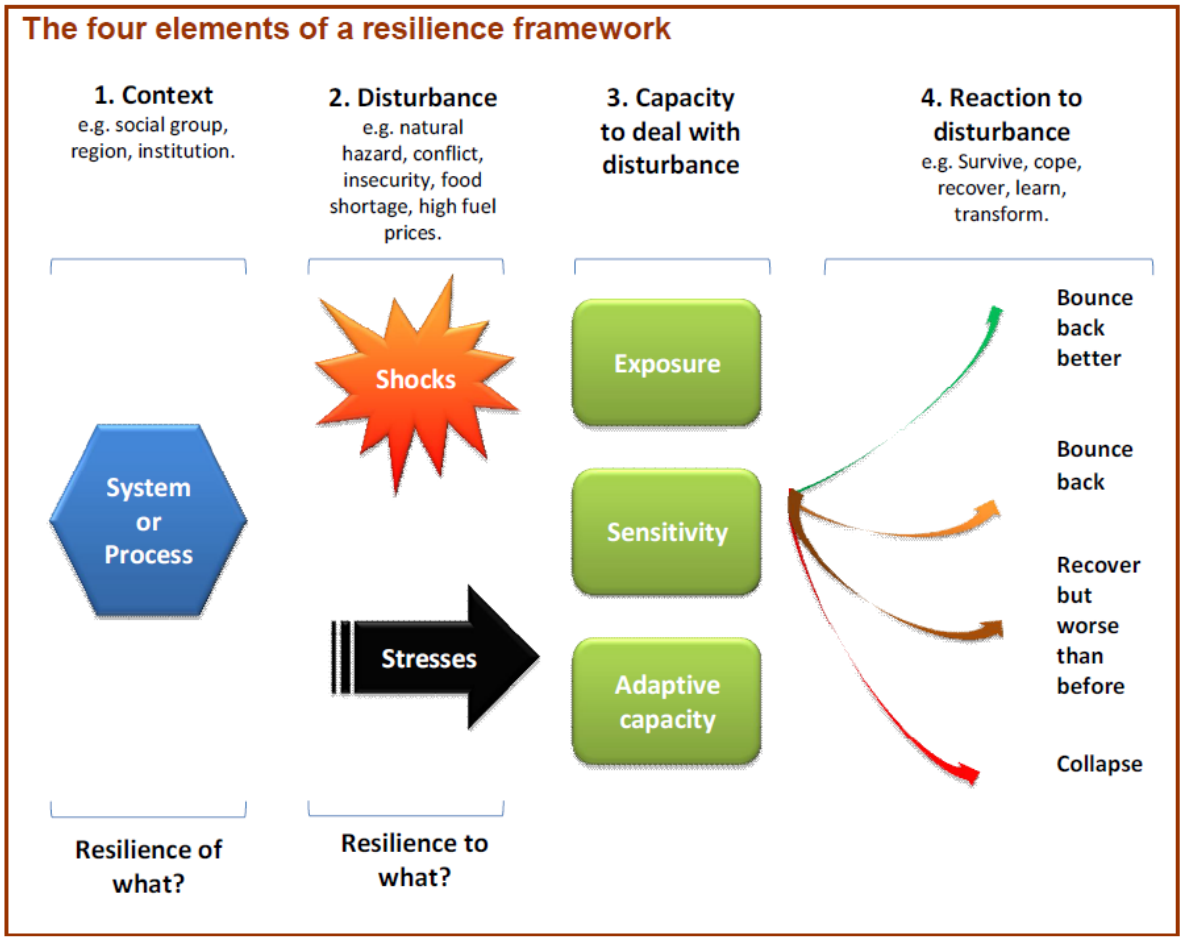
Disaster resilience is part of the broader concept of *resilience* – 'the ability of individuals, communities and states and their institutions to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term changes and uncertainty' (OECD, 2013b, p. 1).

In conceptual terms, *vulnerability* and disaster resilience are closely related. Some authors see vulnerability as the opposite of disaster resilience, while others view vulnerability as a risk factor and disaster resilience as the capacity to respond *(*Manyena, 2006, pp. 436, 439-443).

In practice, DFID's framework (DFID, 2011a, pp. 6-7) depicts the **core elements of disaster resilience** as follows (see Figure 1):

- ***Context***: Whose resilience is being built – such as a social group, socio-economic or political system, environmental context or institution.
- ***Disturbance***: What shocks (sudden events like conflict or disasters) and/or stresses (long-term trends like resource degradation, urbanisation, or climate change) the group aims to be resilient to.
- ***Capacity to respond***: The ability of a system or process to deal with a shock or stress depends on exposure (the magnitude of the shock or stress), *sensitivity* (the degree to which a system will be affected by, or will respond to, a given shock or stress), and *adaptive capacity* (how well it can adjust to a disturbance or moderate damage, take advantage of opportunities and cope with the consequences of a transformation).
- ***Reaction***: A range of responses are possible, including: *bounce back better*, where capacities are enhanced, exposures are reduced, and the system is more able to deal with future shocks and stresses; *bounce back*, where pre-existing conditions prevail; or *recover, but worse than before,* meaning capacities are reduced. In the worst-case scenario, the system collapses, leading to a catastrophic reduction in capacity to cope with the future.

Figure 1. Components of a disaster resilience framework (DFID)



Source: DFID 2011a, p. 7

Disaster resilience has been described as both **an outcome and a process** (Manyena, 2006, pp. 436-439). Practices focused on **outcome** have tended to adopt top-down reactive approaches which can favour the status quo and take attention away from inequalities resulting from insecurity and disaster (Manyena, 2006, pp. 438). As a **process**, building disaster resilience involves supporting the capacity of individuals, communities and states to adapt through assets and resources relevant to their context (Manyena, 2006, p. 439). For some, this implies enhancing peoples' rights and addressing socio-economic, gender and environmental inequalities that exacerbate vulnerability (Andharia et al., 2010, p. 11; Oxfam, 2013).

1.2. Disaster resilience on the international agenda

Resilience has had a long multi-disciplinary history. Since its origins in the 19th century study of materials, resilience has been used in psychology (from the 1940s), ecology (from the 1970s), social sciences (from the 1990s), development aid (starting with DFID's 1999 sustainable livelihoods perspective) and, in the last decade, economics and the study of organisations (McAslan, 2010; Manyena, 2006, pp. 433-434).

Connection to disaster risk management

Disaster resilience is closely embedded in the longer international history of disaster risk management (DRM), notably disaster risk reduction (DRR) (Manyena, 2006; Revet, 2012). There is wide agreement in the literature that **DRM is central to strategies and interventions to build disaster resilience**: tools and lessons from risk reduction, prevention, preparedness, mitigation, response and recovery are deemed critical to address hazards, exposure, vulnerability and capacities, and thus to build resilience[1]. Box 2 links to key international resources on DRM that are relevant to disaster resilience. At the same time, authors on disaster resilience largely agree that approaches and tools for disaster resilience are broader than the field of DRM: disaster resilience draws from, and brings together, knowledge and practices from fields such as climate change adaptation, poverty reduction, state-building and conflict resolution (see Figure 2 on p.7).

The connection between DRM and disaster resilience is epitomised by the '**Hyogo Framework for Action** 2005–2015: Building the Resilience of Nations and Communities', adopted by the UN World Conference on Disaster Reduction (UNISDR, 2005b). Acknowledging the severity of the threat from disasters and the deficiencies of the existing international response, in 2005 the UN's Hyogo Framework called for international actors and national governments to invest in disaster resilience (UNISDR, 2005b). It advocated the incorporation of DRR, poverty reduction, climate change adaptation, good governance and sustainable development into a single framework for building resilience. Another goal was to emphasise 'prevention, mitigation, preparedness and vulnerability reduction', with risk reduction integrated into emergency preparedness, response and recovery (UNISDR, 2005b, 3-4). The Framework identified gender equality and attention to the most vulnerable social groups and countries as key principles. It set out five priority areas for action, summarised in Box 3 below.

Box 2. Key international resources on DRM relevant to disaster resilience

- Emergency Capacity Building Project - DRR
- Global Facility for Disaster Reduction and Recovery
- International Federation of Red Cross and Red Crescent Societies – Disaster management
- NGO interagency group on DRR and Building Resilience
- Office for the Coordination of Humanitarian Affairs – Humanitarian-development nexus
- PreventionWeb
- UN Development Programme – Crisis prevention & recovery
- UN International Strategy for Disaster Reduction
- World Bank - DRM
- World Health Organisation - Emergencies

[1] Among the many references making this point, see for example the following multi-country ones: DFID, 2011a; Frankenberger et al., 2012; GFDRR, 2010; Harris et al., 2013; IFRC, 2012b; Jha et al., 2013; Manyena, 2006; Norris et al., 2008; OCHA, 2012; OECD, 2013a; Oliver-Smith et al., 2012; Oxfam, 2013; Reaching Resilience, n.d.; Shepherd et al., 2013; Turnbull et al., 2013; UNISDR, 2005b, 2011b.

Box 3. Priorities of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities (UNISDR, 2005b)

1. Prioritising disaster risk reduction by providing high-profile leadership, establishing relevant policies and programmes, and allocating resources to implement them
2. Identifying, assessing and monitoring disaster risks and improving early warning systems
3. Creating awareness at all levels of society about risk and providing information about how to reduce it
4. Reducing social, economic and environmental vulnerabilities and those related to land use through improved development planning and post-disaster reconstruction by all sectors
5. Strengthening disaster preparedness for effective response at all levels.

Rationale for a resilience approach to disasters

Over the past decade, the concept of disaster resilience has gained prominence in aid policy debates (Manyena, 2006; OECD, 2013b, p. 1; Revet, 2012). For example, the UK government integrated resilience into its humanitarian policy (DFID, 2011b) after the Humanitarian Emergency Response Review (See Box 4).

Box 4. Review of the UK government's humanitarian emergency response ('HERR report', Ashdown, 2011)

This review suggests disaster resilience would be a more effective, efficient and sustainable approach than other current approaches to disasters. It recommends integrating into policy and practice seven interrelated principles: anticipation; resilience; leadership; innovation; accountability; partnerships; and humanitarian space. It advocates embedding resilience within development programmes; building regional, national and local capacities; and using 'innovative funding models for risk transfer' (15-19).

This prominence has been prompted by growing recognition of both the severity of natural and man-made disasters and of the inadequacy of international efforts to reduce vulnerability to them. Specifically, there is growing consensus that:

- ***The frequency and severity of weather-related hazards is increasing***.[2] Climate change 'contributes to more frequent, severe and unpredictable weather-related hazards such as droughts, tropical cyclones, floods and heat waves' (IPCC, cited in UNISDR, 2011d).
- ***Exposure to all hazards is increasing***.[3] Exposure to natural and man-made disasters has increased and is likely to continue to increase with the effects of climate change (Oxfam, 2013; Shepherd et al., 2013; UNISDR, 2011d, 2013). Over the next two to three decades, increasing exposure and vulnerability due to economic and urban development 'will have a greater influence on disaster risk than climate change' (UNISDR, 2013, p. 92).
- ***Disasters have set back development***.[4] It is well documented that disasters have set back development gains, aggravated poverty and increased vulnerability (GFDRR, 2010, pp. 11-13; Shepherd et al., 2013; UNISDR, 2011d, 2013). Such negative impacts reflect and worsen inequalities, such as gendered and generational inequalities (Bradshaw & Fordham, 2013).

[2] Nearly all references make this point. For quantitative and qualitative data, see: Ashdown, 2011; Cabot Venton et al., 2012, 2013; GFDRR, 2010; Oxfam International, 2013; Paton et al., 2006; Shepherd et al., 2013; Turnbull et al., 2013; UNISDR, 2005b, 2011d, 2013 (which cites data from the Inter-governmental Panel on Climate Panel).
[3] Nearly all references make this point. See previous footnote for references.
[4] A large number of references make this point. See for example: Ashdown, 2011; GFDRR, 2010; Oxfam International, 2013; Shepherd et al., 2013; Turnbull et al., 2013; UNISDR, 2005b, 2011d, 2013.

- ***Disasters and resilience related to natural hazards, violent conflict or state fragility share commonalities and connections, but interventions generally treat these contexts separately.*** Harris et al. (2013, pp. vii-ix) note that multiple vulnerabilities stack up. For instance, state fragility, vulnerability to climate change and the risk of mortality from drought seem closely associated. Yet conflict prevention and DRM are treated separately, with limited crossover and little documented integration (Harris et al., 2013).

- ***Disaster resilience has historically been underfunded***. Only 2.6% of all humanitarian aid from 2006 to 2011 was spent on disaster prevention and preparedness (Oxfam, 2013, p. 20). DRR amounts to only 1% of the US$150 billion 'spent in the 20 countries that received the most humanitarian aid' in 2005-2009 (DFID, 2011a, p. 16). In contrast, spending on emergency humanitarian assistance has been growing over the past ten years (Cabot Venton et al., 2012, p. 8). Proponents of resilience argue that this balance needs to change, and greater emphasis should be placed on building capacities to reduce vulnerability and support communities to recover themselves (Cabot Venton et al., 2013; DFID, 2011a, pp. 16-17).

