CLIMATE CHANGE AND CONFLICT:

Lessons for Conflict Resolution
from the Southern Sahel of Sudan

SALOMÉ BRONKHORST

ACCORD
THE AFRICAN CENTRE FOR THE CONSTRUCTIVE RESOLUTION OF DISPUTES

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Acknowledgements

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List of acronyms and abbreviations

ACCORD	African Centre for the Constructive Resolution of Disputes
AU	African Union
DFID	Department for International Development (UK)
GECHS	Global Environmental Change and Human Security
GEF	Global Environment Facility
GPPAC	Global Partnership for the Prevention of Armed Conflict
HAC	Humanitarian Affairs Commission
HSRU	Human Security Research Unit
IPCC	Intergovernmental Panel on Climate Change
NCP	National Congress Party
NGO	Non-governmental organisation
NMIAD	Nuba Mountains International Association for Development
NRM	Natural resource management
PAPD	Participatory Action Plan Development
RPCM	Reconciliation and Peaceful Coexistence Mechanism
RWC	Rural Water Corporation
SDG	Sudanese Pound
SECS	Sudan Environmental Conservation Society
Sida	Swedish International Development Cooperation Agency
SPLM/A	Sudan People's Liberation Movement/Army
TCR	Traditional conflict resolution
VDC(s)	Village development committee(s)
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNMIS	United Nations Mission in Sudan
USAID	United States Agency for International Development

Executive summary

Using a human security perspective, this report identifies and analyses local and international non-governmental organisation (NGO) interventions in cases of conflicts related to the environment and environmental change in the southern Sahel of Sudan[1]. The research was driven by the premise that valuable lessons for addressing conflicts related to the impacts of climate change may be identified from environmental interventions. The report focuses on the southern Sahel that stretches across Africa and across Sudan; in particular, the state of Southern Kordofan and its neighbours. It is argued that this study area is relevant to identify how measures to address environment-related conflicts can be applied in other areas where climate change impacts – drought, desertification, water scarcity, and competition over grazing and pasture – can contribute to conflict. The research largely focused on conflicts between and within pastoralist, agro-pastoralist and farmer communities in the context of these same challenges – making the argument and then building on the premise that the study area is relevant from which to draw lessons for climate adaption. The study provides practical lessons and academic insights on resolving environment-related conflicts in Sudan and conflict-sensitive climate change adaptation for policy makers, practitioners and academics.

The report argues that in light of their wide applicability, human security approaches may be appropriate for the study of environment-related conflict, and to develop interventions for conflict-sensitive climate change adaptation. Previous framings of the human security approach were problematic and have not been truly workable in a research and policy environment. The report finds that if the concept can be sufficiently narrowed, without losing its focus on broader forms of security and the focus on the 'freedom from fear and want'[2], it may be applicable to and workable for Africa, and to address conflicts related to the environment. Hence, the conceptual basis of this report has been guided by a 'deprivation-vulnerability' framework to human security, which considers environmental threats, deprivations, exclusions and vulnerability in its analyses. For the purpose of this study, environmental threats refer to the impacts of climatic and environmental change – such as water scarcity, droughts, desertification, and competition over land for grazing and farming. Deprivations and exclusions refer to development indicators – specifically poverty, social exclusion, marginalisation and a lack of livelihood alternatives. Vulnerability here is defined as a person's or group's "exposure, sensitivity and resilience" (Busumtwi-Sam, 2008:16) to a threat, in the context of deprivations and exclusions.

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1   This report was written before the secession of South Sudan from the north on 9 July 2011, therefore where the term 'Sudan' is used, it refers to both South Sudan and its northern neighbour.

2   Human security essentially refers to "the security of individuals and communities, expressed as both 'freedom from fear' [broadly, security] and 'freedom from want' [broadly, development]" (Kaldor, Martin & Selchow, 2007:273). It therefore refers to the capacity of communities and people to manage stresses to their needs, rights and values (Alkire, 2003) and involves national security, political security and social security (Hutchful, 2008:81).

A number of general findings emerge from this report. First, the report reveals that a lack of legitimate and functioning conflict resolution tools and mechanisms contribute to human insecurity, by affecting the ability of communities to deal with their own vulnerabilities and the threat of environmental stressors and conflict. The study finds that most NGO interventions which address environment-related conflicts assist communities by strengthening conflict resolution capacity and by creating opportunities for conflict resolution and reconciliation. This is achieved by providing opportunities for interactive conflict resolution and by enhancing and promoting traditional forms of conflict resolution, such as the Sudanese form of customary mediation, *judiyya.* Second, the report argues that environmental and climate threats – such as water scarcity, drought and a lack of land for farming and grazing – contribute to human insecurity and conflicts, especially in a context where people and communities already suffer deprivations and exclusions, and are highly dependent on the environment for a living. The study highlights the potential for resolving environmental and climate conflicts by addressing these kinds of environmental threats. Some NGOs manage human insecurity by addressing or removing the environmental threats in question, often drawing on environmental management approaches or technology – such as through the provision of alternative water sources, hardier crop varieties, better environmental management or the creation of new livestock migration routes. Third, the report argues that where communities suffer from deprivations and exclusions – such as poverty, a lack of livelihood alternatives and other structural factors – they are less able to withstand environmental threats, leading to human insecurity and conflicts. The study found that NGOs which address environment-related conflicts include context-specific 'developmental' project elements in their intervention design. From a human security perspective, these elements address deprivations and exclusions, or underlying structural factors that contribute to human insecurity and conflict. The study shows that helping people to create livelihood alternatives or to build more resilient livelihoods that can withstand environmental threats – in particular in communities where people are highly dependent on the environment – is of critical importance. Women and youth, as generally excluded groups, are considered or targeted by most NGOs, which ensures that they form part of project committees that conduct conflict analyses and develop, implement and manage interventions.

The report makes recommendations for state, non-state and academic actors. They can be summarised as follows:

For the Sudan federal government and state governments

- A review is needed of the role of the Native Administration and *judiyya* to determine how these may be enhanced through technical and human resource capacity building and modern participatory methods, to address human vulnerability and environmental and climate conflicts.
- In areas where customary mediation is practiced and has legitimacy, factors that presently undermine *judiyya* should be addressed. These include competing legal

frameworks or legal pluralism; a lack of coordination between local, state and federal levels, and between state and non-state actors in conflict resolution; and the declining role of traditional leaders in societies.

- Institutional and policy measures should be put in place to ensure that when agreements are reached through modern and/or traditional mechanisms (such as *judiyya*), they are implemented.

- Structural and institutional factors contribute to deprivation, exclusion, vulnerability, conflict and erode the possibilities for sustainable peace. These factors, which include government policies on mechanised farming and land policies that govern migration routes and pastoral land rights, should be addressed in order to deal with the root causes of conflicts within and between pastoral and farmer communities.

- State government-sponsored mediations may have a key role to play in addressing environment-related conflicts and future climate conflicts in Sudan. However, issues regarding the political and ethnic manipulation and interference should be addressed.

For scholars, think tanks and universities

- Research should be undertaken into the role of traditional conflict resolution (TCR) mechanisms in resolving climate-related conflicts in Sudan and elsewhere, and the unique contexts in which particular mechanisms would be more suitable than others (if at all). Moreover, researchers should investigate where modern institutional and legal frameworks could be enhanced by TCR to deal with present and future environmental and climate conflicts in Sudan and beyond.

- Systematic evaluations and causal analyses of the processes of interactive conflict resolution employed in the study area, such as peace and reconciliation conferences and others discussed in this report should be undertaken.

- Assessments are needed on how the approaches to address environmental threats, as outlined in this report, may function in quick-onset events – for example, after sudden floods.

- Affordable technologies, such as the development of new water resources at little cost, can play a critical role in addressing environmental and climate threats.

For international organisations and civil society

- Institutional capacity building and economic development are critical to address present environment-related conflicts in Sudan, and will also ensure that sustainable mechanisms resilient to environmental and climate change are put in place.

- Existing conflict-mapping technologies and climate prediction models should be developed further into early threat, vulnerability and warning systems for human insecurity and conflict.

- There is a need to build more resilient livelihoods and livelihood alternatives for communities highly dependent on the environment and rain-fed agriculture.

Introduction

This report discusses the outcomes of desk research and a two-week field research mission which focused on the Sahelian belt that stretches across Sudan; in particular, the state of Southern Kordofan and the localities of Kadugli and Dilling. The research study analysed interventions by local and international non-governmental organisations (NGOs)[3] where they work to resolve and prevent conflicts[4] over the environment between and within pastoralist, agro-pastoralist and farmer communities. The research was informed by semi-structured interviews with NGOs and Southern Kordofan state government officials, among others, and by primary NGO programme/project materials. The purpose of the research was to make a contribution to the emerging body of work on climate change adaptation and conflict resolution, by identifying lessons and successes from NGO work to address or transform climate and environmental conflicts.[5] Most conflicts in this report relate to the scarcity of water and arable land – as a result, among others, of climate and/ or environmental change – and manifest in competition over water for human and animal consumption, and land for farming and grazing, between and within pastoralist and farmer groups in Southern Kordofan and other Sahelian states of Sudan. In this report, 'climate change' refers to natural changes in climate over time or changes in climate that result from human activity. Generally, pastoralists can be categorised according to the extent of movement, from largely nomadic, to transhumant and agro-pastoral. According to Blench (2001:11) nomads' "movements are opportunistic and follow pasture resources in a pattern that varies from year to year … [while] transhumance is the regular movement of herds between fixed points to exploit seasonal availability of pastures." Agro-pastoralists on the other hand cultivate land and make investments in housing and other infrastructure; at the same time they hold smaller herds and may send larger herds away with more nomadic pastoralists (Blench, 2011:13). The term 'environmental change' is also used – largely to refer to the effects of climate change on the environment and/or to changes in the

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3   The NGOs interviewed managed projects across Southern Kordofan (in one case, also in Gedaref state, where similar conflict dynamics are evident), and in other areas of Sudan that face similar challenges. Most NGOs had offices in Khartoum (the federal capital), Kadugli (the Southern Kordofan state capital) or Dilling. Kadugli was selected as it is home to the most NGOs in the state, and for its accessibility from Khartoum. See Annex I for more information on the research method.

4   'Conflict/s' in this report refers to "a social situation in which a minimum of two actors (parties) strive to acquire at the same moment in time an available set of scarce resources" (Wallensteen, 2007:15). This means that the conflicts considered need not have led to violence but are marked by three components, according to Wallensteen, that make up a conflict – an incompatibility, action (not necessarily violent) and actors.

5   The research limitations are discussed in Annex 1, but an important point is that the relative success or failure of interventions are based on reports from the NGOs themselves – either recorded in interviews with managerial staff or in programme evaluations. The study did not seek to analyse the long-term sustainability of interventions and, therefore, successful interventions refer to projects that are on-going or completed, which at the time of interviewing did not see a return to conflict.

environment (not the climate) as a result of human activity – such as poor natural resource management (NRM), the effects of land policy and deforestation.

The premise of the research was twofold. First, the semi-arid southern Sahel region in Sudan is an interesting study region for a number of reasons:

- It has and continues to experience climatic and environmental change.
- As a result, its inhabitants historically have experienced and had to adapt to or mitigate environmental threats.
- Communities and their governments have thus developed coping and conflict resolution mechanisms to mitigate environmental threats and to deal with and prevent conflicts.
- Finally, the region benefits from the work of NGOs that address conflicts with environmental dimensions (Wadi, El Hillo & Hadi, 2005:2); in particular, conflicts between and within pastoralist and farmer groups in the study area, where the environment is a key conflict driver (Saeed, 2010).

The second, related premise was that lessons from current or past interventions in climate- and environment-related conflicts – whether those are the result of human-induced climate change, natural variability or other environmental changes – may contribute to conflict-sensitive climate change adaptation and mitigation.[6] In other words, we may not know which environmental impacts are anthropogenic or not, but these impacts provide instructive examples of the social, political, economic and other effects of, and possible interventions in, conflicts that result from environmental impacts, which make them useful to study. In turn, lessons from such studies will assist those involved in conflict resolution, adaptation and other fields to help communities prevent and mitigate climate-related conflicts.

