



Strengthening
Climate
Resilience

Resilience in Practice

Operationalising the Ten
Characteristics of Resilience
through the Case of Greening
Darfur

Katie Harris
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Tackle changing disaster risks and uncertainties

Enhance adaptive capacity

Address poverty and vulnerability and their structural causes

Collaborate

Strengthen collaboration and integration between diverse stakeholders working on disasters, climate and development

To what extent are climate change adaptation, disaster risk management and development integrated across sectors and scales? How are organisations working on disasters, climate change and development collaborating?

Experiment

Strengthen the ability of people, organisations and networks to experiment and innovate

How are the institutions, organisations and communities involved in tackling changing disaster risks and uncertainties creating and strengthening opportunities to innovate and experiment?

Challenge

Promote more socially just and equitable economic systems

How are interventions challenging injustice and exclusion and providing equitable access to sustainable livelihood opportunities? Have climate change impacts been considered and integrated into these interventions?

Assess

Periodically assess the effects of climate change on current and future disaster risks and uncertainties

How is knowledge from meteorology, climatology, social science, and communities about hazards, vulnerabilities and uncertainties being collected, integrated and used at different scales?

Learn

Promote regular learning and reflection to improve the implementation of policies and practices

Have disaster risk management policies and practices been changed as a result of reflection and learning-by-doing? Is there a process in place for information and learning to flow from communities to organisations and vice versa?

Advocate

Forge partnerships to ensure the rights and entitlements of people

to access basic services, productive assets and common property resources

What networks and alliances are in place to advocate for the rights and entitlements of people to access basic services, productive assets and common property resources?

Integrate

Integrate knowledge of changing risks and uncertainties into planning, policy and programme design to reduce the vulnerability and exposure of people's lives and livelihoods

How is knowledge about changing disaster risks being incorporated into and acted upon within interventions? How are measures to tackle uncertainty being considered in these processes? How are these processes strengthening partnerships between communities, governments and other stakeholders?

Be flexible

Ensure policies and practices to tackle changing disaster risk are flexible, integrated across sectors and scale and have regular feedback loops

What are the links between people and organisations working to reduce changing disaster risks and uncertainties at community, sub-national, national and international levels? How flexible, accountable and transparent are these people and organisations?

Empower

Empower communities and local authorities to influence the decisions of national governments, NGOs, international and private sector organisations and to promote accountability and transparency

To what extent are decision-making structures de-centralised, participatory and inclusive? How do communities, including women, children and other marginalised groups, influence decisions? How do they hold government and other organisations to account?

Inform

Increase access of all stakeholders to information and support services concerning changing disaster risks, uncertainties and broader climate impacts

How are varied educational approaches, early warning systems, media and community-led public awareness programmes supporting increased access to information and related support services?

Plan

Plan for uncertainty and unexpected events

What activities are being carried out to support the capacity of governments, communities and other stakeholders to plan for and manage the uncertainties of future climate and development events? How are you building capacity through exercises, systems and training to create integrated plans?

Develop

Promote environmental sustainability and low carbon development

How are interventions protecting and restoring ecosystems and to what extent is renewable energy being promoted, to enhance resilience? How is the mitigation of greenhouse gases being integrated within development plans?

Contents

Introduction	4
1. The revival of resilience	4
2. Resilience - unpacking the term	5
3. How can we create resilience to all kinds of risks?	6
4. The Darfur context	8
5. Operationalising the ten characteristics of resilience through Greening Darfur	8
5.1. Resilience characteristic 1 - diverse opportunities	8
5.2. Resilience characteristic 2 - effective governance and institutions	9
5.3. Resilience characteristic 3 - acceptance of uncertainty and change	10
5.4. Resilience characteristic 4 - community involvement and local knowledge	11
5.5. Resilience characteristic 5 - preparedness and redundancy	11
5.6. Resilience characteristic 6 - equitable systems	12
5.7. Resilience characteristic 7 - social values and structures	13
5.8. Resilience characteristic 8 - non-equilibrium dynamics	14
5.9. Resilience characteristic 9 - continual and effective learning	14
5.10. Resilience characteristic 10 - cross-scalar perspective	15
6. How can Greening Darfur further build resilience?	16
7. Resilience in practice - issues for consideration	17
8. 'Building Resilience' - points to consider for policy makers and practitioners	18
8.1. Programming and funding	18
8.2. Organisational structure and mandate	18
8.3. Sectoral challenges and 'good development'	18
9. Conclusion	19
9.1. Resilience characteristics	19
9.2. Resilience within a coping deficit and recognition of power and politics	20
9.3. What role for climate change?	21
References	22
Box 1 - Ten main characteristics of resilient systems	6
Annex 1 – Programme description: the Greening Darfur programme	24
Acknowledgments	26

Introduction

What does resilience look like in practice? How can conceptual understandings of resilience be transformed into meaningful applications at the practical level? Are existing programmes already building resilience or does undertaking a ‘resilient’ programme mean doing something differently? These are just some of the questions this paper will explore.

This paper commits to a specific understanding of the concept of resilience and explores the usefulness, and in some respects validity, of that conceptual understanding of resilience in practice. Specifically, the paper will seek to apply Bahadur et al.’s (2010) ten characteristics of resilience to the Greening Darfur programme implemented by Practical Action in El Fashir, Sudan (for programme details, see Annex 1). There is currently a lack of evidence and analysis on how to operationalise resilience and what this means in practice. The analysis presented here, based on primary and secondary research, seeks to contribute towards filling that gap.

Thinking seriously about resilience is not just a matter of semantics. The central reason why the concept of resilience is useful is because people experience their lives holistically: people live in complex, interconnected systems. This includes experiencing different crises, shocks, stresses, hazards and risks in overlapping or simultaneous ways. It is at the analytical and operational level that issues become divided and silos appear, for example as specific sectors or disciplines. The concept of resilience is therefore potentially useful for putting those vulnerable to the conditions of climate change, disaster risk and conflict at the centre of the frame, by developing a more holistic understanding of the complexities of the challenges that individuals face on a daily basis.

The paper is structured as follows: First, the paper describes the revival of the use of the concept of resilience in academic and policy circles, then the term itself is unpacked and Bahadur et al.’s (2010) understanding of the concept is outlined. Next the paper considers how we can create resilience to all kinds of risks before briefly describing the case context, Darfur. The main focus of the paper is the operationalisation of the ten characteristics of resilience through the case of Greening Darfur, which is followed by a consideration of how the programme can further build resilience. The paper then outlines issues for consideration, both in terms of resilience in practice and issues for policy makers and practitioners, followed by a conclusion.

Methodology

This paper builds on primary research undertaken by the author and in-country researcher with Practical Action technical, programme and management staff in El Fashir and Khartoum, as well as Christian Aid Sudan, one of the Greening Darfur funders. It also incorporates fieldwork with Village Development Committees in El Fashir who were part of the Greening Darfur programme. In addition, desk-based research was undertaken and included a literature review of academic and grey literature and Greening Darfur programme reports. The paper builds on each of these knowledge sources and findings, in addition to the author’s own experience, conversations and reflections.

1. The revival of resilience

The term resilience has been used in various different guises in academic disciplines for the past few decades and has gained increased traction in policy circles throughout the late noughties. The new, or in some cases renewed, interest in the term is the result of a number of processes. First, the term is seen to be a useful unifying concept; an umbrella term under which many communities of practice, disciplines and policy realms can relate to one another. Many programmes seeking to build climate and disaster resilience provide effective illustrations¹. With the increased understanding of the links between disaster risk and climate change, there has been a concerted effort to invest in integrating different approaches which it is believed will contribute towards building ‘resilience’. This has taken many different forms: mainstreaming disaster risk reduction into development programmes; the convergence of climate change adaptation and disaster risk reduction; and the reframing of development through a climate lens. A recent example is the Climate Smart Disaster Risk Management (CSDRM) approach, which brings together climate change, disaster risk management and development². For

¹There is also much work on trying to understand adaptation by adopting a resilience lens, for examples see Nelson, Adger and Brown (2007) and Ensor (2011)

²See www.csdrm.org

CSDRM, as with many other initiatives, because of its many entry points the concept of resilience has been a useful tool to better understand - at least on a theoretical level - how to bring together sectors that have until now functioned in a relatively siloed manner. At the policy level, the UK's Humanitarian Emergency Response Review (HERR, 2011) and DfID's response to the review (DfID, 2011) provide useful examples. Despite the inclusion of the term in these and many other important policy and programme documents, it is still largely being worked out what resilience means in practice. It remains to be seen to what extent the potentially unifying term will result in significant changes in approach, policy and practice.