- ***Traditional humanitarian and development approaches have been inadequate***. Humanitarian relief is targeted primarily at saving lives rather than reducing vulnerabilities; development assistance has not been sufficiently focused on building community capacity for adaptation; and approaches to DRR have often been decoupled from development, rights and power imbalances (Oxfam, 2013, 20).

- ***Responsibilities and roles need to be better balanced between the fields of development and humanitarian action.*** Many authors note that an integrated approach to disaster resilience will only yield benefits if development actors take the lead on a number of key strategies and interventions (DFID, 2011a; Levine et al., 2012, pp. 3-4; Oxfam, 2013; Turnbull et al., 2013; UNISDR, 2011b, p. 11). For instance, disaster prevention requires long-term development expenditures in addition to humanitarian aid in emergencies (GFDRR, 2010, p. 9).

1.3. Benefits of disaster resilience

The lens of resilience can help to enhance responses to disaster risk as it calls for a holistic consideration of hazards, exposure, risk, vulnerability and capacity (DFID, 2011a; Manyena, 2006, p. 436). Disaster resilience programming aims to save lives whilst protecting infrastructure, livelihoods, social systems and the environment (Cabot Venton et al., 2013; Turnbull et al., 2013).[5] Building resilience to natural hazards can have wider-reaching positive effects in fragile states and violent conflicts (GFDRR, 2010; Harris et al., 2013). Evidence from a range of countries supports the potential contribution of disaster resilience to:

- ***Saving lives***: Statistical evidence suggests disaster prevention has helped limit loss of life to disasters in a number of developed and developing countries (GFDRR, 2010, p. 10). In Bangladesh, for example, the fact that far fewer people were killed by a cyclone in 2008 (3,000) than by a similar one in 1970 (almost 500,000) is attributed to better disaster prevention (Ashdown, 2011, p. 15).

- ***Protecting infrastructure and livelihoods*****:** A review by the Global Facility for Disaster Reduction and Recovery (GFDRR) found that the cost of property damage from all hazards between 1970

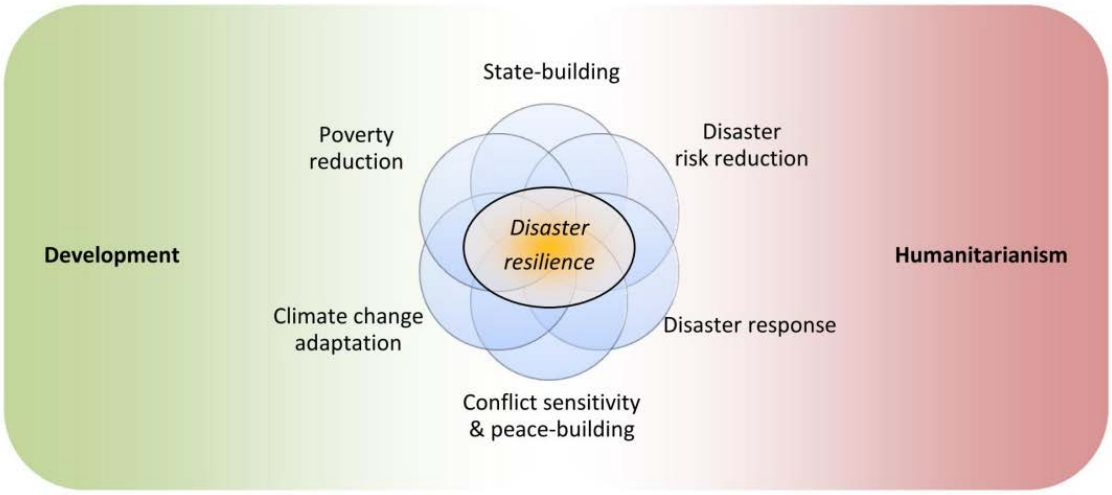
[5] These benefits are mentioned in nearly all references. In particular, see: Ashdown, 2011; Cabot Venton et al., 2012, 2013; GFDRR, 2010; Oxfam International, 2013; Paton et al., 2006; Turnbull et al., 2013; UNISDR, 2005b.

and 2008 totalled US$2,300 billion, but that effective disaster prevention had curtailed an upward trend (GFDRR, 2010, pp. 10-11).

- ***Protecting social systems*:** A review of humanitarian assistance provided by the Red Cross following the 2004 Indian Ocean tsunami found that community-based DRR had a positive impact on social resilience through altering attitudes and behaviours towards risk (IFRC, 2012b, p. 12).
- ***Protecting the environment*:** Increased disaster resilience has in some cases been associated with behaviours that preserve the natural environment. In Honduras, for example, resilience-building in an indigenous community from 1994 to 2002 led to slower forest destruction (McSweeney et al., 2011), and at the borders between Kenya, Ethiopia and Somalia, collaborative local approaches to resilience have helped preserve pasture and water resources (Standley, 2012).
- ***Supporting broader resilience in contexts of violent conflict or fragility*:** The drivers and constraints that shape resilience to natural hazards are largely similar to those that shape people's resilience in contexts of violent conflict or fragile states (e.g. DFID, 2011a, p. 10; GFDRR, 2010, p. 13). For example, countries with well-performing institutions are better able to both prevent disasters and reduce the likelihood of disaster-related conflict (GFDRR, 2010, p. 8).

Another potential benefit of disaster resilience is that it offers a **'rallying point' for international collaboration** (OECD, 2013b, p. 1). It draws together DRR, disaster response, climate change adaptation and poverty reduction (DFID, 2011a; Reaching Resilience, n.d.; Turnbull et al., 2013) and builds on 30-year efforts to link humanitarian and development aid (Irish Aid, n.d.) as illustrated in Figure 2.

Figure 2. Disaster resilience as common ground



It has also been argued that addressing vulnerability by building resilience is **more cost-effective than emergency relief**. There is some limited evidence of this from Kenya and Ethiopia, where one study modelled the relative costs of early and late humanitarian responses (e.g. food aid) versus interventions to develop community resilience to drought (e.g. livelihoods diversification, and better access to roads and water) (Cabot Venton, 2012a). Whilst acknowledging that the true cost of resilience is difficult to ascertain robustly,[6] it concluded that the cost of resilience is offset by its benefits. This is partly because sectoral interventions (e.g. in health, water and education) reduce the need for relief, prevent loss of

[6] Resilience covers many different activities and available data is often weak, so proxy indicators have to be used.

livestock, and produce long-term development gains. However, the value for money of specific resilience-building activities (e.g. 'expensive interventions such as education and roads') depends on the context, hence the need for local participation and buy-in to ensure the right activities are chosen (DFID, 2012, pp. 6-7).

Box 5. Relative costs of resilience-building versus humanitarian response

Resilience-building costs more than early response, but its benefits can significantly outweigh the costs:

- In Kenya, every $1 spent on resilience means a $2.9 gain in benefits over 20 years, and $2 over 10 years (pp. 2-4).
- In Southern Ethiopia, every $1 spent on resilience means a $2.8 gain in benefits over 20 years, and $2 over 10 years (pp. 4-6).
- In both countries, a late humanitarian response costs billions more than resilience-building over 20 years (pp. 4, 6).

DFID, 2012a

Critical perspectives on disaster resilience

Whilst disaster resilience has featured prominently in international policy discourse,[7] it has also been subject to criticism. Some authors contend that disaster resilience does not add anything particularly new to the substance of humanitarian or development assistance (Levine et al., 2012, pp. 1-2; Manyena, 2006, pp. 434-436). Others oppose the re-labelling of long-standing approaches as resilience-building if this has no meaningful effect on how humanitarian or poverty reduction programmes are implemented (Manyena, 2006, p. 435; Maxwell et al., 2009, p. 31; Levine et al., 2012, p. 4).

There is also concern that, as a concept, disaster resilience has been depoliticised (Walker et al., 2011, pp. 144-145), placing too much responsibility on the individual and wider society rather than on state actors who have the political power to address the underlying causes of vulnerability to disasters (Andharia et al., 2010; Béné et al., 2012; Chandler, 2012, p. 217; Levine et al., 2012, pp. 1, 4; Manyena, 2006, p. 436; Norris et al., 2008, p. 146; Oxfam, 2013). Some experts suggest that shifting to bottom-up disaster resilience risks further burdening women and girls (Ganapati, 2013; OCHA, 2012). It has also been suggested that the discourse of disaster resilience could stigmatise individuals and communities with low levels of resilience (Norris et al., 2008, pp. 145-146).

1.4. The state of the evidence

There is a large body of theoretical literature about how and why disaster resilience works, and some qualitative and quantitative case studies detail empirical findings.[8] However, evidence of what creates disaster resilience, or its effects on humanitarian and development outcomes, remains limited in a

[7] 'Disaster resilience' was labelled 'buzzword of the year' in 2012 (Devex Editor, 2012). It has also been described as a 'mantra' (IRIN, 2012), 'catch-all' (Bahadur et al., 2010), 'mobilising banner' (Levine et al., 2013, p. 4) and 'new tyranny' (Béné et al., 2012).

[8] The guide is based on a search of the literature in English, mostly from the past five years, that explicitly discusses resilience to natural hazards in low- and middle-income countries, with particular attention to humanitarian action (as detailed elsewhere in this guide, many of the findings have relevance to contexts of violent conflict and state fragility). Because this is a new and emerging area of limited research, a selection of materials that address the closely linked areas of DRM and DRR are included where relevant.

number of ways. First, this evidence mainly takes the form of isolated qualitative case studies that are sector-, hazard- or context-specific. Second, there are few rigorous evaluations of development and humanitarian interventions that have aimed to build disaster resilience: many resilience-building programmes date back less than a decade. Third, the geographic scope of the available evidence is limited, with few studies from fragile or conflict-affected states and a concentration on a small number of regions and events: Asia-Pacific in relation to the 2004 tsunami, particular cyclones in South Asia, earthquakes in China, and droughts in the Horn of Africa and Sahel. Fourth, there is insufficient consideration of power and inequality issues (a point made in Oxfam International, 2013, among others). For example, most references are gender-blind, providing no disaggregated data.[9] In part, these limitations reflect the relative infancy of the concept of disaster resilience, and ongoing debates about how to define, measure or operationalise it.

The **guide to the evidence** on the following pages summarises the evidence discussed in this topic guide regarding the key factors that enable or impede disaster resilience. The tables give an overview of evidence from various countries – letters between brackets identify the references as listed on p. 12.

[9] This point was observed in the literature and highlighted by two of the external reviewers.

		Factors enabling or inhibiting disaster resilience						
		Adaptive capacities *(sections 1.3, 2.1, 3.5)*	**Good governance,** institutions, regulations, services and infrastructure, with collaboration across **levels, stakeholders, and sectors** *(sections 1.3, 2.1, 2.3, 3.3, 3.5)*	**Corruption, patronage systems, state fragility, poor basic services, lack of commitment** to DRM from governments and communities *(sections 2.3, 3.5)*	**Economic development** and capacity, **diversification** of economy, livelihoods and assets, good employment *(sections 2.1, 3.5)*	**Environmental problems**, social tensions around access to and management of land, water and other environmental resources *(section 3.5)*	**Disaster risk management,** including risk reduction, preparedness, mitigation, response and recovery *(sections 1.3, 2.1, 2.2, 2.3, 3.5)*	**Violent conflicts** *(sections 1.2, 3.5)*
Impact on resilience	**Positive (+)**	**[STRONG]** Bangladesh (L) Honduras (X) Multi-country (F; Y; Z; AA ; CC)	**[STRONG]** Indonesia (J) Mexico (K) Multi-country (A; B; E; F; G; I; L; N; Y; Z; BB; CC)		**[STRONG]** Bangladesh (L) Multi-country (A; F; C; G; Z; AA; BB; CC; DD) Zimbabwe (EE)		**[STRONG]** Bangladesh (L) Mexico (K) Multi-country (A; D; E; O; Y; Z; AA; BB; CC; FF)	
	Neutral (0)	**[WEAK]** Brazil (P)	**[WEAK]** Multi-country (N)					
	Negative (-)			**[WEAK]** Bangladesh (Q) Brazil (P) Multi-country (G; N; GG)		**[MEDIUM]** Multi-country (A; B; E; F; G; HH)		**[WEAK]** Multi-country (A; E; F; G; CC; GG)

[STRONG] Mix of methods; multiple contexts; significant number of relevant studies or literature reviews.
[MEDIUM] Mix of methods; multiple contexts; some relevant studies or reviews.
[WEAK] Limited methods; isolated context; few relevant studies.