The study employs a human security approach. It is argued that its wider and multidisciplinary applicability, and the potential to accommodate the complexities of climate-related conflicts, make it a useful approach. Our existing approaches to dealing with environment-related conflicts – such as through environmental management, environmental policy or conflict resolution tools – may not be suitable for this complexity, and for the scale and impact of climate changes predicted. Thus, the human security approach is proposed. To this end, the study employs a 'deprivation-vulnerability' framework of human security. The framework, when adapted for environmental or climate threats, narrows the concept of human security and considers environmental *threats, deprivations and exclusions* and *vulnerability.* Environmental threats refer to the impacts of climate and/or environmental change – such as water scarcity, droughts, desertification and deforestation, and competition over land for grazing and farming. Deprivations

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6   "Alex [de Waal] is right that it is premature to attribute the drying trend in the Sahel – and especially the drought in the mid-80s – to anthropogenic climate change. But even if the drought itself was not human-induced, it provides an instructive example of the human and social impacts of potential future anthropogenic climate change [or natural climate variability]." (Homer-Dixon, 2007, no pagination)

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A young armed pastoralist in Southern Kordofan, on his way north with his family and their livestock.

and exclusions refer to development indicators that contribute to conflicts – specifically poverty, social exclusion, marginalisation and a lack of livelihood alternatives. Vulnerability is a person's or group's "exposure, sensitivity and resilience" to an environmental threat, in the context of deprivations and exclusions (Busumtwi-Sam, 2008:21). In other words, human (in)security is a state, determined by threats that can cause harm, but those threats can only harm if the unique context in which a person finds oneself does not provide one with the means/ability to cope with or mitigate the threat. Whether that person is in a state of security or insecurity, therefore, depends on a minimum threshold of "dignity, safety/survival, health and well-being and livelihood" (Busumtwi-Sam, 2008:16). This report argues that thresholds will be determined effectively by the institutions (governments, international organisations and NGOs, for instance) addressing the issue of human (in)security at that point in time. The underlying logic of this is that the same threat in different contexts may lead people to experience different states of either security or insecurity. Equally, and perhaps controversially, whether someone is facing insecurity or not is thus also dependent on the values and thresholds set by particular actors at a specific point in time.

This report starts by discussing climate change and conflict linkages generally and in Sudan. It then briefly discusses the utility of the concept of human security in studying conflicts that relate to the environment and climate change, and presents the vulnerability–deprivation framework used in the research. This is followed by a discussion and analysis of interventions in environmental conflicts by NGOs in Southern Kordofan. The report concludes with findings and recommendations.

Climate change and conflict

Overview

Climate change, according to the Intergovernmental Panel on Climate Change (IPCC), refers to "any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC, 2007a:21). Broadly, there is strong evidence that global warming is likely to have a range of negative and positive spatially specific impacts on biological systems, precipitation and drought, and give rise to natural phenomena such as cyclones, floods and high sea levels (Ibid:18). Livelihoods will be affected in various ways – through sea-level rise, changes in weather and rainfall patterns, and human health (Nordås & Gleditsch, 2007:634). The picture painted for Africa, where the majority of people depend on the environment for a living, is bleak. The IPCC argues that Africa is "one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity" (IPCC, 2007a:13), and that although "some adaptation to current climate variability is taking place … this may be insufficient for future changes in climate" (Ibid: 10).

The climate plays a key role in human insecurity, and is expected to do so even more in future as climate impacts manifest themselves (Barnett & Adger, 2007:561)– but will it cause conflicts? Some studies show that shared river basins and variables such as rainfall and temperature variability are positively linked to conflict (Solomon & Turton, 2000; Hendrix & Glaser, 2007; Burke et al., 2009). Other researchers seem to agree that it is unlikely that climate and environmental factors alone will lead to conflicts (Gleditsch, 2011; German Advisory Council on Global Change, 2007), but will rather feed into or exacerbate existing social, political or economic drivers of conflict. For example, the United States-sponsored State Failure Task Force found that environmental factors can contribute to other variables which are already linked to conflict, pointing to the varied effects the climate may have on other conflict-related variables (Department for International Development, 2000). Raleigh and Urdal (2007) also argue that political and economic factors related to the state may play an even greater role in conflicts than environmental factors, while they find that high population density at a local level is a strong predictor of armed conflict (Ibid.:691).

In addition to this multi-causality, some argue that it is more likely that conflicts related to climate change will take place at a local, sub-national level, rather than lead to interstate conflicts (German Advisory Council on Global Change, 2007; Theisen & Brandsegg, 2007). According to Nordås and Gleditsch, climate change could lead to state-based internal armed conflicts, non-state conflicts, unorganised violence and one-sided violence (2007:634).

The effects of climate change on conflict can also be measured by considering the longer-term processes (or 'slow-onset' changes) that lead to conflict – such as land degradation,

changes in climate suitability and fresh water resources per capita – and sudden or short-term triggers ('quick-onset' changes) – such as floods – that increase the probability for conflict. To this end, Hendrix and Glaser (2007) found that inter-annual variability in rainfall may play a greater role in conflicts than gradual environmental change affecting land – possibly because gradual change allows a greater degree of strategic adaptation. As an adaptive strategy, slow-onset changes are also predicted to lead to higher levels of migration, compared to quick-onset disasters such as floods, storms and famine (Raleigh & Urdal, 2007:691).[7] The exact linkages between climate, migration and conflict remain contested, but most researchers agree that some migration already has happened and will happen as a result of animal losses, declines in pasture and water scarcity caused by climate change (Reuveny, 2007:662).

Climate and environmental change and conflict in Sudan

With the Sahel already stretching across the country and slowly expanding south, Sudan is also experiencing climate and environmental change. According to the Global Environment Facility (GEF), in its assessment of Sudan for climate-change adaptation funding, the average annual temperature will increase between 0.8 and 1.7 degrees Celsius by 2030, with greater rainfall variability, especially during the rainy season. Climates suitable for agriculture will shift even further south, reducing yields of sorghum, millet and fodder for livestock, leaving farmers and pastoralists unable to sustain their livelihoods (GEF, 2007). These changes are already affecting and will continue to affect Southern Kordofan adversely, despite its relatively favourable clay soils that produce higher yields than Northern Kordofan with its sandy soils (Saeed et al., 2009a:82). According to the GEF, "average annual rainfall has declined from about 425 mm/year during the 1941–1970 periods, to about 360 mm/year in the 1970–2000 period. This represents a decrease of annual rainfall of about 0.5% per year. At the national level, there is a trend of greater rainfall variability in Sudan, increasing at a rate of about 0.2% per year" (GEF, 2007). It is also estimated that a southward desert shift of between 50 km and 200 km has occurred since records began in the 1930s (UNEP, 2007:9).

Moreover, Sudan is already experiencing and is vulnerable to environmental changes. For instance, some argue that "there is a very strong link between land degradation, desertification and conflict in Darfur", where the environment acted as a trigger for conflict, which was then sustained by other political, ethnic and tribal factors (Ibid.:8). In turn, conflicts also cause environmental degradation (Ibid.). Other issues include the increasing vulnerability to and impacts of natural disasters, particularly droughts and floods; land degradation resulting from demographic pressure; and poor resource management. According to UNEP, deforestation – a result of the energy dependence by rural and urban populations – is occurring at a rate of 0.84% per annum nationally and 1.87% in UNEP case

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7   Also see Salehyan (2005) and Afifi and Warner (2003) on the linkages between and debates on environmental and climate change, conflict and migration.

study locations, with 11.6% of forest cover lost between 1990 and 2005, and nearly 40% of cover lost since independence (Ibid.:11).
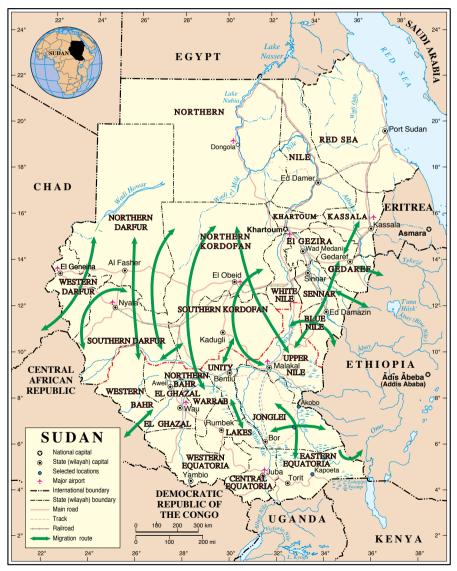
In such a context, where 80% of Sudanese make a living through agriculture and livestock production (GEF, 2007), and where pastoralism constitutes more than 20% of the population (UNDP, 2006), competition over scarce natural resources – particularly land for grazing and farming, and water, exacerbated by climate and environment change – has become a key issue and a cause of conflict among pastoralists and farmers (UNEP, 2007; UNDP, 2006). Sudan's different ethnic groups and tribes have a long history of traditional ways of making a living which invariably incorporate the environment, including rain-fed agriculture and pastoralism. These livelihood strategies compete extensively over natural resources – arable land for crops, pasture for grazing, and water for human and non-human consumption (Saeed et al., 2009a; UNDP, 2006). In Sudan, mobile livestock and crop production are supported by the climatic differences between the north and the south, and the variations in between. This means that limited resources are managed and shared, with seasonal livestock movement. Pastoralists thus follow dry-season grazing and wet-season grazing, generally in a north-south (dry season) and south-north (wet season) direction. Some stock routes, which move through agricultural and forest areas and cross state and country boundaries, are hundreds of years old, while others were established during colonialism. Livestock often move across state lines, especially after drought, and increasingly as a result of desertification, and therefore their management and administration are problematic.

Migratory routes are very much part of the pastoralist identity and their way of life – "not simply transit routes from A to B, the [live]stock routes must accommodate pastoralists' complete social life, such as trade, ceremonies and family commitments"

A woman and child walking in a remote part of Northern Kordofan, with the Nuba Mountains in Southern Kordofan in the background.

(El Hassan & Birch, 2008:2). The impacts of changes in migratory routes are greater than just the threats to livelihoods, resulting from grazing and water shortages, but also other forms of well-being. Interestingly, Shazali argues that "the concept of pastoralists and farmers as distinct groups emerged in the 19th century under Turco-Egyptian rule; prior to this period their leadership was unified. Others argue that traditionally, the competition between pastoralists and

Overview of Transhumance in Sudan

General Indicators of transhumance in Sudan, based on data from FAO, SOS, Sahel and Pace Sudan

Data Source: JLC/FAO, IM Compiled by OCHA - IMU • Date 3 January 2005

farmers over resources was managed through traditional conflict resolution mechanisms – pastoralists would inform the local sheikh or omda when they enter an area and agree compensation for any damage to crops that might occur"[8] (Shazali, 2002 cited by El Hassan & Birch, 2008:3). It is instructive to consider how increased pressures on resources and environmental change have affected these relationships.

> *Resource-based conflicts* [in Sudan] *are triggered by various factors including inequitable access to natural resources, continuous failure of development programmes concerning natural resource management, and misuse of natural resources (overgrazing and over cultivation in marginal areas which are not capable of biological productivity), in addition to natural crisis* [sic]. *All of these lead to more pressure on resources and more marginalized areas less capable of biological productivity. Although resource-based conflicts vary in time, space and intensity, their common consequences include genocide, displacement, homelessness and destruction of socio-economic structures in the affected regions.*
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> Source: Wadi, El Hillo & Hadi, 2005:2.

