

Working paper Series 2013

No.13-131

Traditional or Transformational Development?

A critical assessment of the potential
contribution of resilience to water services in
post-conflict Sub-Saharan Africa?

Christopher Martin

Published: January 2013

Development Studies Institute

London School of Economics and Political Science

Houghton Street

London

WC2A 2AE UK

Tel: +44 (020) 7955 7425/6252

Fax: +44 (020) 7955-6844

Email: d.daley@lse.ac.uk

Web site: www.lse.ac.uk/depts/ID

Abstract

This research argues that the current incorporation of resilience thinking into humanitarian and development theory and policy requires it to be conceptualised as a transformative process. It demonstrates this need by using case studies of water service delivery projects that incorporate key attributes of resilience in post-conflict countries in Sub-Saharan Africa. Using this evidence to explore three focal questions commonly raised in the literature, the conclusion is drawn that if efforts which employ the resilience concept fail to transform the underlying causes of vulnerability, the concept is of little benefit in these contexts and may undermine peacebuilding efforts.

Table of Contents	3
Abbreviations and Acronyms	4
Introduction	5
Chapter 1: Conceptualising Resilience and Post-Conflict Service Delivery	7
1.1 Resilience within a multidisciplinary and contested discourse	7
1.2 Resilience within humanitarianism and development	11
1.3 Resilience and post-conflict service delivery	12
1.4 Case selection and analysis methodology	14
1.5 Chapter summary	15
Chapter 2: Water Service Delivery Interventions in SSA	16
2.1 The DRC	16
2.2 Ethiopia	17
2.3 Liberia	19
2.4 Sudan and South Sudan	20
2.5 Chapter summary	21
Chapter 3: Investigating the Focal Questions	23
3.1 How? - Investigating the means	23
3.2 For what purpose? - Investigating the ends	25
3.3 Who and for whom? - Investigating agency	27
3.4 Chapter summary	29
Conclusions	31
Bibliography	32
Appendices	41
Appendix A HERR global risk map	41
Appendix B Table of focal questions and key attributes	42
Appendix C Glossary of key terminology	43
Appendix D Current example of proposed resilience framework	48
Appendix E Overview data of case studies	49

Abbreviations and Acronyms

DFID	The United Kingdom's Department for International Development
DRC	The Democratic Republic of Congo
DRR	Disaster Risk Reduction
HERR	Humanitarian Emergency Response Review
IDP	Internally Displaced Person (People)
(I)NGO	(International) Non-Governmental Organisation
MDG	Millennium Development Goal
SES	Social-Ecological Systems
SSA	Sub-Saharan Africa

Introduction

“... the only source of water to supply hundreds of people and it was running to a trickle. ... 50 or so people pushed and shoved each other to get spots, moving water cans, raising voices.”

(Author's field journal, Arusha, Tanzania, 26 August 2011)

This experience of waiting for water that may never come remains a stark reality for many across Sub-Saharan Africa (SSA), particularly in war-torn regions. Using water service delivery as an analytical lens, this paper contributes to the under-researched area of how resilience thinking is employed in post-conflict¹ contexts of SSA. First, it synthesises several relevant sets of literature to critically explore key areas of the debates on resilience. It then draws on evidence from five highly vulnerable countries in SSA, the Democratic Republic of Congo (DRC), Ethiopia, Liberia, Sudan, and South Sudan² to investigate the following three focal questions, which are frequently raised in the literature (DFID 2011a, 8; Kaufman 2012, 93; Porter and Davoudi 2012, 332; see Appendix B):

- 1) How is resilience produced?
- 2) For what purposes is resilience used?
- 3) Who is defining resilience and for whom?

Formulating answers to these questions determines whether and how resilience can be woven into humanitarian and development interventions.

This debate on the contribution of resilience, particularly on water issues, could not be more timely. Despite announcements that the Millennium Development Goal (MDG) to improve access to water was met ahead of the 2015 target (The Independent 2012), the aggregated statistics this result relies upon obscure significant inequalities (UNICEF and WHO 2012). These inequalities in both access to and quality of water services are especially severe in SSA. When these conditions are combined with other sources of vulnerability (see Appendix A), they exacerbate the consequences of the repeated humanitarian crises seen in the region (HERR 2011, 9-11). Thus, addressing the issues of access to and management of water is vital to the development of such countries, particularly those emerging from conflict. Current policy debates have sought to utilise solutions from resilience scholarship not only to tackle perpetual crises by improving the ability of communities to anticipate, respond to, and recover from

¹ While this is a contested term, it will be understood here as describing contexts where a peace agreement exists but may be highly fragile, conflict is still active at low intensities or regional levels, or where conflict is prone to sporadic flare ups (Forman and Patrick 2000, 13).

² Since much of the evidence was collected before South Sudan gained independence, it is difficult to separate the two cases. Nevertheless, the two countries are analysed together to highlight the interconnected nature of water issues and conflict.

shocks and stress (DFID 2011b), but also to improve the “value for money” of aid for donors, (international) non-governmental organisations (INGOs), and recipients (HERR 2011).

However, whether these innovative solutions support to or undermine efforts to resolve these problems depends on answers to the three central questions of means, ends, and agency posed above. In examining how answers to these questions are formulated, this contribution argues that, if resilience is to be used in post-conflict contexts, it must be conceptualised as a transformative process, able to challenge institutions and power structures which may perpetuate vulnerability. Furthermore, failure to implement resilience in this form could result in a stagnant, overly technical concept which is of little benefit and, at worst, undermines peace and even increases vulnerability.

As a final introductory note, it is necessary to explain some of the boundaries and definitions used in this study. Though it recognises important interconnections with other areas such as health, sanitation, food security, education, and infrastructure where possible, this paper restricts its scope to water service delivery. In this way, it adopts a broad definition of “service delivery” which includes providing access to, the use of, and management of water resources to exhibit the interdependencies between these areas. Justifying this, data from the British Geological Survey explains that, while African groundwater sources themselves appear resilient to climate change, the uncertainty about aquifer recharge processes and the effects of changes in access, usage, and management of these sources require greater consideration in the long-term (MacDonald et al. 2011). While this paper devotes less attention to which actors should undertake these challenges, it concentrates on how they are provided and what considerations must be accounted for. Finally, examining a handful of cases cannot possibly accommodate for the diversity of contexts in Africa (Padayachee and Hart 2010). However, by employing a range of cases to indicate general themes and trends that support a theoretical discussion, unfounded specific conclusions about the cases themselves are avoided.

Chapter 1: Conceptualising Resilience and Post-Conflict Service Delivery

To make the argument for resilience as a transformative process, the term's associated expansive, multidisciplinary terminology and debates must be elaborated on. The aim of this chapter is to situate resilience thinking within the current relevant literature on social-ecological systems, humanitarianism and development, and post-conflict stabilisation. The debates presented here reveal several key attributes of resilience which can be used to investigate the three focal questions, which are central to determining the potential contributions of the term to post-conflict water service delivery.

1.1 Resilience within a multidisciplinary and contested discourse

Resilience, as understood by the field of development, draws on formulations from a wide range of other disciplines including ecology, engineering, and international relations (Bahadur et al. 2010, 4-5). Initially, the ecology literature used the term to describe how complex environmental systems can persist, adapt, collapse, and rebuild over time in response to changes, however it also came to incorporate the interdependence of humans and the environment in what became known as social-ecological systems (SES) (Holling 1973, 17-18; Adger 2000, 348-350). The engineering sense of the term describes testing the ability of physical infrastructure to return to a set equilibrium state (Davoudi 2012, 300), representing a divergence from the SES use of the term which understands how changes may produce multiple equilibria (Holling 1973).

Another use of resilience that informs development thinking explains that a state's resilience or fragility is partially a function of how the state manages political settlements among elites who represent various interest groups (Di John and Putzel 2009, 14-16). In other words, the more inclusive and participatory state institutions become, the more resilient the state becomes (OECD 2008b, 80-81). This is relevant to service delivery implying that this can be a means of facilitating citizen participation in state institutions by providing an opportunity to strengthen political settlements. The definition of resilience adopted by the Department for International Development (DFID) (see Appendix C), which this paper engages with, displays a multidisciplinary understanding by capturing many of the elements above. While these diverse contributions are not explicitly referred to in the analysis, their influence underpins the argument as a whole.

Next, it is important to explore several key interrelated concepts³ borrowed from multiple disciplines. The concept of sustainability, eventually contributing to the sustainable livelihoods framework, has informed recent resilience thinking. Scoones (2009, 173-174) describes how the Brundtland Report of 1987 helped to mainstream sustainable development and allowed seminal articles by Chambers and Conway (1992) and Leach et al. (1999) to link sustainability to earlier works on livelihoods, such as that of Sen (1981). In this way, Chambers and Conway's (1992; see Appendix C) definition incorporates the need to maintain and adapt the capabilities, assets (5 capitals and access to them), and activities of livelihoods in relation to change and uncertainty (Ellis 2000, 10; Scoones 2009, 177).

While this literature is extensive, this analysis selects three key attributes which have been consistently identified as essential components of sustainable livelihoods approaches and which are also central to current resilience thinking. First, diversification⁴ of capabilities, assets and the means of accessing⁵ them, and activities enables individuals and communities to spread risk and potentially minimise disturbance to livelihood systems (Ellis 2000, 61-63). This is particularly common in the Sahel region of Africa where livelihoods depend on diversified use strategies and even migration to relieve pressure on water sources and are considered crucial to building resilience (HPG 2006, 2). However, diversification can increase economic and social inequalities, and even perpetuate unsustainable practices (Ellis 2000, 236); furthermore, system-wide events can significantly affect livelihoods regardless of diversification. Second, Ostrom's (1990) work identifies that robust institutions are necessary for securing and governing access to assets (Leach et al. 1999). Third, and interrelated, many of the institutional design principles Ostrom (1990, 90-102) presents, such as inclusive participation, monitoring, conflict management, and multiple layers (or "nested enterprises"), and are routinely cited as central to both sustainable livelihoods and water service resilience (Isham and Kähkönen 2002; Bahadur et al. 2010, 15). Critiques of these positions stress the need to recognise the heterogeneity of institutional arrangements and the often highly unequal attendant power relations (Cleverly 2000).

Similarly, the literature relating to vulnerability and adaptation contributes to the vocabulary of resilience. In particular, the concept of vulnerability assesses the ways in which a system can be adversely affected by stresses and shocks (see Appendix C for more details). Under the umbrella term of adaptive capacity come the adaptive processes and strategies, as

³ For the full list of terminology, definitions, and characteristics, see Appendix C.

⁴ Systems theory links this concept to functional redundancy (see Kaufman 2012).

⁵ Deligiannis (2012, 95) notes that the ability to diversify is a function of access to services such as water.

well as coping mechanisms which determine the means with which individuals and communities can reduce the vulnerability of their livelihoods (Batterbury and Forsyth 1999 25; Adger 2006, 273; Deligiannis 2012, 92). These concepts have been picked up in recent scholarship (Thomhalla et al. 2006) and policy (UNISDR 2007) relating to climate change adaptation and disaster risk reduction (DRR)⁶ in attempts to improve synergies between the approaches. Perhaps most relevant to the discussion here is the how differences in both vulnerability and adaptive capacity of individuals and certain groups are partly determined by power which circulates through social relationships (Wisner et al. 2004, 5-12; Gaillard 2010, 222).

A cognisance of the need to account for these power relations has led to the investigation of several trade-offs in the relationship between resilience and vulnerability. Specifically, the complexity of SESs means that fostering resilience of one actor or at one scale may increase the vulnerability of another actor or at another scale (Harris 2011, 7; Kaufman 2012, 72). Support to reduce vulnerabilities could even undermine pre-existing resilience (Martin-Breen and Anderies 2011, 27-28). Such trade-offs have led to the common view of resilience and vulnerability as antonyms, although this is disputed (Adger 2000, 348). While Turner et al. (2003) conceptualise the exposure, sensitivity, and resilience of a system as co-determining the vulnerability of a system, Holling (2001) describes how, over time, the resilience of a system (specifically its resistance to change) may become a source of vulnerability. These views not only indicate an interdependent relationship between resilience and vulnerability, but also that power, scale, and time are all factors that affect this. This commentary on sustainable livelihoods, adaptive capacity, resilience, and vulnerability displays considerable overlap and dispute within the discourse and highlights the importance of diversification (or functional redundancy), participatory and multilayered institutions, and power.

An aspect the literature has questioned recently is the emphasis on a system's need to "bounce back" after crisis. Critics suggest that this represents a conservative understanding of resilience which fails to question whether responses are perpetuating undesirable elements of a system (Randolph 2012, 130). Manyena et al. (2011) and Shaw (2012) suggest that the focus should be on "bouncing forward," on building the capacity to take advantage of the moment of opportunity created by crises to transform the structures and institutions which may be contributing to vulnerability (Kaufman 2012, 68; McLoughlin and Batley 2012, 8-9). This appears to echo arguments which call for livelihoods interventions to empower the most vulnerable and

⁶ While DRR is encompassed within resilience policy (DFID 2011a), space does not permit dealing with the concept separately.

marginalised to transform their circumstances (Devereux and Sabates-Wheeler 2004, 26; Aguiari 2012, 162).