Letters in parentheses refer to reports cited; see pp.12-13 for details

		Factors enabling or inhibiting disaster resilience						
Impact on resilience		**Information, communication** and public discussions on risks and resilience *(sections 2.1, 3.5)*	**Awareness,** knowledge, learning and **innovation** about risks and resilience, populations' **education** levels *(sections 2.1, 3.5)*	Population's good **physical health and mental well-being** *(section 2.1, 3.5)*	**Community cohesion, trust, social connections and networks** *(section 2.1, 3.5)*	**Community involvement, organisation and competence** in risk management *(sections 2.1, 3.5)*	**Inequalities in power, rights, resources** *(sections 1.3, 2.1, 2.2, 3.4, 3.5)*	**Advancing equality, participation & empowerment for at-risk groups** *(sections 2.2, 3.4, 3.5)*
	Positive (+)	**[STRONG]** Multi-country (A; E; Y; Z; AA; BB; CC)	**[MEDIUM]** Multi-country (A; F; Y; Z; BB) Zimbabwe (EE)	**[MEDIUM]** Multi-country (A; Z; G; L)	**[STRONG]** Bangladesh (L) Mexico (K) Multi-country (G; Y; Z; AA; CC) Turkey (S)	**[MEDIUM]** Multi-country (F; H; Y; BB; AA) Zimbabwe (EE)		**[STRONG]** Bangladesh (O) El Salvador (V) Indonesia (M) Mexico (K) Multi-country (A; E; F; G; Y; AA; CC; DD; FF; II; JJ) Turkey (S)
	Neutral (0)				**[WEAK]** India (R) Turkey (T)	**[WEAK]** Zimbabwe (EE)		**[WEAK]** Bangladesh (O) Indonesia (M) Turkey (T) Zimbabwe (W)
	Negative (-)						**[STRONG]** Brazil (P); India (R) Multi-country (A; C; F; G; I; M; Y; AA; DD; FF; II; JJ; KK) Nigeria (LL) Sri Lanka (U) Turkey (T) Zimbabwe (W)	

[STRONG] Mix of methods; multiple contexts; significant number of relevant studies or literature reviews.
[MEDIUM] Mix of methods; multiple contexts; some relevant studies or reviews.
[WEAK] Limited methods; isolated context; few relevant studies.

Letters in parentheses refer to reports cited; see pp.12-13 for details

References cited in evidence guide

A [P&E; OBS]: Turnbull, M., et al. (2013). *Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation*. Catholic Relief Services.

B [P&E; OBS]: Reaching Resilience (n.d.). *Handbook resilience 2.0 for aid practitioners and policymakers in Disaster Risk Reduction, Climate Change Adaptation and Poverty Reduction*. Reaching Resilience.

C [P&E; OBS]: UNISDR (2011b). *Hyogo Framework for Action 2005-2015. Building the Resilience of Nations and Communities to Disasters. Mid-term review*. 2010-2011. UNISDR.

D [P&E; OBS]: IFRC (2012b). *Understanding community resilience and program factors that strengthen them. A Comprehensive Study of Red Cross Red Crescent Societies Tsunami Operation*. IFRC.

E [S with P&E; OR]: GFDRR. (2010). *Natural Hazards, UnNatural Disasters. The Economics of Effective Prevention*. United Nations, World Bank.

F [P&E; OBS]: Standley, S. (2012). *Learning paper: Building resilience in a complex environment*. Briefing Paper 04. Care UK.

G [P&E; OBS]: Frankenberger, T.R., et al. (2012). *Enhancing Resilience to Food Insecurity amid Protracted Crisis*. UN High-Level Expert Forum.

H [S; OR]: Combaz, E. (2013). *Helpdesk Research Report: Effectiveness of interventions in the humanitarian field to support community resilience*. GSDRC.

I [S; OR]: DFID (2011a). *Defining Disaster Resilience: A DFID Approach Paper*. DFID.

J [S; OR]: Djalante, R. (2012). Adaptive governance and resilience: the role of multi-stakeholder platforms in disaster risk reduction. *Natural Hazards and Earth Systems Science*, *12*, 2923-2942.

K [P&E; OBS]: Wilkinson, E. (2012b). Why 'small is beautiful' in municipal disaster risk reduction: Evidence from the Yucatán peninsula, Mexico. *Environmental Hazards*, *11*(2).

L [P&E; OBS]: Jabeen, H., et al. (2010). Built-in resilience: learning from grassroots coping strategies for climate variability. *Environment and Urbanization*, *22*(2), 415–431.

M [P&E; OBS]: Oxfam (2012). *Indonesia Case Study: Jenggala's women living close to disaster*. Oxfam UK.

N [S; OR]: Wilkinson, E. (2012a). *Transforming disaster risk management: a political economy approach*. ODI.

O [P&E; OBS]: IFRC (2012a). *The long road to resilience. Impact and cost-benefit analysis of community-based disaster risk reduction in Bangladesh*. IFRC.

P [P&E; OBS]: Nelson, D. R., & Finan, T. (2009). Praying for drought: Persistent Vulnerability and the Politics of Patronage in Ceará, Northeast Brazil. *American Anthropologist*, *111*(3), 302–316.

Q [P&E; OBS]: Mahmud, T., & Prowse, M. (2012). Corruption in cyclone preparedness and relief efforts in coastal Bangladesh: Lessons for climate adaptation? *Global Environmental Change*, *22*(4), 933–943.

R [P&E; OBS]: Bosher, L., et al. (2007). Resource Accessibility and Vulnerability in Andhra Pradesh: Caste and Non-caste Influences. *Development and Change*, *38*(4), 615–640.

S [P&E; OBS]: Ganapati, N. E. (2012). In Good Company: Why Social Capital Matters for Women during Disaster Recovery. *Public Administration Review*, *72*(3), 419-427.

T [P&E; OBS]: Ganapati, N. E. (2013). Downsides of Social Capital for Women During Disaster Recovery: Toward a More Critical Approach. *Politics and Society*, *41*(1), 72–96.

U [P&E; OBS]: Scharffscher, K. S. (2011). Disempowerment through disconnection: Local women's disaster response and international relief in post-tsunami Batticaloa. *Disaster Prevention and Management*, *20*(1), 63–81.

V [P&E; OBS]: Pérez-Sales, P, et al. (2005). Post-traumatic Factors and Resilience: The Role of Shelter Management and Survivours' [sic] Attitudes after the Earthquakes in El Salvador (2001). *Journal of Community & Applied Social Psychology*, *15*, 368-382.

W [P&E; OBS]: Manyena, S.B., et al. (2008). Disaster Resilience and Children: Managing Food Security in Zimbabwe's Binga District. Children, Youth and Environments. *Children and Disasters*, *18*(1), 303-331.

X [P&E; OBS]: McSweeney, K., & Coomes,O. (2011). Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(13), 5203–5208.

Y [S; OR]: Bahadur, A.V., et al. (2010). *The Resilience Renaissance? Unpacking of resilience for tackling climate change and disasters*. IDS.

Z [S; SR]: Castleden, M., et al. (2011). Resilience thinking in health protection. *Journal of Public Health*, *33*(3), 369–377.

AA [TC]: Norris, F. H., et al. (2008). Community Resilience as a Metaphor, Theory, Set of Capacities, and Strategy for Disaster Readiness. *American Journal of Community Psychology*, *41*(1-2), 127–150.

BB [S; OR]: Manyena, S.B. (2006). The Concept of Resilience Revisited. *Disasters*, *30*(4), 434–450.

CC [S; OR]: Jha, A.K., et al. (eds.) (2013). *Building Urban Resilience: Principles, Tools, and Practice*. World Bank.

DD [S; OR]: Oxfam (2013). *No accident. Resilience and the inequality of risk*. Oxfam International.

EE [P&E; OBS]: Mavhura, E., Manyena, S. B., Collins, A. E., & Manatsa, D. (2013). Indigenous Knowledge, Coping Strategies and Resilience to Floods in Muzarabani, Zimbabwe. *International Journal of Disaster Risk Reduction*, *5*, 38–48.

FF [S; OR]: Shepherd, A., et al. (2013). *The Geography of Poverty, Disasters and Climate Extremes in 2030*. ODI.

GG [S; OR]: Harris, K., et al. (2013). *When disasters and conflicts collide: improving links between disaster resilience and conflict prevention*. ODI.

HH [S; OR]: UNISDR (2011d). *Revealing Risk, Redefining Development*. Global Assessment Report on Disaster Risk Reduction. UNISDR.

II [S; OR]: Bradshaw, S., & Fordham, M. (2013). *Women, Girls and Disasters. A Review for DFID*. DFID.

JJ [S; OR]: Peek, L., et al. (2010). Children With Disabilities in the Context of Disaster: A Social Vulnerability Perspective. *Child Development*, *81*(4), 1260–1270.

KK [P&E; OBS]: UNISDR (2008). *Linking disaster risk reduction and poverty reduction: good practices and lessons learned*. UNISDR.

LL [P&E; OBS]: Ajibade, I., McBean, G., & Bezner-Kerr, R. (2013). Urban Flooding in Lagos, Nigeria: Patterns of Vulnerability and Resilience among Women. *Global Environmental Change*, *23*(6), 1714–1725.

Key to research descriptors

[P&E]	*Primary and Empirical*	**[S]**	*Secondary*
[EXP]	Experimental	**[SR]**	Systematic Review
[OBS]	Observational	**[OR]**	Other Review

2. Drivers of and constraints on disaster resilience: the evidence so far

The impact of a disaster depends not only on the magnitude of the hazard but also on a range of socio-economic and environmental variables (Bahadur et al., 2010; Castleden et al., 2011; Manyena, 2006). This section summarises evidence on the drivers of and constraints on resilience to natural hazards.[10] These factors are related, and often similar, to the factors that shape people's resilience in contexts of violent conflict or state fragility (DFID, 2011a, p. 10; GFDRR, 2010, p. 13; Harris et al., 2013, pp. vii-ix).

2.1. Adaptive capacity

A number of theoretical and empirical studies identify drivers of disaster resilience, which a few meta-reviews summarise (Bahadur et al., 2010; Castleden et al., 2011; Manyena, 2006[11]). At a general level, these include:

- ***Processes***: communication and information; learning, education and knowledge; risk awareness; adaptation, including acceptance of uncertainty and change; adequate planning and preparation.
- ***Community***, such as community involvement, organisation and cohesion (e.g. trust).
- ***Underlying social, economic and political conditions***, including high equity, good governance, political stability, economic strength and diversification, the population's physical and mental health.
- ***Ecological systems and human systems*** (e.g. emergency health systems). Characteristic drivers of resilience in systems include high diversity, redundancy,[12] connections between short-term and long-term capacities to handle disasters, links between capacities at different geographic levels, and the ability of systems to continue working while evolving (as opposed to merely being stable).

At the community level, factors determining resilience include: levels of economic development and social capital, 'community competence' (e.g. collective problem-solving and creativity), and the quality of communication and information in the community (Norris et al., 2008). Such variables determine the adaptive capacities of a community or system, meaning how well it is likely to function and adapt in the face of a severe disturbance or shock (Norris et al., 2008).

Adaptive capacities include **preventative strategies**, which involve making choices to avoid an event and **impact-minimising strategies**, which seek to facilitate recovery (Wisner et al., cited in Jabeen et al., 2010, p. 417). Research has highlighted that adaptive capacities are interrelated, and no single factor is likely to account for the degree of disaster resilience[13] in any given context. For example, the role of indigenous knowledge should be understood relative to other socio-economic variables that support or undermine adaptation, as illustrated in research summary 1 below.

[10] From this section on, 'resilience' refers to 'disaster resilience'.
[11] These reviews differ in scope and methodology. Authors do not always present elements as factors of resilience, but sometimes only as characteristics. All three may not mention each specific driver.
[12] Redundancy means that partial failure does not lead to the system collapsing (Bahadur et al., 2010, p. 3). Typically, having duplicates or distributed resources keeps critical systems functioning when one component fails.
[13] From this section onwards, 'disaster resilience' and 'resilience' are both used to refer to disaster resilience.

Research Summary 1. Indigenous knowledge, coping strategies and resilience to floods in Muzarabani, Zimbabwe

This qualitative study in Zimbabwe found that indigenous knowledge systems played a significant role in reducing the impact of floods in two districts. However, it concluded this influence has to be understood in the context of other socio-economic variables. Independently of the level of indigenous knowledge, communities with lower flooding and higher levels of education and formal employment were better able to cope with flood impacts than those who lacked these assets. Moreover, some of the indigenous coping strategies adopted – including crop protection, moving assets, elevating beds, building raised platforms, and reducing meals or store food – were considered primarily short-term and ultimately unsustainable.

Mavhura et al., 2013

Several studies give detailed accounts of the everyday **adaptive strategies used by communities** at the grassroots level. For example, a survey in Korail, the largest informal settlement in Dhaka, describes the household and community coping strategies used by low-income households in response to the threat of floods (Jabeen et al., 2010). These included:

- ***Modifying the physical and built environment***: Residents modified house structure, and used barriers or built on stilts. Collective efforts to construct and maintain drainage facilities were also noted to be an important factor in disaster resilience.
- ***Building up stores of food and saleable assets***: Whilst storing food is a common strategy in rural areas, people in urban areas tend to accumulate physical possessions of value so that they can be sold if necessary.
- ***Diversifying income sources***: People's strategies included engaging in informal trade, using savings schemes, and having more than one income earner in the family.
- ***Developing social support networks***: This includes calling on family and wider social networks for financial, emotional or physical support. Being able to move to stay with friends or relatives living in the city was important.

2.2. Poverty and inequalities

Evidence consistently confirms that the capacity of an individual, family or community to prepare for, withstand and respond to a hazard or crisis is enabled or constrained by social status, income and ethnicity (Bosher et al., 2007).

