Overseas Development Institute

Responding to a changing climate

Exploring how disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity

Lindsey Jones, Susanne Jaspars, Sara Pavanello, Eva Ludi, Rachel Slater, Alex Arnall, Natasha Grist and Sobona Mtisi

Working Paper 319

Results of ODI research presented in preliminary form for discussion and critical comment

Working Paper 319

Responding to a changing climate:

Exploring how disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity

Lindsey Jones,[i] Susanne Jaspars,[ii] Sara Pavanello,[ii]
Eva Ludi,[iii] Rachel Slater,[iv] Alex Arnall,[v]
Natasha Grist[i] and Sobona Mtisi[iii]

August 2010

Overseas Development Institute
111 Westminster Bridge Road
London SE1 7JD
www.odi.org.uk

Author affiliations: i) ODI Climate Change, Environment and Forests programme; ii) ODI Humanitarian Policy Group; iii) ODI Water Policy programme; iv) ODI Social Protection programme; v) Institute of Development Studies. Extensive comments were also received from Chris Anderson and Catherine Pettengell at Oxfam.

ISBN 978 1 907288 25 8
Working Paper (Print) ISSN 1759 2909
ODI Working Papers (Online) ISSN 1759 2917

Contents

Abbreviations and acronyms

ACCRA	Africa Climate Change Resilience Alliance
AIDS	Acquired Immune Deficiency Syndrome
AR	Assessment Report (IPCC)
CBO	Community-Based Organisation
CCA	Climate Change Adaptation
CSO	Civil Society Organisation
DFID	UK Department for International Development
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
EWS	Early Warning System
HFA	Hyogo Framework for Action
HIV	Human Immunodeficiency Syndrome
IASC	Inter-Agency Standing Committee
IDS	Institute of Development Studies
IPCC	Intergovernmental Panel on Climate Change
LH	Livelihoods
NADEL	Nachdiplomstudium Entwicklungsländer (Advanced Studies in Development and Cooperation)
NGO	Non-Governmental Organisation
NOAA	National Oceanographic and Atmospheric Administration
ODI	Overseas Development Institute
PSNP	Productive Safety Net Programme (Ethiopia)
SDC	Swiss Agency for Development and Cooperation
SP	Social Protection
SR	Social Risk Management
UK	United Kingdom
UN	United Nations
UN/ISDR	UN International Strategy for Disaster Reduction
WFP	World Food Programme
WRI	World Resources Institute

1. Introduction

The inevitability of changes occurring to the climate at both global and local scales is now a well-established reality. Confidence is currently higher than in previous assessments with regard to projected patterns of warming and other features of a regional scale, including changes in wind patterns, precipitation and some aspects of extremes and sea ice (IPCC, 2007a). For poor countries in Africa, Asia and Latin America, climate change adds another layer of complexity to already existing development challenges, such as high levels of poverty and inequality, rapid population growth, underdeveloped financial markets and weak governance systems. In many countries in sub-Saharan Africa, a large proportion of the population also experiences protracted conflict and/or political instability (Alinovi et al., 2008; Bloom and Sachs, 1998; Boyd et al., 2009, in World Bank, 2010). Climate-related changes can provide added impetus to existing civil conflicts and has the potential to spark new ones (Luckham et al., 2000, in Bruck and Schindler, 2009). Climate change is predicted to exacerbate these developmental challenges, 'as more floods, more droughts, more strong storms, and more heat waves makes development policy and practice more complicated' (World Bank, 2010).

Given its wide array of impacts on and interactions with wider development, climate change will inevitably have considerable implications for humanitarian and development interventions. Accordingly, there is a need to consider how humanitarian and development approaches can, in many instances, help enhance communities' capacity to adapt to a changing climate or, at the very least, prevent actions that undermine adaptive capacity. This paper reviews how aspects of disaster risk reduction (DRR), social protection (SP) and livelihoods (LH) approaches may act in contributing to the various features of adaptive capacity.

This paper provides part of the theoretical basis for a project led by Oxfam and supported by the Overseas Development Institute (ODI): the Africa Climate Change Resilience Alliance (ACCRA), which also includes Save the Children UK, World Vision International and CARE. Under ACCRA, consortium members will undertake a study to gather evidence in three countries – Ethiopia, Mozambique and Uganda – with the overall aim of understanding whether and how DRR, SP and LH approaches can contribute to adaptive capacity.[2]

The paper does not seek to expand on the conceptual underpinnings of adaptive capacity; rather, it aims to find out what aspects of DRR, SP and LH can contribute to adaptive capacity, as well as to understand how such approaches can better respond to climate change and facilitate adaptation.

Section 2 of the paper reviews concepts of risk, vulnerability and resilience. Section 3 describes adaptive capacity and outlines the spectrum of activities employed under climate change adaptation (CCA) interventions. Section 4 reviews the objectives, concepts and definitions of DRR, SP and LH approaches, what these mean in terms of programming and their links with CCA. Section 5 discusses how these different approaches can contribute to adaptive capacity. Section 6 concludes.

[2] The project's initial focus was on climate resilience; however, after preliminary literature reviews, discussions at a workshop organised by the Institute of Development Studies (IDS) on climate change and DRR and collaboration with the ACCRA team, we decided that it would be more appropriate to redirect the focus of the paper towards the promotion of adaptive capacity to climate change. The draft background paper was revised accordingly.

2. Defining hazards, risk, vulnerability and resilience

The term **hazard** has been broadly defined as a condition or event that may cause great harm to humans and their welfare (Downing et al., 2001; Helm, 1996; Jones and Boer, 2003). This includes tropical cyclones, droughts, floods or conditions leading to any outbreak of disease-causing organisms (Jones and Boer, 2003, in Brooks, 2003). In the climate change literature, the term 'hazard' refers specifically to 'physical manifestations of climate variability or change, such as droughts, floods, storms, episodes of heavy rainfall, long-term changes in the mean values of climatic variables, potential future shifts in climatic regimes and so on' (Brooks, 2003). In the DRR literature, a hazard is referred to as a 'potentially damaging physical event, phenomenon or human activity, which may cause loss of life or injury, property damage, social and economic disruption or environmental degradation' (Twigg, 2004; UN/ISDR, 2004). According to the United Nations International Strategy for Disaster Reduction (UN/ISDR) 'Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydrometeorological and biological) or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential or combined in their origin and effects. Each hazard is characterised by its location, intensity, frequency and probability' (UN/ISDR, 2004).

LH approaches generally refer to **shocks** and **stresses** rather than hazards. Stresses have been defined as 'pressures which are cumulative and continuous, such as seasonal shortages and climate variability, soil degradation, population pressure, and shocks as sudden events such as floods, epidemics, droughts, but also wars, persecution and civil violence' (Chambers and Conway, 1991). Whereas DRR interventions are concerned largely, though not exclusively, with minimising the effects of extreme events, the breadth of CCA interventions typically aims to address both immediate shocks, as well as gradual stresses, that deviate from 'average' climate conditions, such as continuous and incremental changes to temperature and rainfall. In conflict situations, rather than 'hazard', the term 'threat' (or 'protection threat') is used when referring to the deliberate targeting of civilians and other forms of physical violence, the restriction of movement or access to land and property as well as deliberate deprivation. In general, these approaches deal with hazards, shocks or stresses that affect entire areas or population groups. In contrast, SP is more likely to deal with shocks at the individual or household level, for example: sudden death or injury of a family member; increases in expenditure associated with an event such as a wedding or a funeral; decreasing food production resulting from land degradation; decreasing farm size; unfavourable family situation; old age; or general asset deprivation, among others. In the poorest countries, communities and households are likely to experience a range of such threats, shocks and stresses, multiplying the risks that they face.

The term **risk** is used either to describe the probability of a particular hazard occurring or as a combination of hazard and vulnerability. Twigg (2004) defines risk as the result of hazards multiplied by vulnerability. Others have taken a similar approach by separating event risk and outcome risk (Sarewitz et al., 2003): 'event risk' refers to the risk of occurrence of any particular hazard or extreme event, whereas 'outcome risk' is the risk of a particular outcome. Outcome risk is therefore seen as a function of event risk and of inherent social, economic, political and institutional vulnerabilities.

Vulnerability within social systems is, at its simplest, concerned with the degree to which systems have the ability to cope with, resist and recover from the impact of a shock or a stress. The definition of vulnerability used in the LH literature focuses on its dual facets: 'an external side of risks, shocks and stresses to which an individual or household is subject, and an internal side which is defencelessness, meaning a lack of means to cope without damaging loss' (Chambers, 1989). Definitions of vulnerability vary, but all incorporate 'lack of means to cope'. For example, in the climate change literature, the Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as 'the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity' (IPCC, 2001). Other approaches place greater emphasis on vulnerability to outcomes and focus on the dynamic interaction

between exposure to climate variability and change and the social, political, institutional and economic structures that shape individuals' lives (Adger, 2006; O'Brien et al., 2007).

Causes of vulnerability relate both to the assets people own and to the accountability and effectiveness of institutions and, for many population groups, long-term processes of social, economic and political marginalisation. Lack of assets such as land, livestock, income, social networks and political links influences vulnerability. Meanwhile, households headed by women, children or the elderly are more likely to be unable to cope with shocks and stresses. Access to education, health care, agricultural services, justice systems and conflict resolution mechanisms are other key determinants of vulnerability.

Another term that is increasingly common in these debates is **resilience**. Even though the term is widely used by practitioners, there is no accepted definition across the different disciplines. Holling (1973) defined resilience as a 'measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables'. In short, resilience can be defined as 'the capacity of a system to anticipate, prepare for, respond to and quickly recover from changes in the system – be it climate shock and stresses or other drivers of change' (Badahur, 2009). Definitions used in DRR and LH are similar to this but have taken the focus from the higher systems level to ground it in people and society. In LH approaches, resilience is seen as the opposite of vulnerability. Resilience is considered a key feature of sustainable livelihoods, which means the ability to cope with, avoid or resist stresses and shocks. A household's assets may be chosen with the aim of reducing vulnerability to such shocks and stresses (Chambers and Conway, 1991). LH approaches also encourage the promotion of resilience by ensuring that policies and institutions are responsive to the needs of the poor, as well as by building up assets.