Traditionally, this has involved support for social capital formation and social networks which facilitate flows of information (Grootaert and Bastelaer 2002, 6-11; Agnew and Woodhouse 2011, 121; Coles 2005, 80). However, recent policy and interventions, particularly in water services, have sought more innovative approaches by capitalising on increasing access to mobile phones to improve access to relevant, real-time information needed for operation and maintenance (DFID 2012; Hope 2012). However, an over-emphasis on simply “bouncing back,” as Shaw (2012, 311) and Mitchell and Harris (2012, 5) observe, risks rendering resilience an uncritical, technical concept, which may perpetuate an untenable status quo. If transformation is to be an objective of resilience, a dynamic approach is needed to build social capital and utilise innovative technologies and practices (another key attribute), particularly when attempting to deal with uncertainties. Therefore, it is also necessary to understand resilience as a process rather than an end state (ibid., 2; Goldstein 2012, 1). These points on transformation form the core of this paper’s argument.

For the purposes of this paper, this examination of the multidisciplinary debates with a more detailed focus on the contributions of the SES literature, highlights several points. First, the discourse’s strength is that the multidisciplinary lexicon which includes resilience is able to holistically describe complex SESs, although this is also its weakness. As will be seen throughout, policy tends to unproblematically combine these conflicting and contested concepts such as sustainable livelihoods, adaptive capacity, resilience, and vulnerability. Second, diversification, participatory institution building and reform, power relations and inequalities, and innovative practices and uses of technology are all crucial to resilience and are considered here as key attributes. Third, resilience represents a dynamic process capable of producing transformations. In the context of water services, these points collectively illustrate that, while the physical water source itself may be resilient, as is the case in SSA, it is the social, political, and economic dimensions of access, use, and management of water which play a crucial role in developing resilience.

1.2 Resilience within humanitarianism and development

This section briefly explores how DFID as a donor has sought to interpret the wider discourse. DFID’s engagement with the terminology is primarily the result of the independent

Humanitarian Emergency Response Review (HERR) which proposed several recommendations aimed at improving DFID's role in humanitarianism and development (HPG 2011). The relevant points emphasised in the Review were improving anticipation of crises, building resilience through coordinated humanitarian and development efforts, smarter and more efficient use of donor funding, the importance of innovative uses of technology and its integration with improved intervention methods, and accountability to both funders and recipients of aid (HERR 2011).

DFID's response has attempted to conjoin many of these recommendations by incorporating resilience into both its humanitarian and development policies, capitalising on an opportunity to improve dialogue and coordination in these areas (DFID 2011b, 13; DFID 2012, 7, 10). While it does call attention to the need to engage with the key attributes outlined in the previous section (DFID 2011a, 15), it does so by unproblematically drawing connections within the variegated discourse to bring together long-term livelihood approaches and adaptation processes with short-term coping and risk reduction thinking (*ibid.*, 10-11). It is possible to visually see this in DFID's Resilience Framework (see Appendix D) which is derived from both the sustainable livelihoods framework and the DRR and hazards frameworks. There are several relevant critiques of this position.

Such a formulation of resilience represents an attempt to define the discourse (values, meanings, constructions of knowledge) from the donor side to serve a dual purpose of helping those in need, but also helping donors and (I)NGOs improve coordination and aid-effectiveness (DFID 2011b) - a proverbial "win-win." Tandler's (1975, 102-110) critical insight suggests that, in trying to produce order and reduce uncertainty in the operating environment (i.e. DFID fulfilling the recommendations of the HERR), and despite acknowledging the need for increased recipient voice and participation (DFID 2011a, 15; 2011b, 7), DFID's influence on the wider discourse means that recipients necessarily define their vulnerabilities and resilience in these structured terms (Gaynor 2010, 207). Ferguson's (1994) cautionary contribution adds that such interventions in uncertain contexts (such as post-conflict) necessarily produce both intended and unintended consequences due to complex arrangements of power at multiple scales, thus making the predictability of "win-win" scenarios unlikely. These concerns are further enhanced by the lack of consensus on how resilience should be "measured" (Mitchell and Harris 2012, 3).

Finally, the British domestic political context of austerity with its heightened scrutiny of public budgets suggests that, despite its ring-fenced budget, the pressures on DFID to utilise resilience as a “win-win” scenario may reflect domestic politics as much as humanitarian and development objectives (Loyn 2011; BBC 2012). Together, these concerns raise challenging questions for the current use of resilience in both humanitarian and development practice.⁷ Additionally, they not only reemphasise the importance of considering power and participation, but also underline the relevance of this paper’s third focal question.

1.3 Resilience and post-conflict service delivery

In examining the contributions that resilience thinking claims to make to service delivery, it is first necessary to present some of the recent links between conflict stabilisation, peacebuilding, and service delivery. Stabilisation has become central to the peacebuilding process and outlines how military and non-military (development and humanitarian) activities are used in tandem to produce political, economic, and social changes which reduce conflict and promote peace settlements (SU 2008, 13-17).

Typically, stabilisation activities, due to their comprehensive objectives, involve a raft of organisations and actors, from the local to the international level, each with varying levels of coordination and cooperation, institutional capacities, resources, and operational timeframes (Baird 2010, 9; SU 2008, 19-21). This has resulted not only in the contentious linking of humanitarian and development aid to promote peace (Bailey 2011, 5; Shannon 2009), but also in security objectives becoming tied to the reconstruction and rehabilitation processes (Collins 2011; Baird 2010, 21). This paper concentrates on the second claim that linking citizens to a state during post-conflict reconstruction provides a “peace dividend” (Vaux and Visman 2005, 13).

There are various means purported to facilitate this including infrastructure projects, health and education projects, governance reforms and elections, and cash-for-work programmes (SU 2008). Recent debates have centred on how to combine and utilise the strengths and weaknesses of different actors to deliver services like education, water, sanitation, and healthcare in a manner which supports peace, benefits both citizens and donors, and improves the legitimacy of the state (Vaux and Visman 2005, 2-4; OECD 2008a, 26-27). A growing body of work assessing this suggests that when the state is perceived to be the primary

⁷ While beyond the scope of this paper to address, there are further concerns of how coordination and cooperation between these fields is to be achieved and what implications this holds for humanitarian principles. Rather than investigating this, concern here is for the consequences of failing to induce coordination.

implementer of aid projects, local attitudes toward the government are likely to improve, however there appears to be only a limited impact on peace, which depends on the local security circumstances (Egnell 2010; Giudici et al. 2012; Beath et al. 2011). While there is only a tenuous and context-dependent link between service provision and stabilisation, there are numerous claims made regarding how building resilience can improve this further by supporting peacebuilding through a variety of mechanisms.

DFID's publications highlight how resilience interventions, with an emphasis on improving governance, equity, and supporting the social contract, have strong potential to contribute to rebuilding institutions (DFID 2011a, 5,10; DFID 2012, 16, 26). Ratner et al. (2010, 21) argue that by encouraging community participation, emphasising accountability, and creating polycentric and multilayered institutions, resilient services help lay a strong foundation during reconstruction. Similarly, others recognise important social functions that resilient services can provide. Water services specifically, represent an opportunity to repair grievances produced or widened by the conflict through the building or rebuilding of bonding, bridging, and linking forms of social capital (Coletta and Cullen 2002; Weinthal et al. 2011, 148). Furthermore, when institutions are designed to manage and respond to changes and uncertainty (i.e. resilience is built in), they can minimise the risk of future conflict. However, institutions may also reignite tensions if implemented without sensitivity to conflict (ibid., 147-148, 151). Although these are bold claims about the potential for resilient forms of service management to contribute to conflict resolution between different stakeholders and at different scales, it remains to be seen if such services can "deliver" in practice.

Such claims are not without several counter claims. First, the fact that peacebuilding is seldom a sequential process (Baird 2010, 3), means that institution building and service delivery which claim to support it cannot be either. Forman and Patrick (2000, 4, 56) add that a state's limited ability to "absorb" aid effectively improves several years after conflict has ended. These points suggest that resilience-building activities initiated immediately after a conflict has "ended" are likely to be jeopardised by any backsliding in the peace agreements. Second, as already alluded to, interventions providing services can undermine settlements and even exacerbate local conflicts by highlighting unseen horizontal inequalities (differences in access, power, values, wealth, etc.) which they are unable to adequately address (Vaux and Visman 2005, 13; Ratner et al. 2010, 10). Third, the identity of a service provider is crucial for determining accountability. Macrae (1997) cautioned that overlapping and uncoordinated service providers undermine rather than improve legitimacy and accountability, while de

Sardan (2011) indicates that this is still a concern. Furthermore, the benefits of popular, legitimacy-building services like water frequently go to private or non-profit actors, while unpopular activities such as taxation remain the responsibility of the state (Baird 2010, 20). Fourth, there is also a noted neoliberal streak in current resilience thinking emphasising self-reliance (Shaw 2012, 311), which in post-conflict contexts may translate into reducing the role of the state, and thus the means available to it for establishing its legitimacy.

These debates suggest a need to carefully consider how the political, social, economic objectives and processes of peacebuilding and the layering of institutions required for resilient service delivery are coordinated between multiple actors and across multiple levels. Furthermore, this literature highlights several challenges specific to water services which are relevant to analysing the three focal questions of resilience.

1.4 Case selection and analysis methodology

Finally, this section elaborates on the selection of cases and the method of analysis adopted. The primary rationale is to include a diversity of service delivery experiences, which may or may not be considered resilient, in post-conflict African countries (see Appendix E for details). All have experienced conflict in the last 10 years, with most still experiencing varying levels of violence; all rank at the bottom of the GAIN vulnerability index (GAIN 2010, see Appendix E for explanation), and all rank below (often far below) the world average for water supply access. A further important criteria was the availability of relevant secondary material. Together, these criteria ensure that a diverse range of outcomes are observed. Each case is examined for evidence of the key attributes highlighted in the theoretical and practitioner literature as they relate to the three focal questions of resilience (see Appendix B).

Yet such analysis is not without limitations. Since the concept of resilience is new, diversely defined, and without accepted metrics, cases include interventions that aim to facilitate sustainable livelihoods and/or adaptive capacity, though it is acknowledged above that these are similar, but not necessarily synonymous. While the data on water service describes significant differences between rural and urban access levels (World Bank 2010), the lack of fine-grained data elsewhere means that this is unable to be assessed in detail here. Gender and other inequalities are highlighted where possible. While there is a selection bias of not being able to analyse all post-conflict states in Africa, the range presented attempts to overcome this. There is a strategic bias of relying on self-assessed literature from (I)NGOs which

can be less robust due to the difficulties of conducting monitoring and evaluations in post-conflict areas (DFID 2012, 30-31). Finally, if resilience is conceptualised as a process, the temporally limited available evidence can offer only a “snapshot” (Mitchell and Harris 2012, 3).

1.5 Chapter summary

This chapter has sought to demonstrate the convergence of several sets of relevant literature and unpack the contested discourse surrounding the concept of resilience in order to distill its key attributes. From the diverse and contested lexicon relating to resilience, the key attributes taken forward by this analysis are resilience’s emphasis on diversification, innovation, participatory institutions, power and inequality. In relation to humanitarianism and development policy, resilience is caught in a debate over whether it can bridge the gap between the two or if it is simply an extension of a donor-driven discourse, which primarily reflect donor concerns. While post-conflict service delivery is frequently considered a means for supporting peacebuilding, there are clear concerns that resilience in such services can undermine peace and even exacerbate conflict. Therefore, this dimension is also considered a key attribute.

Though it acknowledges its methodological limitations, this paper selects a diversity of cases which serve as a springboard for theoretical arguments formulated in Chapter 3. Together, the debates and attributes presented in this chapter will be used to guide the exploration of the cases in the following chapter and investigate the three focal questions in support of the argument for conceptualising resilience as a transformative process.

Chapter 2: Water Service Delivery Interventions in SSA

The evidence below draws on projects and programmes implemented in the DRC, Ethiopia, Liberia, Sudan, and South Sudan, which claim to facilitate sustainable livelihoods and adaptive capacities, concepts which will serve as a proxy for resilience building. It is also necessary to explain that many of the projects involved more than the delivery of water services and underscores the close relationship water services have with sanitation, healthcare, food security and agriculture, and other dimensions of livelihoods.

2.1 The DRC

The DRC has been in the throes of conflict, in one form or another, for over 15 years and consistently presents one of the most intractable humanitarian and development challenges. Recent violence in the eastern provinces from the rebel group M-23 threatens to undo the limited progress in stabilisation and peacebuilding (Harding 2012). Sources note that due to years of neglect, infrastructure and services in the DRC have often collapsed completely (Burt and Keiru 2011, 233; UNICEF 2011, 1). Compounding these challenges, are the stresses of both corrupt, ineffective government and the mismanagement of natural resource reserves (Paddon and Lacaille 2011, 20). Together, these contextual factors indicate that support for livelihoods and adaptation must be able to address these stresses and shocks, making a strong case for the need for incorporating resilience in water services.

The evidence gathered on recent projects in the DRC suggests reducing vulnerability by providing water services which support livelihoods and adaptation has produced mixed results. Among the primary concerns is that, while the rehabilitation of services is integrated into stabilisation policies, there has been a general failure of these efforts to address poor governance and the drivers of conflict which contribute to the vulnerability of livelihoods (Bailey 2011, 1-4). Furthermore, the prevailing assertion that aid programmes which deliver services (including water) will prevent conflict and promote peace has generally not been observed in this context, mostly due to the aforementioned lack of engagement with the root causes of vulnerability and the short-term nature of existing aid which precludes such engagement (ibid., 8-9). Specific projects note how corruption at multiple levels and power inequalities (particularly in terms of gender) have resulted in a political culture which makes service delivery exceptionally challenging (Newborne et al. 2007, 31-36; Sow 2006, 10).