There is consensus that the poor suffer the greatest losses from disasters (Oxfam, 2013; Shepherd et al., 2013). In 2008, the United Nations Office for Disaster Risk Reduction (UNISDR) recorded that 94% of all people killed by disasters between 1975-2000 were from low or lower-middle income groups (UNISDR, 2008, p. iii). Hazards deprive the poor of their assets, livelihoods and labour, reproducing poverty and inequality (UNISDR, 2008, p. iii ; Shepherd et al., 2013). On the other hand, 'good DRM can reduce the impact of disasters on poor people', as shown by the impact of comparable hazards in different contexts (Shepherd et al., 2013, p. viii). For example, in 2008, Cyclone Nargis killed 138,000 people in Myanmar, while Hurricane Gustav, of similar strength, killed 153 in the Caribbean and US (Shepherd et al., 2013, p. ix).

Research in eight villages in coastal Andhra Pradesh in southern India concluded **caste** is a key factor determining access to the resources essential to assist recovery from disasters (Bosher et al., 2007). In this

case, 'lower' castes lacked access to assets (e.g. livestock), public facilities (e.g. water) and political networks (e.g. access to local government) necessary to aid their recovery. Whilst these castes were able to use informal social networks to support their resilience to disasters, typically through women's participation with CBOs and NGOs, this did not completely compensate for the systemic discrimination they encountered. Social capital created through informal networks could not entirely substitute for the lack of economic capital. The authors emphasise that inclusion in an unequal society, not exclusion, is at the root of poverty and its effects in this case (Bosher et al., 2007).

Gender is an important form of inequality shaping vulnerability and resilience to disasters (Ganapati, 2012, 2013; OCHA, 2012; Oxfam UK, 2012; Turnbull et al., 2013, pp. 21-23). For women and girls, inequities in the everyday, not just in times of disaster, tend to create greater risk, reduce life chances, and deepen material and immaterial losses (Bradshaw & Fordham, 2013, p. 3). At the same time, women and girls have often made substantial, gender-specific contributions, e.g. in DRR (Bradshaw & Fordham, 2013). However, few studies have to date examined how gender roles and responsibilities in everyday life affect different women's and men's experience of hazards (Ajibade et al., 2013). Further, gender is only one of many factors affecting people's experiences of disaster: one study in coastal areas of Lagos, Nigeria, found that gendered experiences of flooding were also influenced by place, class and household structure (Ajibade et al., 2013) (see research summary 2).

Research Summary 2. Urban flooding in Lagos: Patterns of vulnerability and resilience among women

This mixed-methods study of women's experience of flooding in Lagos, Nigeria, concluded that:

- Gendered experiences of flooding are influenced by gender roles intersecting with location, class and household structure
- Lower-income women were more impacted by flooding and recovered more slowly than other social categories of women and men.
- Women's experience of disaster is embedded in their social relationships with men, families, kinships, and the communities in which they live
- Most women interviewed perceived flood impacts as gender neutral.

Ajibade et al., 2013

There is also considerable concern expressed in the literature about the vulnerability of other high-risk populations, including **children**, the **elderly**, and **people with disabilities** and **people with chronic diseases**. Such groups can be disadvantaged and discriminated against, and can face multiple inequalities that amplify risk (Peek et al., 2010, p. 1261). There is consensus that, while disadvantaged groups are usually more exposed and vulnerable to hazards, they can also contribute to building disaster resilience (e.g. Oliver-Smith et al., 2012; Oxfam, 2013; Turnbull et al., 2013). Nevertheless, rigorous analysis of the resilience of these groups to disasters, and of intersecting inequalities, is limited and uneven. For example, Peek et al. (2010) found that the situation of children with disabilities, numbering an estimated 200 million worldwide, has barely been studied.

2.3. Political economy

A number of aspects of the political economy in a country can affect disaster resilience. One of them is the **regulatory environment**, particularly in relation to urban building codes and land use: poor regulations, or poor enforcement of regulations, can create economic and social conditions that put vulnerable groups at greater risks and that are difficult to correct (GFDRR, 2010; Turnbull et al., 2013; Wilkinson, 2012a).

For example, poor people's frequent insecurity of **land holdings** is a disincentive to build well (GFDRR, 2010, p. 15). At the same time, the poor may resist regulation if it threatens to evict them from their settlement without a relocation that provides similar access to job markets and services (Wilkinson, 2012a, p. 4). Conversely, effective government policies for the security of property (clear titles) can, in some cases, allow the poor to invest in prevention: in Peru, the distribution of 1.2 million land titles in 1996 was associated with a 68% increase in housing renovation within four years (GFDRR, 2010, pp. 6, 15).

Another significant issue, documented in some case studies, is how **corruption and patronage systems** constrain adaptive capacities and undermine disaster resilience. One study in Bangladesh found that both pre- and post- disaster interventions were co-opted and used to enhance the assets of elites to the detriment of lower-income groups (Mahmud & Prowse, 2012). Based on a survey of 278 households in Khulna, the study found that 99% of households had experienced corruption related to DRR interventions before and after Cyclone Alia in May 2009. Pre-disaster interventions (e.g. disaster preparedness training) were undermined by negligence and nepotism, which included trainees being selected on the basis of political considerations. Post-disaster interventions (e.g. public works programmes) were affected by wage/asset stripping, bribery and the misuse of resources, including corrupt tendering practices. These effects were not uniformly felt across wealth quartiles, however: ultra-poor households experienced more corruption in pre-disaster interventions, whilst the wealthiest quartile experienced corruption in post-disaster interventions (Mahmud & Prowse, 2012).

Anthropological studies have explored how and why patronage systems can be resilient and capable of reproducing the vulnerabilities of less powerful groups over the long term. These political dynamics can limit agency and hinder adaptive capacities, as illustrated in research summary 3.

Research summary 3. Praying for Drought: Persistent Vulnerability and the Politics of Patronage in Ceara, Northeast Brazil

This study examines the underlying causes of persistent vulnerability to drought in one area of Northeast Brazil. It argues that in spite of the construction of dams, cloud-seeding airplanes, massive relief programmes and sophisticated climate-forecasting systems, the basic underlying vulnerabilities of the rural population have remain unchanged for decades. This persistent vulnerability is attributed to embedded patron-client relationships, which limit the choice and agency of the rural poor:

- In this highly precarious drought-prone rural environment, unequal patron-client relations are a key survival strategy for farming communities. People in these communities rely on patrons to give them land and protection during times of drought, in return for labour.
- Other factors underlying people's persistent vulnerability include: historical inequity in resource distribution, the lack of quality education and health care, insufficient water systems, inadequate investment in physical infrastructure (energy, roads, etc.), and the absence of climate-neutral employment (i.e., manufacturing).
- In this context of structural inequality, government responses to drought (in the form of food aid, water, and cash-for-work programmes) have become the only 'adaptive capacity' available to rural communities vulnerable to environmental stress. This cycle of disaster and relief in turn reinforces the paternalistic relationship between central state institutions and the powerless rural population.

Nelson and Finan, 2009

In many developing countries, public policies and **political commitment to disaster resilience has been sub-optimal**. In a meta-review of the evidence, Wilkinson (2012a) attributes this to:

- ***Lack of interest and political will****:* The political salience of DRM is low, because citizens cannot easily observe its effects. Its benefits are also more likely to be under-estimated where experience with hazards is absent. Even in areas of recent disaster, other problems may take precedence, such as reconstruction. High-impact disasters open up 'policy windows', but the focus is usually on relief. Governments may also fail to invest because they know external aid will be given after a disaster.
- ***Complex economic and political incentives***: Resilience depends on public funding because it is a form of public good (Jha et al., 2013, p. 3). There are trade-offs in public investment decisions, as governments distribute funds according to need and other demands, including economic growth. The lack of resources in poor countries partly explains insufficient DRM.
- ***Information gaps***: Disaster risk policy options are complex, and their relative effectiveness uncertain. This undermines political commitment to them.
- ***Coordination problems***: Relationships between different levels of government are key, yet there are often coordination problems (particularly how horizontal and vertical power is distributed, formally and informally, and how local governance works). Local governments may be relatively powerless, lack clear mandates, and have strong incentives to respond to the needs of local elites.

3. Aid and disaster resilience: challenges, approaches and lessons

This section summarises evidence of what has and has not worked in aid for disaster resilience. A number of references suggest these findings have relevance to aid for resilience in fragile or conflict-affected states (DFID, 2011a, p. 10; GFDRR, 2010, p. 13; Harris et al., 2013, pp. vii-ix; Turnbull et al., 2013, pp. 92-96).

3.1. Integrating disaster resilience in aid operations and policy

DFID (2013) provides a set of minimum standards to embed resilience to one-off, regular or ongoing disasters in the work of its country offices. The standards recommend carrying out a multi-hazard risk assessment, developing 'a country/regional disaster resilience strategy', 'disaster-proofing' new business cases and developing 'an emergency humanitarian response plan'. They also advise developing new programmes and adapting existing ones to support disaster resilience. Internally, DFID recommends that offices designate a champion for disaster resilience and report to ministers on disaster resilience.

In many cases, work on disaster resilience is disconnected from issues of political economy, power and inequalities, including gender inequalities (OCHA, 2012; Oxfam, 2013; UNISDR, 2011b). Oxfam (2013, p. 6) therefore recommends a **political and equity-focused lens for aiding resilience**, which focuses on:

- ***Sharing risk across society*** through social insurance and other actions targeting disadvantaged groups who require greater support and services to have equal opportunities
- ***Building pro-poor institutions*** at all levels, which represent and respond to the needs and capacities of the most vulnerable
- ***Ensuring rights and accountability***, and the ability of women and men to assert their rights and hold power-holders to account through participation in decision-making at all levels
- ***Providing free essential basic services*** for health and education, and social protection
- ***Establishing progressive tax regimes and tackling corruption*** in order to fund these measures.

Box 6. Turnbull, M., Sterrett, C.L., Hilleboe, A. (2013). Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation

This 194-page operational guidance is based on consultation and lesson-sharing among member organisations of the Emergency Capacity Building Project and on a review of policy and practitioner literature on disaster risk reduction, climate change adaptation and resilience-building.

It covers principles, approaches, and the enabling environment for building resilience, and considers risks and impacts for multiple vulnerable groups within society. It includes guidance on programme cycle management, developmental and humanitarian measures for resilience in food security, livelihoods, natural resource management, water, sanitation and hygiene, education, health, and protection. The guide addresses resilience in conflict settings, early recovery, urban environments, and slow-onset disasters.

Advancing disaster resilience at the international level

Creating an enabling environment implies that humanitarian and development actors work on **international governance and advocacy for resilience** (DFID, 2011a, p. 16; Turnbull et al., 2013).[14] Oxfam International (2013, pp. 5-7) recommends reflecting risk and resilience in the post-2015 development framework and strengthening the Hyogo Framework for Action. The organisation also advocates for donors and high-income countries to act in line with their **international responsibilities** to build resilience and reduce risk for the poorest – for example, by providing funding to multilateral agencies and developing countries – and by cutting emissions which contribute to climate change.[15]

3.2. Analysing and measuring disaster resilience

Several agencies have developed guidance for measuring disaster resilience. One widely-cited example is the **'characteristics of resilience' framework**, which uses the five dimensions of resilience identified in the Hyogo Framework for Action and suggests a range of indicators for measuring each of them (Twigg, 2009). The indicators are illustrated in the table below.

Thematic area	Components/indicators of resilience
Governance	▪ Policy, planning, priorities and political commitment ▪ Legal and regulatory systems ▪ Integration with development policies and planning ▪ Integration with emergency response and recovery ▪ Institutional mechanisms, capacities and structures ▪ Allocation of responsibilities ▪ Partnerships ▪ Accountability and community participation
Risk Assessment	▪ Hazards/risk data and assessment ▪ Vulnerability/capacity and impact data and assessment ▪ Scientific and technical capacities and innovation
Knowledge and Education	▪ Public awareness, knowledge and skills ▪ Information management and sharing ▪ Education and training ▪ Cultures, attitudes, motivation ▪ Learning and research
Risk Management and Vulnerability Reduction	▪ Public awareness, knowledge and skills ▪ Information management and sharing ▪ Education and training ▪ Cultures, attitudes, motivation ▪ Learning and research
Disaster Preparedness and Response	▪ Public awareness, knowledge and skills ▪ Information management and sharing ▪ Education and training ▪ Cultures, attitudes, motivation ▪ Learning and research

Source: Twigg, 2009

[14] The study by Djalante (2012) covers action for disaster resilience at regional, continental and multilateral levels. The UNISDR (2011b) mid-term review of the Hyogo Framework includes similar assessments.

[15] A few references also cover resilience-building at the scale of regions and continents, for example on Africa (UNISDR, 2011a), Asia and the Pacific (UNISDR, 2011c) and the Arab world (Verner, 2012).

Other agencies' frameworks measure different dimensions of resilience. Oxfam, for example, has recently developed a **multi-dimensional framework** that incorporates livelihoods, innovation capacity, access to contingency resources, the integrity of the natural environment, and social and institutional capacity (Hughes et al., 2013). See box 7 for links to other agencies' frameworks.