3. Characterising adaptation and adaptive capacity

3.1 Adaptation

Adaptation has become central to the development debate in recent years, as academics and practitioners alike recognise the need to secure development benefits that might otherwise be undermined by climate change, in building towards an uncertain future (Boyd et al., 2009). Most sectors, regions and communities are reasonably adaptable to average changes to the local climate and do so on their own initiative (often referred to as 'autonomous adaptation'), particularly if change is gradual. However, support is needed at both national and community levels to adapt and make informed transformations in response to changes in climate that may have no recent historical precedent, when local institutions may not have the necessary familiarity or the capacity to cope and adapt.

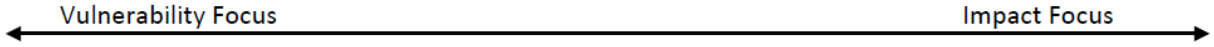
Adaptation actions refer to actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate (IPCC, 2007b). Adaptation actions are needed to ensure that individuals and societies are capable of dealing with the detrimental impacts of both natural and anthropogenic (or human-induced) climate change. Adaptation manifests itself in a number of forms, is undertaken by various agents and occurs at multiple scales. The concept is usefully disaggregated in various ways: mainly by timing and by the degree of planning involved. Adaptation practices by communities and institutions can be either anticipatory or reactive and, depending on the degree of spontaneity, can be autonomous or planned.[3] Accordingly, there are distinctions between adaptation as a programmatic approach and adaptive actions by households, communities or institutions themselves: the former is largely planned, seeking to facilitate sustainable and effective positive adaptation by the community as a whole; the latter is generally associated with any such actions in anticipation of/reaction to climatic shocks and stresses. Indeed, it should be noted that adaptive actions are not necessarily positive, short-term gains or benefits taken to adapt to changing shocks and stresses can in some cases lead to increased vulnerability in the long term – known as maladaptation.

Adaptation actions are rarely made in response to climatic stimuli alone. In many cases, a direct climatic event is less likely to trigger adaptive action than the economic and socio-political consequences of the climatic condition (Smit and Pilifosova, 2001). Thus, the consequences of a climate event are not direct functions of its physical characteristics. Rather, as Rayner and Malone (1998) contend, they are also functions of 'the way in which a society has organised its relation to its resource base, its relations with other societies, and the relations among members'. This echoes discussions about the human-made aspect of disasters. Accordingly, in order to understand how societies can better cope with and adapt to climatic stressors, a focus is needed on addressing the political, cultural and socioeconomic factors that may promote or inhibit individuals from adapting (Smit and Pilifosova, 2001). This is an essential component of programmatic adaptation approaches.

Similar in many regards to DRR, SP and LH, CCA cannot be characterised as a single intervention, and instead needs to be seen as an overarching approach, incorporating a number of different interventions. Efforts to facilitate adaptation are diverse in nature but can be conceptualised broadly along a continuum (see Figure 1), varying from interventions designed exclusively to confront the impacts associated with a changing climate, to initiatives seeking to address the wider underlying drivers of vulnerability and adaptive capacity – often with little direct association with climate hazards (McGray et al., 2007). The various elements of DRR, SP and LH may go a long way towards contributing to an individual's capacity to adapt to a changing climate.

[3] Autonomous adaptation: adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Planned adaptation: the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain or achieve a desired state. See www.ukcip.org.uk/index.php?option=com_content&task=view&id=55.

Figure 1: The adaptation continuum



Addressing Drivers of Vulnerability	**Building Response Capacity**	**Managing Climate Risk**	**Confronting Climate Change**
Activities seek to reduce poverty and other non-climatic stressors that make people vulnerable	*Activities seek to build robust systems for problem-solving*	*Activities seek to incorporate climate information into decision-making*	*Activities seek to address impacts associated exclusively with climate change*
Examples:	**Examples:**	**Examples:**	**Examples:**
Diversification of livelihood strategies in areas vulnerable to flooding	Participatory reforestation to combat flood-induced landslides	Monitoring of salinisation of drinking water and drilling of new wells no longer useable	Managing coral reefs in response to widespread coral bleaching
Provision of crossbred goats and information and instructions in graze-free feeding	Reinstating pastoral networks to foster appropriate rangeland management practices in arid lands	Teaching farmers to collect climate data and integrate into their planting decisions	Reducing risk of glacial lake outburst floods (GLOFs).
Vaccination programmes to eradicate diseases in low-income areas	Reviving traditional enclosures to encourage vegetation regeneration and reduce land regredation	Using nationally standardised risk assessment procedures to develop a community adaptation plan of action	Erection of sea wall defences to combat rising sea levels

Source: Adapted and expanded from McGray et al. (2007).

Central to adaptation is the notion of adaptive capacity. Although frequently used interchangeably with the term resilience, adaptive capacity denotes the ability of a system to evolve in order to accommodate shock and stress or to expand the range of variability with which it can cope (Klein and Huq, 2003). In the context of climate change, the IPCC (2001) defines adaptive capacity as the actual ability of a system to adjust (or adapt) to climate change, variability and extremes, moderating potential damage, taking advantage of opportunities, coping with consequences, as well as expanding its coping range under existing climate variability or future climate conditions. The presence of adaptive capacity has been shown to be a necessary condition for the design and implementation of effective adaptation strategies so as to reduce the likelihood and the magnitude of harmful outcomes resulting from climate change (Brooks and Adger, 2005). Adaptive capacity also describes communities' capacity to take advantage of the benefits and opportunities associated with a changing climate.

Essentially, the key component in this description relates to the system's capacity to alter and adapt its circumstances in response to a changing environment. This contrasts with conventional definitions of resilience in the climate literature, which describe the ability of the system to 'tolerate disturbance without changing state' (Levina and Tirpak, 2006). Although both terms have a wide variety of frequently overlapping definitions, put simply, resilience within the context of climate refers to 'the ability of a system to absorb shocks, to avoid crossing a threshold into an alternate and possibly

irreversible new state, and to regenerate after disturbance. Adaptive capacity is the capacity to adapt and to shape change' (NOAA, 2008). The abovementioned descriptions are used to describe the concepts of resilience and adaptive capacity for this paper. Despite being associated in this context primarily with climate change, it must be noted that the notion of adaptive capacity can be used in a number of contexts, simply implying the capacity of a system to adapt to a changing environment – be that climate, economic, conflict stress, etc.

3.2 Features of adaptive capacity

In order to further understand how features of DRR, SP and LH can contribute to promoting adaptive capacity in light of climate change, it is essential to characterise adaptive capacity and its various features. Much of our understanding of adaptive capacity originates from vulnerability assessments. Despite not being concerned explicitly with the determinants of adaptive capacity, indictors of vulnerability often provide substantial insights into the factors, processes and structures that promote or constrain adaptive capacity. Accordingly, observations of vulnerability and adaptive capacity research assessments suggest that certain dimensions of adaptive capacity are generic, whereas others are specific to particular climate change impacts. Generic indicators include factors such as education, income and health. Indicators specific to a particular impact, such as drought or floods, may relate to institutions, knowledge and technology (IPCC, 2007b).

As no universal characterisation of the features of adaptive capacity is available, we provide a comprehensive depiction of its various features, based on an extensive review of the wider literature, and the development of the ACCRA framework for adaptive capacity.[4] The ACCRA framework is informed by a consultative discussion with experts at the IDS climate change and DRR workshop held in February 2010 and guided by available scientific and grey literature.

The features listed below form the conceptual basis for the ACCRA framework (see Box 1). The IPCC's Third Assessment Report (AR3) proposes that the main features of a community's adaptive capacity comprise *economic resources*, *infrastructure technology*, *infrastructure*, *information and skills*, *institutions* and *equity* (IPCC, 2001). Studies carried out after AR3 led the Fourth Assessment Report (AR4) to acknowledge the influence of social factors such as *human capital* and *governance structures* (IPCC, 2007b). Building on the IPCC's assessment reports, and similar analyses such as the World Resources Institute (WRI) National Adaptive Capacity Framework (WRI, 2009), as well as drawing on an extensive array of wider adaptation literature,[5] the ACCRA framework identifies the features of adaptive capacity at the community level as broadly comprising five core features: *the asset base*; *institutions and entitlements*; *knowledge and information*; *innovation*; and *flexible forward-looking governance*. Box 1 gives further descriptions of the particularities of each identified feature.

[4] Note that the ACCRA framework is under development.

[5] See, for example, Adger et al. (2003); Berkes and Jolly (2001); Diaz et al. (2005); Folke et al. (2002); Klein and Huq (2003); Smit et al. (2000); Smith et al. (2003); Tompkins and Adger (2004); Yohe and Tol (2002).

Box 1: ACCRA features of adaptive capacity

The asset base: *The availability and interplay of key assets needed to respond to evolving circumstances in a changing climate*.

Combining the economic resource and infrastructural components, this feature is made up of a number of elements that constitute the various financial, physical, natural, social, political and human capitals necessary to best prepare the system to respond to a changing climate.

Institutions and entitlements: *An institutional environment that allows equitable access and entitlement to key assets.*

The ability of the system to ensure equitable access and entitlement to key resources and assets is a fundamental characteristic of adaptive capacity. Given that entitlements to 'elements of adaptive capacity are socially differentiated along the lines of age, ethnicity, class, religion and gender' (Adger et al., 2007), an institutional environment that permits equitable procedural and distributional opportunities for all groups, and those most vulnerable to the impacts of climate change, is essential to building the capacity to adapt.

Knowledge and information: *The system has the ability to collect, analyse and disseminate knowledge and information in support of adaptive activities.*

Successful adaptation will require information and understanding of future change, knowledge around adaptation options, the ability to assess them and the capacity to implement the most suitable interventions (Frankhauser and Tol, 1997). Thus, in the context of climate change it is important to ensure that systems are in place to disseminate climate- and adaptation-relevant information at both national and regional levels.

Innovation: *The system creates an enabling environment to foster innovation, experimentation and the ability to explore niche solutions in order to take advantage of new opportunities.*

A key characteristic of adaptive capacity relates to the system's ability to foster and support innovation (Smith et al., 2003). Innovation can be planned, high-tech orientated and geared towards large-scale innovations; or autonomous, micro-level initiatives that help innovate or adapt, fostered at the local level (Wongtschowski et al., 2009). An enabling environment that promotes and allows for experimentation and the exploration of niche solutions is required to take advantage of new opportunities presented under climate change.

Flexible forward-thinking decision making and governance: *The system is able to anticipate, incorporate and respond to changes with regard to its governance structures and future planning.*

Concerned largely with aspects of institutional governance, this characteristic relates to the system's capacity to anticipate change and incorporate relevant initiatives into future planning. Informed decision making, transparency and prioritisation all are key elements of the characteristic, acknowledging the role of dynamicism of institutions, as well as the asset base, to respond to evolving circumstances in light of climate change. Similarly, flexibility to allow for systems, and the institutions that govern them, to evolve and adapt to a changing environment is a crucial characteristic of adaptive capacity (Adger et al., 2007; Smith et al., 2003).