While concentrating primarily on humanitarian needs, UNICEF's (2011) delivery of water services involve limited activities (water trucking and chlorination) designed to reach maximum numbers of people. The ambitious Tuungane project sought to improve the livelihoods of 1.7 million people through a variety of community-led interventions including water service rehabilitation, yet it was noted that, "the evidence for positive effects is scattered and generally weak" (Humphreys et al. 2012, 74). However, an apparently successful Tearfund project describes how a community-based organisation provided improved access to water, incorporated women into its administrative structure, linked itself to national-level institutions, and even diversified access to sources to resolve conflicts which arose over access (Burt and Keiru 2011, 232-234).

The shocks and stresses in the context of the DRC clearly present significant challenges to the provision of services which attempt to account for these. They also limit the ability to incorporate attributes necessary for resilience building such as participation and institution building. The strong emphasis on the political problems at the core of the DRC's continuing crisis, and the observation that interventions are becoming less politically oriented and more technical (Paddon and Lacaille 2011, 3), corroborates the view that any transformational effects of sustainable livelihoods interventions can be thwarted. Nevertheless, the ambitious, small-scale intervention presented here displays several of the key attributes of the resilience process and the results, though isolated, suggest wider transformations are possible.

2.2 Ethiopia

The pressure from shocks and stresses on Ethiopian livelihoods is well known. Prone to severe droughts which create food insecurity and water shortages for millions, and compounded with a high population growth rate, the country consistently ranks one of the most vulnerable (Ludi et al. 2011, 15). Additionally, the added shocks of international and local conflicts, and spillover from neighbouring conflicts make exposure to hazard a norm for many (ibid., 21; BBC 2009).

On the condition of existing water services, sources note that access can be limited by lack of maintenance and, in some cases, completely inoperable infrastructure (WaterAid 2010, 27; Selassie 2011, 9). As in the case of Liberia below, official data estimates much higher levels of access than independent sources and Selassie (2011, 21, 68) observes that regional and rural/urban inequalities indicate that the country is unlikely to meet its own target of near

universal water accessibility by 2015 (FDRE 2011, 1). The livelihoods and adaptive capacity interventions examined demonstrate a variety of engagements with these challenges to building resilience.

A rigorous, multi-regional analysis conducted by Ludi et al. (2011) of the interventions of several INGOs which sought to improve the adaptive capacity of livelihoods by increasing and diversifying assets, is critically attuned to the attributes of resilience. The report notes an increasing reliance on irrigation for agriculture which reduces a household's mobility necessary for pastoralism (ibid., 42), a prime example of the trade-offs faced between building resilience and vulnerability. A recent water policy framework from the Ethiopian government appears to recognise such delicate balances of livelihoods and emphasises reducing vulnerability, increasing participatory practices, and improving layers of governance (FDRE 2011, 71). There is also evidence that power inequalities which affect the adaptive capacities of women and poorer households are often inadequately addressed (Ludi et al. 2011, 46, 58). Inequalities in and between the Oromia and Somali regions⁸ have even resulted in conflicts over access to new boreholes, leading to stockpiling of weapons, raiding, and the deliberate destruction of water infrastructure (Gomes 2006, 25, 38; BBC 2009). Finally, Ludi et al. (2011, 47-48, 54) emphasise the need for both improved access to reliable information on hazards as well as the need to build the capacity of communities to develop their own innovative solutions.

The case of Ethiopia reiterates several points which are relevant to this paper. First, the trade-offs between the resilience and vulnerability of livelihoods is a challenge that will be difficult to overcome without reliable information or innovative, appropriate technologies to support this (Ludi et al. 2011, 56). Second, despite a strong government stance on improving water service delivery, there is an expressed need to improve coordination, cooperation, and inequality-sensitive participation to be able to match this rhetoric (Welle et al. 2012; Selassie 2011). Third, it remains to be seen whether delivering resilient services can play a role in mitigating conflicts which deliberately target water sources.

⁸ Oromia has around 20% higher levels of access than the Somali region (WaterAid 2010, 36).

2.3 Liberia

Liberia is the only case discussed here where conflict ended nearly a decade ago. However, the country's water services still face significant stresses. According to the World Bank (2010) dataset, Liberia has the highest level of access of the cited cases (see Appendix E). Yet, the Human Development Report (UNDP 2011, 145) data from 2007 contradicts this, stating that only about 33 per cent had access to improved water sources. Despite different data collection methods, the discrepancies appear to reflect differing definitions of "improved access" to water. Nevertheless, Liberia is considered to be failing to meet the MDGs, facing persistent food insecurity and unemployment (Owadi et al. 2010, 23-24, 57). Other stresses which contribute to vulnerability include weak government capacity and high levels of gender-based violence (Sitali 2010, 11; House 2007, 105). While this contextual evidence poses challenges for rehabilitating and building water services, there are some positive results evident.

A Tearfund project which sought to minimise women's vulnerability to gender-based violence, constructed improved hand pumps in more public areas, ultimately noting an impact in reducing waterborne diseases in the community (Burt and Keiru 2011, 236-237). In Monrovia, the process of rehabilitating water services was implemented through a combination of large-scale infrastructure projects and by relying on INGOs to provide access in more difficult to reach areas, ensuring maximum coverage (Pinera and Reed 2011, 224-225). While Oxfam's early operations in Liberia appear to have been plagued by coordination problems, it consciously sought to shift away from humanitarian forms of service delivery and toward more sustainable efforts of constructing new wells and facilitating the establishment of management structures (Bikaba et al. 2004, 22-25). Additionally, Oxfam was able to use water service delivery in one neighbourhood of Monrovia to limit the activity of criminal gangs linked to illegal water vendors and incorporate the vendors into a delivery system to ensure access to safe water, even producing an agreement between the them and the Liberia Water and Sewer Corporation (Pinera and Reed 2011, 226). While this ability to layer institutions was possible in Monrovia, rural community management of water pumps (House 2007, 76) show little indication of links to higher level institutions.

While the evidence consists of isolated relevant examples in a country which faces a plethora of stress factors, the case of Liberia does demonstrate several of the key attributes of

resilience building. First, there are indications of participatory and multi-scalar institutions being established, though it is unclear what further coordination is necessary for additional improvement. Second, a successful attempt has been made to use water service as a means of limiting violent crime at a communal level. Third, despite its political and economic fragility, advances in Liberia's peace settlement have allowed for a shift towards interventions which can fulfil humanitarian needs and implement sustainable processes more in line with resilience. However, this political and economic fragility should not be underestimated as doing so could jeopardise any gains being made in water service delivery.

2.4 Sudan and South Sudan

Sudan faces not only severe climate fluctuations, but also frequent and multilevel conflict shocks. These often become interconnected as its climatic changes produce droughts and general scarcity of water, resulting in competition between those relying on pastoralist and agricultural livelihoods (Jaspars 2010, 5; Bronkhorst 2011, 30). Both Bromwich et al. (2007, 39-41) and Jaspars and O'Callaghan (2010, S170) explain that significant disruption of livelihoods in Darfur by conflict has led to particularly acute water needs around the internally displaced persons (IDP) camps in that region. Similarly, the recent resurgence of violence between the two Sudans has recently displaced thousands of Sudanese into South Sudan, exacerbating the need for water (Nelson 2012). Bennett et al. (2010, 39) comment that different levels of acceptance of and adherence to peace plans mean that inter- and intra-communal violence persists in multiple regions over a variety of issues (Harris 2011, 8). Wider regional issues such as the large scale water infrastructure projects in the Nile Basin have frequently stalled, becoming tied up in conflict dynamics and international politics (Salman 2011). All these facets make the delivery of water particularly challenging in Sudan and South Sudan.

Historically, Sudanese livelihoods displayed a diversified range of adaptive and coping mechanisms which allowed survival in semi-arid regions (Coles, 2005). However, decades of multilevel conflict have changed this context, often ensnaring issues of water access. In South Kordofan, a recent water for peace project sought to limit local conflict by recreating diversified access through constructing separate water sources for humans and the livestock of pastoralists (Bronkhorst 2011, 34). Greening Darfur, a programme initiated by Practical Action in 2009, opted for a holistic approach to livelihood intervention which employed the rehabilitation of water sources with particular attention to the burden water collection placed upon women (Jaspars 2010; Harris 2011, 8-12). The projects have also made efforts at resolving and

preventing local conflict over water by utilising participatory, consensus-building meetings between communities where agreements are made over access to and construction of water sources (ibid., 13). A final intervention observed in Darfur has been the distribution of “water rollers” to reduce the vulnerability of women to violence while collecting water and improve ease of access (IRIN 2011), however, there is a lack of further engagement on gender issues such as providing skills training or income generation possibilities (Jaspars 2010, 31).

This overview of the evidence from both Sudan and South Sudan covers several of the key attributes. Water service delivery is used to serve the dual purpose of reducing vulnerability to environmental and conflict hazards, thus producing “peace dividends” (Mailer and Poole 2010, 26). While this may be successful at a local level, alone, such a method is unlikely to be able to address the multidimensional drivers of the wider regional conflict in Darfur (Jaspars 2010, 32) or the politically-charged international water dilemmas of the Nile Basin (Salman 2011). In such contexts it is difficult to assess the sustainability of water projects as management institutions have often become polarised by conflict and social networks disrupted by displacement (Jaspars 2010, 3,10; Bennett et al. 2010, 139). Additionally, it is unclear how the interventions are rebuilding the layers of connections between institutions and how this affects resilience (Jaspars 2010, 31). Similarly, Harris (2011) argues that better sectoral coordination and integration between water, health, and sanitation efforts is needed to initiate the process of resilience. Evidently, the efforts at building resilience in water services must be sharply focused on the challenges of resolving conflicts in and between both countries, in which water issues have become intertwined.

2.5 Chapter summary

While none of the cases demonstrate a definitive example of transformative resilience, many do exhibit the key attributes and tensions presented in this paper. As a result of both significant political stress and periodic conflict shocks, efforts in the DRC have concentrated on humanitarian needs, but displayed only limited evidence of the holistic interventions necessary for initiating a resilience-building process. Ethiopia appears to be engaging with sustainable livelihoods and adaptive capacity approaches on a large scale to improve access to water services, though conflict linked to notable inequalities in access remains an obstacle. Innovative and multi-scalar delivery approaches in Liberia have created significant improvements in access during the post-conflict period, but continuing political and economic stress along with the challenges of building further institutional interconnections make the future of these trends

uncertain. Finally, the drivers of multiple conflicts in Sudan and South Sudan have become inseparable from the interventions to promote sustainable livelihoods and improve water access in several regions. These cases illustrate that, while evidence does exist of the core elements of resilience taking root in water service delivery in SSA, this process faces a range of challenges in post-conflict contexts.

Chapter 3: Investigating the Focal Questions

Connections between the focal questions, key attributes, and the evidence from the cited cases are now used to argue for a transformative conceptualisation of resilience which can more critically address the specifics of water service delivery in post-conflict settings. While this discussion does not present definitive answers to these questions, it demonstrates that how they are answered determines whether resilience will support or undermine water services in such contexts. While there are overlaps and interconnections between the answers to these questions (i.e. institution building can be a means for initiating the resilience process and building robust institutions can represent an end of this process), it is not possible to explore them all fully. Nevertheless, a transformative understanding of resilience effectively links these questions.

3.1 How? - Investigating the means

Diversification represents one of the primary means of creating resilience seen in the cases. In Ethiopia, livelihoods programmes made a conscious effort to diversify assets, including access to water (Ludi et al. 2011). Interventions in Liberia adopted a slightly different approach, diversifying water sources, but also incorporating projects on multiple scales to ensure coverage (Pinera and Reed, 2011; Agnew and Woodhouse 2011, 206). Both Sudan and DRC present cases where diversification itself became a means for diffusing conflicts over access (Harris 2011; Burt and Keiru 2011).

This heterogeneity of strategies using diversification to deliver more resilient water services, while dependent on context, strengthens the ability of households and communities to choose what water source is appropriate and necessary to respond to a shock or stress. Furthermore, it crucially affords the ability to switch strategies if part of the system fails (Mitchell and Harris 2012, 2). In supporting autonomous decision-making, this means of facilitating resilience goes beyond drilling new boreholes or installing new public tapstands. In this process, diversification of water sources can also transform the other interconnected dimensions of livelihoods such as health, sanitation, and food security. Finally, the functional redundancy that this creates within a system, especially where shocks and stresses are common, also partially⁹ prevents over-dependence on a single source, and thus resilience from creating vulnerabilities.

⁹ The adaptive cycle has numerous variables which contribute to the vulnerability of a system, hence why diversification is only partially influences this (Pelling and Manuel-Navarete 2011).

Innovative technologies and practices are also commonly utilised as a means of producing resilience. Ludi et al. (2011) explain that, though the use of new technologies and practices in Ethiopia enhanced both knowledge of and access to water services, the neglect or inability to strengthen social capital necessary for communities to produce their own innovations was a notable shortcoming. Formalising the activities of water sellers to ensure access in parts of Monrovia is another example of using innovative delivery practices (Pinera and Reed 2011). The distribution of new water rollers in Sudan increased the ease of access for families (IRIN 2011) though, as explained later, this innovation does not necessarily translate to transformation elsewhere. Recently, a global shift has been made toward adopting high tech solutions such as “smart pumps,” capable of collecting data on usage and functionality (MW4D 2012), and mobile phone technologies to improve access to knowledge and increase its flow through social networks (Annerose 2012; Mergel 2009, 32). Though clearly an area for future concentration, more critical awareness of how these technologies can be successfully deployed in post-conflict settings is needed.

Regarding current policy, both the HERR (2011) and DFID (2011b; 2012) strongly underscore the need for innovation; however there is little indication of whether this will favour outside solutions or the steady building of local innovative capacity. A genuinely transformative approach would concentrate on merging the benefits of each solution and integrating them with local innovations in a way which is cognisant of existing power inequalities (Phadke 2011). In doing so, this process would help prevent innovation from become an overly technical means of producing resilience. Relating this to the discussion on diversification, retaining a degree of functional redundancy by not discarding “outdated” technologies and practices may also help ensure that building resilience does not increase vulnerability (Agnew and Woodhouse 2011, 121).