Box 7. Selected frameworks for analysing disaster resilience

- Catholic Relief Services' 2009 'Community Based Disaster Preparedness: A How-To Guide'
- DFID's 2012 'Multi-Hazard Disaster Risk Assessment'
- The Emergency Capacity Building Project's 2013 guidance on analysis for disaster resilience in the programme cycle (Turnbull et al. 2013, 33-36)
- Oxfam GB's 2012 'Participatory Capacity and Vulnerability Assessment (PCVA): A Practitioner's Guide'
- Tearfund's 2011 'Roots 9: Reducing Risk of Disaster in our Communities'
- Twigg's 2009 'Characteristics of a Disaster-Resilient Community. A Guidance Note' (discussion of analysis pp. 22-23).

Action-oriented resilience assessment has also been applied in some instances. This approach seeks to understand the roles that different stakeholders can play in implementing the actions needed to enhance disaster resilience. For example, in urban Chennai, India, researchers interviewed 155 elected representatives (municipal councillors) to ascertain what the priority areas of action were, and who should be responsible for undertaking them (i.e. government or communities) (Joerin et al., 2012).

There is a tension between the need for indicators to be comparable, whilst at the same time tailored to particular social groups and contexts (Castleden et al., 2011, p. 375; Turnbull et al., 2013, p. 40; Twigg, 2009). Moreover, Levine et al. (2012) warn that quantification can de-contextualise resilience, particularly where it fails to account for factors operating at multiple levels (household, national, international).

3.3. Supporting the enabling environment and government action

Multi-level, multi-stakeholder work on enabling environments

Connecting interventions at different scales of action and government is essential (DFID, 2011a, p. 16; IFRC, 2012b, p. 6; Jha et al., 2013, p. 25; Oxfam, 2013; Reaching Resilience, n.d.; Turnbull et al., 2013). For example, Jabeen et al. (2010, p. 418) emphasise that adaptations needed at a certain level may be beyond the control of people at that level and must be implemented by actors from another level (e.g. poor slum dwellers needing secure land tenure to invest in adapting their buildings against hazards). A policy and institutional environment that supports long-term disaster resilience also involves governments supporting the capacity of individuals, civil society, the private sector and at-risk populations to manage and adapt to risks and shocks (Turnbull et al., 2013; OECD, 2013b, p. 1).

Based on desk research and fieldwork in disaster-prone areas in three countries,[16] Reaching Resilience (n.d.) found the following **multi-stakeholder, multi-level approaches** effective when integrating DRR, climate change adaptation and poverty reduction in interventions:

- ***Understanding, and creating dialogue on, people's 'risk landscape'***, i.e. the wide range of risks communities face from hazards, but also disease, hunger, unemployment, insecure land rights or violence. Reaching Resilience advocates a people-centred perspective instead of preconceived projects. This helps understand the different risk perspectives between and within communities that may cause tensions, and their social and political ramifications. Aid actors can then act as bridge-builders. For example, they can use risk maps for dialogue and negotiation, engaging with the most vulnerable groups *and* village authorities *and* national elites. Reaching Resilience also recommends selecting communities based on needs, geographical and strategic criteria.
- ***Exploring institutions and the governance context***. Aid actors need to understand the interactions within and between governance realms and actors. In practice, it is important to identify the risk perceptions of state and non-state actors, risk policies, formal and informal institutions, norms, and spatial planning. It is also important to find where disconnect exist between risks and policies, and to determine obstacles and opportunities in risk reduction based on local priorities.
- ***Analysing power and relations between stakeholders***. This requires an in-depth analysis of the root causes of vulnerabilities and social inequalities caused by power differentials and poor governance, as well as an understanding of people's agency to demand risk reduction. It is useful to identify all relevant actors before acting from local to (inter)national level.
- ***Engaging with like-minded stakeholders (individuals and organisations)***. Communities can initiate an enabling environment through horizontal linkages (particularly through community-based organisations) and through vertical linkages (linking with power-holders at district, provincial and national levels). Actors who share common interests with communities' agendas can cooperate, e.g. through awareness-raising, community networks for lobbying and advocacy, vertical and horizontal linkages on early warning, and collaborations with the private sector and the media.
- ***Negotiating differences between actors about agendas, values and scale***, in the face of opposition within and between communities, or between communities, government and private actors. This entails changing how actors engage with each other (through negotiation, dialogue and at times confrontations), rather than what is programmed. Communities, with support from civil society, can use their own power and connect with powerful local and national actors in order to have a political voice, to access political resources, and to obtain risk reduction. It is also useful to link traditional applied knowledge to scientific knowledge.
- ***Working across scales***. First, this means interconnecting considerations on social groups and ecosystems. Actors need to pay attention to the spatial dimensions of risk (e.g. whole river basins), coping (e.g. pastoral migrations) and politics (e.g. in spatial planning, land use and environmental resource management). Second, this includes generating climate projections. Third, the appropriate administrative scale is the most decentralised one possible, as relevant in the context.
- ***Designing, and insisting on, iterative and flexible interventions***. Practitioners need to embrace uncertainty and unpredictability. This means letting communities' interests and agenda-setting lead, with resilience a long-term political process with local, district, provincial and (inter)national

[16] Namely a semi-arid area affected by drought in Southern Ethiopia, tropical lowland prone to floods in Bolivia, and peat lands prone to peat fires in Kalimantan, Indonesia (Reaching Resilience, n.d., p. 7).

dimensions. In addition, design needs to happen step by step. This is workable through repeated reflective practice and adaptive planning (learning by doing and doing by learning).

- ***Being aware of trade-offs***. Adaptation or risk management 'are rarely win-win, beneficial to all social groups and ecosystems', and some responses may increase specific groups' vulnerabilities (Reaching Resilience, n. d., p. 24). Reaching Resilience stresses that interventions should be aware of and sensitive to their trade-offs for people and the environment, and avoid creating new risks or conflicts.

Supporting action by national governments

Oxfam (2013, pp. 5-6) emphasises that only governments have the capacity and political leadership to embed resilience in national development plans. National resilience frameworks require: systems for disaster preparedness and response; options for a living wage; equal access to services and political participation; and sharing risk through social insurance. To fund this, governments, supported by donors, can use progressive tax systems and can reduce corruption (Oxfam, 2013, pp. 5-6). In terms of policy, Shepherd et al. (2013) add that DRM should be a key component of poverty reduction, focusing on protecting livelihoods as well as saving lives. They state that there is a need to identify, and act, where the poor and disaster risks are most concentrated. Turnbull et al. (2013, p. 38) recommend supporting national resilience policies by:

- ***Establishing and strengthening governance of risk management***. This includes national laws, dedicated ministries, the mainstreaming of risk management policies, and multi-stakeholders, multi-level decision-making (so efforts can be scaled up from local to district and national levels).
- ***Developing longer-term plans that are inclusive*** of multiple institutions ('whole of government' approach) and that identify key partnerships from different social sectors as well as the human and financial resources required.
- ***Strengthening institutions and entitlement systems*** 'to ensure equitable access to key assets'. Examples include national policies on potable water, health services, education, climate information and basic rights; local norms regulating access to natural resources; laws for indigenous groups' land rights; and customs encouraging wealthier households to support poorer ones during hardships.
- ***Supporting people's ability to influence policy and planning*** at different levels, in government and governance. This can be through popular campaigning to ensure that at-risk populations can raise concerns that are heard and acted upon by decision-makers.
- ***Providing national support to innovation and learning***, e.g. with inputs or insurance for changing crop types, training in new employment skills or promotion of improved sanitation designs.

To date, evaluations of aid interventions supporting an enabling environment for disaster resilience are limited. One exception is a study by Tadele et al. (2009), which examined a project in Ethiopia that assisted **government capacity building** for disaster prevention and response. In this case, a combination of human resources development, action research, physical capacity building, and enhancement of systems and structures was used. Others advocate the use of multi-stakeholder platforms (MSPs) for disaster resilience, specifically DRR, which have shown positive results in Indonesia (Djalante, 2012). Here, MSPs were found to facilitate disaster resilience because they engaged actors at different levels, and with different agendas, creating space for participation, collaboration, learning and sharing (Djalante, 2012). However, their inclusiveness was found to be limited, with limited involvement of 'non-traditional' stakeholders such as

parliamentarians, scientific and academic communities, and the private sector. In addition, public data on MSPs' budgets was limited, obscuring the allocation of resources and hindering their accountability.

Supporting action by local government

Turnbull et al. (2013, pp. 37-38, 121-124) provide detailed guidance on **local risk governance**. To strengthen *risk prevention*, they recommend improving local stakeholders' access to public information, hazard mapping, use of forecasting and early warning systems. Strategies to face *high-impact disasters* include the development of disaster management committees, emergency services, contingency plans and funds, and social insurance mechanisms. Strategies to *protect assets and services* include developing new building techniques for homes, schools and hospitals, and investing in new water and sanitation technology.

Research summary 4. Why 'small is beautiful' in municipal disaster risk reduction: evidence from the Yucatán peninsula, Mexico

This qualitative study compared progress made by five municipalities in the Yucatán peninsula in disaster risk reduction (DRR) from 1998 to 2008. The selected municipalities are coastal, have high and frequent exposure to hurricanes, and are characterised by socioeconomic marginalisation. The study found that the financial, material, human and administrative capacities of civil protection departments were most limited in small cities, but these municipalities have been more innovative and effective in disaster risk reduction. A number of factors were found to influence their effectiveness, including:

- ***Community participation in planning and implementation***: Small municipalities overcame some constraints by relying on other organisations. Contact with communities was beneficial for communicating risk, preparedness and evacuation.
- ***Social capital***: In one city, the population benefited from already having 'bonding social capital' (based on friendship and kinship), and 'networking social capital' (based on trust and reciprocity between the community and the municipality).
- ***Relations between municipalities and states***: Two factors played a role: partisan change (the state most used to opposition parties being elected in cities cooperated better) and the number of municipalities (a greater number led to a less interventionist and controlling state).
- ***Political change***: The four cities with the greatest improvements have been ruled, at some point, by parties other than the dominant one. 'Policy entrepreneurs' can be catalysts. One new mayor mobilised the population, spurring increased participation and raised expectations, leading to efficiency.
- ***Focus on measures with multiplier effects***: Education and communication for awareness and preparedness were effective. However, persistent limitations, such as over-reliance on evacuation, required for costlier measures such as land-use planning and resettlement, which require external support.

Wilkinson, 2012

3.4. Supporting adaptive capacities

Building on community capacities

Community resilience does not necessarily require or benefit from outside intervention (Combaz, 2013). Disaster resilience can be self-generated by communities, as illustrated by the case study from Honduras outlined in research summary 5 below. There is consensus in the literature that the success of external aid

to resilience hinges on the meaningful participation of at-risk populations (Oxfam, 2013; Turnbull et al., 2013). Accordingly, Jabeen et al. (2010) call for practitioners to examine and draw on existing adaptive capacities and scale these up to integrate them into planning at local government level.

Some research findings have suggested that international actors be more sensitive to the potential for short-term relief aid to undermine long-term processes of building adaptive capacities. In post-tsunami Sri Lanka, for example, one qualitative study found a disconnection between international relief and the activities of local women's NGOs, which they argue led to a disempowerment of those local groups (Scharffscher, 2011). To avoid unintended consequences, international actors are encouraged to adopt the 'do no harm' principles of adapting interventions to context, following local leadership, committing enough time and resources, and addressing all aspects of disaster resilience holistically (Combaz, 2013).

Interventions can also be shaped to support individuals' resilience. For example, Pérez-Sales et al. (2005), looking at shelters established after the 2001 earthquakes in El Salvador, show that grouping of tents that reflected survivors' community of origin were associated with higher levels of psychological resilience. They conclude that shelter organisation which considers dignity, participation and respect for victims' capacity to control their own lives contributes to effective individual and community coping (Pérez-Sales et al., 2005, p. 368).

Research Summary 5. Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras

Drawing on a longitudinal study of a rural community in Honduras (1994-2002), this peer-reviewed paper finds that residents were able to use the window of opportunity created by Hurricane Mitch to generate socio-ecological improvement. The community was highly vulnerable to the impacts of disaster due, in part, to the legacy of previous development assistance. NGOs' promotion of market specialisation (p. 5204), land concentration (p. 5204), and forest conservation (p. 5204) were particular factors that contributed to socio-economic vulnerability.

The study found that the disaster prompted the community to initiate institutional change and improve resilience. In particular, agricultural reorganisation reallocated production away from vulnerable floodplains, improved social cohesion by instituting a more equitable distribution of land, and contributed to restoring a diverse range of income generating activities. Based on the positive experience here, the authors recommend that interventions to enhance resilience to climate shocks should incorporate local capacities for institutional change.

McSweeney and Coomes, 2011

Ensuring the participation of at-risk groups

At-risk groups such as women, minorities, children, persons with disabilities and the elderly tend to be adversely affected by disasters and stresses, but can also contribute to building resilience. Turnbull et al. (2013) argue that resilience interventions are more likely to have a sustainable impact in the medium- to long-term if they incorporate these groups. This includes children, who are likely to make up a substantial portion of any vulnerable population. However, ensuring the participation of children can be challenging in cultures where children are not encouraged or empowered to share their views, as illustrated in the implementation of child-centred approaches in Zimbabwe outlined in research summary 6 below.