Although not conventionally associated with interventions aimed at facilitating adaptive capacity, elements of DRR, SP and LH practices may ultimately contribute to and enhance aspects of the various features. In order to better assess how such approaches may be seen to contribute to increasing adaptive capacity, this paper now gives a brief description of the types of interventions associated with each approach.

4. Disaster risk reduction, social protection and livelihoods approaches and their linkages to climate change adaptation

This section describes DRR, SP and LH approaches in terms of their objectives, the underlying concepts and definitions and the associated programme approaches. Each approach is described individually, and a concluding section discusses actual and/or potential linkages and contributions to CCA. Indicators do not as yet exist to monitor whether they contribute to CCA – or whether climate change has been mainstreamed or built into the interventions. The features of adaptive capacity proposed in Box 1 could form the basis for developing such indicators.

4.1 Disaster risk reduction

'Natural' disasters are a product of the social, economic and political context in which they occur. Although hazards that lead to natural disasters cannot be prevented, their effects can be mitigated or reduced (Wisner et al., 2004). To this end, disaster management approaches focus on reducing the risk posed by actual and potential hazards (Alexander, 2002).

4.1.1 Objectives

The UN/ISDR defines DRR as the sets of actions 'taken to reduce the risk of disasters and the adverse impacts of natural hazards, through systematic efforts to analyse and manage the causes of disasters, including through avoidance of hazards, reduced social and economic vulnerability to hazards, and improved preparedness for adverse events'.[6] Another scholar defines DRR as a 'systematic approach to identifying, assessing and reducing the risks of disaster. It aims to reduce socio-economic vulnerabilities to disaster as well as dealing with the environmental and other hazards that trigger them' (Twigg, 2007). DRR is also viewed as 'a conceptual framework intended to systematically avoid (prevent) and limit (prepare/mitigate) disaster risks with regard to losses in lives and the social, economic and environmental assets of communities and countries' (InfoResources, 2009).

4.1.2 Concepts and definitions

DRR refers to 'the broad development and application of policies, strategies and practices to minimise vulnerabilities and disaster risks throughout society' (Twigg, 2004). From an operational point of view, historically, the majority of DRR interventions have focused on mitigation and preparedness:

- Mitigation refers to actions taken to minimise the extent of a disaster or potential disaster and is used mostly to refer to measures against potential disasters. Mitigation measures can be both structural (e.g. flood defences) and non-structural (regulating land use and public education).
- Preparedness refers to specific measures taken before disasters strike, usually to forecast or warn against them, when there is a disaster threat and to arrange for appropriate responses. Preparedness falls within the broader field of mitigation.

Although DRR initiatives are largely linked to mitigation and preparedness actions, from a conceptual point of view DRR's remit is much broader. Incorporating and expanding on the principles of disaster risk management (DRM), DRR is holistic in the breadth of its interventions as it seeks to address a wide range of issues, from policy and governance, education and awareness, to addressing the underlying features of vulnerability and risk to hazards and stresses.

In DRR thinking, disasters are no longer seen as exceptional events for which responses are limited to ex-post relief and rehabilitation activities. Disasters are increasingly being recognised as 'deep rooted

[6] UN/ISDR Terminology on Disaster Risk Reduction (under development). Based on the 2004 Terminology: Basic Terms of Disaster Risk Reduction (UN/ISDR, 2004).

and longer-term problems that must be planned for' (Twigg, 2004), with consequences that can be reduced and mitigated when appropriate measures are taken. In this context, DRR has emerged as a critical area for building linkages and addressing the longstanding divide between humanitarian and development work (Maxwell et al., 2009).

4.1.3 DRR in practice: operational implications

Fundamental to DRR programming is the adoption of a risk management approach, in other words the 'systematic approach to identifying, assessing and reducing risks of all kinds associated with hazards and human activities' (Twigg, 2004). Although DRR is more concerned with the present and focuses on near time trends (Sperling and Szekely, 2005), among the wide range of risks that the approach takes into account are future risks, such as climate change and variability. DRM is the operationalisation of DRR approaches and covers the implementation of preparedness, mitigation, emergency response and relief and recovery measures (ibid). DRR thinking sees disasters as complex problems requiring a collective response from a wide range of stakeholders, including non-governmental organisations (NGOs), other civil society organisations (CSOs), governments at all levels, the private sector and communities (Twigg, 2004; 2007).

The 2005-2015 Hyogo Framework for Action[7] (HFA) lays out the foundation and sets out a comprehensive guideline for the implementation of DRR for a wide range of key stakeholders. The HFA is articulated around five areas, with relevant DRR activities[8] outlined as follows (Twigg, 2004; UN/ISDR, 2005):

1. **Governance:** Ensure that DRR is a national and a local priority with a strong institutional basis for implementation. This might include: establish and support policies; regulations and procedures to reduce risk such as design standards; building codes; health and safety regulations; legalisation of land or property ownership; urban planning regulations and integration with development.
2. **Risk assessment:** Identify, assess and monitor disaster risks and enhance early warning. This includes: national and local risk assessments; update and dissemination of risk maps and information; vulnerability and capacity assessments at all levels; statistical information on disaster occurrence; impacts and losses through international, regional, national and local mechanisms and early warning systems (EWSs).
3. **Knowledge and education:** Use knowledge, innovation and education to build a culture of safety and resilience at all levels. Key activities include: public education; communication of information and awareness raising about risk and risk reduction through leaflets and posters; hazard risks and maps; demonstrations; media messages; community training and school curricula.
4. **Risk management and vulnerability reduction:** Reduce the underlying risk factors. This includes: addressing disaster risks related to changing social, economic, environmental conditions and the impact of hazards associated with geological events; addressing weather, climate variability and climate change through better land-use planning; natural resource management; livelihoods and food security support; social protection and safety nets; financial risk-sharing mechanisms (insurance against disasters) and mainstreaming DRR in development activities e.g. in major infrastructure projects, rural and urban development planning and management.
5. **Disaster preparedness and response:** Strengthen disaster preparedness for effective response at all levels. This includes forecasting and warning systems; taking precautionary measures in response to warnings; contingency planning; strengthening capacity to deliver timely and effective rescue, relief and assistance; rebuilding livelihoods after disasters; cash for work and food for work initiatives.

[7] The Hyogo Declaration and the HFA 2005-2015, agreed on by 168 governments worldwide at the World Conference on Disaster Reduction in 2005, symbolises the strong commitment of the international community to engage in a well-defined, results-oriented plan of action 'to promote a strategic and systematic approach at the national level to address vulnerabilities and to reduce risk to natural hazards'. See www.unisdr.org/eng/isdr-system/In-a-nutshell.htm.

[8] A full list of activities is beyond the scope of this analysis. For a comprehensive review of activities under each thematic area of the HFA see Twigg (2004) and UN/ISDR (2005).

It is important to note that the inclusion of climate variability and climate change in the HFA (see Point 4 above) indicates that the linkages between climate change and DRR have been recognised, not only conceptually but also formally. Hence, adoption and implementation of the HFA can represent an important tool to support adaptation, through building resilience and reducing vulnerability to climate-related hazards (IASC, 2008).

Box 2: Examples of DRR interventions

Disaster preparedness and early warning: EWSs, contingency planning, community disaster risk analysis and action planning, capacity building of community disaster management committees

Infrastructural interventions: Relocation from flood-prone areas to higher grounds, building physical defences, improving housing, construction of earthquake- and hurricane-resistant wells and other infrastructure

Food security and livelihoods: Natural resource management for protection (planting trees, grasses); cash or social transfer/safety net programmes, food or cash for work programmes, supporting animal health/extension services, distributions of seeds and tools, promoting resilient livelihood strategies (diversification, drought-/saline-resistant/short-cycle crops), de-stocking or re-stocking livestock

Source: Adapted from Oxfam (2009).

4.1.4 Conclusions on links with CCA

The description of DRR and an overview of some typical DRR interventions show that DRR can, in many instances, fall broadly under the umbrella of adaptation. Important to note is that the linkages and overlaps between CCA and DRR are formally acknowledged in a number of international treaties and development plans, including the HFA, UNFCCC and the Bali Action Plan. A greater focus on CCA within DRR would place emphasis on the forward-looking component of DRR and the capacity to deal with future risks, in addition to preventing the longer-term negative aspects of adaptation action (or maladaptation, see Section 4.3 on livelihoods). In addition, threats associated with gradual alterations in temperature and rainfall variability, intensity and distribution have required a shift within the DRR community of late, giving greater emphasis to addressing the risks associated with such slow onset or 'creeping' disasters.

Like CCA, DRR emphasises the importance of knowledge and information (including EWS), as well as including a focus on infrastructure as a key intervention. Similarly, both CCA and DRR place considerable emphasis on action and awareness at local levels. At the conceptual level, DRR approaches have made a substantial shift in terms of acknowledging the importance of addressing climate change within its remit and incorporating actions to deal with gradual and incremental stresses as well as extreme events. However, this has yet to transcend into common and consistent practice.

4.2 Social protection

4.2.1 Objectives and definitions

SP programmes aim to protect poor and vulnerable households from the shocks and stresses that have negative impacts on their wellbeing. It is concerned with the ways to strengthen households' or individuals' resilience to adverse events. There are various definitions, each of which has implications for the programming and implementation (Table 1). All of these represent a significant advance from the narrow social safety nets debate of the 1980s. However, SP is still contested, in terms of what can and cannot be considered a part of the concept.