Second, by encouraging systems-based thinking many authors believe the concept of resilience has the potential to radically transform the compartmentalised and somewhat fragmented ways the challenges of development are currently framed and addressed. Resilience offers the potential to better reflect the realities on the ground for those living with conditions of vulnerability. By recognising the complex interplay of the conditions of vulnerability, resilience could provide a means for more holistic understandings of such complexity - shifting attention away from individual project approaches that focus on one dissected aspect of that complex milieu. Thinking and acting holistically is of course much easier said than done. The compatibility of approaches - between climate change, disaster risk reduction and conflict, as well as other development approaches - is not always apparent and trade-offs are likely to occur. It is not the intention to explore these relationships here, but to note that in exploring the potential usefulness of the concept of resilience as a frame, tensions between different approaches will arise. The term resilience has often been treated as a catch-all concept, and consequently in many ways does not represent something particularly new. The concept has a long history in psychology and engineering, for example. Moreover, the use of resilience as a concept and the way it is employed does not come without its critics (see Cannon and Muller-Mahn, 2010). For example, the concept of resilience is not always employed in ways that are potentially transformative, holistic and in line with systems thinking (for a critique, see Brown, 2011).

2. Resilience - unpacking the term

The intention here is not to give a full and thorough assessment of the term resilience or its multiple and varied uses. What follows is a summary of the specific understanding of resilience that will be employed within this paper.

First, it is important to make clear that the term resilience means different things to different people. There is substantial diversity in how the term is understood and employed between disciplines, and consequently different understandings of the term have different implications when translated into policy or action. On a casual basis, i.e. in everyday language, the term resilience may be used simply as a noun to mean 'the ability of a substance or object to spring back into shape; the capacity to recover quickly from difficulties'³. However, from a theoretical perspective there are significant and important variations in how the term is understood. One of the most useful mappings of the term comes from Bahadur et al. (2010), outlining sixteen different conceptualisations of resilience ranging from the psychological, social and ecological to the economic. This is not simply an academic exercise, as Bahadur et al. (2010: 2) note: '... there has been little attempt to scrutinise the literature to examine how it might underpin an operational approach to resilience'. What can be seen is the adoption of a term that is varied and in some cases loosely defined, and perhaps more worryingly there is often a lack of awareness that such diversity of interpretation exists. This has real significance when it comes to operationalising the term: different understandings lead to different '...notions of the components, characteristics and indicators of resilient systems' (Bahadur et al., 2010: 5).

Despite the challenges that the use of the term resilience presents, this paper employs the term in accordance with the ten characteristics of a resilient system as outlined by Bahadur et al. (2010: 2-3) - see Box 1 below. Further, this paper will adopt the notion that integrated approaches⁴ provide a means to promote the characteristics of a resilient system. The ten characteristics of resilience will be explored as a useful frame for understanding the inter-linkages between different parts of a system.

³Oxford English Dictionary (2011) Available at: <http://oxforddictionaries.com/definition/resilience> [Accessed 21.10.2011]

⁴'Integrated approaches' in this paper refers to bringing together different issues, sectors and disciplines, and proactively thinking about their compatibility and the trade-offs between them. It is not understood to mean simply 'doing lots of things' simultaneously, nor to mean subsuming one sector within/under another.

Box 1 - Ten main characteristics of resilient systems

1. A high level of diversity in groups performing different functions in an ecosystem; in the availability of economic opportunities; in the voices included in a resilience-building policy process; in partnerships within a community; in the natural resources on which communities may rely; and in planning, response and recovery activities.
2. Effective governance and institutions which may enhance community cohesion. These should be decentralised, flexible and in touch with local realities; should facilitate system-wide learning; and perform other specialised functions such as translating scientific data on climate change into actionable guidance for policymakers.
3. The inevitable existence of uncertainty and change is accepted. The non-linearity or randomness of events in a system is acknowledged, which shifts policy from an attempt to control change and create stability to managing the capacity of systems to cope with, adapt to, and shape change.
4. There is community involvement and the appropriation of local knowledge in any resilience-building projects; communities enjoy ownership of natural resources; communities have a voice in relevant policy processes.
5. Preparedness activities aim not at resisting change but preparing to live with it; this could be by building in redundancy within systems (when partial failure does not lead to the system collapsing) or by incorporating failure scenarios in Disaster Management (DM) plans.
6. A high degree of social and economic equity exists in systems; resilience programmes consider issues of justice and equity when distributing risks within communities.
7. The importance of social values and structures is acknowledged because association between individuals can have a positive impact on cooperation in a community which may lead to more equal access to natural resources and greater resilience; it may also bring down transaction costs as agreements between community members would be honoured.
8. The non-equilibrium dynamics of a system are acknowledged. Any approach to building resilience should not work with an idea of restoring equilibrium because systems do not have a stable state to which they should return after a disturbance.
9. Continual and effective learning is important. This may take the form of iterative policy/institutional processes, organisational learning, reflective practice, adaptive management and may merge with the concept of adaptive capacity.
10. Resilient systems take a cross-scalar perspective of events and occurrences. Resilience is built through social, political, economic and cultural networks that reach from the local to the global scale.

Source: Bahadur et al. (2010: 2-3)

3. How can we create resilience to all kinds of risks?

There are several conceptual and practical reasons for the way different aspects of resilience are often divided into separate issues.

- What causes one type of shock or stress is not the same as another, therefore how they are understood, conceptualised and analysed varies.
- The impacts of different shocks and stresses varies, therefore how they are managed will be different depending on the context. Different tools, approaches and interventions will be needed.
- Funding streams are compartmentalised into sectors, topics and discrete issues, forcing sub-division and sector-specific interventions.

- Individuals in the development sector can at most specialise in one or two sectors given the time it takes to undergo education, training and/or field experience. This reinforces the presence of discrete specialisms.

Despite these reasons for addressing issues in compartmentalised ways, the reality is that if we put vulnerable communities at the centre of the frame, the separation of shocks and stresses can limit our understanding. Individuals, particularly those who are confronted with a plethora of challenges associated with disaster risk, climate change and conflict, may only be able to understand the complexity of their situation when viewed holistically. The emphasis that resilience places on cross-scalar processes and learning, for example, derive from the fact that people live in complex, interconnected systems. Recognising this requires more than avoiding silos (although this is a first step), what is needed is a better understanding of ‘...how can all forms of shock and risk, together with uncertainty, be managed, including those from natural phenomena and man-made factors, particularly insecurity (‘integrated disaster risk management’)?’ (Mitchell, 2011:2).

Shocks and stresses are experienced and interact with one another differently in different contexts. Thus, it is necessary that any attempt to understand what a resilient system looks like is as context-specific as possible. This includes, amongst other things: being historically grounded; taking into consideration the political economy of a given context; considering the role of natural resources and natural resource management in local livelihood systems; taking into consideration the critical role of people’s perceptions and values of climate change adaptation (see Adger, Lorenzoni and O’Brien, 2009); different perceptions of risk; the role of formal and informal governance mechanisms at different levels; understanding the conflict dynamics at play; the role of indigenous/traditional/local coping mechanisms; and the role of culture in disaster risk (see Harris, 2011).

The argument here is not simply that a more informed context analysis is required. In order to respond effectively to the complexities of people’s lives, to support communities to build their adaptive capacity which can contribute towards enabling a more resilient system, it is necessary to know how that system works. This requires a better understanding of the way interventions interact with shocks and stresses beyond those a specific intervention is designed to target. Much can be learned from the way this is encouraged in conflict sensitive approaches to development (Conflict Sensitivity Consortium, 2004), for example (although there is not the space to explore this in more detail here). In the planning, implementation and monitoring of an intervention, conflict sensitivity encourages an understanding of both the intended and unintended impact and outcomes.

Adopting the position that integrated policies and programmes is a way to operationalise the characteristics of resilience provides a means to explore the value of existing programmes which have sought to bring together a variety of sectors and approaches. Despite there being a lack of rigorous empirical research on resilience in practice from the development sector, as Bahadur et al. (2010: 19) correctly point out, we are not starting from scratch if we invest in rethinking the way we understand current interventions. Just because something is packaged within a particular sector, or designed to address a particular shock or stress, does not mean that an intervention may not also be having positive (or negative) contributions to building resilience. This aligns with conflict sensitivity mentioned previously, and the approach taken by the ACCRA programme, which has been mining existing programmes (sustainable livelihoods, social protection and DRR) in order to better understand what can be learnt about enhancing adaptive capacity for climate change (see Jones et al., 2010). This paper takes a similar approach.

It is important to recognise that the characteristics of resilience are being employed in this paper precisely because they allow for a reframing of interventions and their impact in ways that do not rely on conventional sector-specific frames. Thus, the programme at the centre of the research, Practical Action’s Greening Darfur, does not necessarily employ the terminology of disaster risk reduction, for example, but that does not mean the programme’s activities do not contribute to building resilience to disaster risk. This paper intends to identify practical examples of dealing with complex and dynamic situations, which in turn it is hoped may develop our understanding of what ‘building resilience’ may look like in practice.