Research Summary 6. Disaster resilience and children: managing food security in Zimbabwe's Binga District

This small-sample observational case study investigated the involvement of children in disaster risk reduction programmes focused on enhancing food security in Binga District, Zimbabwe. It found that in spite of the knowledge and potential contribution of children to resilience, their involvement was contested, and engaging them effectively required an understanding of how community culture characterised the role of children.

Interviews with children demonstrated that they are acutely aware of the causes and consequences of food insecurity, and knew about the early warning signs of disasters. Although children cope in various ways (including selling livestock, fishing, skipping meals), girls are more restricted because of their limited mobility.

The researchers conclude that understanding the family and cultural pressures imposed on children is key to effective programme design. Without this understanding, programmes risk getting locked into justifying children's involvement at the expense of practical action to involve them.

Manyena et al., 2008

Gender-sensitive programming

Women's inclusion in community efforts to create resilience is often described as essential because of their particular skills, knowledge and social networks (e.g. Bradshaw & Fordham 2013, p. 12). For example, one Oxfam-funded programme that aimed to improve community resilience to floods and landslides in the village of Jengatta, Eastern Indonesia, noted that women had a better understanding of where floods and landslides were likely to occur because they are the ones who typically labour in the fields (Oxfam, 2012). Nevertheless, the study documented challenges to women's meaningful participation, including resistance to women's inclusion in community meetings. Actively engaging men who held strategic positions in the village, holding separate meetings with women, and having quotas for women's participation, only partially addressed this discrimination (Oxfam, 2012).

Turnbull et al. (2013) set out key components for gender-sensitive resilience programming, summarised in box 8. Further resources on gender equality in disaster resilience are listed in box 9.

Box 8. Components of gender-sensitive resilience programming

- Monitor the gendered impacts of disasters using sex-disaggregated data
- Conduct baseline analysis of the roles of women, men, boys and girls in the management of social, economic, political and natural resources
- Involve men and women in risk assessments
- Use gender-sensitive processes, such as separate groups and interviews where appropriate
- Help men and women participate within and outside their usual roles.

Turnbull et al., 2013

Box 9. Gender equality resources for disaster resilience

- Gender and Disaster Network
- GFDRR – Gender
- Huairou Commission - Women, Homes & Community – Resilience
- PreventionWeb – Gender
- OCHA – Gender Equality
- UNISDR – Publications – Gender
- UNDP – Women in Conflict Prevention, Peacebuilding and Recovery

Some research findings suggest disasters can present *opportunities* for women and men to challenge socially-conditioned gender roles and uneven power structures (Turnbull et al., 2013). On the other hand, there is isolated evidence that the inclusion of women in resilience-building activities has reinforced gender stereotypes and potentially placed women in conflict with state authorities. This dynamic was reportedly created in the aftermath of the earthquake in Turkey, as described in research summary 7.

Research Summary 7. Downsides of social capital for women during disaster recovery: Towards a more critical approach

Drawing on empirical research in Turkey, this paper explores the role of social capital in the context of disasters. While much literature emphasises the benefits of social capital for disaster management, this paper cautions that social capital can perpetuate gender-based assumptions and potentially place women in conflict with state authorities.

These findings are based on a qualitative case study of post-earthquake recovery in Gölcük, Turkey. Following the earthquake, ten formal and informal civic networks emerged with a variety of purposes, including search and rescue and providing financial and other support to vulnerable people. Research indicates that women's participation in these networks was often constrained by gender. Many experienced a gendered division of labour that limited participation in areas such as search and rescue, and helped perpetuate gender-based assumptions. The study suggests that there is a need for gender-awareness building in post-disaster contexts, for example through capacity building initiatives that target civic networks and other actors.

Ganapati, 2013

3.5. Adapting to different contexts

Resilience-building may take place in fragile and conflict-affected states, in slow-onset disasters, and in urban areas. Although these contexts can overlap, the literature defines them as distinct and presents findings specific to each.

Fragile and conflict-affected states

Between 2005 and 2009, an estimated 50% of people affected by disasters from natural hazards lived in fragile and conflict-affected states (Harris et al., 2013, pp. vii-ix). Over 1.5 billion people live in countries that face repeated cycles of violence, so organisations such as Oxfam (2013, pp. 3, 5) advocate increased aid interventions in risky contexts. However, the empirical literature on **resilience in the context of violent conflict** is limited, fragmented and contested, and focuses on development rather than humanitarian action (Harris et al., 2013, pp. vii-ix). For instance, although different types of conflict may call for different approaches to resilience (e.g. ongoing violent conflicts and post-conflict periods), the literature does not give clear guidance on how to tailor approaches to them.

Both vicious and virtuous cycles are apparent in the impacts of conflicts and natural hazards, and in building resilience to them. Disasters from natural hazards exacerbate conflict, and conflict and fragility increase the impacts of disasters from natural hazards (Harris et al., 2013, pp. vii-viii) and tend to prolong conflicts (GFDRR, 2010, p. 13). On the other hand, 'effective governance, equity and strong social contracts' tend to enhance both climate resilience and conflict resilience (DFID, 2011a, p. 10), and good institutions reduce the likelihood of violence (GFDRR, 2010, p. 13).

Based on a review of the available literature, Harris et al. (2013) advocate adapting tools for measuring and appraising resilience in conflict-affected countries. They argue there is a need for combined frameworks that incorporate peace-building, state-building and disaster risk, and conversely for disaster frameworks to integrate conflict and fragility (Harris et al., 2013, p. ix). They also suggest that a multidimensional risk index could be developed from existing data on conflict and fragility, hazards, vulnerability, poverty and climate change, with sub-national areas and weighted risk factors (Harris et al., 2013, p. x).

Turnbull et al. (2013, pp. 94-96) note that a conflict-sensitive approach to disaster resilience requires a clear understanding of the interaction between programme and context, and between conflict risk and disaster risk, and should:

- Analyse conflict issues before and during programming, and ensure that participatory capacity and vulnerability analysis covers risk, conflict and peace
- Consult *all* stakeholders before allocating resources or defining projects, and make clear how decisions are made
- Address governance (including institutions that promote accountability), natural resource management and livelihood security
- Encourage 'win-win measures' for different interest groups, e.g. agreement on contingency plans
- Support conflict early warning and provide training in conflict sensitivity and doing no harm
- Support customary negotiation and conflict-resolution.

In protracted crises,[17] resilience is constrained by challenges at three levels, according to a recent synthesis of academic and practitioner knowledge (Frankenberger et al., 2012):

- ***Community level***: Environmental problems leading to aid dependency and conflict; contested access to land and water; poverty within unequal power relations; the impact of livelihood insecurity on youth and armed conflict; and gender inequality.
- ***Government level*:** Ineffectual governance, policies and service delivery, lack of political will and local or national political interference all affect resilience-building.
- ***Donor level:*** Humanitarian and development activities operate to different timelines, with different procurement systems, geographic areas of focus, relationships with governments and trade-offs among aid sectors.

To respond to these challenges, Frankenberger et al. (2012, p. 8) suggest shifting aid towards a long-term combination of DRM, climate change adaptation, livelihood diversification and social protection. Strategic partnerships (including with the private sector) could complement donor funding and create financial incentives for investment in livelihoods, and external actors should draw on customary institutions and knowledge on coping with climate, conflict and food insecurity. The authors propose that effective programming must (Frankenberger et al., 2012, p. 8):

- Support 'effective formal and informal governance, peace-building and conflict mitigation'

[17] Areas in protracted crisis are 'environments in which a significant proportion of the population is acutely vulnerable to death, disease and disruption of livelihoods over a prolonged period of time. The governance of these environments is usually very weak, with the state having a limited capacity to respond to, and mitigate, the threats to the population, or provide adequate levels of protection' (Harmer & Macrae, 2004, p. 1).

- Address 'the different needs, capabilities and aspirations of the most vulnerable groups (women, orphans, elderly, displaced, conflict-affected, unemployed/uneducated youth)', with equity for women supported through participation in decision-making and access to productive assets
- Promote healthy ecosystems, incorporate ecosystem-based planning, payment for ecosystem services and farmer-managed natural regeneration
- Support livelihoods diversification based on a thorough risk assessment (including political economy and conflict drivers)
- Promote access to infrastructure (e.g. roads, markets, water) and financial services
- Encourage actors to invest in household 'human capital': health, diversified livelihoods, social capital, and rights.

Research summary 8 outlines the experience of a regional approach to building resilience in a complex environment of conflict between local groups over livelihoods.

Research Summary 8. Building resilience in a complex environment

This paper reports on a long-term, regional programme to build resilience to drought through cross-border collaboration between communities in Kenya, Ethiopia and Somalia, implemented by CARE. *Regional Resilience Enhancement Against Drought (RREAD)* aims to improve innovation, diversification, governance and resource management approaches (pp. 1-3). The programme succeeded in enhancing the adaptive capacities of pastoralists, partly by increasing the diversification of livelihoods, though this requires careful planning and risk assessment. Support for resilience came from access to markets, viable economic alternatives and sustainable natural resource management. The paper concludes that approaches to building resilience should (pp. 4-10):

1. Enhance community capacities to manage risks and uncertainties
2. Support good governance at and between all levels, based on rights and on decentralised and participatory decision-making, and build the capacity of local institutions
3. Strengthen inclusive partnerships across a broad spectrum of institutions, with support for the rights and interests of all marginalised and vulnerable groups
4. Integrate local traditional knowledge with science and technology
5. Work across scales, focusing on socio-ecological systems and context specifics
6. Build on the 'conflict transformation potential' of effective natural resource management, run by community users in collaboration with authorities.

Standley, 2012

Slow-onset disasters

Slow-onset disasters present significant opportunities for resilience-building (Turnbull et al., 2013). For instance, the rehabilitation of water sources during droughts, or the provision of information and chlorine for water potability, can reduce the risk of sickness in the long-term. Technical support can improve early warning systems, evacuation planning and the capacity of local authorities to manage risk (Turnbull et al., 2013).

The consequences of slow-onset disasters are predictable and can be reduced through early action, from days to years in advance (Turnbull et al., 2013). For example, with flood risks, early action can be taken in advance by: years (e.g. work with at-risk populations on reforestation and house reinforcement); months (e.g. update contingency plans and inform population of risks and appropriate response such as clearing drains); weeks (e.g. mobilise local groups responsible for disaster preparedness and response); days (e.g. store valuables in higher places); and hours (evacuate).

In the face of drought-related food insecurity, useful interventions include:

- Protecting food production (e.g. irrigation, soil and water conservation, crop diversification)
- Protecting access to food, through cash transfers, food distribution, credit, cash- or food-for-work
- Preserving food (e.g. storage), water (e.g. rainwater harvesting) and livestock (e.g. fodder supply)
- Protecting and diversifying livelihoods, e.g. through insurance, agricultural diversification, off-farm employment and the protection of natural resources
- Providing monitoring, forecasting and guidance through local-to-international early warning.

Urban areas

By 2030, over 60 percent of the world's population – almost five billion people – are expected to live in urban environments, with the fastest population growth expected in small- to medium-sized towns (Jha et al., 2013, pp. 1-2; Turnbull et al., 2013, pp. 104-109; see also UNISDR, 2012). Urban contexts present specific challenges, vulnerabilities and opportunities for disaster resilience (Turnbull et al., 2013, pp. 104-109; Jha et al., 2013, pp. 1-2). This section reflects lessons and recommendations from practitioner experience and research in a range of countries, illustrated by a case study on Bangladesh (Research summary 9).

Research summary 9. Resilience of the urban poor and municipal policy, Bangladesh

Jabeen et al. (2010) examine household and community coping by the poor in Korail, the largest informal settlement in Dhaka, in the face of climate vulnerability and various hazards. They find that the urban poor use a variety of coping strategies (pp. 423-428). These include physical modifications to buildings, saving groups and diversified livelihoods, social networks for help and safety nets, and the accumulation and use of assets such as material goods, skills and health (usually on the initiative of women).

The authors recommend that effective and equitable municipal plans scale up knowledge and lessons from the grassroots to tackle the 'double vulnerability' of the urban poor to climate change and poverty (pp. 429-430). Local adaptation plans should be associated with broader development, at the intersection of poverty reduction, vulnerability reduction and climate change. Plans should combine structural approaches (such as engineering) and non-structural ones (e.g. warnings, evacuations, regulations of land use and building, insurance). Land tenure is essential to encouraging dwellers to improve buildings. Partnerships between government, utility providers and civil society would be useful. Municipalities could support community-managed savings schemes and insurance for low-income groups.

Jabeen et al., 2010

In terms of general principles, Jha et al. (2013, pp. 2-3) emphasise that, in the face of uncertainty, 'a flexible and dynamic approach' is critical to building urban resilience. Prioritising different risk reduction measures requires risk information that highlights trade-offs between policy options (Jha et al., 2013, p. 5). Municipal governments should learn from other cities through knowledge exchange (Turnbull et al., 2013, pp. 104-109).

Local governments can plan development, among others through land use planning and ecosystem management approaches (Jha et al., 2013, pp. 3-4). They can influence land availability and construction requirements, regulate building design, construction and hazardous activities.