Table 1: Definitions of social protection

Source	Definition	Features
Holzmann and Jørgensen (2000)	Social risk management (SRM) consists of public interventions to help individuals, households and communities better manage risk and to provide support to the critically poor.	The concept of SRM repositions the traditional areas of SP (labour market interventions, social insurance and social safety nets) in a framework that includes three strategies to deal with risk (**prevention, mitigation and coping**), three levels of formality of risk management (**informal, market based, public**) and many actors (individuals, households, communities, NGOs, governments at various levels and international organisations), against the background of asymmetric information and different types of risk. This expanded view of SP emphasises the double role of risk management instruments: protecting basic livelihoods as well as promoting risk taking. It focuses specifically on the poor, since they are the most vulnerable to risk and typically lack appropriate risk management instruments, which constrains them from engaging in riskier but also higher-return activities and hence gradually moving out of chronic poverty.
Norton et al. (2002)	'The public actions taken in response to levels of vulnerability, risk and deprivation which are deemed socially unacceptable within a given society.'	Norton et al. (2002) argue that what is new about the concept of SP is the link it makes between social assistance and wider objectives such as growth. This contrasts with earlier, largely 'residualist' or 'safety net' treatments of social assistance, which focused on providing support to those who would otherwise fall chronically or temporarily below some very low standard of living. It also allows us to distinguish those SP measures that concern us here – i.e. those closely related to livelihoods – from others, referred to by some as falling in the 'social sectors', e.g. health and education.
Farrington et al. (2007)	As per Norton et al. above.	Differentiates between **shocks** and **stresses**, that is, between unpredictable usually rapid onset events that damage household wellbeing (flood, accidental death of household member) and more predictable and slower onset events (chronic illness, soil fertility decline).
Sabates-Wheeler and Devereux (2006)	Describes all initiatives that transfer income and assets to the poor, protect the vulnerable against livelihood risks and enhance the social status and rights of the marginalised, with the overall objectives of extending the benefits of economic growth and reducing the economic or social vulnerability of the poor, vulnerable and marginalised groups.	This is a wider view of SP, going beyond the economic sphere to include attention to social and political dimensions as well. It also favours 'a broader classification of social protection providers, including formal ("public" and "private") as well as informal ("collective" or "community-level") sources' (Devereux and Sabates-Wheeler, 2004).

4.2.2 Programming and operational implications

A number of frameworks for social protection have been developed based on the definitions above. Two are described in more detail below. The first is SRM, which considers preventive, mitigation and coping strategies as part of SP interventions in response to risk (Holzman and Jørgensen, 2000). The second differentiates between protective, preventive, promotional and transformative measures (Devereux and Sabates-Wheeler, 2004). Box 3 describes these.

SP is usually provided by government institutions. In areas or countries where governance is weak, informal institutions become more important, such as traditional social networks and other systems for assisting the poorest or most vulnerable.

Humanitarian assistance could be viewed as a subset of SP, in particular a protective measure or safety net (Harvey et al., 2007). It could certainly be considered part of a set of public actions to address vulnerability, enable people to manage risk or support the critically poor. On the other hand, SP aims to provide long-term predictable assistance, whereas planning cycles for humanitarian are short term, even if most humanitarian assistance is in reality long term (Development Initiatives, 2009). Shepherd (2004) differentiates SP from humanitarian response by defining the former as a range of processes, policies and interventions to enable people to reduce, mitigate, cope with and recover from risk in order that they become less insecure and can participate in economic growth. Devereux (2001) also stresses moving away from a safety net approach towards identifying potential linkages between the protection of people's livelihoods and the promotion of livelihoods through economic growth.

Box 3: Social protection frameworks

SRM

- **Preventive strategies** are public measures to reduce the probability of risk. For example, in the labour market, preventive SRM interventions are geared towards improving the skills or the functioning of labour markets to reduce the risk of un- or under-employment or low wages.
- **Mitigation strategies** decrease the impact of a probable risk. Typical mitigation strategies are portfolio diversification, insurance and hedging. They can be either formal or informal. Reciprocity arrangements in families or communities are examples of informal insurance schemes.
- **Coping strategies** relieve the burden of risk once it has occurred. The government has an important role in assisting people in coping, for example when individual households have not saved enough to handle serious illness or catastrophic risks.

Protective, preventive, promotive and transformative measures

- **Protective measures** provide relief from deprivation. Protective measures are narrowly targeted safety net measures in the conventional sense – they aim to provide relief from poverty and deprivation where promotional and preventive measures have failed. Protective measures include social assistance for the chronically poor, especially those who are unable to work and earn an income. This equates most closely with mainstream social welfare. Social assistance programmes typically include targeted resource transfers – disability benefit, single parent allowances and social pensions for the elderly poor – that are financed publicly (out of the tax base, with donor support and/or through NGO projects).
- **Preventive measures** seek to avert deprivation. Preventive measures deal directly with poverty alleviation. They include social insurance for economically vulnerable groups – people who have fallen or might fall into poverty and may need support to help them manage livelihood shocks. This is similar to social safety nets. Social insurance programmes refer to formalised systems of pensions, health insurance, maternity benefit and unemployment benefits, often with tripartite financing by employers, employees and the state. They also include informal mechanisms, such as savings clubs and funeral societies.
- **Promotive measures** aim to enhance real incomes and capabilities of the poorest and most vulnerable populations while remaining grounded in SP objectives. They are achieved through a range of livelihood-enhancing programmes targeted at households and individuals, such as microfinance and school feeding. The intention of promotive measures is not to broaden the scope to include all development initiatives, but to focus on approaches and instruments that have income stabilisation at least as one objective. Strategies of risk diversification – such as crop or income diversification – can be considered promotive measures.
- **Transformative measures** seek to address vulnerabilities arising from social inequity and exclusion of the poorest and most marginalised groups. Interventions under this category might include collective action for workers' rights, protecting minority ethnic groups against discrimination or HIV and AIDS sensitisation campaigns. Transformative approaches to SP are therefore broadly similar to rights-based approaches.

The focus on growth is important because it demonstrates the strong linkage between SP and livelihoods. In relation to the productive sectors, SP can enhance resilience in the face of threats (whether climate related or not), limit disinvestment and, by reducing perceptions of high risk, promote investment by the poor (Farrington et al., 2007). As such, it can play a critical role in building or maintaining livelihoods. Such promotive interventions are also part of forward-looking DRR and adaptation approaches. Table 2 below shows typical SP interventions.

4.2.3 Conclusions on links with CCA

SP can be considered a component of adaptation interventions, as it addresses both vulnerability and response capacity, in particular the preventive, promotive and transformative components of SP. Like CCA, SP aims to reduce vulnerability and manage risk, and it does so mainly by building both productive and financial assets. Incorporating CCA into SP would mean understanding in what ways SP interventions can potentially contribute to adaptation. This has been developed as a separate approach, called 'adaptive SP', which Table 2 illustrates.

Table 2: Promoting adaptation through social protection

SP category	SP instruments	Adaptation and DRR benefits
Provision/protection (coping strategies)	• Social service provision • Basic social transfers/safety nets (food/cash) • Pensions • Fee waivers • Public works	• Protection of those most vulnerable to climate risks, with low levels of adaptive capacity
Preventive (coping strategies)	• Social transfers • Livelihood diversification • Weather-indexed insurance	• Prevents damaging coping strategies as a result of risks to weather-dependent livelihoods
Promotive (building adaptive capacity)	• Social transfers • Access to credit/microfinance • Asset transfers/protection • Starter packs (drought/flood resistant) • Access to common property resources • Public works	• Promotes resilience through livelihood diversification and security to withstand climate-related shocks • Promotes opportunities arising from climate change
Transformative (building adaptive capacity)	• Promotion of minority rights • Anti-discrimination campaigns • Social funds	• Transforms social relations to combat discrimination underlying social and political vulnerability

Source: Adapted from Davies et al. (2009).

The extent to which the objectives of SP are compatible with the objectives of CCA is still the subject of much debate, although empirical evidence is limited. For example, could drought-resistant seeds in Africa help people cope with climate change better than social security in the form of old-age pensions? SP could potentially assist in delivering adaptation assistance to the poorest and the most vulnerable, whereas with CCA there is risk that it will not reach the poorest. Much of the debate on CCA is currently centred on insurance, in which the poorest are less likely to participate.

A second consideration is the effect that climate change will have on existing SP systems in developing countries, and what increasingly unpredictable weather means in relation to the demands placed on SP systems and the kind of support they offer poor and vulnerable people.

4.3 Livelihoods approaches

4.3.1 Objectives of livelihoods approaches

Sustainable LH approaches have been central to development and poverty reduction policy and practice since the late 1990s, when it was recognised that effective poverty alleviation required action at community level in addition to government-level policy and services (Ashley and Carney, 1999). Emergency LH approaches originated in the 1980s following the drought-induced famines of that decade, emerging from a recognition of the need to protect livelihoods as part of humanitarian response in order to prevent future vulnerability. At its most basic, a LH approach is 'simply one that takes as its starting point the actual livelihoods strategies of people … It looks at "where people are, what they have, and what their needs and interests are"' (Chambers, 1988, in Schafer, 2002).

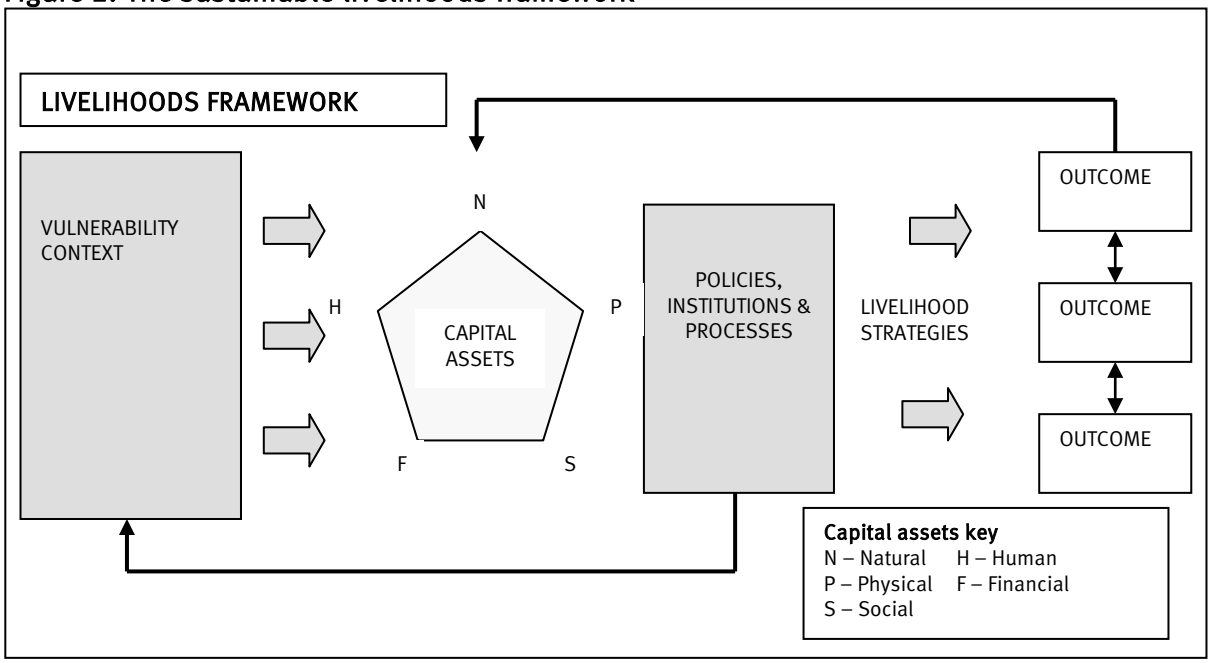
4.3.2 Definitions, concepts and principles

A sustainable livelihood is defined as follows: 'A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base' (Chambers and Conway, 1991).