The climate affects when pastoralist groups move north in the rainy season and south in the dry season, and this variability contributes to conflict between different pastoralist groups or between pastoralists and sedentary farmers. Conflicts often occur because of shifting migratory routes – traditional and historical migratory routes have been destroyed and changed by, among other things, the civil war and the introduction of large mechanised farming projects (Saeed et al., 2009a; Saeed et al., 2009b; Badawi, 2010). That said, droughts, desertification and high levels of evaporation lead to competition over water and land for pasture or farming. Crop vulnerability is exacerbated by the location and natural replenishment of water resources, which in turn are affected by pastoralists moving into areas unexpectedly as a result of shifting and blocked migratory routes. The lack of strategically placed water and food resources along stock routes also plays a role in conflicts (Saeed et al., 2009a; Badawi, 2010). Deforestation is another factor that may contribute to conflict dynamics – the loss of tree cover is widespread. Trees are cut for food and charcoal, and regeneration is slow because of the semi-arid climate, which exacerbates desertification and a loss of grazing for livestock (Mohammed, 2010).[9] It is also likely that increasing sedentarisation of pastoralists will increase conflicts – Saeed et al. (2009a, 2009b) argue that whereas present conflicts are related to access to land for grazing or farming, future conflicts will rather be about land ownership. Some also argue that present land shortages in Southern Kordofan and Sudan have been artificially created through government policy,

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8   This is based on the extent of the damage, the price of the crop, the stage of growth of the crop, whether the herdsmen led the animals there and whether apologies were made (El Tahir, 2002).

9   As a result of post-conflict reintegration, urbanisation and oil exploration, there has been a shift in livelihood systems at a household level, which make people dependent on selling wood to survive (Mohammed, 2010).

Tax receipts for the sale of wood: farmers report that high taxes are levied on the sale of wood; despite this measure to curb deforestation many poor farmers continue to sell wood, which they say produces enough income for food only. The sale of wood and charcoal is contributing to deforestation which degrades grazing areas and causes desertification.

and a lack of management of animal and human populations, which in turn has led to intertribal issues (Saeed et al., 2009a; Saeed, 2010).

Notwithstanding ethnic, cultural, political and other factors, poverty and inequality are key issues that contribute to conflict in the southern Sahel and in Southern Kordofan. This state, and the Nuba Mountains area in particular, was severely affected by the civil war. Poverty is deep and pervasive, and most people depend on the environment to make a living. Reliable poverty statistics for Southern Kordofan and its neighbours are difficult to obtain but Table 1 provides an indication of human vulnerability and poverty in the region at a time before West Kordofan was divided between Northern and Southern Kordofan. This poverty extends beyond the borders of Kordofan – Sudan was ranked 154 out of 169 countries in the most recent (2010) United Nations Human Development assessment. The two states in the newly formed South Sudan which border Southern Kordofan, Unity and Warrap, may also give an indication of poverty levels in their immediate northern neighbour, which was also involved in the civil war; in Unity 68.4% and in Warrap 64.2% of the population live below the poverty line of just over $1 or the equivalent SDG 73 (Sudanese Pound) per month (World Bank, 2011).

Table 1: Household poverty, Greater Kordofan, as at May 2004

	Household characteristics		
State	% Destitute (no assets, labour power)	% Poor (few assets, high vulnerability)	% Less poor (basic needs met but vulnerable to crises)
North Kordofan	25%	30%	26%
South Kordofan	30%	45%	
(formerly) West Kordofan	17%		

Source: Adapted from Siddig, 2007: 11, who drew on data obtained from the International Fund for Agricultural Development

While some sedentary farmers have access to basic health, social and educational services (and are able to lobby government because of their sedentary lifestyles), pastoralist groups face greater challenges and often lack access to these services. Therefore, in contrast, while pastoralist groups may be wealthier in purely economic terms (cattle equates to capital), in some human development measures they lag behind – illiteracy is high and nomadic groups lack access to even the most basic services (Mohammed, 2010). Women and youth are constituencies that appear to suffer the greatest material deprivations and inequality, and are often excluded politically, socially and economically (El Tom, 2010; Saeed et al., 2010). Generally, communities outside of larger towns lack political representation and access to structures of decision making; therefore, they organise themselves at a local level and employ traditional mechanisms to resolve issues (Mohammed, 2010).

Other factors that contribute to environmental stress and conflict include low agricultural productivity, geographical isolation and a lack of infrastructure and development, with poor transport and communication links. In the context of these factors and others listed in the box below, it can be argued that in Sudan, and in the study area, conflicts will result from the complex interplay of environmental variables within the environmental, economic, social, political and cultural contexts.

Key non-climatic factors contributing to the vulnerability of rural communities in Sudan

- Deep poverty levels
- Lack of income diversity
- Lack of agricultural inputs
- Resource mismanagement
- Land overcultivation
- Fragile land/water resources

- Poor soil fertility
- Deforestation
- Natural resource conflicts
- Poor extension services
- Community displacement
- Poor sanitation/health services

Source: GEF, 2007.

Theoretical and analytical framework

Human security

Notwithstanding the complexity of existing environment-related conflicts, the obvious need for multidisciplinary approaches, and although climate change is not a new phenomenon, the likely scale, suddenness and depth of climatic changes and their effects, globally and in Sudan, will be unprecedented (IPCC, 2007). Our existing tools may very well not be able to cope with or be suitable for the additional complexity caused by climate change and variability, especially at the community level where climate impacts are likely to be experienced first. Moreover, as the earlier discussion highlights, magnified effects and impacts will give increased prominence to security and other multidisciplinary dimensions of climate change. In response, practitioners and policy makers require approaches that will help people and communities cope, prevent or adapt to climate change, and which take into consideration each unique socio-economic, political, cultural and structural context. Human security approaches may help us deal with these complexities and challenges by providing a multidisciplinary and normative approach that considers the physical security and well-being of people and communities.

Pastoralists moving from Southern Kordofan to Northern Kordofan and other states during the rainy season.

The concept of human security grew from the practical substance of the 1994 United Nations Development Programme (UNDP) report, *New dimensions of human security*. The paradigm is evolving but, at its essence, refers to "the security of individuals and communities, expressed as 'freedom from fear' [broadly, security] and 'freedom from want' [broadly, development]" (Kaldor, Martin & Selchow, 2007). By placing a greater focus on the security of individuals, rather than the state, the UNDP proposed that the scope of security should be broadened to include seven threats to an individual's or community's human security – economic, food, personal, environment, health, community and political security.

Human security is particularly appropriate for Africa (UNDP, 1994:22; Poku & Sandkjaer, 2008:22) and thus for Sudan. Climate change aside, Africans have experienced social, economic, political, environmental and cultural hardships, caused by and resulting in interstate and intrastate conflicts, environmental degradation, poor governance, economic uncertainty, inequality and a myriad of other global, national and local reasons. Human security's wider applicability and broader focus may address this complexity, which is exacerbated by the effects of climate change, and by the uncertainty around the future impacts of climate change. Moreover, it is argued that human security is also compatible with the natural humanism tradition of Africa, which focuses on philosophies that echo human security – such as mental, physical and spiritual health; food and environmental security; protection from criminal and external threats; and access to social and community services (Hutchful, 2008). In the form it has been adopted in Africa by the African Union (AU), for instance, it mirrors these values (Ibid.), with the AU defining human security as:

> ...the security of the individual with respect to the satisfaction of the basic needs of life; it also encompasses the creation of the social, political, economic, military, environmental and cultural conditions necessary for the survival, livelihood, and dignity of the individual, including the protection of fundamental freedoms, the respect for human rights, good governance, access to education, healthcare, and ensuring that each individual has opportunities and choices to fulfil his/her own potential...
> (African Union, 2004)

That said, human security as an approach to security has gained significant momentum over the years, but has also elicited criticism from numerous researchers in different fields, including security and development practitioners and feminists (Hutchful, 2008:78–79). Many argue that the academic and policy communities still lack rigorous tools for analysis and that, although its wide applicability is useful in a number of issues, human security "appears to lose coherence" upon scrutiny (Poku & Sandkjaer, 2008:17; Paris, 2001). While some argue that human security's only utility is as a rather useful and effective 'rallying cry' by political coalitions and as a potential label for a new research area

(Paris, 2001), others have attempted to narrow the concept to make it more workable,[10] with most seeking to reduce the number of variables or threats, and introducing different indicators and frameworks to operationalise the concept. Others have focused on the development of possible thresholds to determine when a person is suffering from human insecurity. For instance, King and Murray (2001:592) introduce the concept of generalised poverty, defining human security as one's "expectation of years of life without experiencing the state of generalized poverty", with the latter defined as "falling below critical thresholds in any domain of well-being", and with "domains of well-being" being proposed. Alkire (2003:6) proposes that "the objective of human security is to safeguard the vital core of all human lives from critical pervasive threats, without impeding long-term human fulfilment." According to Alkire, the rights and freedoms in the vital core pertain to survival, livelihood and basic dignity, and all institutions should at least protect the vital core from harm.

The deprivation-vulnerability approach to human security

Another approach to human security, the deprivation-vulnerability framework, operationalises a development-oriented approach to human security that seeks to establish clear research and policy priorities (Busumtwi-Sam, 2008). Busumtwi-Sam argues that, while human security and human development are discrete, they are mutually reinforcing.

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Southern Kordofan: a pastoralist on his way north, rests near a cultivated field.

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10 See, for example, Busumtwi-Sam, 2008; Human Security Research Unit, 2006; King and Murray, 2001; GECHS, 2000; Alkire, 2003.

The author also argues that human development is a longer-term *process* that works to improve health and well-being, livelihoods, dignity, survival, safety and knowledge, for example. Human security is a *condition* that expresses the "relative presence/absence (or increase/decrease) of contingencies that threaten physical and psychosocial harms affecting human dignity, livelihoods, safety, survival and health and well-being in the political, economic, socio-cultural and ecological contexts within which processes of human development take place" (Ibid.:19). In other words, human security or insecurity is a state, determined by threats that can cause harm – but can only harm if the unique context one finds oneself in does not provide the person with the means/ability to cope with or mitigate the threat. Whether a person is in a state of security or insecurity depends on a minimum threshold of "dignity, safety/survival, health and well-being and livelihood" (Ibid.:22). Thresholds (at least for the time being) will be determined effectively by the institutions (governments, international organisations and NGOs) addressing the issue of human (in)security at that point in time. The underlying logic of this is that the same threat *in different contexts* may lead to different states of either security or insecurity, and that it would be nearly impossible to seek universal thresholds that could only open the issue up for further debate (Ibid. 2008).[11]

To that end, Busumtwi-Sam (2008:16) thus proposes a middle ground between the broad definition of human security and the limited security discourse, so that human security aids human development and vice versa, rather than replicating each other. In light of the above definition, the deprivation-vulnerability approach proposed considers:[12]

- *Threats*: essentially **the likelihood of an incident occurring that will cause harm**. For the purpose of this study, threats also refer to the impacts of climate and environmental change, such as water scarcity, drought, desertification and competition over arable land for grazing and farming. The thresholds of threats are determined by their imminence, severity and suddenness.

- *Vulnerabilities*: threats do not necessarily cause harm, but some groups of people or individuals are more susceptible to harm than others. Therefore, an analysis of vulnerabilities is essentially **the likelihood of suffering harm from a specific threat in the context of particular deprivations and exclusions**. Vulnerability is measured by considering a group of people's exposure, sensitivity and resilience to a threat, in the context of deprivations and exclusions.

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11 Owen (2004:384) also argues that, "just as with traditional security, what is a threat to the world community is different from what is a threat to a nation or region. The line [threshold] is therefore set by political priority, capability, and will. The first opportunity and primary responsibility for ensuring human security should fall on national governments. However, if threats crossing the human security threshold are caused by governments or if governments are unable to protect against them, the international community should act."

12 What follows in bulleted form has been paraphrased and adapted from Busumtwi-Sam (2008).

- *Deprivations and exclusions*: these refer to **current hardships and scarcity, which result from poverty and inequality**; or those "impediments and dispossessions" that are measured by considering material/physical deprivations (people's income, assets and material needs), horizontal and vertical capability deprivations and exclusions (inequality between groups, power differentials, opportunities for participation, entitlements and patterns of domination.) (Andersen & Siim, 2004, cited by Busumtwi-Sam, 2008).

For the purpose of the research, this narrower conceptualisation of the human security approach has been used, focusing on whether and how NGO projects address threats, deprivations and exclusions and vulnerability in conflicts related to the environment. (The limitations and delimitations of the study are outlined in Annex 1.)