In terms of **analysis and design** (Turnbull et al., 2013, pp. 104-109), maps of hazards should be developed and overlapped at different scales (regional, city-wide, specific neighbourhoods or sectors). The analysis of hazards should be integrated with other risks, such as technologies and violence. It should also consider population growth, migration, unemployment and informal employment. The focus should be on informal settlements and older central districts. Engaging professionals (engineers, city planners and social workers) is important to gain expertise. At the same time, participatory risk assessment can increase social cohesion in heterogeneous populations (Turnbull et al., 2013, pp. 104-109) and helps with collective resilience and information dissemination (Jha et al., 2013, p. 4).

Actors must plan for particularly **long and complex negotiations and coordination** in urban contexts (Turnbull et al., 2013, pp. 104-109). Multi-sectoral and multi-level contingency planning must be a priority. All plans must fit urban livelihoods, which often involve long commuting distances and working days. A wide range of stakeholders (including emergency services, relevant government departments, private sector and civil society) must engage in city-wide and area-specific efforts.

In terms of funding, public investment should **prioritise activities that perform well in different risk scenarios,** as urban resilience relies on the redundancy of assets while facing trade-offs due to limited resources (Jha et al., 2013, p. 3).

In addition, local governments can provide safe and affordable infrastructure and services, while putting in place effective **disaster early warning, preparedness and response** measures, and encouraging household and community risk reduction (Jha et al., 2013, pp. 3-4). **Infrastructure** systems – water, sanitation, energy, communications and transportation – are critically important for emergency response and quick recovery (Jha et al., 2013, p. 4). Their robust design should build on 'investments in risk information, strategic communication, cross-sectoral coordination', and response and recovery planning (Jha et al., 2013, p. 4). Urban upgrading should prioritise 'infrastructure, housing, livelihoods, and social networks for highly vulnerable households living in slum settlements' (Jha et al., 2013, p. 4).

Aid actors have a role to play in **advocacy,** to promote multi-hazard and multi-effect forecasting and early warning systems, as well as public and private accountability for risk reduction (Turnbull et al., 2013, pp. 104-109).

3.6. Financing resilience

Disaster resilience is underfunded (DFID, 2011a, p. 16; GFDRR, 2010), and the evidence about the costs and cost-effectiveness of interventions for resilience is limited, but growing. **Multi-year funding** for disaster resilience is often advocated, especially for protracted crises (e.g. Frankenberger et al., 2012, pp. 10-11). A DFID-commissioned desk-based study examining the value for money of multi-year humanitarian funding found that multi-year funding generates gains in economy, efficiency and effectiveness throughout the

disaster management cycle, but evidence is limited and benefits depend on the type of crisis (Cabot Venton, 2013).

Allocating scarce resources is always difficult, and resilience programming inherently involves trade-offs among sectors and groups (Frankenberger et al., 2012). 'Building back better' implies higher costs to meet stricter building standards and more technical solutions, which may exclude those most in need from assistance (Levine et al., 2012, p. 3). In protracted crises, building resilience among vulnerable people through small-scale livelihood diversification may come at the expense of economic growth in the form of larger agricultural and industrial projects (Frankenberger et al., 2012, pp. 9-13).

Despite these challenges, some studies show that building **disaster resilience is cost-effective** compared to late humanitarian response (Cabot Venton et al., 2013; GFDRR, 2010). For example, Bangladesh spent modest sums on shelters, weather forecasting, warning systems, and evacuation plans, which proved very effective in reducing deaths from cyclones (GFDRR, 2010, p. 2). Based on statistical evidence, GFDRR advocates spending on an early warning system, well-maintained critical infrastructure that functions during and after disasters, and environmental buffers for physical protection (GFDRR, 2010, pp. 3-10, 17-18). It adds that the **cost-effectiveness of prevention** will be enhanced where:

- Governments make information and analysis about hazards easily accessible.
- Governments ensure that property values reflect hazard risks, through land and housing markets and public action where needed. Government also need to expand the choices of the poor, for instance through security of property or targeted availability of land in safer locations coupled with transportation and other services.
- Governments provide adequate infrastructure and services. Effectiveness depends on quality, so spending should be prioritised properly. High-return spending like maintenance must not be deferred. New infrastructure should not introduce new risks. Where a safe location is impossible, multipurpose infrastructure (such as roads that also help drain water) is promising. Higher margins of safety must be applied to critical infrastructure.
- Governments and donors assess in the specific context each type of financial coping mechanism (insurance, borrowing, dedicated funds, remittances, aid). Assessment should consider benefits but also uncertainties, drawbacks or negative consequences on prevention and cost-effectiveness.
- Decision-makers permit public dissent, information, involvement, oversight and experimentation by an array of entities including the media, neighbourhood associations, engineering groups and businesses. Diverse sets of organisations that facilitate collective action by large groups of citizens will be able to press more effectively for information, prevention and cost-effectiveness.
- Donors earmark development (rather than humanitarian) aid for prevention.

Research Summary 10. The long road to resilience. Impact and cost-benefit analysis of disaster risk reduction in Bangladesh

This independent, mixed methods study evaluated a Community-Based Disaster Risk Reduction (CBDRR) programme implemented by the Bangladesh Red Crescent Society between 2005 and 2011. The evaluation found that in the four communities studied, the benefits of resilience programming benefits exceeded the costs. At a minimum, benefit-cost ratios stood at between 1.18 and 3.04, and between 3.05 and 4.90 when future protective benefits over the next 15 years were included.

Specific lessons learned on programme efficiency include:

- ***Continue to support community development and awareness*:** Cost-efficient measures include improving community organisation and promoting behaviours such as protecting the environment and cleaning dredging channels.
- ***Extend support to middle-income groups*:** They are able to cover their expenditures, which keeps costs low, and benefits are likely to be significantly higher compared to an exclusive focus on the most vulnerable.
- ***Stay longer to increase impact*:** Initial set-up costs were relatively high and benefits relatively low. A consolidation period would reap far greater returns.

IFRC, 2012

However, the evidence remains lacking in many areas with regards to costs and benefits (DFID, 2011a, pp. 13, 16). Only a few aspects, such as community-based DRR, have been appraised.[18] Further studies are needed to assess long-term resilience benefits and costs, especially on expensive interventions such as education and roads: while many interventions are likely to represent value for money, some resilience-building activities 'may be a waste of time and resources' (Cabot Venton, 2012, pp. 77-9). **Efficiency depends on the context**, hence the need for local participation and buy-in (Cabot Venton et al., 2013).

Disaster risk financing and insurance are receiving increasing attention, although evidence is still limited. A World Bank study (2011, pp. 4-6) argues that innovation is needed:

- Private insurance and capital markets could be used in **sovereign disaster risk financing**. Examples include Mexico's 2009 cat bond issuance and the Caribbean Catastrophe Risk Insurance Facility.
- Innovations from **property catastrophe risk insurance** could increase the financial resilience of households, agriculture and businesses while reducing contingent governmental liability.
- Disaster **micro-insurance** for low-income populations has had uneven success rates. Noteworthy innovations have included the following: the Horn of Africa Risk Transfer for Adaptation Programme had a 'holistic approach to risk management for vulnerable populations'; the Kilimo Salama pilot lowered distribution costs and facilitated scale-up with mobile technology; and an El Niño insurance programme drew on 'forecast index insurance' for advance payouts.
- An **international platform** with public and private funding should offer assistance and public goods.

[18] A number of detailed quantitative studies on market-oriented costing and financing are available from the World Bank and the GFDRR (see links in Box 2 on relevant resources on disaster risk management). Overall, more evidence is needed about costs and benefits, cost-effectiveness and value for money (Cabot Venton et al., 2013; DFID, 2011a, pp. 13, 16).

4. References

Ajibade, I., McBean, G., & Bezner-Kerr, R. (2013). Urban Flooding in Lagos, Nigeria: Patterns of Vulnerability and Resilience among Women. *Global Environmental Change*, *23*(6), 1714–1725. http://dx.doi.org/doi:10.1016/j.gloenvcha.2013.08.009

Andharia, J., et al. (2010). *Towards disaster resilience index for vulnerable communities: A Mumbai study*. Tata Institute of Social Sciences.

Ashdown, P. (2011). *Humanitarian Emergency Response Review*. UK Government. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67579/HERR.pdf

Bahadur, A.V., et al. (2010). *The Resilience Renaissance? Unpacking of resilience for tackling climate change and disasters*. IDS. http://community.eldis.org/.59e0d267/resilience-renaissance.pdf

Béné, C., et al. (2012). *Resilience: New Utopia or New Tyranny? Reflection about the Potentials and Limits of the Concept of Resilience in Relation to Vulnerability Reduction Programmes*. IDS Working Paper 405. IDS. http://www.ids.ac.uk/publication/resilience-new-utopia-or-new-tyranny-reflection-about-the-potentials-and-limits-of-the-concept-of-resilience-in-relation-to-vulnerability-reduction-programmes

Bosher, L., et al. (2007). Resource Accessibility and Vulnerability in Andhra Pradesh: Caste and Non-caste Influences. *Development and Change*, *38*(4), 615–640. http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7660.2007.00426.x/abstract

Bradshaw, S., & Fordham, M. (2013). *Women, Girls and Disasters. A Review for DFID*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236656/women-girls-disasters.pdf

Cabot Venton, C. (2013). *Value for Money of Multi-year Approaches to Humanitarian Funding*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204946/Cost_Effectiveness_of_Multi-year_Humanitarian_Funding_-_Final_Report.pdf

Cabot Venton, C., et al. (2012). *The Economics of Early Response and Disaster Resilience: Lessons from Kenya and Ethiopia. Final report*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67330/Econ-Ear-Rec-Res-Full-Report_20.pdf

Cabot Venton, C. et al. (2013). *The Economics of Early Response and Resilience: Approach and Methodology*. DFID https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204951/Econ_Ear_Rec_Res_Exec_Sum.pdf

Castleden, M., et al. (2011). Resilience thinking in health protection. *Journal of Public Health*, *33*(3), 369–377. http://jpubhealth.oxfordjournals.org/content/33/3/369

Chandler, D. (2012). Resilience and Human Security: The Post-interventionist Paradigm. *Security Dialogue*, *43*(3), 213-229. http://sdi.sagepub.com/content/43/3/213.abstract

Combaz, E. (2013). *Helpdesk Research Report: Effectiveness of interventions in the humanitarian field to support community resilience*. GSDRC. http://www.gsdrc.org/go/display&type=Helpdesk&id=894

Devex Editor. (2012). The international development buzzword of 2012. *Devex*. https://www.devex.com/en/news/the-international-development-buzzword-of-2012/80011

DFID (2011a). *Defining Disaster Resilience: A DFID Approach Paper*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/186874/defining-disaster-resilience-approach-paper.pdf

DFID (2011b). *Saving lives, preventing suffering and building resilience: The UK Government's Humanitarian Policy*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67468/The_20UK_20Government_s_20Humanitarian_20Policy_20-_20September_202011_20-_20Final.pdf

DFID (2012a). *Multi-Hazard Disaster Risk Assessment (v2)*. How-to Note. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204933/Multi-hazard_risk_assessment_guidance.pdf

DFID (2012b). *Promoting innovation and evidence-based approaches to building resilience and responding to humanitarian crises: A DFID Strategy Paper*. DFID. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193166/prom-innov-evi-bas-appr-build-res-resp-hum-cris.pdf

DFID (2013). *Minimum Standards for Embedding Disaster Resilience in DFID Country Offices*. DFID. https://www.gov.uk/government/publications/minimum-standards-for-embedding-disaster-resilience

Djalante, R. (2012). Adaptive governance and resilience: the role of multi-stakeholder platforms in disaster risk reduction. *Natural Hazards and Earth Systems Science*, *12*, 2923-2942. http://nat-hazards-earth-syst-sci.net/12/2923/2012/nhess-12-2923-2012.pdf

Frankenberger, T.R., et al. (2012). *Enhancing Resilience to Food Insecurity amid Protracted Crisis*. UN High-Level Expert Forum. http://www.fao.org/fileadmin/templates/cfs_high_level_forum/documents/Enhancing_Resilience_FoodInsecurity-TANGO.pdf

Ganapati, N. E. (2012). In Good Company: Why Social Capital Matters for Women during Disaster Recovery. *Public Administration Review*, *72*(3), 419-427. http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6210.2011.02526.x/abstract

Ganapati, N. E. (2013). Downsides of Social Capital for Women During Disaster Recovery: Toward a More Critical Approach. *Politics and Society*, *41*(1), 72–96. http://aas.sagepub.com/content/45/1/72

GFDRR. (2010). *Natural Hazards, UnNatural Disasters. The Economics of Effective Prevention*. United Nations, World Bank. https://www.gfdrr.org/node/281

Harmer A., & Macrae, J. (Eds.) (2004). *Beyond the Continuum: Aid Policy in Protracted Crises*. HPG Report No. 18, p. 1. Overseas Development Institute. http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/279.pdf

Harris, K., et al. (2013). *When disasters and conflicts collide: improving links between disaster resilience and conflict prevention*. ODI. http://www.odi.org.uk/publications/7257-disasters-conflicts-collide-improving-links-between-disaster-resilience-conflict-prevention

Hughes, K., Fuller, R., & Bushell, H. (2013). *A Multidimensional Approach to Measuring Resilience*. Discussion Paper. Oxfam GB. http://oxfamilibrary.openrepository.com/oxfam/handle/10546/302641

IFRC (2012a). *The long road to resilience. Impact and cost-benefit analysis of community-based disaster risk reduction in Bangladesh*. IFRC. http://www.ifrc.org/Global/Publications/disasters/reducing_risks/Long-road-to-resilience.pdf

IFRC (2012b). *Understanding community resilience and program factors that strengthen them. A Comprehensive Study of Red Cross Red Crescent Societies Tsunami Operation*. IFRC. http://www.ifrc.org/PageFiles/96984/Final_Synthesis_Characteristics_Lessons_Tsunami.pdf

Independent Evaluation Group (2006). *Hazards of Nature, Risks to Development: An IEG Evaluation of World Bank Assistance for Natural Disasters*. World Bank. http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/F0FCEB17632CB93485257155005081BE/$file/natural_disasters_evaluation.pdf

IRIN (2012). *Aid policy: Resisting the mantra of resilience*. IRINnews. http://www.irinnews.org/report.aspx?reportid=96549

Irish Aid (n.d.). Resilience. An Irish Presidency Perspective. Irish Aid.