Building resilience to stress and shock, specifically through diversifying to create options and by promoting innovative technological and procedural solutions, has a substantial impact on outcomes. While both provide benefits in post-conflict contexts, they have their limitations when they are not used in a transformational way. Without this transformative element, resilience would become a static, technical exercise, possibly failing to account for the multiple and dynamic dimensions of vulnerability. However, if diversification and innovation are used to enhance social capital, strengthen local conflict-resolution methods, or afford a greater degree of autonomy, then they can represent a transformational means of delivering resilient water services.

3.2 For what purpose? - Investigating the ends¹⁰

The end of building or rebuilding institutions which are polycentric, multilayered, and participatory to enhance the ability to respond to hazards is frequently seen in the cited cases, yet each has slightly different effects. In the DRC, while Burt and Keiru (2011) present evidence of participatory institutions for water management built at the local level that even draw in the national government, it is unclear what effects corruption and weak governance might have on this. Both the Ethiopian and Liberian governments play a stronger role in determining water resource management and can engage with institutions at the local level. Furthermore, the Liberian case demonstrates an emphasis on participation, incorporating women and even marginalised criminal elements in these institutions (Pinera and Reed 2011). Sudan, however, with its institutions fractured by conflict, faces significant challenges at both the local and national levels in this area (Harris 2011). These examples corroborate the view that incorporating resilience by building institutions at the local level without simultaneous efforts at other levels is unlikely to be sustainable in the long run due to their interdependencies (Harvey and Reed 2006). For instance, the unresolved hydro-politics of the Nile Basin means that local efforts to introduce resilience thinking could be jeopardised by the impact of decision-making (or lack thereof) at higher levels. For this objective of institution building, resilience efforts demand multilevel coordination to prevent resilience at one level from being affected by, or affecting, vulnerability at another.

The other end of resilient service delivery relevant to this analysis is its use to support conflict resolution and peacebuilding. In both the DRC and Sudan, the delivery and management of water services has been utilised to promote a “peace dividend” at the local level (Burt and Keiru 2011; Bronkhorst 2011), however in neither case are these efforts able to address regional, national, or international conflict drivers. The conflicts over the construction of boreholes seen in Ethiopia suggests that water services require attention to existing underlying inequalities (BBC 2009). The evidence from Liberia indicates that, while reducing localised criminal activity (Burt and Keiru 2011), the unresolved political and economic issues faced by the country may threaten the ability of water services to rebuild social capital.

These trends appear to echo Bradbury’s (1998) “normalising the crisis” thesis in that, by not engaging with the political failures beyond the local level, efforts at “sustainability,” or

¹⁰ As this paper argues that resilience should be conceived of as a transformative process, it is therefore not an end itself, but rather may affect other ends.

resilience for that matter, are unlikely to address some of the root causes of vulnerability. In effect, by preventing needed transformations, the process may create resilience to the root causes of the conflict or poverty, rather than addressing them (Randolph 2012, 129-130; Kaufman 2012, 68). This is interrelated with the challenges of institution building in that multilevel problems require multilevel solutions. Some might argue that this position risks the unethical denial of urgently needed services because of an inability to interact with broader political agendas. However, this paper does not adopt the view that services should be withheld, but rather that resilience cannot afford to disregard political settlements of post-conflict settings completely (Jaspars 2010, 36) and must have a flexible plan for engaging with the objectives of peace.

The arguments of this section indicate that for the ends of participatory institution building and peacebuilding, there is a strong need for the delivery of resilient services to coordinate at different levels and understand post-conflict dynamics (Green 2002, 83). This also weakens the argument stressing the centrality of self-reliance, demonstrating that such a position alone cannot accommodate the multiple actors and scales necessary to produce a resilience process. Additionally, the evidence from the cases suggests a limit to the scale at which a “peace dividend” can be achieved through resilience. While local efforts at conflict resolution may benefit greatly, with more complex national or international conflicts, resilience can jeopardise a fragile peace or provoke conflict by highlighting or creating inequalities. In this way, the resilient service of today can become a vulnerability of tomorrow (Kaufman 2012, 70). Here a dynamic, long-term view is needed to account for these dimensions, lending support to the argument that resilience must be considered a process if it is to be transformative. If so, the challenges posed by post-conflict present an opportunity to bring together a range of interventions which contribute to the broader efforts of peace in a way which allows a community to “bounce forward” by transforming the status quo (Davoudi 2012, 304; Burt and Keiru 2011, 241).

3.3 Who and for whom? - Investigating agency

It is also necessary to account for power inequalities and how these affect the way resilience is conceived and delivered in practice (Zellner et al. 2012, 56; Leach 2008, 15). Recent policy also acknowledges that groups are affected differently by hazards because of their relative power (DFID 2011a, 15). However, the cases above indicate that there is a greater need

for attention to who is defining the concept of resilience and that the opportunity crises present can be utilised to transform vulnerabilities into strengths by challenging power relations.

First, the wider discourse affords domestic governments considerable power to define the concepts as well as the corresponding means and ends. For example, regarding the Ethiopian government's recent policies on water services and livelihoods, Ludi et al. (2011, 51-52) argue that the government's strong position often forces communities to adopt certain technologies and practices it deems as necessary for building sustainable livelihoods. Resilience is susceptible to this process too as national governments are able to determine how improvements to adaptive capacities and the building social capital will be used to meet service delivery policy objectives. Additionally, the corruption noted in the governments of both the DRC and Liberia suggest that if this affects service delivery, the ability of resilience to transform other aspects of livelihoods will be undermined. Where the power of domestic governments is weak, in regions such as eastern DRC or Darfur (Jaspars 2010, 10), donors and (I)NGOs gain more power to define resilience. If so, they may have less of an incentive to engage with a negligent or hostile governments to produce the necessary institutional transformations since they are able to achieve local successes without doing so.

In sum, this presents a set of trade-offs. With too much government control of the process, there is a concern that activities may be co-opted by more powerful interests, turning resilience into a technology of power in ways which are not foreseen (Foucault 1977; Ferguson 1994; Agrawal 2005). As demonstrated earlier, with too little government involvement, resilience is of little benefit to peacebuilding or may harm such efforts. Without a critical awareness of how the process of resilience can transform power relations and create or rebuild institutions which limit, but also include strong sources of power, the process risks either result.

Second, what happens to the power of vulnerable groups such as minorities, women, or children? While the "water rollers" introduced in Sudan sought to improve the livelihoods of women (Bronkhorst 2011, 34), this intervention clearly fails to question the more entrenched gender roles which determine the position of women as water collectors (Wallace and Coles 2005; Aguiari 2012). In Liberia and DRC, women have been included in management institutions (Burt and Keiru 2011), however in the DRC these gains are overshadowed by lack of access to power at higher levels of government. The interventions in Ethiopia also note that the poorest households and women faced marginalisation from decision-making institutions (Ludi et al. 2011). Where marginalised ethnicities and groups such as nomadic and semi-nomadic

pastoralists are not given a voice in the management structures, they too could be marginalised further.

These observations indicate that resilience efforts run the risk of perpetuating the status quo of vulnerable groups, despite perhaps reducing a dimension of their vulnerability. In other words, without the ability to challenge and transform the power structures which determine vulnerability (Gaillard 2010), interventions will simply reconstruct institutions using the same discourse and sustain existing sites of power (Stammers 1999). This further supports the view that the resilience process should focus on how the most vulnerable groups can take advantage of opportunities to redefine relations and structures of power rather than just mitigating threats to services.

Third, donors have gained considerable power through the way the discourse has been constructed, even though this is more subtle. From the discrepancies seen in the data on water access in Liberia and Ethiopia, it is clear the actor who has the power to define what is meant by “access” and “improved” matters considerably. Donors (and beneficiary governments) gain the power to interpret goals and targets, such as the MDGs, and deploy the discourse encompassing resilience to attain these ends. This appears to directly conflict with the view of resilience as needing to be defined by beneficiary communities to remain context-specific (Randolph 2012, 137). Furthermore, as donors have predominately defined the discourse so far (HERR 2011, DFID 2012), they have the power to determine what counts as resilience-building activities worthy of funding, which in turn, impacts how (I)NGOs structure their interventions. Essentially, this translates to the power to defend the status quo of development policy itself (Mitchell and Harris 2012, 5) - determining what means are worthy for “developing” specific ends.

Another trend, evidenced by DFID's (2012) call for more robust data to guide policy and decision-making, is that resilience may become a technocratic approach that uses a flexible “toolkit,” yet which overlooks the dynamics of a system to ensure outcomes (Welle et al. 2012, 45; Davoudi 2012, 303). In the context of water service delivery, with the long-term efforts needed to resolve conflicts and build networks of institutions, it is possible to see how this may result in a technical exercise. As Shaw (2012, 311) explains, such a technocratic approach stifles the creativity and improvisation which resilience requires to remain a process that transforms more than just access to water.

If resilience is conceived of as a transformative process which aims to use crisis as a means of “bouncing forward,” it must be capable of challenging and reorganising sites and structures of power. If it becomes an uncritical approach, it may become a technology of power for those who seek to consolidate their power. Thus, the concept straddles a line that requires both a close relationship with sites of power and checks on stronger sites to prevent possible co-option. By concentrating on simply “bouncing back,” resilience risks overlooking inequalities (as seen in the cases of Sudan and Liberia) which are the sources of vulnerabilities. To avoid the concerns voiced by Tandler (1975) and Ferguson (1994), resilience must also be defined by those who are to benefit from it, but in a way which does not place additional burdens on them (Randolph 2012, 137). Ultimately, if the context-specific ends of polycentric, participatory, and multilayered institutions and conflict resolution are to be realised through the delivery of services, then the process of resilience requires an approach which transforms the relations of power which underpin these.

3.4 Chapter summary

This critical scrutiny of the three focal questions reveals several important trends in resilience thinking which provide insight on how the concept may be deployed as a transformative process. First, the question of means helps explain how the key attributes of diversification and innovation, if not utilised to sustain broader economic, social, and political transformation, risk reducing resilience to a technical exercise in simply producing access to a service. Second, the ends of institution building and conflict resolution demonstrate that without multi-scalar interventions that are attuned to conflict dynamics, resilience efforts may result in uncoordinated outcomes that produce limited “peace dividends,” or even undermine a fragile peace. Third, the analysis of agency, reveals the wider discourse’s potential to influence relations of power which benefit either the status quo or transform these relations to address the root causes of vulnerability. These findings are highly relevant as they suggest that current formulations of resilience thinking are failing to realise their transformative potential. Furthermore, there is room for more critical engagement with the questions that the context of post-conflict demands for effective resilient service delivery.

Finally, this analysis leaves two points worthy of more discussion. Further consideration is needed on how the cooperation and coordination between donors, (I)NGOs, private actors, and national governments necessary for resilience can be incentivised and achieved to avoid undermining conflict settlements, gaps in service provision, the manipulation of aid,

compromises on humanitarian principles, and stifling of deliberation with beneficiaries (Frankenberger et al. 2012, 24). Although this work has concentrated on water services, it is also essential to research the specific and interrelated challenges faced by other forms of services and the effects of resilience on them (Shaw 2012, 310). Such a discussion would benefit from the conclusions drawn here about water services.

Conclusions

“The problem is not changing people's consciousness ... but the political, economic, institutional regime of the production of truth.”
(Foucault 1991, 133)

This paper set out to investigate whether resilience thinking could benefit water service delivery methods in post-conflict without imperilling a fragile peace or provoking conflict. Synthesising several sets of literature to isolate key attributes which help to examine the importance of how three commonly identified focal questions are answered, it proposes that if resilience is implemented as a transformative process, it offers a useful contribution to this area of development.

The literature on SESs highlights deep tensions in the concepts related to resilience, but also introduces the transformative potential of the term to go beyond simply “bouncing back.” While the policy literature overlooks some of these debates, it makes bold claims about the potential benefits it holds for coordinating humanitarian and development aid to achieve results. The contributions of post-conflict stabilisation research emphasises resilience’s potential to support peacebuilding through service delivery, but cautions that this may be severely limited if uncoordinated. Next, the attributes of diversification, innovation, institution building, effects on peace, and effects on relations of power, were used to present and guide the analysis of evidence from the vulnerable contexts of the DRC, Ethiopia, Liberia, Sudan, and South Sudan. The central conclusion of this analysis, reached by a critical investigation of the questions of means, ends, and agency, is that if resilience is not conceived of as a transformative process, attempts to answer these questions might provide only limited institutional, peace, social capital, and power-challenging benefits through water service delivery. Additionally, failure to account for the dynamics of post-conflict and the reorganisations of power and institutions this creates, may mean that resilience undermines these efforts.

Though resilience is far from a panacea for addressing the challenges of post-conflict service delivery, the connections to wider aspects of livelihoods including health, sanitation, food security, and education indicate that this research has implications which go beyond water services in Africa. Ultimately, the progressive stance presented here attempts to steer resilience away from becoming a simple technocratic means of increasing adaptation or coping strategies to reduce vulnerability. In doing so, resilience becomes a process through which, as alluded to by the words of Foucault above, beneficiaries can sustain broader transformations of political, economic, and social “truths” by capitalising on moments of crisis.