4. The Darfur context

It is not the intention of this paper to provide a background to Darfur, the location of the programme intervention and research; there are many excellent analyses of the Darfur context, which informed this paper through a thorough literature review⁵. Much has been written on the dynamic and multifaceted nature of the Darfurian context and its links to the broader national, regional and international political economy. Any context analysis of Darfur necessarily needs to employ a strong political economy approach and myriad interrelated factors, including the following: the environment (recurrent droughts, low precipitation, vulnerable ecosystems, expanding desertification southwards); security (instability contributing to population displacement and an ongoing refugee crisis, kidnapping, increasing tribal conflict, proliferation of small arms, militarisation of the young); livelihoods (chronic food insecurity, lack of livelihood and employment opportunities); history (historical grievances); disasters (drought, famine and more recently floods); governance (weak and contested formal governance institutions, disrupted and contested local governance mechanisms, lack of democratic processes); socio-economic (increased poverty, inequitable distribution of resources); political (increasing factions, fragmentation of negotiations); and humanitarian (the expulsion of INGOs and lack of local capacity to provide services). Readers wanting to know more are pointed in the direction of Flint and de Waal (2005; see also Duffield, 2001; Keen, 2008)⁶.

5. Operationalising the ten characteristics of resilience through Greening Darfur

The Greening Darfur programme was not designed with Bahadur et al.'s (2010) resilience characteristics in mind but makes great strides towards developing and implementing integrated programming: it brings together sustainable livelihoods interventions with food security, water harvesting, market access, knowledge sharing, new technologies, capacity building and consensus building, all in a difficult and unstable environment. The aim of this section is to explore to what extent the programme contributes towards building each of the ten characteristics of resilience. It must be recognised that it is not the intention to imply that the characteristics can or should be applied as a form of checklist. The intention here is to try and operationalise the characteristics by unpacking what they could mean in practice through the experience of Greening Darfur and to explore the ways in which the programme can be understood to be building resilience. The reader will notice that some of the characteristics are incredibly broad. Where this is the case the activities of Greening Darfur will likely only touch on certain aspects of that characteristic. This is not surprising; it is highly unlikely that any programme could ever fully address all ten characteristics.

5.1. Resilience characteristic 1 - diverse opportunities

A high level of diversity in groups performing different functions in an ecosystem; in the availability of economic opportunities; in the voices included in a resilience-building policy process; in partnerships within a community; in the natural resources on which communities may rely; and in planning, response and recovery activities.

⁵The desk-based literature review was supported by independent researcher Sara Wolcott.

⁶The Greening Darfur programme is based out of the Practical Action El Fashir field office. The majority of villages involved in programme implementation have remained settled through the conflict, but obviously have been severely affected by the broader conflict context.

Three examples are provided below of how the Greening Darfur programme contributes to building resilience in terms of the first characteristic: the regeneration of natural resource management systems; the establishment of community forests and nurseries; and increased income through crop diversification.

A good illustration of Greening Darfur's attempt to support diversity, protect ecosystems, enhance community ownership and promote sustainable use of natural resources is the work towards regenerating the natural resource management systems for use by humans and livestock. In an attempt to prevent degradation and regenerate vegetation cover, Practical Action have been involved in projects (within and beyond Greening Darfur) to construct terraces, establish community forests and shelter belts and regenerate rangeland. Together, these activities promote diversity within an ecosystem by allowing that system to support multiple activities in a sustainable way.

For example, over 210,000 seedlings of various different types were produced and transplanted, and with additional funds from the Food and Agriculture Organisation 15 community nurseries

were established which produced a further 120,000 seedlings (Practical Action, 2010d: 10). This was possible because Greening Darfur led ten environmental awareness sessions and trained 63 community members on tree seeding production and transplantation. Moreover, in conjunction with Community Based Organisations (CBOs), Greening Darfur established four community nurseries and 11 community forests as part of the natural resource regeneration project, in conjunction with the National Forest Corporation.

It's apparent that Greening Darfur's operational context places severe constraints on the ability to develop a diverse range of economic opportunities. Nevertheless, the programme did manage to support communities to increase their ability to sustain the natural resources on which they rely by enabling 31 Village Extension Agents to undertake advanced training on crop production. The crop production techniques were subsequently used to increase the success rate as well as the diversification of crop production in the area (Practical Action, 2010d: 6). In conjunction with other activities aimed at improving food and water security, the 2010 cropping season increased farmers' incomes (Practical Action, 2010d: 9). It is estimated that the average cropping yield for 2010 was 4.1 MT per hectare, compared to 1.5 MT per hectare in previous years with similar rainy seasons (Practical Action, 2010d: 8). The 'availability of economic opportunities' dimension of resilience was also supported by activities which sought to link farmers' agricultural products with market opportunities within the private sector (Practical Action, 2010d: 9).

5.2. Resilience characteristic 2 - effective governance and institutions

Effective governance and institutions which may enhance community cohesion. These should be decentralised, flexible and in touch with local realities; should facilitate system-wide learning; and perform other specialized functions such as translating scientific data on climate change into actionable guidance for policymakers.

Aspects of the Greening Darfur programme that can be seen to contribute to building the second dimension of resilience include building the capacity of the networks to form institutions that adhere to basic organisational good governance; the networks developing their own development priorities and plans, reflecting a form of decentralisation; and securing additional funding from other sources reflecting an ability to act independently.

Practical Action's early work in Darfur focused on developing CBOs which later coalesced around three parent networks which have become central to Greening Darfur: the Village Development Committee Network (VDC-net), Women's Development Associations Network (WDA-net) and the Market Network (M-net) (Practical Action, 2009a). One of the main ambitions of the Greening Darfur programme was to build the capacity of the networks to be able to manage, prioritise, plan and resource their own development priorities. In doing so, it is hoped that the networks can represent the rural poor and enable their voice to be heard in policy processes (Practical Action, 2010d: 4), thus contributing towards the development of effective institutions to enhance community cohesion.

The institutional capacity of the networks has been strengthened by encouraging processes and procedures that are fundamental to ensuring good governance within a programme and organisation. Members of the networks receive basic book keeping and management training to help them establish transparent and accountable financial systems and establish a Programme Management Committee with fair representation from the networks and Practical Action staff. The existence of the Programme Management Committee has strengthened the ability of the networks to ensure local realities and views are represented in biweekly meetings during discussions on the implementation of the programme, review of progress, setting monthly joint plans, establishing selection criteria for targeting CBOs and beneficiaries, and support monitoring of the programme (Practical Action, 2009b: 3).

The establishment of the Programme Management Committee has helped to encourage decentralised decision-making in programme implementation. It has also encouraged flexible planning, as monthly joint plans are devised based on reflection on the previous month's progress. Moreover, the willingness and enthusiasm of the networks to form a joint committee has encouraged consensus building among the three networks. This has been demonstrated by the networks sharing funding opportunities and information, which has reduced the potential for competition developing between them and instead capitalises on the 'collective work spirit'

that has emerged, initiated by the Greening Darfur programme (Practical Action, 2009b: 3).

The support provided by Greening Darfur certainly helped to develop the networks and build their capacity to implement the programme. Moreover, their engagement with the programme activities provided a space to engage with various government ministries they might not have otherwise had the opportunity to encounter, such as the Ministry of Agriculture. What is less clear is the extent to which the networks have been able to achieve policy influence. In recognition of this, the networks have agreed that an umbrella forum is needed that involves other, existing networks in North Darfur, to create a 'powerful lobbying body able to advocate on behalf of communities' (Practical Action, 2010d: 5).

Another outcome of the programme which can be seen to contribute towards the second characteristic of resilience is the enhanced capacity of the networks to gain access to alternative donor funding. This reflects an empowering of the communities to be able to decide on their own development priorities in a decentralised manner and gain access to funding from other sources. By 2010, the networks had submitted 84 proposals and managed to secure more than 6.8 million SDG (£1.5 million) in funds (Practical Action, 2010d: 5). The networks have also become operating partners with the United Nations and other humanitarian agencies. However, it is unclear to what extent this implies decentralisation or being 'in touch with local realities' as outlined in the resilience characteristic. Some would interpret this as increased capacity to act as implementer or sub-contractor with limited control over the actual programme activities which would be subject to donor priorities and demands. Following the central government move to allow primarily only Sudanese NGOs to work in Darfur, many agencies have restricted themselves, or been restricted to, humanitarian response and service delivery and often employ local organisations as 'local intermediaries in the aid process', what Jaspars (2010: 15) refers to as 'more sub-contractors than local partners'.

Despite the operational challenges, the resilience characteristic of being 'decentralised, flexible and in touch with local realities' is reflected in the implementation approach of the Greening Darfur programme which always intended to support the networks to develop their own capacities to implement programmes, conduct monitoring visits, and link with service providers. It is anticipated that because of this, the networks are highly likely to remain effective within the communities by being able to seek funding for the development plans they have devised themselves, beyond the life of the Greening Darfur programme (Practical Action, 2009b: 4).

5.3. Resilience characteristic 3 - acceptance of uncertainty and change

The inevitable existence of uncertainty and change is accepted. The non-linearity or randomness of events in a system is acknowledged, which shifts policy from an attempt to control change and create stability to managing the capacity of systems to cope with, adapt to, and shape change.