In the study, the threats have been assumed to be identified by NGOs as i) mostly environmental, ii) are imminent or have already occurred/manifested, and iii) are severe enough to cause human insecurity and possibly even conflict. Exclusion exists when people are not able to exercise social, economic, political and cultural rights, and has a number of qualities. Exclusion is relative, and individuals and communities can only be excluded in relation to other members of their society. It is also largely imposed – by institutional arrangements, a lack of power and other forces. People may be excluded from many things such as activities, sectors, means of livelihood and decision making, for instance. Finally, exclusion is often based on group identity – for example, religion, ethnicity, tribe, gender or age. The notion of vulnerability considers access to justice and conflict resolution mechanisms, and the likelihood of suffering harm from an environmental threat in the context of poverty, a lack of alternatives and inequality. In the study, it was assumed that vulnerability can be reduced (or resilience built) either by addressing threats, deprivations or exclusions, or – and here the approach has been adapted – by providing individuals with the necessary tools to address their own vulnerabilities that arise from manifested/imminent threats in the context of deprivations and exclusions, such as by building conflict resolution capacity. Moreover, in the study it was assumed that the researcher needs not be concerned with whether thresholds of threats and vulnerability have been crossed – it was assumed that they have been, hence the manifestation of conflicts.

In what follows, this framework will be applied to the analysis. Key themes that emerged from the study will be discussed first, followed by findings and recommendations.

Addressing climate- and environment-related conflicts in the Southern Sahel of Sudan

Conflict resolution capacity and opportunities, and vulnerability

A lack of legitimate and functioning conflict resolution tools and mechanisms may contribute to human insecurity and conflicts, by reducing the ability of communities to deal with their own vulnerabilities and the threat of conflict itself. Thus, whether customary, modern or a combination of such conflict resolution methods are used, most NGO projects that address environment-related conflicts in the study area assist communities to resolve conflicts by strengthening conflict resolution capacity and by creating opportunities for, among others, interactive conflict resolution and reconciliation (Anil, 2010; Balandia, 2010; Deng, 2010; Mohammed, 2010; Badawi, 2010).

Opportunities for conflict resolution and reconciliation

The opportunities created by NGOs for conflict resolution and reconciliation in Southern Kordofan and the state's Sahelian neighbours take many forms and are created at different scales, from state to local levels. Examples of such opportunities include peace and reconciliation conferences that draw on customary methods, dialogue forums, peacebuilding workshops and conflict resolution capacity building workshops. For instance, the Adlan Services and Development Organization (Adlan),[13] a local NGO, also addresses environment-related and other conflicts as part of its development and peacebuilding agenda. To this end, it offers capacity building events (such as workshops, seminars and training courses) and reconciliation services in rural areas in Southern Kordofan and beyond. It operates a number of initiatives, including the facilitation of reconciliation between tribes, and has also established a dialogue forum between pastoralists and farmers in Greater Kordofan. One such forum, offered in partnership with the Western Sudan Resources Management Programme, was a peacebuilding workshop held in December 2009 for the Birgid Awlad Hilal and Dar Bakhota tribes, from the Arabised Hawazma tribe from Southern Kordofan.

The workshop, which aimed to resolve a long-standing conflict between the tribes, with competition over resources as a key conflict driver, was witnessed by leaders of the traditional administration of the parties – the mayors, administrators, *sheikhs* and "personalities of high ranks from both parties". Representatives from local governments

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13 Adlan Services and Development Organization is a Sudanese community development and peacebuilding organisation that works on issues related to the environment, women and human rights. It focuses on education and capacity building, development work, "the promotion and development of nomadic life, grazing, agriculture, environmental protection and poverty elimination", peace consolidation, dispute resolution and advocacy.

Graduates from a conflict resolution training course, offered by the Sudan Environmental Conservation Society .

and traditional leaders of other tribes attended, with a clear statement from local government that it was committed to implement the decisions taken during the workshop. After deliberations, resolutions and recommendations were signed by the tribal leaders and witnessed by local government officials and by other tribal leaders of the area (Adlan Services and Development Organization, 2009). The outcomes of the meeting and agreement focused on a range of issues that are not directly related to land or the environment, but which aim to improve development, on one hand, and human security, on the other. Other dialogue platforms held by Adlan and the other organisations interviewed followed a similar process.

In an interesting partnership, Adlan also has a synergistic relationship with the Life and Peace Institute, a research institute based at the University of Khartoum. In return for conflict resolution training and capacity building of staff and stakeholders of Adlan, the research fieldwork of the Life and Peace Institute is facilitated by Adlan. Adlan introduces the researchers to community members and negotiates access for researchers to study the conflict in the Nuba Mountains. As a result of the civil war, suspicion and a general mistrust of outsiders are not uncommon; therefore, this partnership is a particularly beneficial one (Ahmed, 2010).

Similarly, Justice Africa[14] works to build conflict resolution capacity mechanisms, to facilitate mediation and peace conferences and to conduct conflict prevention through training. By creating opportunities for dialogue and strengthening customary conflict resolution capacity, the organisation has, for instance, assisted five tribes in Heiban (the Uturu, Tira, Lira, Shawaya and Heiban) to lead a peace process successfully, backed by technical expertise from civil society, international donors and government. A reconciliation workshop and conference were held over five days in January 2010 and focused on conflict prevention, peace and reconciliation. A large number of stakeholders were invited, including spoilers, representatives from the Sudan People's Liberation Movement (SPLM) and National Congress Party (NCP) and tribal leaders (Mohammed, 2010). Training workshops on peacebuilding were held for two days, followed by workshops that sought to address specific issues involving specific tribal groups. A reconciliation conference was held on the last two days under the banner "Together, through dialogue; towards reconciliation, peace and development". At the end of the conference the Heiban declaration was drawn up, detailing recommendations from the conference with signed commitments from each of the tribal leaders to stand by the recommendations.

As an international organisation, the UNDP, through its Reduction of Resource Based Conflicts Among Pastoralists and Farmers programme,[15] has also invested significantly in efforts to create platforms for dialogue and reconciliation (UNDP, 2010). To address and prevent conflicts, the programme focuses on strengthening capacity to manage resources and conflict, among other things. To this end, several conferences and forums have been held to address issues of land tenure, and informal opportunities for exchange and partnerships between pastoralists and farmers have been engineered through joint field trips and awareness-raising sessions with pastoralist and farmer's unions (UNDP, 2006).

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14 Justice Africa is an advocacy organisation and research institute founded in 1999 to campaign for human rights and social justice across Africa. The organisation contributes to understanding and resolving some of the most pressing issues on the continent, by means of conferences, media work, publications, direct engagement with policy makers, as well as initiating and supporting civil society activities for peace, justice and democracy in Africa. See <http://www.justiceafrica.org>.

15 As the different project elements of the UNDP's Reduction of Resource Based Conflicts Among Pastoralists and Farmers programme are largely implemented by NGOs such as SOS Sahel and SECS at a local level, it is also relevant here. See UNDP (2010) and UNDP (2006) for more on the programme's objectives and activities, and the UNDP analysis on pastoralist-farmer conflicts in Southern Kordofan.

Traditional or customary conflict resolution mechanisms

In Sudan, traditional conflict resolution (TCR) mechanisms[16] – such as the practice of customary mediation or *judiyya* (see box below), the institution of native administrators[17]– coupled with customary land tenure systems, played a key role in the past to prevent and address environmental and other conflicts in Sudan's tribal lands.

Judiyya (also Goodiya/Judiya)

Judiyya is used to resolve conflicts in many parts of Sudan by *Ajaweed* (mediators) or *Ajawi* (singular, mediator) (Egeimi, Mahmood & Ahmed, 2003:3). A form of customary mediation or TCR, *judiyya* is employed in reconciliation conferences or councils, for instance, and is used to resolve major conflicts amongst tribes, where conflicts often involve competition over grazing or farming land, or water. *Ajaweed* are involved, and call on concerned parties, some dignitaries and tribal leaders in a reconciliation conference. The conference suggests solutions that satisfy both parties. If agreements are not reached, other people are invited "who are known of their wisdom, foresightedness [sic] and the ability to find suitable solutions for the problems. In most cases, such conflicts rarely reach the official channels of conflict resolution. This is due to the general convention that it is shameful to let outsiders interfere in local affairs" (Wadi, El Hillo & Hadi, 2005:35). Minor conflicts are normally resolved by the village *sheikhs* who, for cases such as crop damage, may determine the amount of crop damage and the compensation required, for example. Mediation – for minor and major conflicts – is based on the Koran and the teachings of Prophet Mohammed, while the mediators can be people of high standing in the community, such as village or religious leaders. The mediation usually involves a number of steps: (1) the expression of mutual forgiveness by both parties; (2) examples of conflict resolution from the perspective of the Koran are highlighted; (3) a presentation by each of the parties of their analysis of the conflict or issue; (4) a way forward is proposed by the *Ajawi*, discussed and the mediation is concluded; and (5) a reading from the Koran (Egeimi, Mahmood & Ahmed, 2003). As part of the process, the mediators will divide themselves into 'doves' and 'hawks'. The doves are the ones that work to create peace, by encouraging parties to forgive and forget, make friendly or symbolic gestures, and provide examples of peaceful coexistence in the past, with considerable reference to the Koran, Sudanese proverbs, and even explaining how feuds can affect the afterlife. The hawks are the enforcers – the ones that highlight the drawbacks or repercussions of not accepting the ruling of the *Ajaweed* (Mohammed, 2002).

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16 In Africa, traditional/"endogenous"/"indigenous" or customary conflict resolution methods are usually applied in a particular cultural context to resolve conflicts, and are home-grown mechanisms that evolved organically and historically, especially in tradition-bound communities.

17 The Native Administration is "the customary institution of traditional leaders, including *Sheikhs*, *Oumdas* and *Emirs*, who are responsible for maintaining customary law, including the allocation and management of land" (Egeimi, Mahmood & Ahmed, 2003:22).

A number of factors have led to the erosion of TCR mechanisms in Sudan and in Southern Kordofan, however: the drawn-out civil war and small arms proliferation; greater competition over increasingly scarce resources and ever larger herds increasing the stakes in conflict (Ali Siddiq, El-Harizi & Prato, 2007); competing modern and traditional legal frameworks (Wadi, El Hillo & Hadi, 2005); the rise of modernity; and according to some, the undermining of customary mediation by the government and political interest groups (Mohammed, 2002). Another key factor was the abolition of the Native Administration[18] between 1970 and 1986 (Egeimi, Mahmood & Ahmed, 2003:22). Although reinstated in the 1980s, "the 20 years of its absence proved sufficient enough to irreversibly undermine its position in the people's minds and sentiments. Yet even after the return of the National Administration, it was not given sufficient powers that would elevate it again in the public eyes. Over and above, over the 20 years of its absence the world has changed and native authorities need to upgrade their human capabilities and technical capacities to match the new realities of conflict and its resolution" (Wadi, El Hillo & Hadi, 2005:35).

However, despite these challenges, TCR, according to some, still has the potential to prevent large-scale intergroup conflict (Mohammed, 2002). The use of TCR to resolve environment- and other-related conflicts in the study area is, by all accounts, widespread. Especially in areas where modern institutions do not exist, *judiyya* plays a greater role in conflict prevention, management and resolution. For example, according to Mohammed (2002), grassroots or community conflicts in Sudan continue to be solved in any of five ways, most of which draw on forms of customary mechanisms: (1) modern institutions such as courts and police; (2) native courts that draw on customary laws; (3) Sharia law courts that deal with conflicts involving Muslims; (4) citizen-based customary mediation practices; and (5) government-sponsored peacemaking conferences. There is even some evidence to suggest that communal and traditional leaders, and those in charge of native courts, may prefer to refer disputes to *judiyya* – according to one native court president (quoted by Mohammed, 2002), "the court will postpone the problem, the *judiyya* will solve it" – while also expressing the belief that by using courts one party always loses, whereby *judiyya* seeks win-win solutions.

In fact, peace or reconciliation conferences to resolve conflicts between and within pastoralist and farmer groups are widely used and accepted in the study area (Balandia, 2010; El Tom, 2010; Mohammed, 2002). For major conflicts, the conferences are often sponsored by the Southern Kordofan state government and employ *judiyya*, but some concerns have been expressed about cases in which there is implicit support for one party to the conflict or where the *Ajaweed* has clear political affiliations, which could derail

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18 The Native Administration was critical in the management of livestock mobility and the separation of grazing and cultivation lines in the colonial period. According to El Hassan and Birch (2008:7), "local orders stipulated the timing and direction of pastoralist movements along the livestock corridors, the opening and closing of water points and the latest date for harvest, after which livestock could enter fields and graze the crop residues. Farming was forbidden in the corridors, and agreements were periodically facilitated between groups in order to head off conflict."