Within livelihood perspectives, the term 'sustainable' entails two main issues. First, it tends to refer to coping with immediate and short-term shocks where local capacities and knowledge, if effectively supported, would be sufficient (Scoones, 2009). Second, it implies that livelihoods are stable, durable, resilient and robust in the face of both shocks and stresses, and do not undermine the livelihoods options of others.

The key elements of a LH approach are the livelihoods principles and the sustainable livelihoods framework. The principles include taking a participatory and capacity-building approach and working at different levels (micro and macro, or national and international, as well as community) for maximum impact, learning from change and adaptation and promoting sustainability (Ashley and Carney, 1999; DFID, 1999). The livelihoods framework shows the key elements of livelihoods and how these interact. It includes assets, strategies, outcomes and policies, institutions and processes (DFID, 1999).

Figure 2: The sustainable livelihoods framework



Source: Adapted from DFID (1999).

Livelihood **strategies** are what people do to make a living in normal times, or what people do to meet their livelihood goals (Schafer, 2002). These may include agriculture, pastoralism and wage labour. Scoones (1998) divides (rural, agrarian) livelihood strategies into three clusters: intensification/ extensification (more output per unit area or increased area under cultivation); diversification (the adoption of new strategies); and migration. In most societies, livelihoods are in competition, and therefore the livelihoods strategies of one group may involve weakening or destroying those of others.

Assets encompass what people have, including their natural (e.g. land, forest products, water), physical (e.g. livestock, shelter, tools, materials), social (e.g. extended family and other social networks), financial (e.g. income, credit, savings) and human assets (e.g. education, skills, health). People's livelihood options are determined not only by their asset base but also by the wider governance environment, or 'policies, institutions and processes', which determines access to and control over assets by different population groups and thus their vulnerability or resilience. **Policies** can be taken to include any government, donor, UN and NGO policies, as well as private sector policy

and behaviour. For example, a country's agriculture, land tenure or land use policies can be instrumental in increasing or reducing vulnerability. The effectiveness, in terms of accountability and reach, of civil, economic and political **institutions** will also play a large part in determining people's welfare. These include public services that deal with, for example, agricultural and livestock services, natural resource management, education, law enforcement and justice, as well as banks, systems for providing credit, communication systems and markets. It may also include community-based-organisations (CBOs), associations and unions, as well as informal institutions around social assistance, conflict resolution and land tenure systems. Power relations are embedded within these institutions and are thus an essential component of a livelihoods analysis. Power relations are also reflected in long-term **processes** of social and political marginalisation of certain population groups, and thus the creation of vulnerability.

4.3.3 Coping, adaptation and long-term transitions

In contrast with livelihood strategies, coping strategies were originally defined as temporary responses to a reduction in food entitlements (Corbett, 1988; Davies, 1993). Such strategies have been divided into reversible strategies (for example changes in diet, collection of wild foods, migration of family members for work), which are not damaging to livelihoods, and irreversible ones (for example sale of productive assets, migration of whole families following destitution), which will damage livelihoods in the long term. The latter are also termed crisis or survival strategies (e.g. Devereux, 1999).

There are important differences between coping and adaptation. Coping strategies are the short-term responses of resilient livelihood systems to deal with periods of (food) stress. They are therefore a characteristic of structurally secure livelihood systems (Davies, 1996. Adaptation, on the other hand, involves long-term changes to the mix of activities required for subsistence, in order to reduce the vulnerability of livelihood systems. Supporting adaptation therefore needs to go beyond simply supporting livelihood strategies and also needs to address institutional and policy constraints encountered in the adaptation process. Furthermore, in order that they can be pursued over time, strategies need to be environmentally sustainable (Davies, 1993) and not damaging to the livelihoods of others. These issues are particularly relevant in the face of climate change.

Although some coping strategies may in fact be turned into longer-term strategies over time, this is not necessarily 'adaptation' in a positive sense. Some people who suffer repeated or multiple crises may be coping simply to survive, for example pastoralists who have lost their livestock or people displaced by conflict (Davies, 1993). Such populations are often dependent on a limited number of marginal activities, such as firewood collection, brick making, casual labour, etc. In some cases these strategies may be environmentally damaging and, as such, have the potential to be maladaptive (Young et al., 2009).

Longer-term transitions may include permanent outmigration and urbanisation. Whether this is a positive or a negative change, in terms of leading to sustainable livelihoods, depends on a number of factors. For example, in Port Sudan urban migrants differ with regard to their former livelihood, their access to and willingness to engage in new economic opportunities and their political influence and, as a consequence, have integrated into the urban economy to a greater or lesser extent (Abdel Ati et al., 2010). Similarly, the Zaghawa in Darfur successfully adapted their livelihoods following the drought in the 1970s by migrating south and engaging in farming and trade as new sources of livelihood, while maintaining links with relatives in their area of origin, who changed their livestock from cattle to camels and goats (de Waal, 1989). Others migrated out to find work, in response to declining livelihood opportunities at home, sending remittances to relatives remaining behind.

4.3.4 Critiques of livelihoods approaches

Despite the adoption of LH approaches in rural development since the 1990s, a number of challenges have led to their decreasing prominence in recent years. Broadly speaking, the critiques are that, despite the theory, LH approaches have not been able to incorporate global economic, political and environmental change (Scoones, 2009). A number of researchers have highlighted a lack of attention

to power, politics and governance, proposing new frameworks to include this dimension (Collinson, 2003; Lautze and Raven-Roberts, 2006; Ludi and Slater, 2007). Climate change is another area where LH approaches have been challenged. In livelihoods literature, sustainability is generally taken to mean coping with immediate shocks and stresses rather than adapting to long-term change. Bringing perspectives on livelihoods into climate change responses means adopting a livelihoods analysis that identifies different future strategies or pathways in order to focus on long-term change and the capacity of systems to provide for livelihoods in the future (Scoones, 2009).

4.3.5 Livelihood support programmes

Sustainable LH approaches can help in enabling agencies to develop flexible and locally appropriate responses to risk, vulnerability and poverty. Entry points for poverty-relevant development measures can be related to: i) promoting and implementing poverty-oriented policies; ii) initiating and supporting pro-poor institutional change; iii) enhancing the capabilities of poor people; iv) facilitating access to existing opportunities; and v) reducing exposure to risks and reducing poor people's vulnerabilities (NADEL and SDC, 2007).

More generally, livelihoods interventions can be divided into those that support the assets people need to carry out their livelihood strategies and interventions that support policies, institutions and processes (Lautze and Stites, 2003; Young et al., 2007). In reality, most livelihood support programmes tend to focus on the provision, protection or recovery of assets. Successful livelihood-oriented programming still needs to move beyond the local level and take into consideration policies and institutions at regional, national and even international levels. For example, the support of alternative income generation activities will not result in the desired outcome of improved livelihood stability if wider markets are insufficiently developed. Box 4 summarises livelihoods interventions.

Box 4: Livelihoods interventions

Livelihoods provisioning: Interventions that meet immediate needs, e.g. cash transfers, food aid

Livelihood protection: Interventions that protect or recover assets, e.g.:
- Agricultural support (crops, livestock, fisheries, agro-forestry), improvements (inputs, assets, services)
- Income generation, vocational training
- Microfinance/microcredit/savings and loans and insurance

Livelihood promotion: Interventions that create new skills, influence policies and strengthen institutions:
- CBO/local institution capacity building (e.g. farming cooperatives, women's groups, village development committees, self-help groups, etc)
- Natural resource management (e.g. soil and water conservation, afforestation, etc)
- Access to markets (information, infrastructure, vouchers, producers' cooperatives)
- Influencing policy: land rights/ownership, border controls, remittances, trade, environmental policies, etc

Source: Jaspars and Maxwell (2009).

A range of interventions are implemented in emergency and development contexts. Food aid comprises a major component of this and can have both a live-saving and a livelihood protection objective, either by direct distribution or through food for work programmes. Income generation and cash transfers (grants, vouchers, cash for work) are increasingly used (Harvey, 2007). In some countries, such as Ethiopia and Kenya, repeated food distributions and cash transfers have provided an incentive to develop longer-term SP programmes to assist the chronically vulnerable. In terms of institutions, support for markets is the most common response, but this can also include support for services, such as veterinary care, education and health care, or creating or strengthening institutions such as farming cooperatives, women's groups or local systems for natural resource management. Policy actions might include easing border restrictions, taxation exemptions and land rights (Lautze and Stites, 2003), or ensuring that trade negotiations or environmental treaties do not undermine the livelihood options of the poor (Moser and Norton, 2001).

Humanitarian responses, including emergency livelihoods responses, will continue to play an important role in responding to climate change. Many populations experiencing climate changes are

already living in the poorest and most crisis-prone countries (Ethiopia, Somalia, Sudan and Uganda are good examples). In states where governance is weak, or in situations of internal conflict, people's welfare needs will not be addressed through the state. Moreover, displacement and migration are already a feature in these countries and will be exacerbated by climate change; climate change itself may exacerbate conflict. This points to a need not only to better link livelihood support and climate change, but also to adapt humanitarian action more generally to take account of the more complex dynamics of vulnerability created by climate change (Collinson, 2010).

4.3.6 Conclusions on links with CCA

Livelihoods interventions do, in many instances, play a substantial role in promoting adaptive capacity. Such interventions typically fall along the left-hand side of the adaptation continuum, aiming to reduce vulnerability and increase resilience to shocks and stresses. Many go further and have transformative, or livelihood promotion, objectives, such as promoting policies that support livelihoods as well as strengthening the institutions that enable populations to access and support livelihoods assets. Ensuring equal access is also a key objective. All livelihoods interventions therefore have the potential to promote adaptive capacity. The characteristics of adaptive capacity are also closely linked with some elements of the livelihoods framework, as both emphasise the need to consider a variety of assets, as well as accountable institutions as part of good governance.