The Greening Darfur programme does not demonstrate effective examples of the third resilience characteristic. In part, because of the nature of the programme and partly because of the context itself. That said, simply investing in livelihood sustainability is significant because, through this, Greening Darfur is building the capacity of individuals to create sustainability and cope with change. This is in contrast with the widespread focus on short-term food aid within El Fashir. This is not to suggest that humanitarian response to immediate human needs is not in demand or should not be delivered; the point is simply to recognise that, where it is possible, investing in potentially more sustainable solutions to the challenge of food security is favourable.

The efforts of the Greening Darfur programme to increase access to water for a variety of uses can also be understood as contributing to building the capacity of the system to cope with and adapt to change. By the end of the programme, 900 crescent-shaped terraces were constructed, accompanied by communities and extension agents trained in construction, layout, levelling and drainage control, leading to increased food production and reduced pressure on rangelands (Practical Action, 2010d: 7). The terraces were built to embrace a dynamic environment and variety of scenarios; not only did they help improve land productivity by 200 per cent in general, but even when there was drought they delivered a tangible benefit by securing crop yields at near average levels (Practical Action, 2010d: 7).

5.4. Resilience characteristic 4 - community involvement and local knowledge

There is community involvement and the appropriation of local knowledge in any resilience-building projects; communities enjoy ownership of natural resources; communities have a voice in relevant policy processes.

The fourth characteristic of resilience reflects the strengths of the Greening Darfur programme which include supporting community involvement and generating community ownership of the natural resources through the programme's activities. This is evidenced by the focus on building local-level capacity to form VDCs, CBOs and networks which are responsible for effectively managing natural resources; the allocation of seats within the Programme Management Committee which allows the networks to represent community views; and supporting the networks to devise their own strategic plans and funding proposals.

The programme has also effectively demonstrated 'the appropriation of local knowledge'. For example, at the local level, communities themselves have been responsible for the oversight of programme activities associated with natural resource management, including activities aimed at vegetation regeneration, rangeland rehabilitation and pastures management (Practical Action, 2010d: 10). One of the processes involved supporting local leaders to enact traditional local forest laws associated with restricting animal grazing in order to protect the designated areas (Practical Action, 2009b:11). Also, local forest guards from the beneficiary communities were identified to act as guardians for the community forests.

The historical relationship between the Darfurian communities' local knowledge and natural resource management provides a rich resource that has been effectively tapped into for the benefit of the community, environmental sustainability and the programme. Moreover, it is only through the positive engagement of local leaders and forest guards that the activities aimed at environmental regeneration have been able to take place.

The latter part of the fourth resilience characteristic refers to communities having a voice in policy processes. The complexities and politics of the local governance situation in Darfur mean that efforts towards encouraging stronger community voice in formal policy processes are difficult and strained. However, as mentioned above, the programme networks have agreed that an umbrella forum is needed to create a lobbying body able to advocate on behalf of communities.

5.5. Resilience characteristic 5 - preparedness and redundancy

Preparedness activities aim not at resisting change but preparing to live with it; this could be by building in redundancy within systems (when partial failure does not lead to the system collapsing) or by incorporating failure scenarios in Disaster Management plans.

The fifth characteristic of resilience raises a number of challenges for understanding 'redundancy' within conflict affected areas. For many, there is little redundancy within the system; the system is stretched to breaking point on a daily basis, choices are limited and vulnerability is high. However, the core message of the fifth resilience characteristic, that you cannot resist change, could be a useful unifying concept which could ignite discussion across the disaster risk reduction, climate change and conflict and development communities of practice.

An example of an intervention that could loosely be regarded as building redundancy into the system is the efforts to build links between the Ministry of Agriculture and the Village Extension Agents. This has included activities to support Village Extension Agents to become trained in helping their communities identify pests, diagnose animal diseases and access information related to animal welfare (Practical Action, 2009b: 7). Through this initiative, the agents have been able to establish a process whereby a group of reliable sources are able to identify and manage the threat of pests before risk of spreading. This has meant that a system is in place to prevent widespread crop and animal loss (Practical Action, 2010d: 7): rather than focusing on reactive responses, the system seeks to encourage preventative, early action, in order to minimise the possible damage caused.

Another example of the way Greening Darfur can be understood to integrate the notion of redundancy is through the development of safety nets. For example, the establishment of three community seed stores provides community members access to seeds which have been stored safely, should livelihoods be damaged by a disaster (Practical Action, 2010c: 7).

Although the Greening Darfur programme doesn't explicitly frame any of its activities as disaster risk reduction, many of the activities Practical Action are undertaking in Darfur can be seen to contribute in some way to reducing the disaster risk of drought by improving food security and access to water supply. This has been achieved through significant progress in rehabilitating wells and improving water storage. However, failing to explicitly consider risk reduction may account for the failure to prepare for the floods that occurred during the third quarter of year two programming: the 'inevitability of uncertainty' (resilience characteristic 3) is thus always present. An unprecedented amount of rainfall resulted in floods that were four to five times more than in previous years as well as flooding in areas that had never experienced floods before. Flood damage in and around the project area caused loss of assets, animals, crops and houses (Practical Action, 2010c: 1).

5.6. Resilience characteristic 6 - equitable systems

A high degree of social and economic equity exists in systems; resilience programmes consider issues of justice and equity when distributing risks within communities.

To the extent it was possible, the Greening Darfur programme sought to reduce risks within the beneficiary communities in a fair and equitable manner. For example, in the construction of the crescent-shaped terraces, Practical Action recognised that the poorest households would require financial support to purchase the correct tools in order to be able to construct the terraces. The programme thus provided subsidies for the tools. In addition, 900 sets of agricultural hand tools were distributed and shared on a revolving basis between farmer families and female-headed households (Practical Action, 2010d: 7).

The programme also recognised the specific pressures that water scarcity puts on women and female-headed households. For example, the demand on women's labour increases as a result of the limited water recharge because of groundwater extraction. This has meant that women are forced to travel longer distances in order to access water. In an attempt to address this, Greening Darfur, in conjunction with the National Water Cooperation and the Water and Sanitation Department, rehabilitated two hand-dug wells, six shallow wells and six hand pumps, providing near year-round water to approximately 7,000 people and animals (Practical Action, 2010d: 8).

Similarly, in an attempt to enhance social and economic equity, purchases of donkey-drawn carts were made to support 50 rural families, 50 per cent of whom are female-headed, to gain access to the drinkable water. The collection of water, firewood and fodder is the burden of women and children. Having access to the carts has not only relieved some of the burden of daily water collection, it has also enabled better links between the farms and markets. Depending on the season, the average income from hiring a cart increased by between 30 and 150 SDG (Practical Action, 2010d: 8).

The Greening Darfur programme also sought to encourage equitable systems of governance within the VDCs, CBOs and the networks. Initially the networks, with Practical Action's support, undertook orientations with the VDCs in 31 of the targeted villages to learn how to properly form a CBO, or reform existing CBOs. Practical Action also advised on the proper formation of the VDCs. Suggested criteria included:

- fair representation of women (not less than 40 per cent recommended)
- restructuring of the VDCs to ensure sub-village representation
- segregating the roles of the VDC chairman and committee
- encouraging a formal registration process
- establishing network and constitutional rules (Practical Action, 2009b: 6).

By the end of year one, the majority of VDCs had followed the recommendations made by the Programme Management Committee, including specifically the criteria of no less than 40 per cent female representation (Practical Action, 2009b: 6). The programme also took great strides towards ensuring women's views were heard and acted upon. Through separate discussions

with women it was recognised that the women wanted a separate society to represent their views. In two villages, women's associations were established by the women independently. Despite wanting to ensure there was appropriate space for their representation, Practical Action were wary of the drawbacks of having separate women's groups which could lead to an 'artificial disaggregation of institutions and subsequent support' (Practical Action, 2009b: 6).

Greening Darfur's activities to promote more equitable governance systems within the VDCs, CBOs and networks, as described above, are not simply a matter of wanting equitable operations. It is hoped that using the entry point of the 'proper' formation of organisations will help to provide greater space for women's views and priorities to be heard within communities, which may have a positive effect on social relations more broadly.

5.7. Resilience characteristic 7- social values and structures

The importance of social values and structures is acknowledged because association between individuals can have a positive impact on cooperation in a community which may lead to more equal access to natural resources and greater resilience; it may also bring down transaction costs as agreements between community members would be honoured.

The seventh resilience characteristic speaks in particular to Practical Action's efforts to integrate consensus building approaches into the Greening Darfur programme. The specific approach adopted is their Participatory Action Plan Development (PAPD). The PAPD was developed over the past nine years in a variety of countries, for use in identifying and solving problems associated with environmental or livelihood tensions. The PAPD approach uses community participation to resolve issues by building local consensus and developing local action plans (PAPD, 2010). The approach emphasises positive cooperation between communities through equal access to natural resources. The approach also recognises that social values and structures will be bound up with formal and informal institutions, and these in turn will affect the outcome of negotiations, conflict resolution and local decision making (PAPD, 2010: 16-17).