Southern Kordofan, with the Nuba Mountains on the horizon, during the rainy season.

the process and exacerbate conflict (Mohammed, 2002). In Southern Kordofan, the government body to strengthen peace – the Reconciliation and Peaceful Coexistence Mechanism (RPCM) – was established to address conflicts in the state.[19] According to the state governor, climate and environmental change and their impacts on farmer and pastoralist conflicts are key concerns for the government (El Tom, 2010). To this end, the RPCM works closely with international institutions such as the United Nations (UN) and other funders, which finance programmes and projects and provide technical support. Reconciliation and peace conferences are held to foster reconciliation, re-establish working relationships and reach agreement on conflict issues. The conferences are often funded by international agencies, but executed by local partners. Key state government figures from the ruling SPLM (in Southern Kordofan) and the Sudanese government (ruled by the NCP) may play a key role in conferences – such as in the case of a UN Mission in Sudan (UNMIS)-funded reconciliation conference in Southern Kordofan under the RPCM (UNMIS, 2010). According to the chief of the Humanitarian Affairs Commission (HAC), reconciliation workshops and conferences have contributed to a reduction in conflicts between pastoralists and farmers in the west and north of Southern Kordofan (Anil, 2010).

In the study area, NGO projects and programmes also reintroduce and strengthen customary conflict resolution mechanisms through modern participatory methods

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19 Other national government ministries involved in addressing conflicts include the Ministry of Social Development, Humanitarian Affairs Commission (HAC), and the Ministry of Local Government (El Tom, 2010).

(Majzoub Fidiel, 2010; Mohammed, 2010; Badawi, 2010). While most recognise the importance of TCR, some agree with Wadi, El Hillo and Hadi (2005), that it is essential to strengthen and modernise customary methods through capacity building, consultation with stakeholders, dialogue facilitation and negotiation (Salih A. Majid, 2010; Mohammed, 2002). A case in point is the conflict between the Gawamaa, Sebeihat and Baggara tribes in Gargur (outlined in the box below), which provides a typology of a conflict and the potential for TCR.

Conflict between the Gawamaa, Sebeihat and Baggara tribes

Conflicts over grazing land and water are not new phenomena, and traditionally pastoralists and farmers have drawn on TCR mechanisms to resolve conflicts. In the case of the Gawamaa tribal group, who lives in Gagrur in the Sahelian belt of Northern Kordofan, before an intervention by SOS Sahel, local farmers annually came into conflict with pastoralists from the Sebeihat and Baggara tribes at different points in the year. The Sebeihat consists of 40 pastoralist households who depend entirely on the Gagrur land during the dry season (April to June). On the other hand, the Baggara pastoralists, who are based in Southern Kordofan, move north during the wet season, following established stock routes, and pass through Gagrur every August (Egeimi, Mahmood & Ahmed, 2003). Conflict between the tribes resulted from crop damage due to high animal numbers, the expansion of Gawamaa farming into areas traditionally demarcated for grazing and stock routes, and competition over water. Modern legal frameworks also compete with each other, as well as with local customs and the sheer necessities of farming. For instance, according to customary law, farm land after harvest is subject to public grazing, but during planting and crop-growing periods animals are not allowed on fields. The latter period is set by the Gawamaa village *sheikh* in a ritual called 'stick raising'. However, "this period also coincides with the passing of the herds of the Baggara pastoralists, and the time of greatest pressure on the pastoral resources in the region" (Ibid.:22).

SOS Sahel[20] works with conflicting communities and builds conflict resolution capacity by employing participatory tools to enhance TCR. One year after the intervention in the Gawamaa-Sebeihat-Baggara conflict, an SOS Sahel evaluation found that the TCR mechanism had been strengthened significantly through participatory methods, and had led to the implementation of agreements (Egeimi, Mahmood & Ahmed, 2003:23). According to the evaluation, the participatory methods were useful in helping the communities to distinguish between and agree on root causes, core problems and effects;

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20 SOS Sahel's mission is to find meaningful solutions to poverty and vulnerability experienced by the people living in the dry lands of the Sahel. It has been operating in Sudan since 1985, and nationalised from being a British NGO in January 2010. It works in the Red Sea state and in Northern Kordofan and Southern Kordofan, where it is "working with herding and farming groups to help them overcome their conflicts and peacefully share access to the sparse forests, water and pasture that they each depend upon". See <www.sahel.org.uk/about.html>.

to start a dialogue; and to help communities realise that collaboration led to the resolution of the conflict. Some of the techniques introduced to the process included conflict mapping, a timeline of events and a 'conflict tree' – which reportedly, when drawn by conflicting parties and compared, showed both parties how their perceptions of a conflict differed (Ibid.). During the negotiation stage that followed, the communities chose a committee and a chairman whom they felt represented them fairly to mediate. From this point, a local form of *judiyya* was used: "[T]he mediation team used religious and cultural customs that call for sharing of resources among relatives and neighbours" (Ibid: 23). Finally, an agreement acceptable to both parties was reached, and signed by representatives of the two parties.

Similarly, Practical Action[21] utilises Participatory Action Plan Development (PAPD) as a consensus-building vehicle in its work to resolve environmental conflicts (Practical Action, 2009). PAPD combines with the *judiyya* and *Ajaweed* and involves the inclusion of a wide range of stakeholders in NRM. This participatory approach complements the *Ajaweed* to reduce resource conflicts and, at the same time, assists in sensitisation and the development of measures to implement *Ajaweed* decisions.[22] PAPD has been used with much success globally to help local people plan in floodplains, forests, coastal areas and cities, and is deemed particularly useful in North Darfur, where water security for grazing and pasture is a key issue (Practical Action, 2009:3).

More generally, it is also argued that partnerships enhance traditional mechanisms, given that institutional frameworks which provide legitimacy and recourse to legal instruments need to be in place. For instance, SOS Sahel ensures the involvement of institutions such as pastoralist and farmer unions, the native administration and policy bodies in its interventions. Specifically, it also works to improve coordination between local, state and federal levels (Salih A. Majid, 2010). Partnerships also form an essential element of the Sudan Environmental Conservation Society (SECS),[23] which works closely with state ministries in the states in which it operates, and with local universities, farmers and pastoralist unions. While it tends to intervene in areas where there have been no

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21 Practical Action is a development organisation that uses technology to reduce vulnerability, create markets that work for the poor, and improve access to basic services. See <http://practicalaction.org/sudan/region_sudan_programmes>.

22 The six stages of PAPD include (1) preparation (collection of good background knowledge), (2) problem census and problem prioritisation (by different groups), (3) information is gathered about relevant problems, (4) the community analyses possible solutions, (5) the wider community is consulted for input, and (6) an action plan is developed and implemented (Practical Action, 2009).

23 SECS was established in 1975 as a national NGO. It supports "grass-roots community driven programs addressing climate change impact and adaptation, ecological restoration, bio-diversity, sustainable agriculture. With a broad base membership of leading scientists, ecologists, academics, and young volunteers, SECS serves as the regional coordinating body environmental networks such as the Nile Basin Discourse – an NGO consortium of the 10 Nile Basin Countries, along with other regional." [sic] See <www.empowermentworks.org/SECS.html>.

other interventions, it does collaborate with other NGOs. In a project in Gedarif state, it also collaborated with local partners and drew on local knowledge and experience, by commissioning a study from the University of Gedarif to determine the effects of climate change on livelihoods and conflict (Badawi, 2010).

Preventing or mitigating threats to human security

The Water for Peace project and other projects

By reducing environmental threats,[24] organisations working in the study area aim to address human insecurity and conflict. SECS,[25] through its Water for Peace project, "contribute[s] to local peace building processes in South Kordofan State through enhanced access to safe, and adequate water for human and animal consumption" (SECS, 2010a:22). The project works in Babanusa (in the villages of Tiboon and Baggara) and Al Salam (Kijeira) in Southern Kordofan state, in areas where the water supply is critical and where competition over water is a key conflict issue – farmers compete with pastoralists along the migratory route over water for irrigation, cattle and personal consumption. The livelihoods of pastoralists have been severely affected by water scarcity, drought and desertification since the 1970s, the effects of which were exacerbated by the civil war.

SECS fills an essential post-conflict peacebuilding and environmental conflict resolution gap. In the aftermath of the civil war – and despite development interventions by the Southern Kordofan government, civil society and international organisations – the Water for Peace project areas experience water scarcity and a severe lack of basic services. According to SECS, "service-providers and authority structures have been significantly weakened or destroyed, resulting in minimal effective governance or service provision to populations in the area as the civil administration collapsed." For example, the state Rural Water Corporation (RWC) is hampered by a lack of capacity – tools, staff, skills, underinvestment and generally poor support from the federal government. In the context of weak government structures unable to resolve conflicts, competing mandates and poor environmental management, water scarcity has increased, contributing to conflicts between pastoralists and farmers (SECS, 2010a:4). Women and girls are disproportionately affected by water scarcity and the conflict. People have access to less than 10 litres per person per day and, according to the RWC, need to travel distances of 10–30 km to get this water. Women and girls, who are the primary water collectors, have to travel these substantial distances to fetch water, often through unsafe areas. Water collection has the consequence of girls missing their schooling, and SECS reports that girls drop out of school at an early age (SECS, 2010a:4). Other environmental threats are emerging from the investments in oil extraction along the migratory route of the pastoralists.

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24 As noted earlier, in this research environmental threats can include water scarcity, droughts, a shortage of wells or water points, a shortage of land for grazing or farming, competition over such land, blocked migratory routes, and so on.

25 This section, in parts, has been abbreviated from the original SECS Water for Peace project proposal.

This is leading to environmental degradation and affecting the livelihoods of Messeriya pastoralists, which in turn may exacerbate conflicts over land and water (SECS, 2010a).

In a direct intervention at the threat level of human insecurity, SECS' Water for Peace project provides affordable water at strategic points along the livestock routes, and works towards separating water sources for humans and livestock, easing congestion and preventing conflict by creating alternative water sources in areas of high demand. Through the RWC, one water supply in each village will be rehabilitated. Artisanal wells supply the water, driven by diesel pumps. With support from SECS, RWC will overhaul the facilities, ensure separate supplies for human and livestock consumption, put up fencing and provide villagers with training on how to maintain and operate the equipment (SECS, 2010a; Badawi, 2010).

SECS's Water for Peace Project also works to reduce vulnerability by re-establishing traditional social structures for conflict resolution, which were eroded through conflict and displacement. Another objective is to reduce inequalities and exclusions in the access to and control of water resources for the 27 500 people and 18 000 head of livestock in the project area that depend on the water supply. By improving basic sanitation, the project not only safeguards the quality of water resources but also improves the health and well-being of farmers and pastoralists, and especially that of women and girls. Finally, SECS creates platforms for dialogue and capacity building – through workshops, training sessions and sensitisation missions – for conflict resolution, with a focus on water management and sharing, hygiene and peacebuilding. It also collaborates with other private and government stakeholders in the Water for Peace

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Kadugli, Southern Kordofan: even during the rainy season drinking water and fodder are not available freely, and are transported by donkeys to their destinations.

A man-made dam or hafir*, which captures run off and provides critical resources for pastoralists along livestock routes.*

project area, to ensure the coordination and sustainability of projects and to prevent overlap (SECS, 2010a; Badawi, 2010).

Although in this particular project (Water for Peace) the focus is on addressing water scarcity, SECS intervenes at various levels to improve human security. Notwithstanding efforts to reduce the immediate threat of water scarcity (by providing a sustainable, accessible, managed, affordable and equitable water supply), it also works to address vulnerability and exclusion. To that end, it empowers communities and local traditional leaders to resolve conflicts, by providing capacity building and conflict management training. It does not do this in isolation, but works in partnership with local government structures and other NGOs in the area (Badawi, 2010).