Adapting to long-term change has so far not been a major focus of LH approaches, however. Incorporating CCA into LH approaches would mean reviewing livelihoods analysis to also identify potential future strategies and examining the capacity of systems to deal with future risks. This would mean a greater emphasis on innovation and flexible forward-looking decision making to deal with the impacts of climate change in the future. Issues of migration and urbanisation, and abandoning specific livelihood strategies in favour of others (e.g. pastoral groups becoming increasingly sedentary crop farmers), also need further examination to determine what makes these longer-term transitions either a positive or a negative adaptation. At the same time, the humanitarian dimension needs more attention within the climate change community. Not all climate change effects can be addressed through adaptive measures, as many communities in the areas worst affected by climate change are already in crisis and are coping simply to survive.

5. Analysis and discussion

5.1 Many interventions contribute to features of adaptive capacity and fall along the adaptation continuum

Many of the interventions reviewed above under DRR, SP and LH overlap considerably with projects identified as addressing CCA, and can be classified as falling along the adaptation continuum. Moreover, aspects of the various approaches may go some way towards promoting one or more of the features of adaptive capacity. Within the broad remit of DRR, much commonality can be drawn with CCA and interventions aimed at enhancing adaptive capacity. This recognises that DRR, as a holistic approach, is not concerned merely with physical assets and infrastructure, but also with issues of entitlements, planning and awareness, as well as measures to address underlying causes of risks and vulnerability and risk to extreme events. Similarly, SP measures, ranging from safety nets or social insurance to promotive measures such as minimum wage legislation, can largely be considered adaptive interventions, given their contribution to poverty reduction and enhancing income, each of them addressing the underlying drivers of vulnerability in the face of a climate change.

The focus on assets and institutions within the livelihoods framework is also closely linked with the features of adaptive capacity. Indeed, all approaches seek either to provide, protect or recover assets or to strengthen or create institutions at multiple levels; from this perspective, therefore, they have the potential to contribute towards adaptive capacity. The assets and institutions that the different approaches support overlap significantly, although each approach tends to have a particular focus. The importance of both formal and informal institutions is emphasised in all, including traditional social networks or safety nets and functioning government services, in particular health and education. Table 3 illustrates this.

Table 3: Assets, policies and institutions targeted by DRR, SP and LH approaches

	Assets – main focus	Policies and institutions
DRR	Protecting, preparing and replacing lost physical assets; awareness and knowledge; addressing underlying causes of vulnerability and risk to extreme events	Natural resource management EWS Contingency planning Insurance Education Access to information
SP	Focus on physical and financial assets at household level and some natural and physical assets at community level (e.g. soil conservation, rural roads)	Social relations/networks Government institutions: • Safety nets • Credit/microfinance • Public works Anti-discrimination policies
LH	Physical, natural, human, social, financial assets	CBOs/ committees at community level Social networks Markets, including financial markets Agricultural services Natural resource management

The promotion of assets has been an important component in linking DRR and livelihood support, and this will be equally important for CCA. This might include: support for physical assets through e.g. water harvesting and building emergency shelters; support for natural assets by increasing agricultural productivity and natural resource management; building financial assets by increasing income or human assets through skills training; and building social assets by supporting self-help groups.

Important to note is that each of the various approaches typically uses differing labels for many of the same community responses and actions. What in CCA terminology is characterised as autonomous adaptation, in livelihoods language overlaps considerably with definitions of livelihoods, coping or

adaptive strategies, some of which in SP could be termed informal social protection. Livelihoods and CCA approaches are clear that they should include the responses of communities themselves, whereas in SP there is some debate as to whether definitions should incorporate informal or community-based responses to shocks and stresses.

At the programmatic level, each of the approaches described is multidimensional: they all operate at, and complement work at, both micro (household and community) and macro (national and international) levels. At the macro level, policies that play a significant role in enhancing adaptive capacity might include those on design standards, building codes, land and property legislation, anti-discrimination legislation, land use and rights, pastoral development and movement of goods across borders. At community level, approaches include diversification of livelihoods, for example income-earning strategies, switching to drought-resistant crops, investing in sustainable land and water management practices and so on. They also include actions that incorporate the strengthening of local institutions to deal with increasing stress or to support collective action. This may include weather-based risk insurance schemes and the establishment of community groups.

5.2 Efforts to enhance adaptive capacity require a focus on particular features

Actions to promote adaptive capacity rarely constitute a novel approach to development. Indeed, many interventions that fall under the remit of DRR, SP and LH approaches have gone a long way towards enhancing adaptive capacity without a deliberate intention to do so. However, the various challenges posed by climate change necessitate a focus on particular elements of the various approaches, and an examination of the ways in which different interventions can potentially contribute to adaptation. For all approaches, this means placing a greater emphasis on forward-looking components informed by the latest climate information and projections. This applies to both the outputs of project interventions, such as set-up of EWSs and dissemination of seasonal forecasts and longer-tern trends, as well as the design of projects themselves: ensuring effective flexibility and capacity for projects to deal with changing shocks and stresses. It also means a focus on supporting long-term change, considering 'informed trade-offs' between short- and longer-term actions and making efforts to prevent maladaptation – as opposed to uninformed/reactive behaviour.

The links between SP and CCA, or adaptive SP, is a good example of this (Davies et al., 2009). Adaptive SP examines explicitly how different elements of SP can contribute to adaptation. For example, social assistance can protect those most vulnerable to climate risks and preventive measures (e.g. weather-based risk insurance) can stave off damaging coping strategies, whereas promotive and transformative strategies can better ensure that people are able to withstand shocks.

When adopting climate adaptation as an objective in livelihoods interventions, focus should be not solely on assets and institutions but also on promoting features of innovation and flexible forward-looking decision making. Accordingly, the focus of an institutional analysis would be much more on how institutions are able to adapt to climate change in the future, not only how they have been affected by past hazards, shocks and stresses. Some examples exist of incorporating CCA into DRR and LH approaches. In such cases, livelihood support includes strengthening community organisation, natural resource management, income generation, access to markets and living conditions, combined with building capacity to analyse hazards and stresses and improved early warning and contingency planning. This is further adapted for climate change by improving people's ability to deal with uncertainty by promoting knowledge, access to information and support for learning and experimentation (Pasteur, 2009).

5.3 No single intervention addresses all of the features of adaptive capacity but they can complement each other to promote adaptive capacity as a collective

Although in isolation none of the approaches addresses all of the features of adaptive capacity, the ensemble of interventions under each approach can be largely complementary across the approaches in seeking to successfully promote adaptive capacity. Illustrative of this, interventions under DRR might focus particularly on infrastructural measures, EWSs and providing information, whereas LH and SP approaches place more emphasis on social and economic vulnerability and on institutions. Ensuring that elements of each approach are combined within a community or system may go a long way towards enhancing adaptive capacity to climate change, with a variety of interventions falling along the adaptation continuum.

All approaches also have ex-post and ex-ante elements, although the relative emphasis on each varies. DRR has ex-ante components in its focus on mitigation and preparedness activities, and LH responses can be ex-ante in terms of building up assets, strengthening institutions and diversifying livelihood strategies. Humanitarian LH responses tend to be ex-post (although this depends on the disaster: drought response is often intended to be early enough to prevent large-scale loss of life and destitution). SP includes similar ex-post elements. Ex-ante actions are about reducing risk itself by either reducing the impact of a shock or stress or reducing vulnerability (e.g. flood defences, drought-resistant varieties of common crops, improving access to water, diversification of livelihoods options); ex-post actions respond to the consequences of risk (e.g. food transfers to keep people alive/healthy when faced by shocks). Both are important components of adaptive capacity.

The different target groups also mean that the approaches are complementary in their potential to promote adaptive capacity. SP specifically targets the poorest and most vulnerable sections of the population. DRR and emergency LH approaches focus on the entire affected population, irrespective of wealth. For example, improved access to meteorological information can benefit a whole nation, whether faced by potential disasters or not.

As a collective, DRR, SP and LH approaches can therefore make a significant contribution towards CCA. A combined approach would also mean a combination of interventions that address not only repeated shocks but also longer-term stresses for different sections of the population and at different levels (national and local).

Important to note is that efforts aimed at enhancing adaptive capacity require more than simply combining DRR, SP and LH approaches. Interventions that aim to enhance adaptive capacity need to explicitly mainstream adaptation within programme operations. This entails placing greater emphasis on features of innovation and flexible forward-looking decision making in light of projected changes in climate. This needs to be premised on the existence of an enabling environment that supports the adoption of new practices, experimentation and innovation, as well as learning and action on how to take advantage of new opportunities. Key to achieving this are interventions in supporting institutions, both formal and informal, in relation to ensuring accountability, equitable representation and entitlement across various levels – be they local, national, regional or international.

6. Conclusions

This review has exposed how interventions associated with DRR, SP and LH approaches can play an important role in contributing to the various features of adaptive capacity. It suggests that, through the combination of approaches into a collective, it may be possible to better address the key features of adaptive capacity needed to cope with and respond to climate variability, hazards and change, in both the short and the longer terms. Better harmonisation of the distinctive areas of work, coupled with greater communication and collaboration of the objectives of DRR, SP and LH approaches, carries the potential to more effectively promote adaptive capacity across scales.

We do not suggest that all SP, LH and DRR interventions automatically focus purely on climate change adaptation. While recognising that each approach has its distinct niche and strength, we suggest that, as a collective, the discussed approaches together may go some way towards promoting certain features of adaptive capacity. It remains crucial, however, that adaptation concerns are mainstreamed within specific programme operations, aiming towards enhancing the various features of adaptive capacity identified. Integrating climate-related information into the planning and operational outputs of projects under DRR, SP and LH may help to ensure the long-term sustainability and applicability of interventions to assist those who are most vulnerable – seeking in particular to prevent maladaptation.

In order to guide such approaches in the promotion of adaptation, it is important to understand how each intervention contributes to the various features of adaptive capacity. However, quantifiable evidence and examples of the impacts of interventions on reducing vulnerability and increasing adaptive capacity are thus far very limited. Accordingly, the ACCRA consortium, with research guidance from ODI, will seek to explore this in greater depth during field research in Ethiopia, Mozambique and Uganda, with the overall aim of generating evidence on how existing approaches to CCA, DRR, SP and LH can and do contribute to adaptive capacity.

References

Abdel-Ati, H., Idries, M., Pavanello, S. and Jaspars, S. (2010) 'A Case Study of Urbanisation in Port Sudan, Red Sea State, Sudan'. HPG Report. London: ODI.