Bibliography

- Adger, W. Neil. 2000. "Social and ecological resilience: are they related?" *Progress in Human Geography*. 24 (3): 347-364.
- Adger, W. Neil. 2006. "Vulnerability." *Global Environmental Change*. 16 (3): 268-281.
- Agnew, Clive and Philip Woodhouse. 2011. *Water Resources and Development*. London: Routledge.
- Agrawal, Arun. 2005. "Environmentality: Community, Intimate Government, and the Making of Environmental Subjects in Kumaon, India." *Current Anthropology*. 46 (2): 161-190.
- Aguiari, Sabrina. 2012. "The Cost of Peace: Exploring Opportunities for Women's Livelihoods in Post-Conflict Settings." In *Women Reclaiming Sustainable Livelihoods: Spaces Lost, Spaces Gained*, edited by Wendy Harcourt. Basingstoke: Palgrave Macmillan, pp. 162-179.
- Almedom, Astier M. 2009. "Sense and Sensibilities of Coherence: Why and How We Seek to Measure Resilience." In *Workshop Report: Resilience in Post-Conflict Reconstruction and Natural Disasters*, edited by Patricia Longstaff, Ines Mergel, and Nicholas Armstrong. INSCAT Project on Resilience and Security, Syracuse University, pp. 17-18.
- Annerose, Daniel. 2012. Rural water supply management and monitoring innovations from West Africa. Podcast. Oxford University Centre for the Environment. Available at: <http://podcasts.ox.ac.uk/rural-water-supply-management-and-monitoring-innovations-west-africa-audio>. Accessed: 18 August 2012.
- Author's personal field journal. 26 August 2011 (extract). Musa Ward, Arusha, Tanzania.
- Bahadur, Aditya V., Maggie Ibrahim, and Thomas Tanner. 2010. "The resilience renaissance?: Unpacking of resilience for tackling climate change and disasters." *Strengthening Climate Resilience (IDS and Christian Aid)*, Discussion Paper 1. Available at: <http://community.eldis.org/.59e0d267/resilience-renaissance.pdf>. 15 August 2012.
- Bailey, Sarah. 2011. "Humanitarian action, early recovery and stabilisation in the Democratic Republic of Congo." Humanitarian Policy Group, ODI. HPG Working Paper. Available at: <http://www.odi.org.uk/resources/docs/7239.pdf>. Accessed: 26 July 2012.
- Baird, Mark. 2010. "Service Delivery in Fragile and Conflict-Affected States." *World Development Report 2011*, Background Paper. Available at: http://wdr2011.worldbank.org/sites/default/files/pdfs/WDR_Service_Delivery_Baird.pdf. Accessed on: 25 July 2012.
- Batterbury, Simon and Tim Forsyth. 1999. "Fighting Back: Human Adaptations in Marginal Environments." *Environment: Science and Policy for Sustainable Development*. 41 (6): 6-11, 25-30.
- BBC. 2009. "Water pipe sparks Ethiopian conflict." BBC News, 13 March. Available at: <http://news.bbc.co.uk/1/hi/world/africa/7929104.stm>. Accessed: 16 August 2012.
- BBC. 2012. "Changes needed if cuts targets to be hit, says watchdog." BBC News, 2 February. Available at: <http://www.bbc.co.uk/news/uk-politics-16839214>. Accessed: 2 August 2012.
- Beath, Andrew, Fotini Christia, and Ruben Enikolopov. 2011. "Winning Hearts and Minds through Development Aid: Evidence from a Field Experiment in Afghanistan." MIT Political Science Department. Working Paper No. 2011-14. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1809677###. Accessed: 16 August 2012.
- Bennett, Jon, Sara Pantuliano, Wendy Fenton, Anthony Vaux, Chris Barnett, and Emery Brusset. 2010. "Aiding the Peace: A Multi-donor Evaluation of Support to Conflict Prevention and Peacebuilding Activities in South Sudan 2005-2010." ITAD Ltd. and Channel Research, Netherlands Ministry of Foreign

Affairs. Available at: <http://www.oecd.org/countries/southsudan/46895095.pdf>. Accessed: 18 August 2012.

Bikaba, Daudi, Zulfiquar Ali Hader, Fannie Davies, Gawolo Duwana, Harrison Geneyan, Benedict Teag, and Ellen Zeah. 2004. "Evaluation of Oxfam's Public Health Programme in Liberia." Project Evaluation for Oxfam GB. Available at: <http://www.alnap.org/pool/files/erd-3366-full.pdf>. Accessed: 16 August 2012.

Bradbury, Mark. 1998. "Normalising the Crisis in Africa." *Disasters*. 22 (4): 328-338.

Bromwich, Brendan, Abuelgasim Abdalla Adam, Abduljabbar Abdulla Fadul, Florence Chege, Jim Sweet, Victor Tanner, and Geoff Wright. 2007. "Darfur: Relief in a vulnerable environment." Tearfund. Available at: <http://www.tearfund.org/webdocs/website/Campaigning/Policy%20and%20research/Relief%20in%20a%20vulnerable%20environment%20final.pdf>. Accessed: 18 August 2012.

Bronkhorst, Salomé. 2011. "Addressing Climate-Related Conflict: Human Security and Lessons from the Southern Swahilian Belt of Sudan." *Conflict Trends*. 2: 29-37.

Burt, Murray and Bilha Joy Keiru. 2011. "Strengthening post-conflict peacebuilding through community water-resource management: case studies from Democratic Republic of Congo, Afghanistan and Liberia." *Water International*. 36 (2): 232-241.

Chambers, Robert and Gordon Conway. 1992. "Sustainable Rural Livelihoods: Practical Concepts for the 21st Century." IDS Discussion Paper 296. Available at: <http://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/775/Dp296.pdf?sequence=1>. Accessed: 16 August 2012.

Cleaver, Frances. 2000. "Moral Ecological Rationality, Institutions and the Management of Common Property Resources." *Development and Change*. 31 (2): 361-383.

Coles, Anne. 2005. "Geology and Gender: Water Supplies, Ethnicity and Livelihoods in Central Sudan." In *Water, Gender and Development*, edited by Anne Coles and Tina Wallace. Oxford: Berg, pp. 75-93.

Coletta, Nat J. and Michelle L. Cullen. 2002. "Social capital and social cohesion: case studies from Cambodia and Rwanda." In *The Role of Social Capital in Development: An Empirical Assessment*, edited by Christiaan Grootaert and Thierry van Bastelaer. Cambridge: Cambridge University Press, pp. 279-309.

Collins, Gregory. 2011. "All Tarded with the Same Brush: The Convergence of Security and Development in Human Security." *Journal of Human Security*. 7 (3): 60-76.

Davoudi, Simin. 2012. "Resilience: A Bridging Concept or a Dead End?" *Planning Theory & Practice*. 13 (2): 329-333.

Deligiannis, Tom. 2012. "Evolution of Environment-Conflict Research: Toward a Livelihood Framework." *Global Environmental Politics*. 12 (1): 78-100.

de Sardan, Jean-Pierre Olivier. 2011. "Local Powers and the Co-delivery of Public Goods in Niger." *IDS Bulletin*. 42 (2): 32-42.

Devereux, Stephen and Rachel Sabates-Wheeler. 2004. "Transformative social protection." IDS Working Paper 232. Available at: <http://www.ids.ac.uk/files/Wp232.pdf>. Accessed: 16 August 2012.

DFID. 2011a. "Defining Disaster Resilience: A DFID Approach Paper." Department for International Development. Available at: <http://www.dfid.gov.uk/Documents/publications1/Defining-Disaster-Resilience-DFID-Approach-Paper.pdf>. Accessed: 30 July 2012.

DFID. 2011b. "Saving lives, preventing suffering and building resilience: The UK Government's Humanitarian Policy." Department for International Development. Available at: <http://www.dfid.gov.uk/Documents/publications1/The%20UK%20Government's%20Humanitarian%20Policy%20-%20September%202011%20-%20Final.pdf>. Accessed: 30 July 2012.

DFID. 2012. "Promoting innovation and evidence-based approaches to building resilience and responding to humanitarian crises: A DFID Strategy Paper." Department for International Development. Available at: <http://www.dfid.gov.uk/Documents/publications1/prom-innov-evi-bas-appr-build-resp-hum-cris.pdf>. Accessed: 31 July 2012.

Di John, Jonathan and James Putzel. 2009. "Political Settlements." Governance and Social Development Resource Centre, Issues Paper. Available at: <http://www.gsdr.org/docs/open/EIRS7.pdf>. Accessed: 16 August 2012.

Egnell, Robert. 2010. "Winning 'Hearts and Minds'? A Critical Analysis of Counter-Insurgency Operations in Afghanistan." *Civil Wars* 12 (3): 282-303.

Ellis, Frank. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford: Oxford University Press.

FDRE. 2011. "The WaSH Implementation Framework." Federal Democratic Republic of Ethiopia. Available at: <http://cmpethiopia.files.wordpress.com/2011/11/full-wif.pdf>. Accessed: 16 August 2012.

Ferguson, James. 1994. *The Anti-Politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho*. Minneapolis: University of Minnesota Press.

Forman, Shepard and Stewart Patrick. eds. 2000. *Good Intentions: Pledges of Aid for Postconflict Recovery*. Boulder: Lynne Rienner Publishers.

Foucault, Michel. 1977. *Discipline and Punish: The Birth of the Prison*. London: Penguin Books.

Foucault, Michel. 1991. "Truth and Power." In *The Foucault Reader*, edited by Paul Rabinow. London: Penguin, pp. 109-133.

Frankenberger, Tim, Mark Langworthy, Tom Spangler, Suzanne Nelson. 2012. "Enhancing Resilience to Food Security Shocks." TANGO International, Inc. White Paper Draft 23 May. Available at: http://www.fsnnetwork.org/sites/default/files/revised_resilience_paper_may_28.pdf. Accessed: 19 August 2012.

Gaillard, J.C. 2010. "Vulnerability, Capacity and Resilience: Perspectives for Climate and Development Policy." *Journal of International Development* 22 (2): 218-232.

GAIN. 2010. "Country Rankings - Vulnerability Rankings." and "Methodology." Global Adaptation Institute. Available at: <http://index.gain.org/ranking/vulnerability> and <http://index.gain.org/about/methodology#vulnerability>. Accessed: 30 July 2012.

Gaynor, Niamh. 2010. *Transforming Participation? The Politics of Development in Malawi and Ireland*. Basingstoke: Palgrave Macmillan.

Giudici, Federico, Rebecca Hurl, Christopher Martin, Waiswa Nkwanga, and Benjamin Stephan. "Cash-for-Work and Stabilisation." London School of Economics. Available at: <http://www.stabilisationunit.gov.uk/attachments/article/523/CfW%20and%20Stabilisation%202012%20LSE%20Team.pdf>. Accessed: 16 August 2012.

Goldstein, Bruce Evan. 2012. "Introduction: Crisis and Collaborative Resilience." In *Collaborative Resilience: Moving Through Crisis to Opportunity*, edited by Bruce Evan Goldstein. Cambridge: The MIT Press, pp. 1-15.

Gomes, Nathalie. 2006. "Access to water, pastoral resource management and pastoralists' livelihoods: Lessons learned from water development in selected areas of Eastern Africa (Kenya, Ethiopia, Somalia)." Livelihood Support Programme, Food and Agriculture Organization of the United Nations. LSP Working Paper 26. Available at: <ftp://ftp.fao.org/docrep/fao/009/ah247e/ah247e00.pdf>. Accessed: 16 August 2012.

Green, Reginald Herbold. 2002. "Planning for post-conflict rehabilitation." In *Renewing Development in Sub-Saharan Africa: Policy, performance and prospects*, edited by Deryke Belshaw and Ian Livingstone. London: Routledge, pp. 81-98.

Grootaert, Christiaan and Thierry van Bastelaer 2002. "Introduction and overview." In *The Role of Social Capital in Development: An Empirical Assessment*, edited by Christiaan Grootaert and Thierry van Bastelaer. Cambridge: Cambridge University Press, pp. 1-15.

Harding, Andrew. 2012. "The tactics behind DR Congo's mutiny." BBC News. 11 July. Available at: <http://www.bbc.co.uk/news/world-africa-18796872>. Accessed: 16 August 2012.

Harris, Katie. 2011. "Resilience in Practice: Operationalising the Ten Characteristics of Resilience through the Case of Greening Darfur." *Strengthening Climate Resilience (IDS and Christian Aid)*, Discussion Paper 10. Available at: <http://www.dfid.gov.uk/R4D/PDF/Outputs/ClimateChange/SCR-Paper10darfur.pdf>. 15 August 2012.

Harvey, Peter A. and Robert A. Reed. 2006. "Community-managed water supplies in Africa: sustainable or dispensable?" *Community Development Journal*. 42 (3): 365-378.

HERR. 2011. "Humanitarian Emergency Response Review." Independent Review Chaired by Lord Paddy Ashdown. Department for International Development. Available at: <http://www.dfid.gov.uk/Documents/publications1/HERR.pdf>. Accessed: 31 July 2012.

Holling, C. S. 1973. "Resilience and Stability of Ecological Systems." *Annual Review of Ecology and Systematics*. 4: 1-23.

Holling, C.S. 2001. "Understanding the Complexity of Economic, Ecological, and Social Systems." *Ecosystems*. 4 (5): 390-405.

Hope, Rob. 2012. Smart handpumps and rural water security risk. Podcast. Oxford University Centre for the Environment. Available at: <http://podcasts.ox.ac.uk/smart-handpumps-and-rural-water-security-risk-audio>. Accessed: 16 August 2012.

House, Sarah. 2007. "How to Make WASH Projects Sustainable and Successfully Disengage in Vulnerable Contexts." ACF - International Network. Available at: http://www.actionagainsthunger.org.uk/fileadmin/contribution/0_accueil/pdf/How%20to%20make%20WASH%20projects%20sustainable%20and%20successfully%20disengage%20in%20vulnerable%20contexts.pdf. 16 August 2012.