Other organisations also address threats to human security in their conflict prevention work. The UNDP's programme to reduce resource conflict among pastoralists and farmers includes the protection of animals through the provision of vaccine, establishing water points in various localities, and the opening of fire lines (UNDP, 2010). And AECOM – a private firm contracted by the United States Agency for International Development (USAID) to work in Sudan in peacebuilding – intervene directly in environmental conflict by working in western Southern Kordofan with Messeriya tribes to provide water on livestock routes and to assist pastoralists to settle, instead of moving deeper into Southern Kordofan (Mikadi Koko, 2010).

It is well worth considering the impacts of interventions. For instance, by addressing a threat such as water scarcity, new forms of conflict can be created. SOS Sahel assisted communities to construct a *hafir* for water capture in an area that has been in conflict for 10 years. When proposed livestock corridors were demarcated, so that the *hafir* could also be used by pastoralists, the farmers refused. SOS Sahel assisted the parties in negotiation and held three meetings and workshops, during which corridors were agreed, but with conditions – one of which was the need for additional water sources, which led to the construction of another *hafir*. It was agreed that the resources on the corridor would be managed by a committee of both communities. It is now an accepted corridor (Salih A. Majid, 2010; Egeimi, Mahmood & Ahmed, 2003:22).

Technology to address threats

The use of technology to address environmental conflict and improve human security is illustrated by the work of Practical Action and SOS Sahel. Practical Action intervenes in resource-based conflicts using an NRM focus – for example, through the improvement of grazing, opening up and/or agreeing on livestock routes, the provision of seeds, the establishment of water points, and training paravets. Practical Action also promotes 'peacebuilding technologies', including early maturing crop varieties and improved millet/sorghum varieties that make planning for harvesting easier, given that many conflicts arise because harvests are delayed and crops are destroyed by the arrival of migrating livestock (Majzoub Fidiel, 2010). In another innovative pilot project, SOS Sahel built a sand dam in Southern Kordofan. The sand dam technology which belongs to SOS Sahel was first

Nomads pause to give their camels water in the Nyala region.

UN Photo/Fred Noy

successfully piloted in northern Kenya's dryland areas. Sand dams capture water and prevent rapid evaporation, as people need to dig a little through sand before getting to the water. This has a number of other benefits, including a reduction in hygiene problems and helping to recharge and regenerate areas in terms of greenery. In addition to bringing and testing new technology to assist communities to adapt, the project was led by the community, with SOS Sahel providing the technical advice and material. While the project had not been formally evaluated at the time of research, similar projects (such as water harvesting through *hafirs* and the establishment of water committees) have had a clear impact elsewhere on reducing conflicts, according to SOS Sahel's Director (Salih A. Majid, 2010). For instance, SOS Sahel, after an extensive negotiation with the groups, introduced a new *hafir* along the Habila-Fayu livestock corridor which previously saw conflicts between Nuba farmers and Hawazma pastoralists (Salih A. Majid, 2010).

Addressing deprivations and exclusions

"Obstacles to development create human insecurities and therefore improvements in human development will enhance human security. At the same time, human development is difficult to achieve when the minimum conditions for human security do not exist" (Busumtwi-Sam, 2008:15). In the study area, a number of interviewed NGOs, in their work to address climate- and environment-related conflicts, incorporate this principle into their programme and project design. Thus, with a focus on "the poor, the disadvantaged, the voiceless, the unrepresented, the powerless" (Said, 1994:84, cited by Busumtwi-Sam, 2008:22), additional highly context-specific 'developmental' elements often utilised by

Women trainees as part of the SECS Eco Peace Project in Gedarif state.

NGOs include focusing on deprivations and exclusions. In the case of the study area, for instance, many organisations address absolute deprivation or poverty by building the resilience of people's livelihoods to environmental and other threats. They do this by providing them with skills to perform other work, or by teaching them to access other markets for their products. These classic development elements aim to address underlying structural factors in conflicts, or those that can affect the environment and escalate conflicts. Measures that focus on exclusion tend to include communities, and those who are normally excluded in communities – such as women and girls – in conflict analyses, the development of solutions, and the implementation and management of solutions.

For instance, through community mobilisation and sensitisation missions SECS, in its Water for Peace project, involves communities in its projects. This gives community members ownership of the problem of conflict, and its resolution. This is empowering generally but critically includes members in the community ordinarily excluded from decision making and projects, such as women and youth.[26] Moreover, by disseminating environmental and health messages, supplemented with indigenous knowledge, and by building toilets and teaching people how to build them cheaply themselves, the overall health and well-being of communities are improved, as well as their water resources. In this case, roughly 20 households in each village are supported by the project to construct toilets, and one selection criterion is economic – the poorest households, including those headed by females, get priority (Badawi, 2010). Like SECS, Practical Action also establishes VDCs to ensure community involvement and ownership, which "form a focus for the delivery of support and training at local level by Practical Action and its partners…. In turn, these VDCs are represented by an umbrella institution – the Network – which helps provide support to activities and skills associated with food, forestry planting, energy use and construction" – an important capacity building element (Practical Action, 2009:3).

The SOS Sahel model also involves all stakeholders in natural resource/conflict issues, and mobilises and trains them to be part of the capacity building and management of resources. SOS Sahel often focuses on elders (such as through pastoralist unions and tribal leaders), but it has become clear that women and youth groups are also powerful actors, who are often excluded and marginalised.[27] Therefore, as a policy, all project committees (whether relating to water, livestock or corridors, for instance) formed by SOS Sahel now involve women and youth. One challenge has been that these groups require a lot of training, and there has been opposition by existing structures to their involvement. The solution has been to create awareness and understanding among elders and traditional leaders about the importance of women and youth groups in addressing issues of conflict, and their role in conflict prevention

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26 SECS requires that village development committees (VDCs) are made up of at least 30% women.

27 A practical limitation to training women is that training venues are perhaps not able to accommodate both sexes, in which case the main protagonists and community leaders, who often are men, usually benefit from such training sessions.

or as spoilers in the resolution of a conflict (Salih A. Majid, 2010). The organisation also argues that the confidence of youths and women needs to be built, to encourage them to participate in conflict prevention and resolution processes. The organisation found, for instance, that in Northern Kordofan, communities were more open to participation, whereas in Southern Kordofan – where some of the fiercest fighting took place during the civil war – communities are more conservative. To this end, SOS Sahel will concentrate on confidence- and capacity building activities, and will assist women and youth groups to organise themselves and engage in critical issues. One way of doing this will be for the groups from Southern Kordofan to spend a week in Northern Kordofan, so they can witness and learn from the participation by their 'peers' (Salih A. Majid, 2010).

Addressing deprivations and exclusions in scaled approaches to resolving environment-related conflicts

As the different project elements of the UNDP's Reduction of Resource Based Conflicts Among Pastoralists and Farmers programme are largely implemented by NGOs such as SOS Sahel and SECS at a local level, they are also relevant in this study. Therefore, the development activities undertaken as part of the UNDP's broader, scaled intervention include the establishment of a development fund, for development initiatives with "clear peace-building dimensions"; the rehabilitation of health facilities; the construction of schools; and measures that promote the creation of alternative livelihoods and protect existing livelihoods. These include, for example, the protection of animals through vaccines and equipment; the establishment of veterinary pharmacies; and assistance to various women groups that focus on the creation of alternative livelihoods (UNDP, 2010).

Deprivations and exclusions are also addressed in other interventions that clearly follow scaled approaches to resolving environment-related conflicts. For example, in Gedarif state, which stretches north into the Sahel, the SECS Eco Peace project seeks to influence environmental management policy through state-wide forums and the publication of research on *Al Massarat* (livestock routes) and conflict. It also conducts advocacy and environmental education at a state level through television and radio messages. At a community level, its intervention addresses numerous forms of human insecurity – environmental threats (through better local environmental protection), vulnerabilities (through capacity building and empowerment), and deprivations and exclusions (Badawi, 2010). In terms of the latter, for example, women were provided with the means and training on food processing and craft making to improve their incomes and develop alternative livelihood options. They were also trained to train others in these processes, which is highly empowering. The community also started a seed bank, and was involved in the design, implementation and monitoring of a programme to supply the community with butane gas (to curb deforestation and empower women, who usually search for firewood). Both of these projects required an initial outlay of funds, in the form of a type of micro credit that was provided by SECS to individuals –who then paid back the money lent or seeds used, when they were able. Finally, veterinary training

Kadugli, Southern Kordofan: the sale of wood and charcoal is contributing to deforestation which degrades grazing areas and causes desertification.

workshops were held and paravets were trained to reduce vulnerability of and stress on pastoralist communities, who often cannot afford or reach vets.

The Eco Peace project is a good example of a broad-scaled intervention that addresses human insecurity to prevent environment-related conflicts. In addition to the lobbying and advocacy work done at a state level to improve environmental management, to secure pastoralists access to wider stock routes and water and to ensuring access to farmland for farmers and pastoralists, the project also assisted communities to diversify livelihoods and to deal better with environment al threats. By building managerial and organisational capacity of the pastoralist and farmers' unions and by demanding increased accountability from leaders, SECS also reduced vulnerability and empowered individuals and organisations to address environmental threats (Wadi, El Hillo & Hadi, 2005). A key lesson from this particular case is that conflicts are rarely simple and that interventions can seldom focus on just one element of human insecurity. By gaining a sophisticated understanding of the conflict (through the research of the state university), the organisation sought to understand the complex root causes and dynamics of the conflict, and was able to intervene on a number of fronts to resolve the conflict. Yet, despite these efforts, SECS reports a number of challenges – including the complexity of conflict analyses; in many areas, it was the first ever to intervene, meaning communities might embrace or reject projects; and slow progress in improving NRM policy. SECS also identified the need for more projects to assist in diversifying livelihoods, and for more research to understand conflict dynamics (SECS, 2010b; Badawi, 2010).

Discussion and findings

Lessons from NGO interventions in environment-related conflicts

Building conflict resolution capacity and opportunities

A lack of legitimate and functioning conflict resolution tools and mechanisms contributes to human insecurity, by affecting the ability of communities to deal with their own vulnerabilities and the threat of violent conflict. The evidence presented in the previous chapter highlights that most NGO interventions which address environment-related conflicts assist communities to resolve conflicts by strengthening conflict resolution capacity, and by creating opportunities for conflict resolution and reconciliation (Anil, 2010; Balandia, 2010; Deng, 2010; Mohammed, 2010; Badawi, 2010). Examples include conflict resolution training; enhancing TCR mechanisms and promoting their use; and offering platforms for conflict resolution, such as peacebuilding workshops, reconciliation and peace conferences, reconciliation meetings, and so on. These largely interactive conflict resolution approaches deserve further consideration for the resolution of environment-related conflicts in the study area and elsewhere, and for conflict-sensitive climate change adaptation.

Sudan Environment Conservation Society (SECS)

In order to help communities diversify livelihoods, men are trained on the processing of hide in Gedarif state.

Interactive conflict resolution has its origins in human 'needs-based' or 'cooperation-based' conflict resolution, and is defined as "facilitated face-to-face activities in communication designed to promote conflict analysis among parties engaged in […] conflict" (Fisher, 1997:121). These include different approaches including negotiation, cooperative analytical or interactive problem-solving, and 'human relations workshops' (Ibid.:122) – all of which were evident in some form in the study. Interestingly, interactive conflict resolution is not alien to the traditional field of environmental conflict resolution, which encapsulates similar processes – "direct, face-to-face discussions; deliberation intended to enhance participants' mutual education and understanding; inclusion of multiple sectors representing diverse and often conflicting perspectives; openness and flexibility of process; and consensus or some variation other than unilateral decision making as the basis for agreements", according to Dukes (2004:191). Moreover, environmental conflict resolution "may or may not include a third-party mediator or facilitator" and will include some environmental elements, but would not be limited to those (Ibid.:192).

As interactive and environmental conflict resolution approaches form part of certain environmental conflict interventions in this study, they are likely to be important elements to efforts to address conflicts related to climate change, and thus in conflict-sensitive climate change adaptation approaches. However, more research is needed to determine their applicability and utility in other settings of climate impact – for instance, in contexts of sudden onset environmental changes and disasters (like floods or droughts), where there may be a breakdown in institutional arrangements.