Jabeen, H., et al. (2010). Built-in resilience: learning from grassroots coping strategies for climate variability. *Environment and Urbanization*, *22*(2), 415–431. http://eau.sagepub.com/content/22/2/415

Jha, A.K., et al. (eds.) (2013). *Building Urban Resilience: Principles, Tools, and Practice*. World Bank. https://www.gfdrr.org/node/1948

Joerin et al., (2012). Action-oriented resilience assessment of communities in Chennai, India. *Environmental Hazards*, *11*(3) http://www.tandfonline.com.ezproxye.bham.ac.uk/doi/full/10.1080/17477891.2012.689248

Levine, S., Pain, A., Bailey, S., and Fan, L. (2012). *The relevance of 'resilience'?* ODI. http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7818.pdf

Manyena, S.B. (2006). The Concept of Resilience Revisited. *Disasters*, *30*(4), 434–450. http://onlinelibrary.wiley.com/doi/10.1111/j.0361-3666.2006.00331.x/abstract

Manyena, S.B., et al. (2008). Disaster Resilience and Children: Managing Food Security in Zimbabwe's Binga District. Children, Youth and Environments. *Children and Disasters*, *18*(1), 303-331. http://www.jstor.org/stable/info/10.7721/chilyoutenvi.18.1.0303

McSweeney, K., & Coomes,O. (2011). Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(13), 5203–5208. http://www.pnas.org/content/108/13/5203

Mahmud, T., & Prowse, M. (2012). Corruption in cyclone preparedness and relief efforts in coastal Bangladesh: Lessons for climate adaptation? *Global Environmental Change*, *22*(4), 933–943. http://www.sciencedirect.com/science/article/pii/S0959378012000799

Mavhura, E., Manyena, S. B., Collins, A. E., & Manatsa, D. (2013). Indigenous Knowledge, Coping Strategies and Resilience to Floods in Muzarabani, Zimbabwe. *International Journal of Disaster Risk Reduction*, *5*, 38–48. http://dx.doi.org/doi:10.1016/j.ijdrr.2013.07.001

Maxwell, D., et al. (2009). *Baseline Report: Africa Community Resilience Project. Tsaeda Amba Woreda, Eastern Tigray, Ethiopia*. Research Program on Livelihoods Change over Time. Feinstein International Center, Tufts University. http://reliefweb.int/sites/reliefweb.int/files/resources/669879DA678141DBC12576AA0051E6B0-Tufts-ACRP_Report_1.pdf

Maxwell, D., et al. (2010). *Participatory Impact Assessment: Africa Community Resilience Project. Tsaeda Amba Woreda, Eastern Tigray, Ethiopia. Research Program on Livelihoods Change over Time – Final Report*. Feinstein International Center, Tufts University. http://sites.tufts.edu/feinstein/2010/final-report-africa-community-resilience-project

McAslan, A. (2010). *The Concept of Resilience. Understanding Its Origins, Meaning and Utility*. Torrens Resilience Institute. http://www.torrensresilience.org/images/pdfs/resilience%20origins%20and%20utility.pdf

McSweeney, K., and Coomes,O. (2011). Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(13), 5203-5208. http://www.pnas.org/content/108/13/5203

Nelson, D. R., & Finan, T. (2009). Praying for drought: Persistent Vulnerability and the Politics of Patronage in Ceará, Northeast Brazil. *American Anthropologist*, *111*(3), 302–316. http://onlinelibrary.wiley.com/doi/10.1111/j.1548-1433.2009.01134.x/abstract

Norris, F. H., et al. (2008). Community Resilience as a Metaphor, Theory, Set of Capacities, and Strategy for Disaster Readiness. *American Journal of Community Psychology*, *41*(1-2), 127–150. http://link.springer.com/article/10.1007/s10464-007-9156-6

OCHA (2012). *OCHA Gender Toolkit 7. Gender and Resilience*. OCHA. http://ochanet.unocha.org/p/Documents/GenderToolkit1_7_GenderandResilience.pdf

OECD (n.d.). *Joint risk assessment – the first step in resilience programming*. OECD. http://www.oecd.org/dac/governance-development/Experts%20Group%20working%20paper%20-%20Joint%20risk%20assessment.pdf

OECD (2013a). *From Good Idea to Good Practice – Options to Make Resilience Work*. OECD. http://www.oecd.org/dac/governance-development/Experts%20Group%20working%20paper%20-%20Options.pdf

OECD (2013b). *What Does 'Resilience' Mean for Donors?* An OECD Factsheet. OECD. http://www.oecd.org/dac/governance-development/May%2010%202013%20FINAL%20resilience%20PDF.pdf

Oliver-Smith, A., et al. (2012). *Addressing loss and damage in the context of social vulnerability and resilience*. Policy Brief No. 7. UN University. http://www.ehs.unu.edu/article/read/press-release-addressing-loss-and-damage-in-the-context

Oxfam (2013). *No accident. Resilience and the inequality of risk*. Oxfam International. http://www.oxfam.org/sites/www.oxfam.org/files/bp172-no-accident-resilience-inequality-of-risk-210513-en_1.pdf

Oxfam (2012). *Indonesia Case Study: Jenggala's women living close to disaster*. Oxfam UK. http://policy-practice.oxfam.org.uk/publications/indonesia-case-study-jenggalas-women-living-close-to-disaster-227179

Paton, D., et al. (Eds.) (2006). Disaster Resilience: An Integrated Approach. Charles C Thomas Publisher.

Peek, L., et al. (2010). Children With Disabilities in the Context of Disaster: A Social Vulnerability Perspective. *Child Development*, *81*(4), 1260–1270. http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8624.2010.01466.x/abstract

Pérez-Sales, P, et al. (2005). Post-traumatic Factors and Resilience: The Role of Shelter Management and Survivours' [sic] Attitudes after the Earthquakes in El Salvador (2001). *Journal of Community & Applied Social Psychology*, *15*, 368-382. http://www.worldwideopen.org/uploads/resources/files/784/RES040_Post_Traumatic_Factors_and_Resilience_El_Salvador.pdf

Ranjan, R. (2012). Natural Resource Sustainability versus Livelihood Resilience: Model of Groundwater Exploitation Strategies in Developing Regions. *Journal of Water Resources Planning and Management-Asce*, *138*(5), 512–522. http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29WR.1943-5452.0000201

Reaching Resilience (n.d.). *Handbook resilience 2.0 for aid practitioners and policymakers in Disaster Risk Reduction, Climate Change Adaptation and Poverty Reduction*. Reaching Resilience. http://www.reachingresilience.org/IMG/pdf/resilience-handbook.pdf

Revet, S. (2012). Conceptualizing and Confronting Disasters: A Panorama of Social Science Research and International Policies. In Attina, F. (2012). *The Politics and Policies of Relief, Aid and Reconstruction: Contrasting Approaches to Disasters and Emergencies*. Palgrave Macmillan. pp 42-56. http://books.google.co.uk/books?id=cFyqk3Nke3YC

Scharffscher, K. S. (2011). Disempowerment through disconnection: Local women's disaster response and international relief in post-tsunami Batticaloa. *Disaster Prevention and Management*, *20*(1), 63–81. http://www.emeraldinsight.com/journals.htm?articleid=1907284&show=abstract

Shepherd, A., et al. (2013). *The Geography of Poverty, Disasters and Climate Extremes in 2030*. ODI. http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8633.pdf

Standley, S. (2012). *Learning paper: Building resilience in a complex environment*. Briefing Paper 04. Care UK. http://insights.careinternational.org.uk/media/k2/attachments/RREAD_Learning_Paper_WEB.pdf

Tadele, F., et al. (2009). Building disaster resilience through capacity building in Ethiopia. *Disaster Prevention and Management*, *18*(3), 317-326. http://search.proquest.com/docview/89247389

Tulane University's Disaster Resilience Leadership Academy et al. (2012). *Haiti Humanitarian Assistance Evaluation - From a Resilience Perspective*. Tulane University. http://www.drlatulane.org/groups/haiti-humanitarian-aid-evaluation/final-report

Turnbull, M., et al. (2013). *Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation*. Catholic Relief Services. http://reliefweb.int/sites/reliefweb.int/files/resources/ECB-toward-resilience-Disaster-risk-reduction-Climate-Change-Adaptation-guide-english.pdf

Twigg, J. (2009). *Characteristics of a Disaster-Resilient Community*. A Guidance Note. NGO inter-agency group. http://community.eldis.org/.59e907ee/Characteristics2EDITION.pdf

UNISDR (2005a). *A Guide for Implementing the Hyogo Framework for Action by Local Stakeholders*. UNISDR. http://www.unisdr.org/files/13101_ImplementingtheHFA.pdf

UNISDR (2005b). *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*. World Conference on Disaster Reduction. 18-22 January 2005, Kobe, Hyogo, Japan. A/CONF.206/6. UNISDR. http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf

UNISDR (2007). *Words Into Action: A Guide to Implementing the Hyogo Framework*. UNISDR. http://www.unisdr.org/files/594_10382.pdf

UNISDR (2008). *Linking disaster risk reduction and poverty reduction: good practices and lessons learned*. UNISDR. http://www.unisdr.org/we/inform/publications/3293

UNISDR (2011a). *Effective measures to build resilience in Africa to adapt to climate change*. UNISDR. http://www.unisdr.org/files/24012_briefingnote04africa.pdf

UNISDR (2011b). *Hyogo Framework for Action 2005-2015. Building the Resilience of Nations and Communities to Disasters. Mid-term review*. 2010-2011. UNISDR. http://www.unisdr.org/we/inform/publications/18197

UNISDR (2011c). *Protecting development gains: reducing disaster vulnerability and building resilience in Asia and the Pacific*. The Asia-Pacific disaster report, 2010. UNISDR, UN Economic and Social Commission for Asia and the Pacific. http://www.unisdr.org/we/inform/publications/16132

UNISDR (2011d). *Revealing Risk, Redefining Development.* Global Assessment Report on Disaster Risk Reduction. UNISDR. http://www.irdrinternational.org/wp-content/uploads/2011/06/GAR2011%20final.pdf

UNISDR (2012). *How To Make Cities More Resilient. A Handbook For Local Government Leaders*. UNISDR. http://www.unisdr.org/campaign/resilientcities/toolkit/handbook

UNISDR (2013). *From Shared Risk to Shared Value –The Business Case for Disaster Risk Reduction*. Global Assessment Report on Disaster Risk Reduction. UNISDR. http://www.preventionweb.net/english/hyogo/gar/2013/en/gar-pdf/GAR2013_EN.pdf

Verner, D. (Ed.) (2012). *Adaptation to a changing climate in the Arab Countries: A Case for Adaptation Governance and Leadership in Building Climate Resilience*. World Bank. http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9459-5

Warner, J & Grunewald, F (2012). Resilience: buzz word or useful concept? *Humanitarian aid on the move*, *10*. UDR. http://www.urd.org/IMG/pdf/URD_HEM_10_UK.pdf

Walker, J., et al. (2011). Genealogies of Resilience from Systems Ecology to the Political Economy of Crisis Adaptation. *Security Dialogue*, *42*(2), 143–160. http://sdi.sagepub.com/content/42/2/143.short

Wilkinson, E. (2012a). *Transforming disaster risk management: a political economy approach*. ODI. http://www.odi.org.uk/publications/6095-disaster-risk-management-political-economy-climate-change

Wilkinson, E. (2012b). Why 'small is beautiful' in municipal disaster risk reduction: Evidence from the Yucatán peninsula, Mexico. *Environmental Hazards*, *11*(2). http://www.tandfonline.com/loi/toc/tenh20/11/2

World Bank (2011). *Innovation in Disaster Risk Financing for Developing Countries: Public and Private Contributions*. World Bank. https://www.gfdrr.org/sites/gfdrr.org/files/DRFI_WRC_Paper_FINAL_April11.pdf