HPG. 2006. "Saving lives through livelihoods: critical gaps in the response to the drought in the Greater Horn of Africa." ODI Humanitarian Policy Group, Briefing Note May 2006. Available at: <http://www.odi.org.uk/resources/docs/2041.pdf>. Accessed: 16 August 2012.

HPG. 2011. "Cause for hope? DFID's response to the Humanitarian Emergency Response Review." ODI Humanitarian Policy Group, Briefing Note June 2011. Available at: <http://www.odi.org.uk/resources/docs/7159.pdf>. Accessed: 16 August 2012.

Humphreys, Macartan, Raul Sanchez de la Sierra, and Peter van der Windt. 2012. "Social and Economic Impacts of Tuungane: Final Report on the Effects of a Community Driven Reconstruction Program in the Eastern Democratic Republic of Congo." Independent Report, Columbia University. Available at: <http://cu-csds.org/wp-content/uploads/2012/06/20120622-FINAL-REPORT.pdf>. Accessed: 6 August 2012.

Independent, The. "World meets UN's safe water target." The Independent online, from Associated Press. Available at: <http://www.independent.co.uk/environment/green-living/world-meets-uns-safe-water-target-7541529.html>. Accessed: 16 August 2012.

IRIN. 2011. "Sudan: North Darfur water project helps protect women from sexual violence." IRIN Humanitarian News and Analysis. Available at: <http://www.irinnews.org/Report/92597/SUDAN-North-Darfur-water-project-helps-protect-women-from-sexual-violence>. Accessed: 18 August 2012.

Isham, Jonathan and Satu Kähkönen. 2002. "How do participation and social capital affect community-based water projects? Evidence from Central Java, Indonesia." In *The Role of Social Capital in Development: An Empirical Assessment*, edited by Christiaan Grootaert and Thierry van Bastelaer. Cambridge: Cambridge University Press, pp. 155-187.

Jaspars, Susanne. 2010. "Coping and change in protracted conflict: The role of community groups and local institutions in addressing food insecurity and threats to livelihoods, A case study of North Darfur." Humanitarian Policy Group, ODI. HPG Working Paper. Available at: <http://www.odi.org.uk/resources/docs/5964.pdf>. Accessed: 26 July 2012.

Jaspars, Susanne and Sorcha O'Callaghan. 2010. "Livelihoods and protection in situations of protracted conflict." *Disasters*. 34 (S2): S165-S182.

Kaufman, Sanda. 2012. "Complex Systems, Anticipation, and Collaborative Planning for Resilience." In *Collaborative Resilience: Moving Through Crisis to Opportunity*, edited by Bruce Evan Goldstein. Cambridge: The MIT Press, pp. 61-98.

Leach, Melissa (ed.). 2008. "Re-framing Resilience: a Symposium Report." STEPS Centre, University of Sussex. Working Paper 13.

Leach, Melissa, Robin Mearns, and Ian Scoones. 1999. "Environmental Entitlements: Dynamics and Institutions in Community-Based Natural Resource Management." *World Development* 27 (2): 225-247.

Longstaff, Patricia H., Nicholas J. Armstrong, Keli Perrin, Whitney May Parker, Matthew A. Hidek. 2010. "Building Resilient Communities: A Preliminary Framework for Assessment." *Homeland Security Affairs*. 4 (3): 1-23.

Loyn, David. 2011. "Overseas aid shake-up: How DfID plans to spend abroad." BBC News, 1 March. Available at: <http://www.bbc.co.uk/news/uk-12606665>. Accessed: 2 August 2012.

Ludi, Eva, Million Getnet, Kirsty Wilson, Kindie Tesfaye, Beneberu Shimelis, Simon Levine, and Lindsey Jones. 2011. "Preparing for the future? Understanding the Influence of Development Interventions on Adaptive Capacity at Local Level in Ethiopia." Africa Climate Change Resilience Alliance. Available at: http://community.eldis.org/.5a35bbfb/Ethiopia_Synthesis_Report.pdf. Accessed 5 August 2012.

MacDonald, A.M., H.C. Bonsor, R.C. Calow, R.G. Taylor, D.J. Lapworth, L. Maurice, J. Tucker, and B.É. Ó Dochartaigh. 2011. "Groundwater resilience to climate change in Africa." British Geological Survey Open Report, OR/11/031. Available at: <http://www.bgs.ac.uk/downloads/start.cfm?id=2081>. Accessed: 15 August 2012.

Macrae, Joanna. 1997. "Dilemmas of Legitimacy, Sustainability, and Coherence: Rehabilitating the Health Sector." In *Rebuilding Societies After Civil War: Critical Roles for International Assistance*, edited by Krishna Kumar. London: Lynne Ripener Publishers, pp. 183-201.

Mailer, Maya and Lydia Poole. 2010. "Rescuing the Peace in Southern Sudan." Oxfam et al., Joint NGO Briefing Paper. Available at: <http://oxfam.qc.ca/sites/oxfam.qc.ca/files/rescuing-peace-southern-sudan.pdf>. Accessed: 18 August 2012.

- Manyena, Siambabala Bernard, Geoff O'Brien, Phil O'Keefe, Joanne Rose. 2011. "Disaster resilience: a bounce back or bounce forward ability?" *Local Environment: The International Journal of Justice and Sustainability*. 16 (5): 417-424.
- Martin-Breen, Patrick and J. Marty Anderies. 2011. "Resilience: A Literature Review." The Rockefeller Foundation. Available at: <http://www.rockefellerfoundation.org/media/download/a63827c7-f22d-495c-a2ab-99447a880b9a>. Accessed: 30 July 2012.
- Mcloughlin, Claire and Richard Batley. 2012. "The politics of what works in service delivery: An evidence-based review." ESID Working Paper 06. Available at: http://www.effective-states.org/_assets/documents/esid_wp_06_mcloughlin-batley.pdf. Accessed: 16 August 2012.
- Mergel, Ines. 2009. "The Use of Emerging Social Media Applications as a Resilience Indicator." In *Workshop Report: Resilience in Post-Conflict Reconstruction and Natural Disasters*, edited by Patricia Longstaff, Ines Mergel, and Nicholas Armstrong. INSCAT Project on Resilience and Security, Syracuse University, pp. 32-34.
- Mitchell, Tom and Katie Harris. 2012. "Resilience: A risk management approach." Overseas Development Institute, Background Note, January 2012. Available at: <http://www.odi.org.uk/resources/docs/7552.pdf>. Accessed: 21 July 2012.
- MW4D. 2012. "Smart Handpumps." Mobile/Water for Development, research initiative website. Available: <http://oxwater.co.uk/#/smart-handpumps/4559322273>. Accessed: 18 August 2012.
- Nelson, Cassandra. 2012. "Refugees pour into South Sudan camps." Al Jazeera Online, 15 July. Available at: <http://www.aljazeera.com/indepth/features/2012/07/201271293447392905.html>. Accessed: 18 August 2012.
- Newborne, Peter, Deogratias Mwakamubaya Nasekwa, Francois Kiza Odjuku, and Nelson Paluku Syayipuma. 2007. "Sanitation and hygiene in developing countries: identifying and responding to barriers A case study from the Democratic Republic of Congo." ODI and Tearfund. Available at: <http://www.odi.org.uk/resources/docs/4002.pdf>. Accessed: 6 August 2012.
- OECD. 2008a. "Service Delivery in Fragile Situations: Key Concepts, Findings and Lessons." OECD/DAC Discussion Paper. *OECD Journal on Development*. 9 (3): 1-54.
- OECD. 2008b. "Part II, Concepts and Dilemmas of State Building in Fragile Situations, From Fragility to Resilience." DAC Fragile States Group. *OECD Journal on Development*. 9 (3): 61-148.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Owadi, Bernard, Andi Kendle, and Tarnue Koiwu. 2010. "The State of Food and Nutrition Insecurity in Liberia: Comprehensive Food Security and Nutrition Survey." Liberian Ministry of Agriculture and World Food Programme. Available at: <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp231357.pdf>. Accessed: 16 August 2012.
- Padayachee, Vishnu and Keith Hart. 2010. "Introducing the African economy." In *The Political Economy of Africa*, edited by Vishnu Padayachee. Abingdon: Routledge, pp. 1-16.
- Paddon, Emily and Guillaume Lacaille. "Stabilising the Congo." Refugee Studies Centre, University of Oxford. Forced Migration Policy Briefing 8. Available at: <http://www.rsc.ox.ac.uk/publications/policy-briefings/rscpb8-stabilising-congo-en-030512.pdf>. Accessed: 26 July 2012.
- Pelling, Mark and David Manuel-Navarrete. 2011. "From Resilience to Transformation: the Adaptive Cycle in Two Mexican Urban Centers." *Ecology and Society*. 16 (2): 1-11.

- Phadke, Roopali. 2011. "Reclaiming the Technological Imagination: Water, Power, and Place in India." In *Knowing Nature: Conversations at the Intersection of Political Ecology and Science Studies*, edited by Mara J. Goldman, Paul Nadasdy, and Matthew D. Turner. Chicago: The University of Chicago Press, pp. 244-262.
- Pike, Andy, Stuart Dawley, and John Tomaney. 2010. "Resilience, adaptation and adaptability." *Cambridge Journal of Regions, Economy and Society*. 3 (1): 59-70.
- Pinera, Jean-François and Robert Reed. 2011. "Restoring services, rebuilding peace: urban water in post-conflict Kabul and Monrovia." *Water International*. 36 (2): 222-231.
- Porter, Libby and Simin Davoudi. 2012. "The Politics of Resilience for Planning: A Cautionary Note." *Planning Theory & Practice*. 13 (2): 329-333.
- Randolph, John. 2012. "Creating the Climate Change Resilient Community." In *Collaborative Resilience: Moving Through Crisis to Opportunity*, edited by Bruce Evan Goldstein. Cambridge: The MIT Press, pp. 127-148.
- Ratner, Blake D., Ruth Meinzen-Dick, Candace May, Eric Haglund. 2010. "Resource Conflict, Collective Action, and Resilience." *Collective Action and Property Rights, Working Paper No. 100*. International Food Policy Research Institute. Available at: <http://www.capri.cgiar.org/pdf/capriwp100.pdf>. Accessed: 25 July 2012.
- Salman, Salman M.A. 2011. "The new state of South Sudan and the hydro-politics of the Nile Basin." *Water International*. 36 (2): 154-166.
- Scoones, Ian. 1998. "Sustainable Rural Livelihoods A Framework for Analysis." IDS Working Paper 72. Available at: http://www.ids.ac.uk/UserFiles/File/publications/classics/working_paper72.pdf. Accessed: 19 August 2012.
- Scoones, Ian. 2009. "Livelihoods perspectives and rural development." *The Journal of Peasant Studies*. 36 (1): 171-196.
- Selassie, Samuel Gebre. 2011. "Research Report on Spatial Equity in the Provision of WaSH services: Evidence from Selected Area-Based Case Studies." Ethiopian Economics Association and WaterAid. Available at: http://www.wateraid.org/documents/plugin_documents/research_report_on_spatial_equity_in_the_provision_of_wash_services.pdf. Accessed: 16 August 2012.
- Sen, Amartya. 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.
- Shannon, Róisín. 2009. "Playing with principles in an era of securitized aid: negotiating humanitarian space in post-9/11 Afghanistan." *Progress in Development Studies*. 9 (1): 15-36.
- Shaw, Keith. 2012. "'Reframing' Resilience: Challenges for Planning Theory and Practice." *Planning Theory & Practice*. 13 (2): 308-312.
- Sitali, Muyatwa. 2010. "Life and Dignity at Risk: The Water, Sanitation and Hygiene Sector in Liberia." Liberia WASH Consortium (ACF, Concern, Oxfam GB, Solidarités International and Tearfund). Available at: http://www.wateraid.org/documents/plugin_documents/life_and_dignity_at_risk_june2010.pdf. Accessed: 15 August 2012.
- Sow, Ndeye. 2006. "Gender and Conflict Transformation in the Great Lakes Region of Africa." *International Alert*. Available at: http://www.glow-boell.de/media/de/txt_rubrik_2/Ndeye_Sow_FGmai06.pdf. Accessed: 6 August 2012.
- Stammers, Neil. 1999. "Social Movements and the Social Construction of Human Rights." *Human Rights Quarterly*. 21 (2): 980 - 1008.