Practical Action applied their PAPD approach to a local level conflict between the Abudegaise and Dala village where the construction of the Abudegaise dam inhibited the downstream Dalal community from accessing water for two successive rainy seasons (Practical Action, 2009b: 8). The PAPD approach was communicated during a five day workshop with 31 representatives from various VDCs, networks and local officers, accompanied by two field visits to the Abudegaise dam site. Through two days of community meetings the consensus building approach was successfully applied. Its success lies in the will and commitment of the communities to engage with the approach, build in traditional (Gudeia) agreements and honour the agreements. By the end of the process a consensus had been reached on possible solutions, and most importantly there was a change in the attitudes of the parties involved, who then sought a solution, verified by a verbal agreement (Practical Action, 2009b: 8). The PAPD approach was also successfully used to resolve a number of other disputes: between two VDCs regarding access to a hafir⁷ and water pond; a local dispute over the distribution of food relief; by networks in other areas involved in the rehabilitation and construction of water sources (Practical Action, 2009b: 8); over concerns that a committee was being dominated by one village at the expense of others (Practical Action, 2010a: 9); addressing a dispute over the location of a community nursery; and conflict over the subdivision of a village council into two councils (Practical Action, 2010b: 6).

Practical Action's adoption of the PAPD approach reflects their recognition of the fact that conventional technical projects will inevitably experience tremendous difficulties in a conflict context. The context will force to the surface and provide an outlet for localised resentments over unequal distribution of resources, which may otherwise remain hidden. The deployment of resources in any NGO intervention inevitably tends to be uneven and if this is not well handled through dialogue mechanisms, such as PAPD, can increase tensions or create new ones within and between communities⁸.

In the context of a changing climate, where it is expected that the availability of natural resources will become increasingly scarce in some contexts, the integration of consensus building approaches into interventions aimed at sustainable livelihoods will become increasingly important; not only for achieving the programme's immediate goals, but for laying the foundations for longer lasting processes which can be employed to manage contested or

⁷The 'hafir' is the local name in Sudan for water reservoir. The hafir is a hollow dug in the ground designed to store water runoff after a rainy season, the hafir is usually used in semi arid regions where rainfall is annual but over short periods and storage is required for the rest of the year'. http://practicalaction.org/practicalanswers/product_info.php?products_id=66 (accessed 3 October 2011)

⁸Email conversations with Stuart Coupe, Practical Action. November 2011

diminishing resources.

5.8. Resilience characteristic 8 - non-equilibrium dynamics

The non-equilibrium dynamics of a system are acknowledged. Any approach to building resilience should not work with an idea of restoring equilibrium because systems do not have a stable state to which they should return after a disturbance.

An example of resilience characteristic number eight is the recognition by Greening Darfur that there is an increasingly changing climate with high variability in temperature and rainfall which is impacting on the feasibility of producing crops and ensuring food security. The innovative seed exchange and storage system established as part of the programme is an illustration of accepting non-equilibrium of a system. In recognition of the changing climate and the need to improve, adapt and build the capacity of the farmers to adjust their farming practices, three community seed stores were established and a seed fair organised (Practical Action, 2010c: 7). The seed storage system enables farmers to access a range of crops and vegetable seeds for production throughout the year. The seed fair was organised by the networks, the Ministry of Agriculture and the El Fashir Research Centre (discussed further under resilience characteristic 9). The fair provided farmers with access to new crop genes as well as ideas for sustainable production (Practical Action, 2010d: 9).

The acknowledgement of non-equilibrium is particularly pertinent in difficult environments, where the changing conflict dynamics mean that any context is continuously in flux. An understanding of resilience which accepts this state of flux is particularly relevant as it is a fallacy to assume a previously stable 'pre-conflict' state can be recreated. Systems cannot be returned to a previous state and in many contexts the 'pre-conflict' state is not even desirable.

5.9. Resilience characteristic 9 - continual and effective learning

Continual and effective learning is important. This may take the form of iterative policy/institutional processes, organisational learning, reflective practice, adaptive management and may merge with the concept of adaptive capacity.

Elements of the ninth resilience characteristic are present within Greening Darfur. First, a seed fair was organised which was specifically geared towards learning, sharing and the exchange of knowledge between farmers and beneficiaries. Second, as part of the funding requirements and good development practice, the programme underwent regular monitoring and evaluation and invited external researchers to review the programme.

The emphasis on learning and sharing was effectively illustrated in the organisation of the seed fair. The fair allowed farmers to access a range of fruit and vegetable seeds and provided space for learning and sharing of ideas. Farmers were able to access local knowledge relating to local crops suitable to the current climate and learn from researchers from the El Fashir Research Centre, thus bridging the knowledge gap between scientists and farmers. The initiative brought together different communities of practice and enabled individuals access to knowledge and experience associated with producing different crops under different conditions (Practical Action, 2010d: 9).

The second example of 'continual and effective learning' is the organisational learning processes adopted by Practical Action. In an attempt to ensure the learning from the programme can be utilised elsewhere, Greening Darfur hosted a conference in El Fashir at the end of the programme to share their learning, findings and experiences of implementing activities geared as improving food security, planning approaches, environmental regeneration and empowering civil society (Practical Action, 2011). The programme approach has also been shared widely by members of Practical Action in Sudan and in the UK. Reviews of the programme have resulted in grey literature, all serving to expand the awareness of the programme beyond the immediate project staff (this publication, also see Jaspars, 2010). The extent to which this constitutes 'continual and effective learning' is questionable, without institutionalised learning loops (discussed further in section 6).

5.10. Resilience characteristic 10 - cross-scalar perspectives

Resilient systems take a cross-scalar perspective of events and occurrences. Resilience is built

through social, political, economic and cultural networks that reach from the local to the global scale.

In the Greening Darfur context, examples of cross-scalar perspectives are demonstrated through the various scales at which the development agencies work, from village to national to international level. For example, the experience and learning from the programme has been translated and applied to other geographical areas through the networks gaining access to other funds and working in areas beyond the Greening Darfur programme sites. Similarly, the learning processes employed by Practical Action and their partners and donors, including Christian Aid, have informed the development of subsequent programmes in other regions. Greening Darfur has generated local knowledge that can be fed into international discussions and policy processes (and this paper serves as one illustration). Similarly, it was through Greening Darfur that international organisations such as Practical Action, and their partners such as Christian Aid, were connected to local issues in Darfur. An exchange thus took place with ideas and tools from the international level being transferred to Darfur and contextualised local information being channelled back to inform organisational development and learning.

In the context of Darfur (and indeed much of Sudan), the disconnect between processes that contribute towards building a resilient system, be they conflict resolution, climate change adaptation or disaster risk reduction, remain somewhat fractured between scales. Take climate change for example. International processes associated with the Intergovernmental Panel on Climate Change (IPCC) and national initiatives such as the National Adaptation Plans of Action (NAPA), are largely disconnected from action at the local level. Similarly, formal conflict resolution mechanisms between selected factions in the conflict in Darfur are totally disconnected from local-level conflict resolution mechanisms, or indeed local realities.

This section of the paper has sought to identify how the activities implemented as part of the Greening Darfur programme are contributing to each of the ten characteristics of resilience. It is clear, and of course natural, that the programme relates to some characteristics more than others. For example, the programme strongly supports resilience characteristics associated with effective governance and institutions (resilience characteristic 2) community involvement and local knowledge (characteristic 4) and social values and structures (characteristic 7). These characteristics relate to the strengths of the programme: to build the capacity of local communities and organisations; to value and build upon local knowledge; to support good governance and decentralised decision-making processes; to encourage local natural resource management; to establish processes for equal access to natural resources; and to support informal community-based mechanisms for resource sharing.

The next logical question to ask is whether there are any aspects of resilience missing in the programme. The intention is not to try and identify everything that the Greening Darfur programme does not cover but to identify ideas and opportunities that could strengthen the efforts towards building resilience in the future. After all, resilience is not just about doing business as usual, or reframing what we already do under the banner of 'resilience'; it is about doing something more, something different.

6. How can Greening Darfur further build resilience?

Outlined below are five examples of areas that could be strengthened within the Greening Darfur programme, or taken into consideration in future work in order to align with the resilience characteristics. The examples are illustrative and necessarily contained, given the challenges that the operational environment presents to programme implementation. There is an unavoidable tension in the methodology of selecting programme activities that seem to demonstrate aspects of each of the ten resilience characteristics, because the characteristics are in many cases remarkably broad and contain many different elements. Section 7 takes a closer look at these and other possible limitations of the ten characteristics of resilience.