Other considerations from the study that may be critical for the development of interventions to address environment-related conflict and conflict-sensitive climate change adaptation, include:

- coupling capacity building in conflict resolution with other informal reconciliation activities and ways of exchange, such as human relations workshops
- securing commitment from local governments to assist or facilitate decisions taken in mediations
- drawing on ceremonial aspects, such as signing agreements in the presence of witnesses, to secure agreements
- developing partnerships and synergistic relationships between different stakeholders involved in conflict resolution
- recognising the important role that NGOs and international organisations – such as the United Nations Environment Programme (UNEP) and UNDP – can play in providing funding and technical support to conflict resolution.

TCR mechanisms largely are human needs-based and interactive. The evidence collected in this study shows that the use of TCR by NGOs – and even government and international organisations such as the UN – to address environment- and other-related conflicts in

the study area is widespread. Particularly in areas where modern institutions do not exist, *judiyya* plays a greater role in conflict prevention, management and resolution.

Despite the clear utility and popularity of TCR mechanisms in Sudan, it is not a given that TCR mechanisms would be successful in contributing to the resolution of environmental and climate related conflicts elsewhere. TCR is highly context-specific and has a number of limitations. It depends on "the existence of a community of relationships and values to which they can refer and that provide the context for their operations. Relationships are a precondition for the effective operation of the modes of conflict management" (Zartman, 2000:224, cited by Boege, 2006). Thus, because it is rooted in an acceptance of customary institutions, TCR may only be effective in smaller areas, where conflicts among the "us" group would be far easier to resolve than between "us" and "them", or in conditions where outsiders could buy into "our" values (Boege, 2006:16). This can clearly be problematic – for instance, in dealing with conflicts resulting from climate migration in receiving communities. In Sudan's case, *judiyya* is widely used, and more research will shed light on context-specific nuances and how it functions in particular localities. Despite it being used on a small scale, others argue that the implications of successful TCR mechanisms locally might be felt nationally, especially as they have the potential to diffuse conflicts that could escalate to a national level (Osaghae, 2000:213–214, cited by Boege, 2006). With the potential that the impacts of climate change will lead to local or communal tensions, this is an important reason why interventions should consider the existence and use (if any) of TCR mechanisms in areas facing human insecurity. Other potential strengths highlighted by authors include the use of TCR mechanisms in areas where state institutions are weak or have failed; the comprehensive inclusion and participation of all stakeholders; and the focus on social and psychological dimensions and aspects of forgiveness, which contribute to reconciliation (Boege, 2006).

Finally, the research highlights the potential benefits of drawing on modern participatory methods to enhance TCR. In the two cases cited, different participatory approaches were used to get to the same end – to help communities analyse a conflict and agree on root causes, and identify, plan and implement solutions. For Sudan – and for climate change adaptation – more work is needed to establish how participatory methods can contribute further to resolving conflicts and strengthening TCR mechanisms.

Threats to human security

Environmental and climate threats – such as water scarcity, drought and a lack of land for farming and grazing – contribute to human insecurity and conflicts, especially in a context where individuals and communities already suffer deprivations and exclusions. The evidence presented in the previous chapter highlights the potential for resolving environmental and climate conflicts, by addressing these threats. Is a focus on threats a priority? While this finding may be important for the development of policies for conflict-sensitive climate change adaptation, it may be argued – in the context of limited funding for adaptation, for instance – that instead of focusing on threats, investments should rather be made (1) to

provide communities with conflict management tools; and (2) to address the deprivations and exclusions or structural factors that make people vulnerable to threats. This means that individuals and communities would then be able to manage most future threats themselves, through their own capacities or those of institutions. While this is the ideal, some threats have already manifested and should be managed. Moreover, evidence in the study shows that NGOs also invest, among other things, in institutional mechanisms (through funding, training and skills development in local government, for instance) to manage particular threats. This will help those institutions deal with other threats. NGOs also put sustainability mechanisms in place – for instance, by community ownership of projects and NRM training. Another example is the introduction of technology such as crop varieties that can withstand drought, which will contribute to building resilience to future climate stress. Therefore, NGOs are not merely addressing symptoms, but making changes that may contribute to conflict-sensitive climate change adaptation.

Many of the approaches and considerations identified in the study form part of classic development or NRM interventions, and therefore are critical for conflict-sensitive climate change adaptation. These interventions would include objectives and principles to empower, ensuring the sustainability of outcomes, the need for buy-in and locally informed rigorous conflict analyses, predicting positive and negative impacts of interventions, and so on. An important consideration should be how these approaches would function in highly volatile situations – for example, quick-onset events such as droughts and floods. In addition, of critical importance is that NGOs draw on innovations and technologies to address threats and conflicts – such as the development of seed banks and the building of sand dams– and must increasingly become more innovative to address the types of climate challenges predicted. This will require more investment in affordable technologies and research and development and the sharing of best practice and technology knowledge.

Finally, while the NGO projects that were studied for this report focused on *manifested* threats, the question remains how to identify or forecast *potential* threats, assess their impact on human security, and put measures in place to prevent their manifestation and conflict. An example of this could be the introduction of water resources in anticipation of a drought. Early warning systems are key to preventing and addressing environmental and climate conflicts.

Addressing deprivations and exclusions

The evidence presented in the previous chapter highlights that NGOs which address environment-related conflicts include context-specific 'developmental' project elements in their intervention design. From a human security perspective, these elements address deprivations and exclusions that contribute to human insecurity and conflict.

For resolving environment-related conflicts and achieving conflict-sensitive climate change adaptation, a number of potentially important lessons emerge. Many project elements focus on helping people create livelihood alternatives or building more resilient livelihoods that can withstand environmental threats. According to Carney (1998), "a livelihood is sustainable

when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base." Given that climatic changes will have different localised impacts, the question is how to build sustainable livelihoods resilient against slow-onset and quick-onset events, or "stresses and shocks". Although different examples of interventions can be cited from the study area, these are context-specific. Of greater importance is that interventions are developmental in nature, should be informed by careful local analyses and should give consideration to broader structural factors that may contribute to the conflict (such as land policy in the study area). As noted, early warning systems will be critical to establish priorities for areas in which livelihoods are vulnerable to climate threats. These measures should be sensitive to the needs and roles of excluded groups (such as women and youth), in conflicts and in building livelihoods resilient to threats.

Finally, scaled approaches that address environment-related conflicts at local, national and sometimes even federal level should include critical developmental interventions that focus on deprivations and exclusions. The dilemma is where to focus and where to spend the development funding – for this, as discussed, early warning systems that take into account localised environmental threats, deprivations and exclusions and vulnerabilities will be critical.

Non-mechanised farming on arid land in Sudan.

Recommendations

Recommendations for the Sudan federal government and state governments

- The federal and state governments – in particular, the government of Southern Kordofan – in partnership with international donors, academia and civil society, should cooperate to *review the role of the Native Administration and judiyya* to determine how these may be enhanced through technical and human-resource capacity building and modern participatory methods, to address human vulnerability and environmental and climate conflicts. This work should form part of regional peacebuilding in the Horn of Africa, given the cross-border nature of pastoralism and the Sudan climate change adaptation agenda. Moreover, factors that presently undermine *judiyya* should be addressed. These factors include competing legal frameworks; a lack of coordination between local, state and federal levels, and between state and non-state actors in conflict resolution; and the declining role of traditional leaders in societies.

- To ensure that conflicts are resolved sustainably, the federal government and government of Southern Kordofan, in partnership with donors and non-state actors, should put in place *institutional and policy measures to make certain that agreements reached through modern and/or TCR mechanisms (such as judiyya) are implemented.* Implementation could be facilitated by improving coordination between state and non-state actors – such as NGOs that could assist with implementation or provide technical support – and by working in partnership with donors and other members of civil society.

- Local, state and federal governments in Sudan should *address the structural and institutional factors that contribute to deprivation, exclusion and vulnerability,* and those factors which lead to conflicts – in particular, government policies on mechanised farming and land policies that govern migration routes and pastoral land rights. It is unlikely that environment-related conflicts between pastoralists and farmers, or future climate conflicts, will be sustainably resolved unless these critical issues are addressed.

- *State government-sponsored mediations have a key role to play in addressing environment-related conflicts* and future climate conflicts in Sudan, by reducing vulnerability and human insecurity. However, issues regarding the political and ethnic manipulation of *judiyya*, the politicisation of the native authorities, and interference in mediations, all of which erode TCR, require urgent attention.

Recommendations for scholars, think tanks and universities

- *Research should be undertaken on the role of TCR mechanisms in resolving climate-related conflicts* in Sudan and elsewhere, by drawing on the existing body of work on TCR, and *judiyya* in particular. Rigorous empirical research is needed to determine the ways that TCR may mitigate environmental conflicts, and the unique

contexts in which particular mechanisms would be more suitable than others (if at all). Moreover, researchers should investigate where modern institutional and legal frameworks could be enhanced by TCR to deal with present and future environmental and climate conflicts in Sudan and beyond.

- Scholars, think tanks and universities, in partnership with state and other non-state actors, should undertake *systematic evaluations and causal analyses of the processes of interactive conflict resolution employed in the study area,* such as peace and reconciliation conferences and others discussed in this report. This work should feed into best practices for the development of conflict-sensitive climate change adaptation policies in Sudan (and possibly beyond) that build resilience in communities against human insecurity. Assessments are also needed on how the approaches to address environmental threats, as outlined in this report (with their focus on NRM and the use of technology), may function in quick-onset events – for example, after sudden floods.

- Think tanks, universities and scholars with funding from international donors, should *develop affordable technologies that address environmental and climate threats*. Best practice and knowledge about such technologies should be shared widely and with local actors in particular. Such technologies could play a critical role in improving the rangeland management and the management of livestock routes in Sudan to prevent future conflicts.

A young girl of the nomadic Ngok Dinka tribe of the Sudan leads cattle to water and food in Abyei, Sudan.

UN Photo/Fred Noy

Recommendations for international organisations and civil society

- NGOs, international and environmental organisations and others that address environment-related conflicts, and government departments responsible for environmental and land management, should continue to focus on *institutional capacity building and development*. This will address present environment-related conflicts in Sudan, but will also ensure that sustainable mechanisms resilient to environmental and climate change are put in place.

- International organisations and think tanks, universities and scholars, with funding from international donors and in partnership with civil society, should build on existing conflict-mapping technologies and climate prediction models to *develop early warning systems for human insecurity and conflict*. The systems should identify future climate and environmental threats, assess where communities will be vulnerable, and propose measures (in partnership with other government and civil society actors) to prevent the manifestation of threats, in the context of broader conflict-sensitive climate change adaptation.

- To address environment-related conflicts in the study area and as part of conflict-sensitive climate change adaptation, international organisations and NGOs should focus on *building resilient livelihoods and livelihood alternatives for communities highly dependent on the environment and rain-fed agriculture*. The involvement of excluded and marginalised groups, such as women and youth, will play a critical role.

UN Photo/Eskinder Debebe

A young boy gathers grain spilled from the air-drop programme of the World Food Programme near Thiekthou., Bahr El Ghazal, Sudan.

Conclusion

This report contributes to the development of interventions and policies to address environment-related conflicts, and for conflict-sensitive climate change adaptation. It discusses the outcomes of desk research and a two-week field research mission, which focused on the Sahelian belt that stretches across Sudan – in particular, the state of Southern Kordofan and the localities of Kadugli and Dilling. The underlying rationale of the research was that, by studying cases where NGOs have dealt (in most cases, successfully) with environment-related conflict, useful lessons could be drawn that may inform the development of solutions for conflicts related to climate change. The lessons are important not only because of the success of some interventions, but also because of how interventions are designed – which in itself provides for interesting study. The study thus analysed interventions by local and international NGOs to address environment-related conflicts between and within pastoralist and farmer communities. The premise is that the southern Sahel of Sudan, which experiences similar effects to the climate impacts predicted – droughts, desertification, water scarcity and competition over arable land, to name a few – may be the ideal place to develop measures for conflict-sensitive climate change adaptation.