- SU. 2008. "The UK Approach to Stabilisation: Stabilisation Unit Guidance Notes." The UK Stabilisation Unit. Available at: http://www.stabilisationunit.gov.uk/attachments/article/520/Stabilisation_guide.pdf. Accessed: 12 August 2012.
- Tendler, Judith. 1975. *Inside Foreign Aid*. Baltimore: The Johns Hopkins University Press.
- Thomalla, Frank, Tom Downing, Erika Spanger-Siegfried, Guoyi Han, and Johan Rockström. 2006. "Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaption." *Disasters* 30 (1): 39-48.
- Turner II, B.L., Roger E. Kasperson, Pamela A. Matson, James J. McCarthy, Robert W. Corell, Lindsey Christensen, Noelle Eckley, Jeanne X. Kasperson, Amy Luers, Marybeth L. Martello, Colin Polsky, Alexander Pulsipher, and Andrew Schiller. 2003. "A framework for vulnerability analysis in sustainability science." *Proceedings of the National Academy of Sciences* 100, 14: 8074-8079.
- Twigg, John. 2009. "Characteristics of a Disaster-Resilient Community, A Guidance Note." Interagency Group (ActionAid, et al.) Available at: <http://www.abuhc.org/Publications/CDRC%20v2%20final.pdf>. Accessed: 19 August 2012.
- UCDP/PRIO. 2012. "UCDP/PRIO Armed Conflict Dataset v.4-2012, 1946-2011." Uppsala Conflict Data Program and Peace Research Institute Oslo. Available at: http://www.pcr.uu.se/research/ucdp/datasets/ucdp_prio_armed_conflict_dataset/. Accessed: 2 August 2012.
- UNDP. 2011. "Human Development Statistical Annex." UNDP Human Development Report. Available at: http://hdr.undp.org/en/media/HDR_2011_EN_Tables.pdf. Accessed: 16 August 2012.
- UNICEF. 2011. "Democratic Republic of the Congo." UNICEF Humanitarian Action for Children. Available at: http://www.unicef.org/hac2011/files/HAC2011_4pager_DRC_4pager.pdf. Accessed: 16 August 2012.
- UNICEF and WHO. 2012. "Progress on Drinking Water and Sanitation 2012 Update." UNICEF and World Health Organization. Available at: <http://www.unicef.org/media/files/JMPReport2012.pdf>. Accessed: 26 April 2012.
- UNISDR. 2007. "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters." UN International Strategy for Disaster Reduction. Available at: http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf. Accessed: 1 August 2012.
- Vaux, Tony and Emma Visman. 2005. "Service Delivery In Countries Emerging From Conflict." Final Report for DFID, Centre for International Co-operation and Security, University of Bradford. Available at: http://www.eldis.org/fulltext/vaux_visman_sdde.pdf. Accessed: 21 July 2012.
- Wallace, Tina, and Anne Coles. 2005. "Water, Gender and Development: An Introduction." In *Gender, Water and Development*, edited by Anne Coles and Tina Wallace. Oxford: Berg, pp. 1-20.
- WaterAid. 2010. "Ethiopia Country Strategy: 2011-2016." WaterAid. Available at: http://www.wateraid.org/documents/plugin_documents/ethiopia_2.pdf. Accessed: 16 August 2012.
- Weinthal, Erika, Jessica Troell, and Mikiyasu Nakayama. "Water and post-conflict peacebuilding: introduction." *Water International*. 36 (2): 143-153.
- Welle, Katharina, Florian Schaefer, John Butterworth, and Kristof Bostoen. 2012. "Enabling or Disabling? Reflections on the Ethiopian National WASH Inventory Process." *IDS Bulletin* 43 (2): 44-50.
- Wisner, Ben, Piers Blaikie, Terry Cannon, and Ian Davis. 2004. *At Risk: Natural hazards, people's vulnerability and disasters*, 2nd Ed. London: Routledge.

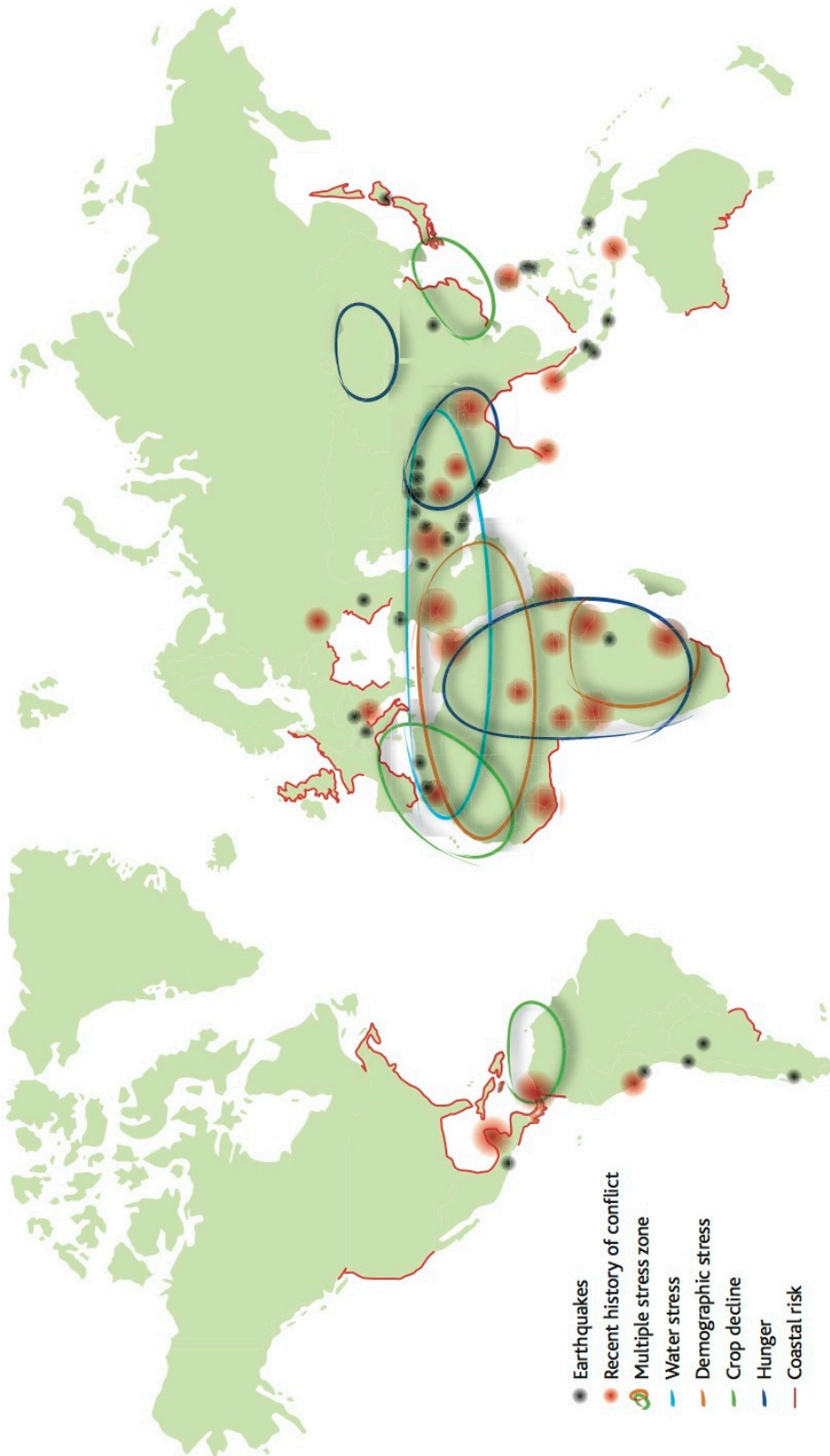
World Bank. 2010. "Improved water source (% of population with access)." The World Bank Group. Available at: <http://data.worldbank.org/indicator/SH.H2O.SAFE.ZS/countries/1W-CD-HT-LR-MZ-SO?display=default>. Accessed: 2 August 2012.

Zellner, Moira L., Charles J. Hoch, and Eric W. Welch. 2012. "Leaping Forward: Building Resilience by Communicating Vulnerability." In *Collaborative Resilience: Moving Through Crisis to Opportunity*, edited by Bruce Evan Goldstein. Cambridge: The MIT Press, pp. 39-59.

Appendices

Appendix A HERR global risk map

Map of areas at risk from overlapping stressors. (source: HERR 2011, 10)



Appendix B Table of focal questions and key attributes

While the key attributes are not the only attributes (see Appendix 3 for others found in the resilience literature), these are selected for their ubiquity in the literature and their close association with the transformative potential of resilience.

Focal Question	Corresponding Key Attributes
1. How is resilience produced? (question of <u>means</u> of achieving this)	<ul style="list-style-type: none"> • Emphasising diversification • Use or development of innovative technologies and practices
2. For what purposes is resilience used? (question of <u>ends</u>)	<ul style="list-style-type: none"> • Building or rebuilding of polycentric, multilayered, and participatory institutions • Positive or negative effects on peace and conflict by rebuilding social capital
3. Who is defining resilience and for whom? (question of <u>agency</u>)	<ul style="list-style-type: none"> • Power of domestic governments • Power of vulnerable groups (minorities, women, children, elderly) • Power of donors

N.B. - Though the question of “resilience of what?” is also often noted, for the specific purposes of this paper, this will be restricted to water services.

Appendix C Glossary of key terminology

The purpose of this glossary, apart from providing definitions for the numerous terms deployed in this paper, is to demonstrate the contested and convoluted nature of this area of study (Shaw 2012, 308). Not all the terms below are addressed in detail in the paper. However, those that are, are considered central to the arguments made here about development. From the definitions alone, which are indicative rather than exhaustive, one can observe how the degree of overlap between certain terms risks undermining conceptual clarity, which holds implications for both policy and practice (Mitchell and Harris 2012, 3; Leach 2008, 15; Gaillard 2010, 219). While there is also significant diversity in the way these terms are understood and deployed across multiple disciplines (Leach 2008, 15), the definitions below are selected for their relevance to resilience in post-conflict service delivery. An effort has been made to include academic, practitioner, and donor definitions where possible.

Term	Definition and Sources	Characteristics and/or Proposed Indicators
Adaptability	<ul style="list-style-type: none"> “...capacity of loosely and weakly connected social agents...to interpret, frame and effect multiple evolutionary trajectories over time.” (Pike et al. 2010, 67) 	<ul style="list-style-type: none"> Only example of distinction between “adaptation” and “adaptability”
Adaptive Capacity	<ul style="list-style-type: none"> Ability of actor to adjust to shock or stress, minimise potential damage, take advantage of opportunities, and cope with any transformation which may result (DFID 2011a, 8) “Adaptive capacity refers to the capability of a particular system to effectively cope with shocks.” (Martin-Breen and Anderies 2011, 14) Resources and assets to resist, cope and recover from shocks; ability to use and access necessary resources thus more than just availability (Gaillard 2010, 220) 	<ul style="list-style-type: none"> Implies ability to anticipate, plan, react to, and learn from shock and stress (DFID 2011a, 8) More than just having assets High degree of correspondence with current definitions of “resilience”
Adaptation	<ul style="list-style-type: none"> “...a process, action, or outcome in a system (from the scale of a household to a country) that occurs in order for the system to better cope with, manage, or adjust to some changing condition, stress, hazard, risk, or opportunity.” (Randolph 2012, 128) “Successful adaptation means that households become less prone to crisis over time...it implies improving the capacity to resist shocks.” (Ellis 2000, 45) “...strong and tightly connected social agents in places respond, cope with and shape movements towards pre-conceived paths in the short run.” (Pike et al. 2010, 67) 	<ul style="list-style-type: none"> “...can be reactive, concurrent or anticipatory; spontaneous or planned;...short-term tactical or long-term strategic.” (Randolph 2012, 128-129) Batterbury and Forsyth (1999, 9, 25) sub-divide into adaptive strategies (short-term changes to livelihood such as active diversification of crops in response to shocks) and processes (long-term decision such as migration)

Term	Definition and Sources	Characteristics and/or Proposed Indicators
Coping	<ul style="list-style-type: none"> • "...coping is the involuntary response to disaster of unanticipated failure in major sources of survival." (Ellis 2000, 61) • Relied on during and after an event to preserve livelihoods (Deligiannis 2012, 92) 	<ul style="list-style-type: none"> • Need to be highly responsive to changes • Include migration, depletion of assets, claims on other assets, protecting assets, reducing consumption, decreasing quality of consumption (Deligiannis 2012, 92) • Close relation to sub-divisions of "adaptation" listed above, however distinct in that represents an involuntary reaction to crisis unlike adaptive strategies and processes
Diversification	<ul style="list-style-type: none"> • "Rural livelihood diversification is defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living." (Ellis 2000, 15) 	<ul style="list-style-type: none"> • Dynamic process governed by both pressures and opportunities; allows amelioration of risk of adverse shocks and stresses (Ellis 2000, 14, 45)
Exposure	<ul style="list-style-type: none"> • "The presence of people, livelihoods, environment, economic, social or cultural assets in places that could be adversely affected." (Mitchell and Harris 2012, 2) • Assessing "magnitude and frequency of shocks or degree of stress" (DFID 2011a, 8) 	<ul style="list-style-type: none"> • Measuring size and frequency of conflict or state fragility (DFID 2011a, 8)
Hazard	<ul style="list-style-type: none"> • Element causing adverse effects (Mitchell and Harris 2012, 2) • Threats to a system causing stress or shocks (Turner et al. 2003, 8074) 	<ul style="list-style-type: none"> • Cannot be separated from the underlying social, political, and economic circumstances which translate a natural hazard into human vulnerabilities (Wisner et al. 2004, 5)