Strengthen resilience characteristic 2 - effective governance and institutions - by building capacity to go beyond having the ability to access 'easy money'. The skills and training needed for organisational management are one way to build local capacity to pursue decentralised development programmes (by placing more capacity at the local level), however in order

to really utilise people's full potential Greening Darfur needs to go beyond this. To be truly sustainable the programme needs to look beyond enabling the networks to access programme funding and 'easy money' (e.g. through NGOs and the United Nations), to look for new donors who could also help mobilise local people, for example by providing a role for local businesses. One of the limitations of 'easy money' is that topics and issues shift with donor/development fashions and funding will typically be of a limited two to three year cycle. The networks' capacity needs to be built to access more sustainable funds, and to have the ability to think beyond the accessibility of development funds.

Strengthen resilience characteristic 4 - community involvement and local knowledge - by promoting integrated programming to avoid possible future challenges. An example of this could be linking the networks with water and sanitation groups. This would encourage more thorough thinking on how water is currently utilised to promote better environmental health. For example, by involving all water users activities could include the separation of animal and human access to water, better organisation around the use of water sources and the promotion of accompanying software activities (such as community sensitisation, capacity building, etc.). At present, communities do not prioritise issues of sanitation because there is sufficient land available (for some communities). Thinking longer term and taking into account the possibility of further floods, more consideration of the impact of sanitation is required, such as how to effectively use the water for personal hygiene, and how to safely store drinking water. Promoting water and sanitation as a package of skills and capacity would also have the potential to bring in more technical resources through other agencies (e.g. World Health Organization).

Strengthen resilience characteristic 5 - preparedness and redundancy - by integrating climate information. Many of the activities undertaken as part of the Greening Darfur programme can be seen to contribute towards building adaptive capacity and adapting to climate change. However, we need to be wary of the distinction between activities seeking to address existing challenges which may be associated with a changing climate and 'climate change adaptation'. One difference is the emphasis placed on looking forward to future climatic changes and whether there is systematic incorporation of seasonal forecasts and long term projections. While recognising that access to, and availability of, climate data may be limited in conflict affected areas, there is a need to build on traditional ways of interpreting the climate and link together different types of information to make our knowledge stronger. This should happen anyway, not just where meteorological information is lacking. Community focus group discussions revealed that there is an appetite for more information about climate change and its relationship with other factors (such as natural resource management, water and environment) and the possible impacts on people's livelihoods⁹.

Strengthen resilience characteristic 6 - equitable systems - by diversifying partnerships for sustainability. The type of partnerships encouraged by the programme are narrowly defined and often focused around a somewhat limited objective of accessing funds. Whilst recognising that funds can lead to other opportunities, it would be beneficial to diversify partnerships to include those who have access to people on the ground, such as the pastoralist and farmers unions, to compliment the usual partnerships of government and NGOs. Forging local partnerships could have a dual role of supporting activities and advocacy. This could also enable pressure to be put on the government around certain advocacy issues, a role that the unions already play, being in the political space with a strong voice.

Strengthen resilience characteristic 9 - continual and effective learning - by reinforcing mechanisms and processes for learning. There remains a need for an organisation-wide learning mechanism that is central, systematically updated and improved, and used by all projects. Although individual projects include some degree of monitoring and evaluation, there fails to be a consistent monitoring and evaluation framework for the organisation as a whole which emphasises the aim of learning rather than procedurally tracking progress. Moreover, although learning is to some degree informally shared through discussions, institutional memory rests with individuals. Formal processes for learning could help encourage thinking on how different aspects of the organisation's work are linking together.¹⁰

⁹Umzoar Village Development Committee, interview (25th May 2011)

¹⁰For example, see Silva-Villanueva (2011)

7. Resilience in practice - issues for consideration

Applying Bahadur et al.'s (2010) ten characteristics of resilience raises a number of practical and theoretical challenges. For example, there is no weighting or sequencing to the characteristics. While it would be logical to assume that the entry point to the characteristics, and perhaps even which characteristics are taken up, is highly context specific, when applying them to a practical case study questions arise such as how many characteristics are needed to undertake a 'resilient' programme and to what extent does a characteristic need to be fulfilled (bearing in mind that each characteristic has many parts)? Further questions are: how many interconnections are needed to build resilience; are they all equal, or are some of them 'connector nodes'; are some characteristics more important than others; are some pre-conditions to others, or are they all entry points into the same goal?¹¹

There is also a danger of trying to 'achieve' resilience by using the ten characteristics as a kind of 'resilience checklist'. This not only underplays the complexity and nuances of the characteristics but also undermines the concept of resilience itself; in the sense that resilience is about thinking differently, more holistically and informed by systems thinking. Each characteristic of resilience is therefore perhaps better understood as having many strands which may be progressed along at different rates. A characteristic can never be 'ticked' as being achieved; there will always be room for improvement.

Another challenge in applying the characteristics is also, ironically, part of their strength; that they draw on many different disciplinary understandings of the term resilience. However, some aspects of the characteristics are rooted in non-social science disciplines such as ecology and may be less applicable to social systems. Take for example the first part of resilience characteristic 1, 'A high level of diversity in groups performing different functions in an ecosystem' (Bahadur et al., 2010: 2) and ask what does this mean for a rights-based gender equity programme? Should an organisation be seeking to address each component of the characteristics, or can they pick and choose? If they pick and choose, how can we know when a programme is supporting resilience? Surely picking and choosing is being selective and therefore not addressing the system as a whole? This relates back to the previous point about how much of the characteristic needs to be achieved. Or in other words, how many interconnections are needed to achieve 'resilience'?

Another challenge is the lack of influence of disciplines such as political economy. With the exception of the references to social and economic equity and justice within characteristic 6, there is very little mention of power (in fact the word does not appear). This could lead readers to assume that resilience is in some way apolitical. Adopting an understanding of disasters as socially constructed (meaning that a disaster is the product of a combination of factors including a natural hazard as well as differing levels of exposure, risk and vulnerability) renders the lack of centrality of power a major limitation, theoretically and practically (Blaikie et al., 1994).

The points made so far also highlight, and in some respects could be addressed by, the question of 'resilience for what'? As a development NGO or research institute that works to eradicate poverty, promote equity and address the conditions of vulnerability, this may seem obvious. But working in a multidisciplinary arena calls our assumptions into question. Establishing what you want to build resilience for will in part help towards understanding how to use the characteristics of resilience in ways that are helpful. This would also help answer some of the questions raised within this section.

Working out what resilience means in practice is part of a much bigger question than a single paper can hope to resolve. What can be said at this stage in our learning is that there are some clear points for consideration in understanding resilience that should be relevant to policy makers and practitioners alike. Outlined below are points for consideration that draw on learning from Practical Action's attempts to bring together different sectors in order to undertake more holistic programming, as well as learning, experience and lessons from the Strengthening Climate Resilience programme more broadly. These points raise important questions that need to be considered by donors, policy makers and practitioners promoting the agenda to refocus development through the lens of 'building resilience'.

¹¹Sara Wolcott, independent researcher – through email conversations, October 2011

8. 'Building resilience' – points to consider for policy makers and practitioners

8.1. Programming and funding

- **Is funding a constraint for 'resilience programming'?** The funding Greening Darfur received from partners such as Christian Aid allowed for bottom-up flexibility and community-led processes that characterised many of the strengths of the programme¹². The programme model was possible in part because of the funding and willingness of the partners and donors to deliver the programme as has been described. However, current funding streams are primarily orientated around separate issues, such as climate change, disaster risk reduction, livelihoods, etc. More donor support is needed to invest in programmes that seek to build resilience, supported by research to identify and analyse the added-value, tensions, trade-offs and best practice of such programmes. Current funding mechanisms offer limited opportunity to develop 'resilient programming'. That said, this very much depends on your understanding of resilience, whether integration is a means to achieve resilience, as well as the extent to which this requires going beyond the linking of similar sectors. To truly think through what a resilient programme may look like requires cross-specialism learning, planning and implementation. It will necessarily involve 'trial and error' and employing new ways of working that require an initial investment of time. It is necessary therefore to question the extent to which this is really happening within programmes currently labelled as 'building resilience' and to provide more investment in areas where aspects of resilience are missing.
- **Is 'resilience programming' more efficient and/or more effective?** It is often assumed that 'building resilience' is a way for programmes to become more efficient and/or more effective (which is often a reflection of donor concerns about reducing expenditure). The experience of Greening Darfur and the Strengthening Climate Resilience programme indicates that integrated programming is a means to build resilience, even if only a few sectors are included. However, programmes that bring together lots of sectors are not necessarily cost saving in financial terms, at least in the short term. One reason for this is because initial overheads may be costly, for example the costs of bringing different sectors together to participate in devising comprehensive integrated programmes. Over the longer term it is anticipated that integrated programming would be more effective as organisational culture would change individuals' ways of thinking and working, becoming instinctively more holistic in their approach. More research is needed to validate these points and develop an evidence base for the short to long term cost and effectiveness implications of integrated programming.