The report argues that the wider applicability of human security approaches may be particularly suitable for research, policy development and practical intervention in complex climate- and environment-related conflicts. The deprivation-vulnerability approach to human security provides a framework that reconceptualises human security by considering threats, deprivations and exclusions, and vulnerability. This approach – which the researcher applied in Sudan – yielded interesting findings, and shows potential for the study and prevention of future climate-related conflicts. In fact, the evidence presented in this report indicates that NGO interventions in environment-related conflicts are interdisciplinary, drawing on a combination of disciplines such as development, conflict resolution and NRM approaches, possibly in combination with others, depending on the context and on how issues are framed. If present conflicts require interdisciplinary interventions, climate change conflicts will do even more so. In addition, in light of the applicability of human security approaches to Africa, the strong developmental focus required dealing with structural factors that make people vulnerable to climate change in Africa, and the likely security dimensions of climate impacts, human security approaches may be particularly appropriate. Thus, the vulnerability-deprivation framework deserves further attention.

A number of general findings have emerged from the study. First, a lack of legitimate and functioning conflict resolution tools and mechanisms contribute to human insecurity, by affecting the ability of communities to deal with their own vulnerabilities and the threat of violent conflict. In fact, the study shows that most NGO interventions which address environment-related conflicts assist communities to resolve conflicts, by strengthening conflict resolution capacity and by creating opportunities for conflict resolution and

reconciliation. They do this by providing opportunities for interactive conflict resolution, and by enhancing and promoting traditional forms of conflict resolution, such as the Sudanese form of customary mediation, *judiyya*. Second, environmental and climate threats – such as water scarcity, drought and a lack of land for farming and grazing – contribute to human insecurity and conflicts, especially in a context where people and communities already suffer deprivations and exclusions and are highly dependent on the environment for a living. The study highlights the potential for resolving environmental and climate conflicts by addressing these kinds of environmental threats. Some NGOs address human insecurity by removing the environmental threats in question, often drawing on environmental management approaches or technology – such as through the provision of alternative water sources, hardier crop varieties, better environmental management or the creation of new livestock migration routes. Third, where communities suffer from deprivations and exclusions (such as poverty, a lack of livelihood alternatives and other structural factors), they are less able to withstand environmental threats, leading to human insecurity and conflicts. The study finds that NGOs which address environment-related conflicts include context-specific 'developmental' project elements in their intervention design. From a human security perspective, these elements address deprivations and exclusions, or underlying structural factors, which contribute to human insecurity and conflict. The study shows that helping people to create livelihood alternatives or to build more resilient livelihoods that can withstand environmental threats – particularly in communities where people are highly dependent on the environment – is of critical importance. Women and youth, as generally excluded groups, are considered or targeted by most NGOs, which ensure that they form part of project committees that conduct conflict analyses and develop, implement and manage interventions.

More specifically, for Sudan, this report finds that a number of important issues need to be dealt with to address environment-related conflicts in the southern Sahel, and for conflict-sensitive climate change adaptation. A review of the role of the Native Administration and *judiyya* is essential to enhance conflict resolution capacity and to reduce vulnerability. In addition, institutional and policy measures are needed to ensure that agreements reached through modern and/or TCR mechanisms (such as *judiyya*) are implemented. For conflict resolution, the report argues that state government-sponsored mediations have a key role to play in addressing environment-related conflicts and future climate conflicts in Sudan, by reducing vulnerability and human insecurity. However, issues regarding the political and ethnic manipulation of *judiyya*, the politicisation of the native authorities, and interference in mediations, which erode TCR, require urgent attention. Finally, there is a need to address the underlying structural and institutional factors that contribute to deprivation, exclusion and vulnerability, and to conflicts – in particular, government policies that favour large-scale mechanised commercial farming, land and natural resource legislation, and the issue of land tenure and land use for pastoralists.

For conflict-sensitive climate change adaptation in Sudan and elsewhere, further research is needed on the role that TCR measures – and, in particular, *judiyya* – may play in resolving

environmental and climate conflicts. It would also be beneficial to undertake a systematic and in-depth evaluation of the processes of interactive conflict resolution employed in the southern Sahel of Sudan, such as peace and reconciliation conferences and others discussed in this report. In addressing the threats of environmental and climate change, affordable technologies should be developed to assist communities in Sudan and beyond to adapt to climate change. There is a need to focus on institutional capacity building and development when addressing present environment-related conflicts in Sudan, but also to ensure that sustainable mechanisms resilient to environmental and climate change are put in place. Of critical importance will be the development of early warning systems for human insecurity and conflict. These systems should identify future climate and environmental threats, assess where communities will be vulnerable, and propose measures to prevent the manifestation of threats, in the context of broader conflict-sensitive climate change adaptation. Finally, a key focus should be on building resilient livelihoods and livelihood alternatives for communities that are dependent on the environment and rain-fed agriculture in Sudan and Africa.

When considering conflict-sensitive climate change adaptation, these findings highlight that solutions to environmental conflicts are rarely simple, and usually need to be context-specific and allow for scaled interventions if they are going to be successful. In other words, the findings emphasise that different approaches to address human insecurity will be successful in different contexts. Therefore, in the study area, NGO projects often employ a mixture of elements that address threats, vulnerabilities, deprivations and exclusions, with priorities determined by the context. There are those who would argue that this uncertainty is precisely why human security approaches are not useful, more so given that every element of intervention can then be seen as addressing human insecurity, and that it is impossible to determine causality; in other words, which intervention was the one that 'resolved' the conflict. For academics seeking to find direct causality between a specific set of human security indicators and conflict, this admittedly may be problematic. However, for policy makers and practitioners, NGO projects themselves provide the answer, by accommodating and tending to this uncertainty in their project/programme development. Organisations that report success in resolving environment-related conflicts understand the conflicts they are dealing with, the underlying structural issues, and the environment in which they are planning to operate. They avoid the over-simplification of conflicts and interventions, which may contribute to their reported successes. These will be critical considerations for conflict-sensitive climate change adaptation – and they highlight the need for approaches such as human security, to prevent and mitigate future environmental and climate conflicts.

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Annex 1 – Method

Research objectives

The research sought to identify and analyse local and international NGO interventions in cases of conflicts related to the environment. The work was driven by the underlying assumption that valuable lessons for addressing conflicts linked to the impacts of climate change may be identified from interventions related to environmental factors or change.

Method

The report is the outcome of a qualitative study, which combined desk research with a two-week field visit to Khartoum, and Kadugli and Dilling in Southern Kordofan, Sudan. A combination of snowball sampling (largely to identify government officials and academic experts in Khartoum, Kadugli and Dilling) and purposive sampling (largely to identify NGOs and international organisations addressing environment-related conflict in the study area) was used for the research. The snowball sampling was necessary as it was difficult to track down the relevant people in charge of specific government affairs in Southern Kordofan, and emails or phone numbers frequently did not work. The translation and spelling of names from Arabic to English also created challenges – including that it was frequently impossible to find contact details for people or government offices on the Internet. The researcher was also informally advised by contacts that it was unusual to set up interviews in advance and that it was preferable to arrive in the state, and to be introduced to relevant people. Purposive sampling was used to identify the NGOs that do the work – addressing climate-related conflict – the researcher wanted to investigate. This process was greatly facilitated by the Internet and by the natural snowballing that followed interviews, when the researcher was introduced to other NGOs doing similar work.

Data collection methods included in-depth semi-structured and unstructured interviews with local and international NGOs in Khartoum and Southern Kordofan, academics, state government officials and local community representatives in Kadugli and Dilling;[1]

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1   Interviews were conducted with 12 representatives from 10 local and international NGOs, including SOS Sahel, Justice Africa, Practical Action Sudan, the Sudan Environmental Conservation Society, the Sudanese Organisation for Non Violence and Development, Nuba Mountains International Association for Development (NMIAD), Adlan Services and Development Organization and Norwegian Church Aid. The researcher also interviewed the head of the UNDP office in Kadugli, and a representative of a private consulting firm, AECOM, contracted by USAID to conduct conflict mitigation work in Sudan. Three government officials from Southern Kordofan – including the state governor, the chairman of the Southern Kordofan State Legislative Assembly and the chief of the Humanitarian Affairs Commission – were interviewed. Academic perspectives were sought from published materials, but the researcher felt the need to have interviews with two key experts: the first an expert on civil society in Sudan, and the second an expert on environment and pastoral conflict in Southern Kordofan. One interview with an SPLM-aligned traditional leader grouping was done.

the researcher's field notes; analysis of official documents and materials provided by NGOs,[2] supplemented by desk research; and reviews of previous relevant studies and photo-documentation. Other primary data included documentation collected from the organisations interviewed, such as programme and project evaluations and proposal documents, policy documents and project reports. Field visits to Kadugli (via Dilling) from Khartoum were undertaken as the towns are host to numerous local and international NGOs, providing a range of economic and social development, agricultural, peacebuilding, health and other services. The organisations identified in the sample are based there. Kadugli is also the seat of the Southern Kordofan government, which provided access to key government figures to be interviewed. Due to poor road infrastructure in the study area and security concerns, the towns also provided relatively easy access, especially given that the researcher had to travel by road as flights are reserved for humanitarian personnel only. The study also incorporated limited but relevant data from other Sudanese states across which the Sahel stretches, where the conflict dynamics show similar environmental, political, socio-economic and ethnic dimensions.

Challenges, limitations and delimitations

It was ACCORD's first visit to South Kordofan and the researcher conducted interviews in English, with translation from Arabic where required. It is likely that important nuances were not recorded or possibly misinterpreted, although triangulation with other primary material was done. Also, although language in a few instances was challenging, most project and programme material supplied by the organisations interviewed was in English. Most appointments could not be pre-arranged, which meant that fewer interviews were conducted than expected, exacerbated by logistical preparations, long travel times and the geographical isolation of most towns in Southern Kordofan. This was, however, mitigated by printed programmes and evaluation material provided by the organisations interviewed, and by official programme materials available on the Internet. While many organisations were able to provide documentation in the form of programme and project proposals and reports, rigorous independent evaluations of interventions were difficult to obtain, even from some established and international NGOs. This was mitigated through in-depth interviews, the scrutinising of organisational reports, and information from other organisations, local community members and government officials. Due to time constraints and other logistical issues, it was not possible to interview local communities (one interview was held with a group of SPLM-aligned traditional leaders, but the data collected from the interview was only utilised to supplement other data to avoid bias).

Some projects were either on-going at the time of research, or had not been independently evaluated, or evaluations of their efficacy were made by the staff members interviewed. In that sense, it is not possible to confirm whether all projects will achieve or have achieved

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2   These materials proved to be of great value to the researcher as they were official organisational documents, such as project and funding proposals, project and programme evaluations and annual reports.

success in resolving a conflict. For instance, while keeping in mind that conflict resolution is a process, it might take various interventions by different actors to achieve resolution – if one is ever reached. Especially in TCR, as argued by Boege (2006:12), "the process of conflict transformation – which can be very time-consuming – tends to be more important than solutions – all the more so as in traditional contexts any 'results' achieved are only of a temporary nature anyhow. They are subject to renegotiations and revisions (and, further down the line, renegotiations of the revised results and revisions of the revision)." One purpose of the study, therefore, was to identify trends in approaches used by NGOs to resolve conflicts, from which possible lessons could be learned (given that they are informed by the experiences and research of NGOs), rather than a systematic and causal analysis of interventions and their success.

Under a tree in the village of Goleh, Abyei district in Sudan, Misseriya community people listen to a Ngok Dinka, traditional community leader, advocating for peaceful co-existence between Misseriya and their Dinka neighbours.

CLIMATE CHANGE AND CONFLICT:

Lessons for Conflict Resolution
from the Southern Sahel of Sudan

Using a human security perspective, this report identifies and analyses local and international non-governmental organisation (NGO) interventions in cases of conflicts related to the environment and environmental change in the Southern Sahel of Sudan. The research for this report is based on the premise that valuable lessons for addressing conflicts related to the impacts of climate change may be identified from environmental interventions. The report focuses on the Southern Sahel that stretches across Africa and across Sudan; in particular, the state of Southern Kordofan and its neighbours. The report makes a contribution to the emerging body of work on conflict-sensitive climate change adaptation.

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