Term	Definition and Sources	Characteristics and/or Proposed Indicators
Resilience	<ul style="list-style-type: none"> • “The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a shock or stress in a timely and efficient manner.” (Mitchell and Harris 2012, 2) • “...the capacity to experience shocks while retaining the same function, structure, and identity - without shifting into a different regime (Walker and Salt 2006).” (cited in Randolph 2012, 129) • “Disaster Resilience is the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses - such as earthquakes, drought or violent conflict - without compromising their long-term prospects.” (DFID 2011a, 6) • “Resilience is a multi-dimensional construct defined as the capacity of individuals, families, communities, and institutions to anticipate, withstand and/or judiciously engage with catastrophic events and/or experiences; actively making meaning out of adversity, with the goal of maintaining ‘normal’ function without losing identity.” (Almedom, 2009, 17) 	<ul style="list-style-type: none"> • Characteristics: high diversity; connectivity of effective institutions, organisations, knowledge and learning; blending of anticipatory, outside and local knowledge; system redundancy; equality and inclusivity; social cohesion and capital; acceptance of uncertainty and change; preparedness; understanding of non-equilibrium system dynamics; a cross-scalar perspective (Mitchell and Harris 2012, 2; Bahadur et al. 2010, 14-18) • Interventions which “...reduce vulnerability to disaster as a primary objective of the programme.” (DFID 2011a, 12) also attention to context, ownership, flexibility, differential vulnerability, multi-sectoral/ disciplinary, long-term needs, international and national commitments, and existing resilience (ibid., 15) • Twigg (2009) lists details of multiple components of resilience, including: integrative and participatory governance systems, vulnerability assessments, various knowledge building activities, multiple risk management activities, and preparedness and response measures • Longstaff et al. (2010, 5-10) resilience as function of both resource robustness (measuring performance, diversity, and redundancy) and adaptive capacity (measuring institutional memory, innovative learning, and connectedness) • Frankenberger et al. (2012, 4-11) divide resilience into six common characteristics and 11 principles
Risk	<ul style="list-style-type: none"> • Likelihood of suffering harm or loss (Mitchell and Harris 2012, 2) • “Risk management is then interpreted as deliberate household strategy to anticipate failures in individual income streams by maintaining a spread of activities...” (italics added, Ellis 2000, 61) 	<ul style="list-style-type: none"> • Similarities with resilience: multi-scalar analysis possible, use of management methods for dealing with uncertainty and change (Mitchell and Harris 2012, 3)
Sensitivity	<ul style="list-style-type: none"> • “...magnitude of a system’s response to an external event...” (Ellis 2000, 62) • How much a shock or stress will affect a system and its response (DFID 2011a, 8) 	<ul style="list-style-type: none"> • Comparison of magnitude of change to magnitude of response • A function of assets (mobility, skill set, social status) and resources (5 capitals) (DFID 2011a, 8) • Requires some measurement of individual or household’s “entitlement mapping” (Sen 1981)

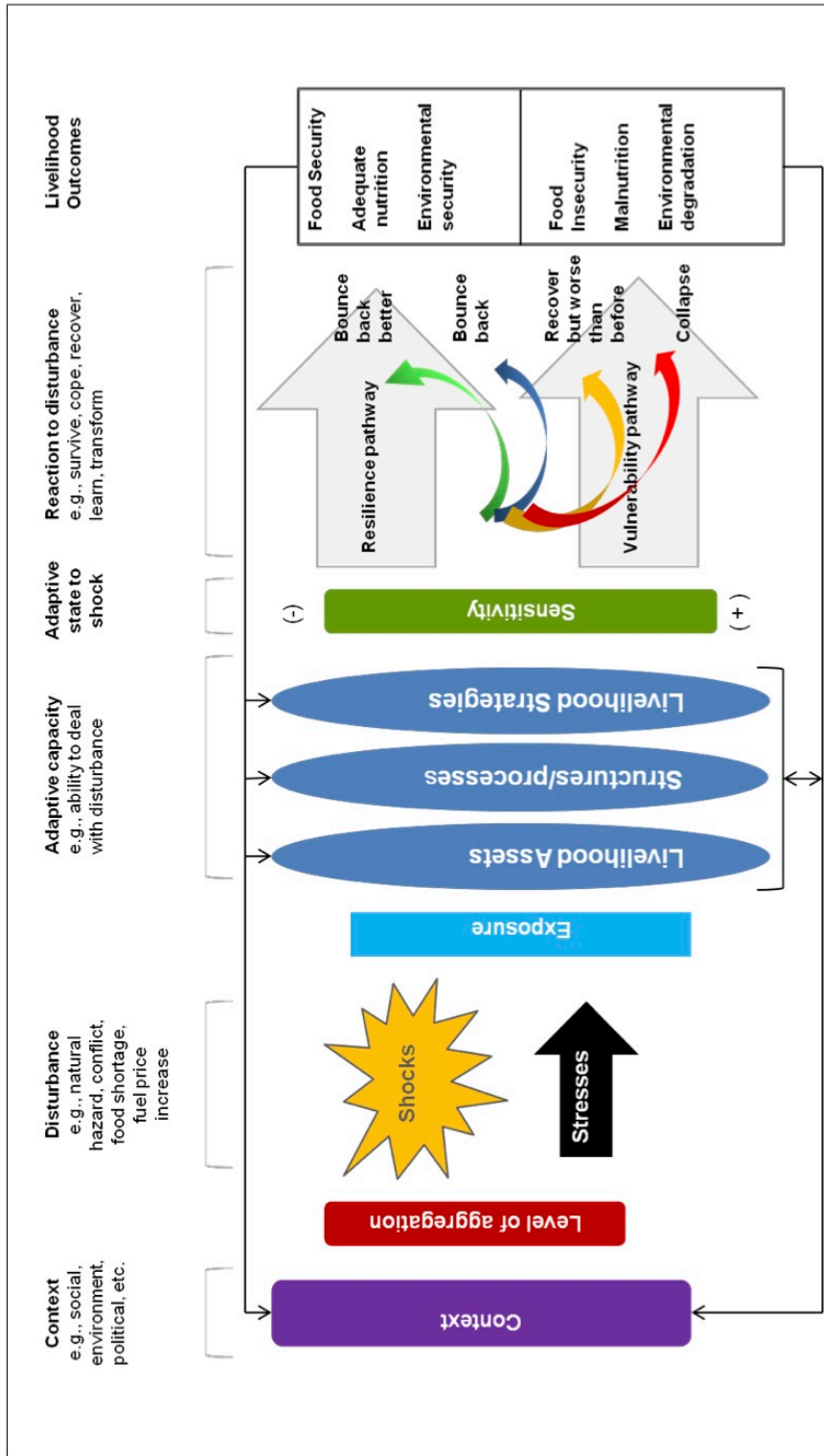
Term	Definition and Sources	Characteristics and/or Proposed Indicators
Shock	<ul style="list-style-type: none"> • Short-term element causing adverse effects (Mitchell and Harris 2012, 1-2) • “Shocks are sudden events that impact on the vulnerability of the system and its components. ...These include disease outbreaks, weather-related and geophysical events including floods, high winds, landslides, droughts or earthquakes. ...conflict-related shocks such as outbreaks of fighting or violence, or shocks related to economic volatility.” (DFID 2011a, 8) 	<ul style="list-style-type: none"> • Often interconnected with stresses • Associated with concept of “hazard”
Stress	<ul style="list-style-type: none"> • Longer-term element causing adverse effects (Mitchell and Harris 2012, 1-2) • “Stresses are long-term trends that undermine the potential of a given system or process and increase the vulnerability of actors within it. These can include natural resource degradation, loss of agricultural production, urbanisation, demographic changes, climate change, political instability and economic decline.” (DFID 2011a, 8) 	<ul style="list-style-type: none"> • Often interconnected with shocks • Associated with concept of “hazard”
Sustainable Livelihood	<ul style="list-style-type: none"> • “a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term.” (Chambers and Conway 1992, 6) • “...a sustainable livelihood...can cope with stress and shocks, and displays resilience when faced with adverse events.” (Ellis 2000, 128) 	<ul style="list-style-type: none"> • Conflict as having direct (attacks and destruction of assets) and indirect (loss of services, access to markets, etc. through restrictions of movement) effects on livelihoods (Jaspars and O’Callaghan 2010, S169) • Interventions supporting livelihoods (depending on context) can address assets, strategies, institutions, policies, processes through in-kind aid, cash and production support, income generation and vocational training, and community organisation (Jaspars and O’Callaghan 2010, S167) • High degree of correspondence with current definitions of “resilience”
Transformability	<ul style="list-style-type: none"> • Capacity to create a new system in the context of shocks and stress (Kaufman 2012, 67) 	<ul style="list-style-type: none"> • Response to problem that resilience of system may prevent necessary and/or desirable change • Active challenging of sites and structures of power which may be contributing to vulnerability

Term	Definition and Sources	Characteristics and/or Proposed Indicators
Vulnerability	<ul style="list-style-type: none"> • Propensity or predisposition to be adversely affected (Mitchell and Harris 2012, 2) • "...degree to which a system is susceptible to, or unable to cope with, the adverse effects of shocks and stresses." (DFID 2011a, 9) • "Vulnerability in conflict can be understood, therefore, as 'powerlessness rather than simply material need' (Collinson 2003, 3)." and "...is in part determined by ethnicity or political identity." (cited in Jaspars and O'Callaghan 2010, S168) 	<ul style="list-style-type: none"> • Condition which determines whether a hazard will be realised as a disaster in terms of its human costs (Gaillard 2010, 219) • "The terms 'resilience' and 'vulnerability' can be seen as opposite sides of the same coin, but both are relative. One has to ask what individuals, communities and systems are vulnerable or resilient to, and to what extent." (Twigg 2009, 8)

Appendix D Current example of proposed resilience framework

Though this particular diagram is relevant to food security, it is possible to see the connections between the resilience framework here and sustainable livelihoods (Scoones 1998, 4) and the hazards frameworks which underpins DRR (Turner et al. 2003, 8076-8077). While this paper does not concentrate on this framework specifically, it illustrates current thinking and the lineage of several concepts. (source: Frankenberger et al. 2012, 3)

Figure 1: Resilience Framework

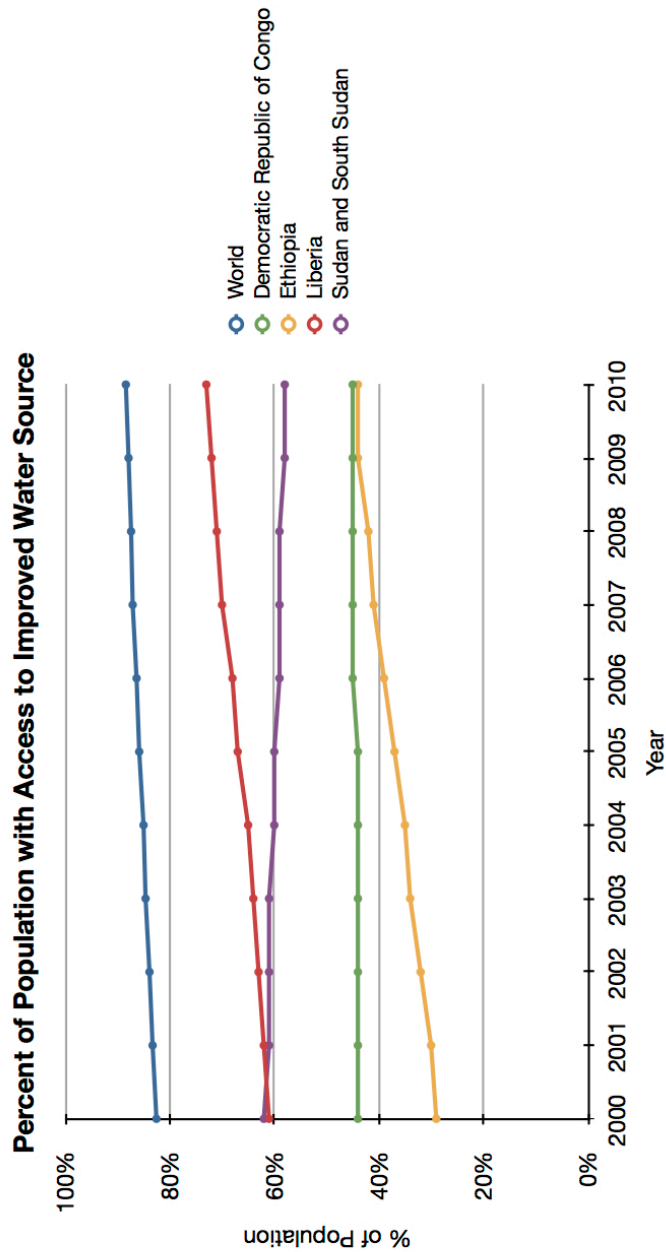


TANGO 2012. Adapted from DFID Disaster Resilience Framework (2011), TANGO Livelihoods Framework (2007), DFID Sustainable Livelihoods Framework (1999) and CARE Household Livelihood Security Framework (2002).

Appendix E Overview data of case studies

Country Name	Percent of Population with Access to Improved Water Source											Conflict during last 10 years and year ended	Vulnerability Rank*
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010		
World	82.5	83.3	83.9	84.6	85.0	85.8	86.3	87.1	87.4	87.9	88.4	-	-
Democratic Republic of Congo	44.0	44.0	44.0	44.0	44.0	45.0	45.0	45.0	45.0	45.0	45.0	Y, ongoing	-
Ethiopia	29.0	30.0	32.0	34.0	35.0	37.0	39.0	41.0	42.0	44.0	44.0	Y, ongoing	184/187
Liberia	61.0	62.0	63.0	64.0	65.0	67.0	68.0	70.0	71.0	72.0	73.0	Y, 2003	176/187
Sudan and South Sudan	62.0	61.0	61.0	61.0	60.0	60.0	59.0	59.0	59.0	58.0	58.0	Y, ongoing	166/187

Chart sources: World Bank 2010; UCDP/PRIO 2012; GAIN 2010.



N.B. - DRC's vulnerability is not ranked due to unavailable data, though available indicators suggest a very high vulnerability. Data not available after South Sudan's independence.

* The GAIN vulnerability index is a composite which, "...measures a country's exposure, sensitivity, ability to cope with climate related hazards, as well as accounting for the overall status of food, water, health, and infrastructure within the nation." While it is useful for the purposes of demonstrating the relative vulnerability of each of the cases, it incorporates the ability to cope with climate hazards by measuring the current capacity to "...increase resilience (or reduce vulnerability) in specific sectors..." (GAIN 2010). This is problematic as it suggests a juxtaposition of resilience and vulnerability which overlooks their interconnections as discussed by this paper. Furthermore, it measures vulnerability predominantly as responses to climate change, with only limited references to political stress or conflict-related shocks.