8.2. Organisational structure and mandate

- **Are organisational mandates acting as a barrier?** Many organisations don't see certain sectors or issues as part of their mandate. If resilience is about more holistic programming, how can organisations be convinced to invest time to appreciate the relevance of existing communities of practice, such as disaster risk reduction or natural resource management, or link with others who do have the mandate and expertise to cover the issues they don't?
- **Does climate change provide an opportunity to challenge sectoral working?** If an organisation has a project specifically looking at climate change, there is a tendency to regard this as the climate change contribution. There often fails to be adequate appreciation (or will) to invest in considering climate change as 'game changing' and there remains a tendency to see climate change as a distinct specialism with a designated individual responsible for it. This is neither effective nor sustainable; it reinforces silos and sectoral ways of working. There is scope to think more creatively about the capacities of existing staff (enhanced through training) and about the added-value that using a climate lens can bring to the sustainability of a programme.

8.3. Sectoral challenges and 'good development'

- **Can resilience help build cross-sectoral relationships?** Attempts to build resilience

¹²No Small Change (Abugre and Valentin, 2007) outlines Christian Aid's understanding of how change happens and guided their approach to partnering with Practical Action. This includes the importance of leverage and how the flexible approach to funding and programme work can enable partners to seek diverse alternative sources of funding and therefore be more flexible.

through integrated programming could provide NGOs, departments and project teams with the opportunity to develop cross-sectoral learning. Cross-sectoral working breaks down false boundaries and silos and changes the nature of working relations; themes and sectors are viewed as complimentary and teams work together regardless of their specialisation. Despite this, the thinking (and practice) of integrated programming occurs in some project areas more than others. For example, where it is difficult to differentiate between livelihoods and natural resource management the two areas are more likely to be linked (e.g. through water management, environmental sustainability and food security). In this way, building resilience through integrated programming is commonsensical; interconnected sectors must work together. More research is needed to establish what constitutes integrated programming. How many interconnections are required to effectively build resilience? How varied should the sectors be that are brought together? To what extent can you contribute to building resilience within a single sector?

- **Distinguishing between building resilience and general principles for good development.** There is often a misconception that building resilience simply means having effectively sequenced software and hardware, or being truly inclusive of all affected stakeholders. Whilst important, these are in fact facets of good development and should not be conflated with building resilience because they don't go far enough towards addressing each of the ten characteristics of resilience. Building resilience is more than working in parallel with other programmes or activities; it is about consciously taking into account the way one set of interventions relate to another, i.e. their complementarily and/or trade-offs, in order to make informed decisions that work towards achieving the ten resilience characteristics. There is a need for further research to build an evidence base that demonstrates 'building resilience' as distinct from 'doing better development' (which is still, in effect, business as usual).

9. Conclusion

The conclusion presented here is not a summary of the paper but a consideration of three themes running through the paper: the resilience characteristics; the position that the resilience agenda does not negate the need to take seriously the role of power; and the role of climate change.

9.1. Resilience characteristics

This paper has demonstrated that in committing to a concrete definition of the term resilience and exploring its relevance in relation to a specific intervention, it is possible to better understand how we can operationalise what has until now been a term confined to the conceptual realm in the development sector. Applying Bahadur et al.'s (2010) ten resilience characteristics to Practical Action's Greening Darfur programme is not without its limitations (discussed previously). Despite the limitations, this paper reveals that the concept of resilience has a lot to offer in terms of supporting more holistic thinking in ways that support the notion of interlocking resilient systems – reflecting the complex reality of the contexts in which interventions are undertaken. However, in order for the characteristics of resilience to be applicable and thus most helpful, they need to be contextualised and new ways of thinking and working must be developed. As this paper has sought to demonstrate, resilience is not simply what we do already - it is more than that.

The findings of the paper not only highlight the usefulness of the characteristics for operationalising resilience, but also how the characteristics help bring to the fore aspects of resilience that represent a break from the status quo, which require us to adopt new ways of working. These include: the inevitable existence of uncertainty and change is accepted (resilience characteristic 3); building redundancy within systems (characteristic 5); the non-equilibrium dynamics of a system are recognised (characteristic 8); and the importance of cross-scalar perspectives (characteristic 10). Although there is no space here to deal with each of these substantially, they are highlighted as characteristics of resilience that fundamentally challenge the way we currently do development. The emphasis on the inevitability of uncertainty and change and the non-linearity of events encourages systems that not only

acknowledge such qualities but embrace them and move away from attempts to control change. This requires a shift in our current project-based approaches, the log frame thinking and assumption that we can know and plan for change. The notion of not resisting change but building redundancy within a system to be able to deal with changing scenarios challenges the tendency to place weight on what conditions used to be like, and considers what is needed to shape future change (whilst recognising we cannot control change).

A good illustration of a resilience characteristic that challenges the way we currently undertake development interventions can be found in the acceptance of the 'non equilibrium' dynamics of a system and recognition that there is no stable state to return to after a disturbance. This requires building in the changes that disturbance creates as part of a continually evolving system. This also challenges the tendency to try and restore previous conditions when in fact new conditions have emerged. And finally, the importance of linking both scales and sectors is stressed: it will only be possible to contribute towards building a resilient system if the complex, multifaceted nature of that system is readily acknowledged.

9.2. Resilience within a coping deficit and recognition of power and politics

The whole notion of building resilience within communities affected by the challenges of disaster risk, climate change and poverty and vulnerability is likely to attract some criticism, not least because within many of the communities in places such as Darfur there is a significant coping deficit. As Osman-Elasha and Sanjak (2008: 244) found, '... in their [Darfurians] attempts to cope with climatic and other related stresses, people may adopt specific measures that further aggravate their vulnerabilities and undermine their productive assets, for example, through overexploiting their over-stressed natural resource base'. Similar conclusions were identified in the Greening Darfur concluding conference in relation to conflict: '...pressure on the natural asset base has fed into conflict dynamics in the region... conflict processes have precipitated maladaptive livelihood practices, further eroded the environment, and severely weakened established systems of resource governance' (Practical Action, 2011: 5).

What must be appreciated is the need to better recognise these coping deficits, the trade-offs in implementing particular interventions and the need to better understand the interconnections between different challenges. It is not the intention to suggest that bad choices are being made by the vulnerable whose choices (if that term is even appropriate) are severely constrained. As Osman-Elasha and Sanjak (2008: 249) note in the case of Darfur, 'it becomes increasingly difficult for them [households] to decide between the few difficult alternatives'.

Resilience is a useful framing for bringing together the multiple shocks and stresses faced by communities in vulnerable conditions. As Keen (2008: 121) stresses in reference to Darfur, the 'lack of political clout of disaster victims' becomes even more significant when recognising that in conflict situations the ability to have voice is even more restricted. In short, 'If disaster victims lack political clout in peacetime, this is all the more applicable in wartime' (Keen, 2008: 122). These are the individuals that require the most sustained support and we must find innovative ways to enable resilience thinking to address these challenges. To continue with business as usual would be a wasted opportunity.

Our '...initial steps to reduce deleterious effects and vulnerability to climate change should focus on improving adaptation to current climate variability... to create adaptive capacities that can significantly improve existing socio-economic conditions for the people as well as enhancing their response to longer-term changes in local and regional climates' (Osman-Elasha, 2009: 3). In order for this to be possible, as Osman-Elasha (2009: 7) points out when speaking about Darfur, it is, '...the allocation of resources and the efficiency with which they are used and managed [that] are important for gaining insight on the region's vulnerability as well as on the role of natural resources in the conflict'. Thus as Campbell (2010: 8) states, '...the linking of climate change and conflict has refocused attention of some of the more fundamental challenges of development as it relates to power relations and the political economy'. This is nowhere more apparent than in the context of Darfur.

It has not been possible within this paper to explore the power and politics dimensions necessary for a full and thorough discussion on conflict and resilience – indeed, unpacking resilience in practice has only just been covered here. What is needed to further our understanding is a more detailed look at a) the political economy of conflict in relation to ‘building resilience’; b) interventions managing disaster risk when it is not framed as that (e.g. it is framed as drought but not in conventional DRM terms); and c) what this (b) can contribute to, as well as learn from, existing disaster risk practice.

It was the intention of this paper to try to demonstrate how the concept of resilience can be used to keep the vulnerable at the centre of the frame. This approach contrasts with concerns that the concept of resilience could be undermining the concept of vulnerability (see Cannon and Muller-Mahn, 2010: 632-3). The whole premise of this paper is to explore the inter-linkages between different parts of a system, which must be taken into consideration in resilience thinking. In the case of Darfur, Nyukuri (2009: vi) illustrates this point:

“Many political sources of ecological conflict are mistaken for ecological sources, sometimes because of wilful obfuscation by those involved... But conflict systems, like ecological systems, are complex, ever-changing phenomena, so it is crucial to contextualize each conflict to properly identify the role of environmental issues such as climate change and its effects.”