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

Adger, W.N., Huq, S., Brown, K., Conway, D. and Hulme, M. (2003) 'Adaptation to Climate Change in the Developing World'. *Progress in Development Studies* 3(3): 179-195.

Adger, W.N., Arnell, W.N. and Tompkins, E.L. (2005) 'Successful Adaptation to Climate Change Across Scales'. *Global Environmental Change* 15(2): 77-86.

Adger, N., Agrawala, S. and Mirza, M. (2007) '*Assessment of Adaptation Practices, Options, Constraints and Capacity',* in IPCC (2007).

Agrawal, A., (2008) 'The Role of Local Institutions in Adaptation to Climate Change'. Prepared for World Bank Social Dimensions of Climate Change. Washington, DC, 5-6 March.

Aguilar, Y. (2001) 'Autonomous and Planned Adaptation: The Low Watershed of the Lempa River'. Prepared for UNFCCC-UNDP Workshop on Adaptation Methodologies. Montreal, 11-14 June.

Alexander, D. (2002) 'From Civil Defense to Civil Protection—and Back Again'. *Disaster Prevention and Management* 1(3): 209-213.

Alinovi, L., Hemrich, G. and Russo, L. (eds) (2008) *Beyond Relief: Food Security in Protracted Crises*. Rugby: Practical Action Publishing.

Ashley, C. and Carney, D. (1999*) Sustainable Livelihoods: Lessons from Early Experience*. London: DFID.

Badahur, A. (2009) 'Understanding Resilience; Components, Characteristics and Indicators'. Draft. Brighton: IDS.

Bankoff, G. (2001) 'Rendering the World Unsafe: "Vulnerability" as Western Discourse'. *Disasters* 25(1): 19-35.

Barrientos, A. and Hulme, D. (eds)(2008) *Social Protection for the Poor and Poorest*. London: Palgrave.

Barrientos, A. and Hulme, D. (2009) 'Social Protection for the Poor and Poorest in Developing Countries: Reflections on a Quiet Revolution'. *Oxford Development Studies* 37(4): 439-456.

Benson, C. and Twigg, J. (2007) 'Tools for Mainstreaming Disaster Risk Reduction. Guidance Notes for Development Organisations'. Geneva: ProVention Consortium.

Berkes, F. and Jolly, D. (2001) 'Adapting to Climate Change: Social-Ecological Resilience in a Canadian Western Arctic Community'. *Conservation Ecology* 5(2): 514-532.

Bloom, D.E. and Sachs, J.D. (1998) 'Geography, Demography, and Economic Growth in Africa', *Brookings Papers on Economic Activity* 2: 207-295.

Bohle, H.G., Downing, T.E. and Watts, M.J. (1994) 'Climate Change and Social Vulnerability: The Sociology and Geography of Food Insecurity'. *Global Environmental Change* 4(1): 37-48.

Boyd, E., Grist, N., Juhola, S. and Nelson. V. (2009) 'Exploring Development Futures in a Changing Climate: Frontiers for Development Policy and Practice'. *Development Policy Review* 27(6): 659-674.

Brooks, N. (2003) *Vulnerability, Risk and Adaptation: A Conceptual Framework*. Working Paper 38. Norwich: Tyndall Centre for Climate Change, University of East Anglia.

Brooks, N. and Adger, W.N. (2005) 'Assessing and Enhancing Adaptive Capacity'. Technical Paper 7. New York: UNDP.

Brown, J. and Kaur, N. (2009) 'Financing Adaptation: Matching Form with Function'. Background Note. London: ODI.

Bruck, T. and Schindler, K. (2009) 'The Impact of Violent Conflicts on Households: What Do We Know and What Should We Know About War Widows?' *Oxford Development Studies* 37(3): 289-301.

Carney, D. (1999) 'Livelihood Approaches Compared: A Brief Comparison of the Livelihoods Approaches of the UK Department for International Development (DFID), CARE, Oxfam and the United Nations Development Program (UNDP). A Brief Review of the Fundamental Principles behind the Sustainable Livelihood Approach of Donor Agencies'. London: Livelihoods Connect, DFID.

Carney, D., Drinkwater, M., Rusinow, T., Neefjes, K., Wanmali, S. and Singh, N. (1999) 'Livelihoods Approaches Compared. A Brief Comparison of the Livelihoods Approaches of the Livelihoods Approaches of the UK Department for International Development (DFID), CARE, Oxfam and the United Nations Development Programme (UNDP)'. Report to DFID.

Center for Development and Cooperation and Swiss Agency for Development and Cooperation (2007) 'Working with a Sustainable Livelihood Approach'. Zurich and Bern: NADEL and SDC.

Chambers, R. (1989) 'Vulnerability, Coping and Policy'. Editorial Introduction. *IDS Bulletin* 20(2): 1-7.

Chambers, R. and Conway, G. (1991) 'Sustainable Rural Livelihoods: Practical Concepts for the 21st Century'. Discussion Paper 296. Brighton: IDS.

Collinson, S. (2003) 'Power, Livelihoods and Conflict: Case Studies in Political Economy Analysis for Humanitarian Action'. HPG Report 13. London: ODI.

Collinson, S. (2010) 'Developing Adequate Humanitarian Responses'. Background Paper for the Transatlantic Study Team on Climate Change and Migration.

Corbett, J. (1988) 'Famine and Household Coping Strategies'. *World Development* 16(9): 1092-1112.

Conway, T., de Haan, A. and Norton, A. (eds) (2000) 'Social Protection: New Directions of Donor Agencies'. London: DFID.

Davies, M., Oswald, K., Mitchell, T. and Tanner, T. (2008) 'Climate Change Adaptation, Disaster Risk Reduction and Social Protection'. Briefing Note. Brighton: IDS.

Davies, M., Guenthier, B., Leavy, J., Mitchell, T. and Tanner, T. (2009) *Climate Change Adaptation, Disaster Risk Reduction and Social Protection: Complementary Roles in Agriculture and Rural Growth?* Working Paper 320. Brighton: Centre for Social Protection and Climate Change and Development Centre, IDS.

Davies, S. (1993) 'Are Coping Strategies a Cop Out?' *IDS Bulletin* 24(4): 60-72.

Davies, S. (1996) *Adaptable Livelihoods. Coping with Food Insecurity in the Malian Sahel*. London: McMillan Press.

Department for International Development (1999) 'Sustainable Livelihoods Guidance Sheets'. London: DFID.

de Waal (1989) *Famine That Kills: Darfur, Sudan*. Oxford: Clarendon Press.

Development Initiatives (2009) *Global Humanitarian Assistance Report 2009*. Wells: Development Initiatives.

Devereux, S. (1999) 'Making Less Last Longer; Informal Safety Nets in Malawi'. Discussion Paper 373. Brighton: IDS.

Devereux, S. (2001) 'Can Social Safety Nets Reduce Chronic Poverty?' *Development Policy Review* 20(5): 657-675.

Devereux, S. and Sabates-Wheeler, R. (2004) *Transformative Social Protection*. Working Paper 232. Brighton: IDS.

Diaz, H., Rojas, A. and Jeannes, S. (2005) *Institutions and Adaptive Capacity to Climate Change*. IACC Project Working Paper 9. Ottawa: IACC.

Downing, T.E., Butterfield, R., Cohen, S., Huq, S., Moss, R., Rahman, A., Sokona, Y. and Stephen, L. (2001) *Vulnerability Indices: Climate Change Impacts and Adaptation*. Policy Series. Nairobi: UNEP.

Elasha, O.G., Elhassan, N.G., Ahmed, H. and Zakieldin, S. (2005) *Sustainable Livelihood Approach for Assessing Community Resilience to Climate Change: Case Studies from Sudan*. Working Paper 17. Washington, DC: AIACC.

Everett, B. (2009) Western Orissa Rural Livelihoods Project, Sustainable Livelihoods, and Climate Change Adaptation'. Prepared for Practical Action Seminar on Integrating Approaches: Sustainable Livelihoods, Disaster Risk Reduction and Climate Change Adaptation. London, 3 December.

Farrington, J., Slater, R. and Holmes, R. (2004a) 'Social Protection and Pro-poor Agricultural Growth: What Scope for Synergies?' Natural Resource Perspectives 91. London: ODI.

Farrington, J., Slater, R. and Holmes, R. (2004b) *The Search for Synergies between Social Protection and Livelihood Promotion: the Agriculture Case*. Working Paper 232. London: ODI.

Farrington, J., Slater, R. and Holmes, R. (2007) 'Linking Social Protection and the Productive Sectors: The Agriculture Case'. Briefing Paper 28. London: ODI.

Folke, C. (2006) 'Resilience: The Emergence of a Perspective for Social–Ecological Systems Analysis'. *Global Environmental Change* 16(3): 253-267.

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L. and Holling, C.S. (2002) 'Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations'. *AMBO: A journal of Human Environment* 31(5): 437-440.

Foresti, M. and E. Ludi (2007) 'Human Rights and Livelihood Approaches for Poverty Reduction'. Briefing Note for the Poverty–Wellbeing Platform. London: ODI.

Frankhauser, S. and Tol, R.S.J. (1997) 'The Social Costs of Climate Change: The IPCC Second Assessment Report and Beyond'. *Mitigation and Adaptation Strategies for Global Change* 1(4): 385-403.

Gurung, G. (2009) 'Livelihoods Approaches to DRR'. Prepared for Practical Action Seminar on Integrating Approaches: Sustainable Livelihoods, Disaster Risk Reduction and Climate Change Adaptation. London, 3 December.

Harvey, P. (2007) 'Cash-Based Responses in Emergencies'. HPG Report 24. London: ODI.

Harvey, P., Holmes, R., Slater, R. and Martin, E. (2007) 'Social Protection in Fragile States'. London: ODI.

Helm, P. (1996) 'Integrated Risk Management for Natural and Technological Disasters'. *Tephra* 15(1): 4-13.

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

Holzmann, R. and Jørgensen, S. (1999) 'Social Protection as Social Risk Management: Conceptual Underpinnings for the Social Protection Strategy Paper'. *Journal of International Development* 11(7): 1005-1027.

Holzmann, R. and Jørgensen, S. (2000) 'Social Risk Management: A New Conceptual Framework for Social Protection and Beyond'. Social Protection Discussion Paper 0006. Washington, DC: Social Protection Unit, Human Development Network, World Bank.