9.3. What role for climate change?

Climate change is already happening. Therefore, because climate change is already a factor in the myriad inter-related dynamics at play within difficult environments such as Darfur, going forward our focus should not be on trying to unpack climate change causality (i.e. to what extent is climate change the cause of different shocks and stresses within a particular environment), but rather to ask how can the myriad institutions, agencies and interventions work towards development – enabling peace and security – in a changing climate? This requires much more holistic thinking that draws on the notion of resilient systems which recognise the dynamic inter-relationship between multiple parts. In very practical terms, this could involve building on the concept of ‘accumulating knowledge’. Osman-Elasha and Sanjak (2008: 253), for example, stress the need to use accumulated knowledge generated by different initiatives that span the breadth of climate change adaptation, disaster risk reduction and poverty reduction.

There is already some concern that the adaptation community is not fully utilising the experience and expertise of the disasters community and it is important to ensure the same cannot be said for peace and security in conflict affected contexts. While recognising that context strongly dictates what is possible, there remains a tendency to overlook the potential of natural resource disputes, including those related to climate change, as a place for peace; what could be called ‘adapting for peace’ or ‘peaceful adaptation’.¹³ This is especially important when considering the experience already gained in applying conflict sensitive approaches to interventions of a range of sectors. As Betsy Hartmann (2007: 2) poignantly states in relation to the literature linking climate change and conflict, ‘...threat scenarios ignore the way many poorly resourced communities manage their affairs without recourse to violence’. She writes: ‘above all, it is institutions and power structures at the local, regional, national and international levels that determine whether conflict over resources turns violent or not’ (Hartmann, 2007: 3). In practical terms, this could mean understanding the relationship between climate change and conflict in ways that take into consideration natural resource management, livelihood options, security and justice mechanisms, as well as environmental vulnerability.¹⁴ The ten characteristics of resilience provide a useful frame in which to bring these different challenges and sectors together.

¹³Term coined by Sara Wolcott, as part of a desk based review for this paper

¹⁴Saferworld have begun to consider this, see Campbell (2010)

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Annex 1

Programme description: the Greening Darfur programme

Practical Action began programming in Darfur in 1988. Known then as the Intermediate Technology Development Group they worked with Oxfam primarily on water harvesting and donkey ploughing. From 2002 onwards Practical Action worked independently on a broader range of livelihoods interventions, supported by organisations such as Christian Aid. In the late 1990s and in 2006 Practical Action established a range of CBOs. These CBOs later coalesced around three parent networks which became central to the Greening Darfur programme (Practical Action, 2011): the Village Development Committee Network (VDC-net), Women's Development Associations Network (WDA-net) and the Market Network (M-net) (from GD PA proposal Oct'08).

Building on longer term investment and experience in Darfur, the Greening Darfur programme was implemented from January 2009 to December 2010. The goal of the programme was to reduce poverty and local communities' vulnerability to environmental degradation and drought. Its purpose was to enable CSOs to shape and implement strategies for the rehabilitation and development of natural resources and livelihoods (Practical Action, 2009a). Key to the Practical Action approach is building the ability of Darfurians to improve their livelihoods through environmentally sensitive technologies to enhance food security, which in turn reduces vulnerability (Osman-Elasha and Sanjak, 2008: 252). Outlined below are the three broad outcomes of the Greening Darfur programme, followed by an extract of a discussion with the Village Development Committee (VDC) from Umzoar village.

Greening Darfur programme outcomes

The programme was implemented in a difficult working environment characterised by a volatile and fluctuating security situation, poor harvest seasons, 72.9 per cent food deficit in the region, increasing price of staple food, poor and erratic rainfall and pest infestation (Practical Action, 2009b: 2). Despite the challenges the Practical Action staff in the El Fashir field office managed to continue with field visits throughout the majority of the implementing period (Annual Report, 2009). The implementation was possible, in part, through the programme's consensus building methods which formed an important part of the implementation approach, discussed further later (PAPD, 2010). Outlined below are the three programme outcomes, along with the relevant activities, as documented in Practical Action's monitoring and evaluation reports and validated through field research.

Outcome 1 - Civil society organisations have the capacity to lead the outreach and extension of successful social and technological practices among rural communities in North Darfur and neighbouring areas.

Outcome one involved building the capacity of the three networks, VDC-net, WDA-net and M-net in:

- Identifying their development priorities;
- Planning and implementing different programme activities;
- Accessing alternative funding sources to finance their priorities;
- Conducting joint monitoring visits;
- Linking with other service providers.

The activities outlined above all aim to build the capacity of the networks to represent the rural poor, develop their skills and input into policy processes. It is hoped that by building the networks' capacity they will also be able to remain effective within their communities, seek additional financial resources and thus provide sustained support to the rural populations.

VDC-net, WDA-net and M-net also undertook institutional capacity assessments, as did 33 newly established VDCs who were formed to increase the membership of the networks. A participatory capacity building plan was then developed and the gaps identified addressed through various activities. In addition, the 22 VDCs and the WDA-net undertook training on organisational development strategic planning and project management. Following the training strategic plans were developed and on the basis of this, proposals were submitted by the

networks to NGOs seeking future support. In support of this, 30 members from across the three networks received fundraising training to build their capacity to develop and write proposals for different donors. The financial competency of the three networks was also developed. This involved operationalising a simple financial system, undergoing training and monitoring performance on a monthly basis.

In addition, two training courses were held covering topics including forest protection, extension and horticulture, land use and soil conservation, attended by 58 Village Extension Agents from 33 villages. This was supported by refresher courses for 33 of the existing agents. An advanced training on crop production was also conducted for 31 agents. Finally, using Practical Action's Participatory Action Plan Development, communities were supported to identify and resolve problems related to natural resource use. This involved establishing joint resource access, management plans and agreeing on development priorities.

Outcome 2 - Rural communities have increased access to water for agriculture, livestock and potable use, leading to increases in food production and reducing pressures on rangelands.

Outcome two included supporting the construction of rainwater harvesting on farmer fields in wadis. In an attempt to address the undermining of traditional coping mechanisms by successive drought cycles, Greening Darfur sought to improve soil terracing on the wadi soils which can secure crop yields at near average levels even in drought years. Activities included:

- Training communities and extension agents on construction, layout, levelling and controlled drainage techniques for the terrace designs;
- Constructing 900 crescent-shaped terraces;
- Subsidising the poorest households and villages with tools and revolving subsidies;
- Supporting 63 Village Extension Agents trained in outcome one to support terrace construction within the communities.

In addition, a study was undertaken to assess the environmental impacts of Practical Action's water harvesting projects, along with a technical and financial feasibility study for dam construction in the area. Together, the studies provided sufficient information to construct 14 mini dams. Rehabilitation and/or construction also took place for two hand-dug wells, six shallow wells, two hafirs and six hand pumps. It is anticipated that these benefited approximately 7,000 people and animals across 15 villages. To support the transportation of water, 50 donkey-drawn carts were also bought and distributed.

To further support food production, food security and local food generation, Greening Darfur supported the construction and management of three community seed stores in conjunction with organising the management, storage and exchange of crops and vegetables. This was strengthened by a seed fair organised by the three networks.

Finally, an end of programme conference was held to share the lessons, challenges and raise awareness of the programme to other stakeholders within Darfur. 130 attendees represented a broad spectrum of stakeholders in Darfur. Amongst other things, the conference aimed to:

- 'Promote the integrated technical and civil society development approach utilised during the project;
- Draw attention to approaches used for rural development and resource management, in a protracted conflict environment; and
- Generate recommendations for long-term sustainable development and poverty reduction in Darfur' (Practical Action, 2010d: 9).

Outcome 3 – Regenerate natural resource management systems for sustainable human and livestock use and improve the efficiency and effectiveness of human exploitation of environmental resources.

Outcome three builds on the longer-term investment by Practical Action in supporting local communities to conserve the environment. This investment has included activities to support terrace construction, community forests, shelter belts, rangeland regeneration and vegetation regeneration (Practical Action, 2010d: 9). Activities within Greening Darfur included:

- Hosting ten environmental awareness sessions and training 63 community members on tree seeding production and transplantation;

- Establishing four community nurseries;
- Producing and transplanting approximately 210,000 tree seedlings of various different types;
- Establishing 11 community forests.

In addition, 'pastures management' training was undertaken with 150 community members to raise awareness of rangeland rehabilitation and the importance of reserve areas. Supporting this was the development of three campaigns which supported new pasture areas and the opening of 370km of fire lines.

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For more information contact:

Katie Harris
Institute of Development Studies
Brighton BN1 9RE UK
T: +44 (0)1273 606261
email: scr@ids.ac.uk
<http://community.eldis.org/scr>

Katherine Nightingale
Christian Aid
London SE1 7RL
T: +44 (0) 207 523 2145
email: knightingale@christian-aid.org
www.christianaid.org.uk

Kelly Hawrylyshyn
Plan International
London EC1V 9LH
T: +(44) 20 7482 9777
email: Kelly.Hawrylyshyn@plan-international.org
www.plan-uk.org



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