Inter-Agency Standing Committee (2008) 'Disaster Risk Reduction Strategies and Risk Management Practices: Critical Elements for Adaptation to Climate Change'. Submission to the UNFCCC Adhoc Working Group on Long-Term Cooperative Action by the Informal Taskforce on Climate Change of the IASC and the ISDR, 11 November.

InfoResources (2009) 'Disaster Risk Reduction: A Gender and Livelihood Perspective'. *Info Resources Focus* 2/09.

Intergovernmental Panel on Climate Change (2001) *Climate Change 2001: Impacts, Adaptation and Vulnerability*. Third Assessment Report and Summary for Policymakers and Technical Summary. Geneva: IPCC.

Intergovernmental Panel on Climate Change (2007a) *Climate Change 2007: The Physical Science Basis: Summary for Policymakers*. Fourth Assessment Report and Summary for Policymakers. Geneva: IPCC.

Intergovernmental Panel on Climate Change (2007b) *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Fourth Assessment Report and Summary for Policymakers. Geneva: IPCC.

Jaspars, S. and Maxwell, D. (2009) 'Food Security and Livelihoods Programming in Conflict: A Review'. Humanitarian Practice Network Paper 65. London: ODI.

Jaspars, S. and O'Callaghan, S. (2010) 'Protection and Livelihoods in Situations of Conflict'. HPG Report 31. London: ODI.

Jones, R. and Boer, R. (2003) 'Assessing Current Climate Risks. Adaptation Policy Framework: A Guide for Policies to Facilitate Adaptation to Climate Change'. New York: UNDP.

Klein, R.J.T. and Persson, Å. (2008) 'Financing Adaptation to Climate Change: Issues and Priorities'. Report 8. Brussels: European Climate Platform.

Klein, R.J.T. and Huq, S. (2003) *Climate Change, Adaptive Capacity and Development.* London: Imperial College Press.

Levina, E. and Tirpak, D. (2006) 'Adaptation to Climate Change: Key Terms'. AIXG Documents on Adaptation to Climate Change. Paris: OECD.

Lautze, S. and Raven Roberts, A. (2006) 'Violence and Complex Emergencies: Implications for Livelihoods Models'. *Disasters* 30(4): 383-401.

Lautze, S. and Stites, E. (2003) 'More than Seeds and Tools: An Overview of OFDA Livelihood Interventions 1964-2002'. Medford, MA: Feinstein International Center, Tufts University.

Ludi, E. and Slater, R. (2007) 'Using the Sustainable Livelihoods Framework to Understand and Tackle Poverty'. Briefing Note for the Poverty–Wellbeing Platform. London: ODI.

Maxwell, D. (1999) 'Programme Guidelines for Chronically Vulnerable Areas'. *Disasters* 23(4): 292-305.

Maxwell, D., Tadesse, G., Mukwavi, M., Hailu, S., Zewold, W.G. and Gebrekiros, A. (2009) 'Baseline Report: Africa Community Resilience Project. Tsaeda Amba Woreda, Eastern Tigray, Ethiopia'.

Research Program on Livelihood Change over Time. Medford, MA: Feinstein International Center, Tufts University.

McGray, H., Hammill, A. and Bradley, R. (2007) *Weathering the Storm: Options for Framing Adaptation and Development*. Washington, DC: WRI.

Mitchell, T. (2009) 'Climate Change Adaptation and Social Protection'. Prepared for Practical Action Seminar on Integrating Approaches: Sustainable Livelihoods, Disaster Risk Reduction and Climate Change Adaptation. London, 3 December.

Moench, M. and A. Dixit (eds) (2007) *Working with the Winds of Change: Toward Strategies for Responding to the Risks Associated with Climate Change and Other Hazards*. Boulder, CO, Kathmandu and Geneva: ISET, ISET-Nepal and the ProVention Consortium.

Moser, C. and Norton, A. with Conway, T., Ferguson, C. and Vizard, P. (2001) 'To Claim our Rights: Livelihood Security, Human Rights and Sustainable Development'. London: ODI.

Norton, A., Conway, T. and Foster, M. (2002) 'Social Protection: Defining the Field of Action and Policy'. *Development Policy Review* 20 (5): 541-567.

National Oceanographic and Atmospheric Administration (2008) 'Resilience Definitions'. Washington, DC: NOAA.

O'Brien, K., Eriksen, S., Nygaard, L.P. and Schjolden, A. (2007) 'Why Different Interpretations of Vulnerability Matter in Climate Change Discourses'. *Climate Policy* 7: 73-88.

Oxfam (2009) 'Introduction to Disaster Risk Reduction: A Learning Companion.' Oxfam Disaster Risk Reduction and Climate Change Adaptation Resources. Oxford: Oxfam.

Pasteur, K. (2009) 'From Vulnerability to Resilience. A Framework for Integrating Livelihoods, Disaster Risk Reduction and Climate Change Adaptation'. Prepared for Practical Action Seminar on Integrating Approaches: Sustainable Livelihoods, Disaster Risk Reduction and Climate Change Adaptation. London, 3 December.

Peilke, R. (1998) 'Rethinking the Role of Adaptation in Climate Policy'. *Global Environmental Change* 8(2): 159-170.

Rayner, S. and Malone, E. (1998) *Human Choice and Climate Change Volume 3: The Tools for Policy Analysis*. Columbus, OH: Battelle Press.

Sabates-Wheeler, R. and Devereux, S. (2008) 'Transformative Social Protection: The Currency of Social Justice', in Barrientos, A. and Hulme, D. (eds) *Social Protection for the Poor and Poorest*. London: Palgrave.

Sarewitz, D., Pielke, R. and Keykhah, M. (2003) 'Vulnerability and Risk: Some Thoughts from a Political and Policy Perspective'. *Risk Analysis* 23(4): 805 -810.

Savenije, S. and Svedin, U. (2002) 'Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations'. Science Background Paper commissioned by the Environmental Advisory Council of the Swedish Government in preparation for the World Summit on Sustainable Development.

Schafer, J. (2002) *Supporting Livelihoods in Situations of Chronic Political Instability. Overview of Conceptual Issues*. Working Paper 183. London: ODI.

Scoones, I. (1998) *Sustainable Rural Livelihoods A Framework for Analysis*. Working Paper 72. Brighton: IDS.

Scoones, I. (2009) 'Livelihoods Perspectives and Rural Development'. *Journal of Peasant Studies* 36(1): 171-196.

Shepherd, A., with Marcus, R. and Barrientos, A. (2004) 'Policy Paper on Social Protection'. London: ODI.

Smit, I.B. and Pilifosova, O. (2001) 'Adaptation to Climate Change in the Context of Sustainable Development and Equity', in IPCC (2001).

Smit, I.B., Klein, R.J.T. and Wandel, J. (2000) 'An Anatomy of Adaptation to Climate Change and Variability'. *Climatic Change* 45(1): 233-251.

Smith, J.B., Klein, R.J.T. and Huq, S. (2003) *Climate Change, Adaptive Capacity and Development*. London: Imperial College Press.

Smithers, J. and Smit, B. (1997) 'Human Adaptation to Climate Variability and Change'. *Global Environmental Change* 7(2): 129-146.

Suarez, P., Ribot, J.C. and Patt, A.G. (2009) 'Climate Information, Equity and Vulnerability Reduction', in Ruth, M. and Ibarraran, M.E. (eds) *Distributional Impacts of Climate Change and Disasters: Concepts and Cases*. Cheltenham: Edward Elgar.

Sperling, F. and Szekely, F. (2005) 'Disaster Risk Management in a Changing Climate'. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group. Reprint with Addendum on Conference Outcomes.

Tanner, T. and Mitchell, T. (2008) 'Poverty in a Changing Climate'. *IDS Bulletin* 39(4).

Twigg, J. (2004) 'Disaster Risk Reduction, Mitigation and Preparedness in Development and Emergency Programming*'.* Good Practice Review 9. London: Humanitarian Practice Network, ODI.

Twigg, J. (2007) 'Characteristics of a Disaster-Resilient Community: A Guidance Note'. Report prepared for the DFID Disaster Risk Reduction Interagency Coordination Group.

Tompkins, E. and Adger, N. (2004) 'Does Adaptive Management of Natural Resources Enhance Reliance to Climate Change?' *Ecology and Society* 9(2): 10.

UN International Strategy for Disaster Risk Reduction (2004) 'Terminology of Disaster Reduction'. www.unisdr.org/eng/library/lib-terminology-eng%20home.htm (last downloaded 25 June 2010).

United Nations International Strategy for Disaster Reduction (2005) 'Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters'. World Conference on Disaster Reduction. Kobe, 18-22 January.

Wisner, B., Blaikie, P., Cannon, T. and Davis, I. (2004) *At Risk: Natural Hazards, People's Vulnerabilities and Disasters*. Second Edition. Florence, KY and Abingdon: Routledge.

World Bank (2010) *World Development Report: Development and Climate Change.* Washington, DC: World Bank.

World Food Programme (2009) *Emergency Food Security Assessment Handbook*. Second Edition. Rome: WFP.

World Resources Institute (2009) *National Adaptive Capacity Framework*. Washington, DC: WRI.

World Resources Institute (2009) '*The National Adaptive Capacity Framework'. Pilot draft*. Washington, DC: WRI.

Wongtschowski, M., Verburg, M. and Waters-Bayer, A. (2009) *Strengthening Local Adaptive Capacities: The Role of Local Innovation in Supporting Climate Change Adaptation.* For the Third International Conference on Community-Based Adaptation. Dhaka, 18-24 February.

Yohe, G. and Tol, R.S.J. (2002) 'Indicators for Social and Economic Coping Capacity: Moving toward a Working Definition of Adaptive Capacity'. *Global Environmental Change* 12(1): 25-40.

Young, H., A. Osman et al. (2007) 'Sharpening the Strategic Focus of Livelihoods Programming in the Darfur Region. A Report of Four Livelihoods Workshops'. Medford, MA: Feinstein International Center, Tufts University.

Young, H., Osman, A.M., et al. (2009) 'Livelihoods, Power and Choice: The Vulnerability of the Northern Rizeigat, Darfur, Sudan'. Medford, MA: Feinstein International Center, Tufts University.

Overseas Development Institute
111 Westminster Bridge Road
London SE1 7JD
UK

Tel: +44 (0)20 7922 0300
Fax: +44 (0)20 7922 0399
Email: publications@odi.org.uk
Website: www.odi.org.uk

ISBN 978 1 907288 25 8
Working Paper (Print) ISSN 1759 2909
ODI Working Papers (Online) ISSN 1759 2917