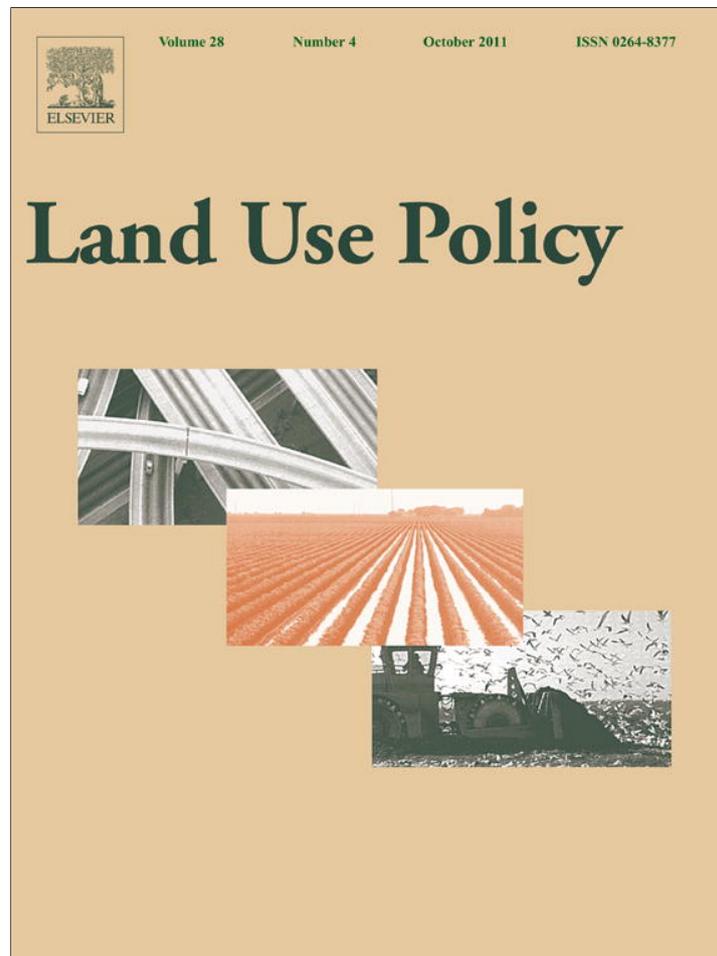


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Climate, carbon, civil war and flexible boundaries: Sudan's contested landscape

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ABSTRACT

The confluence of climate change, oil development, farmer–nomad interaction, and civil war has given rise to serious contestation over land and water resources in the heart of Sudan. Here we report on direct involvement in the very difficult and protracted efforts to resolve these land-use conflicts. Repeated efforts to define and implement “hard demarcation” of boundaries in agroecological regions characterized by great temporal variability across space have been unsuccessful for many reasons. In semi-arid and savanna environments, where nomads share the use of land with sedentary communities, boundary disputes are minimized by the existence of flexible demarcations. Flexible boundaries are identifiable but subject to change in response to negotiation and agreement among resource users. It seems that the struggle is always over “rights” to particular areas of land. But it is necessary to understand the distinction between interests and rights. Each individual – and each group – has interests that they will seek to protect and, very often, enhance. But the conversion of interests into rights is a more difficult matter. As long as the need to deal with risk and uncertainty dominate livelihood strategies, flexible adaptation rather than rigid boundaries remains the optimal strategy in agro-pastoral economies.

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Introduction

Land tenure reforms in Africa have sought to address long-standing boundary disputes among groups of individuals (“communities”) dependent on extensive rangelands and interspersed sedentary agriculture. Part of this effort has entailed the demarcation and registration of customary land. One of the motivations for customary land registration has been the expected increase in security of tenure for the community and its members. With increased security of tenure arising from registration, landholders are expected to spend less time quarreling over land and focus on improved management. Sudan represents an exemplar of the many difficulties of such programs. And within Sudan, Southern Kordofan State finds itself at the vortex of land disputes exacerbated by climate change, major oil deposits, lingering ethnic hostility involving Arab nomads, and civil war.

The issue of overlapping claims to territory is characteristic of African semi-arid and savanna lands where forage and water sources tend to be shared by several individuals, households, or village groups (Swallow and Bromley, 1995). Behnke observes that where pastoralism is a major activity, land is seldom carved up into well-defined distinct territories. Instead, “. . .any defined area is likely to be used by a myriad of different ownership groups of

variable size and composition, with overlapping claims to territory derived from particular claims to different categories of resources within it (Behnke, 1994, p. 13).” In African land tenure systems the idea of ownership is contested because land rights tend to be inclusive rather than exclusive. This perspective is shared by Scoones (1995) who affirms the idea that in African drylands, customary tenure systems operate with shared overlapping forms of tenure rights. In these settings, the imposition of strict boundaries is ecologically, economically, and culturally untenable. Rather, community boundaries are best understood as a zone – a swath of varying widths – of overlapping territory that is jointly managed by neighboring groups. These “elastic boundaries” allow for expansion and contraction, and they function as fallback areas in difficult times. Traditionally, some communities maintained more extensive buffer zones that required ad hoc negotiations with contending groups. In the buffer zone, neighboring communities had secondary rights to land (Pettersen et al., 2005).

Our primary purpose here is to argue that in many instances – and Sudan is certainly one of those – flexible boundaries among agro-pastoral communities are superior to strict demarcation. Unfortunately, the compelling logic of flexibility is often jeopardized by exogenous circumstances beyond the control of contending parties. In addition to climate change, oil exploitation, and civil conflict; these exogenous factors include national politics, regional, and global geopolitics. Writing on Sudan, Deng (1995) and Jok (2007) have emphasized divisive race and religion as causes of recurrent civil conflicts. In their view, Sudan's political instability is

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Fig. 1. Migration Trends of Nomad Groups in the Semi-Arid and Central Parts of Sudan.

explained with reference to monopoly over power and resources by an Arab ruling elite and marginalization and exclusion of peripheral regions such as Southern Kordofan and Darfur. On the other hand work by Carmody (2009) provides a more nuanced picture whereby in addition to structural issues, climate change is considered one of the driving forces to the Sudan conflict. Since 1998, the advent of oil exploitation has added complexity and intensity to land conflicts.

In what he refers to as a crises complex, Berg (2008) has astutely situated the Sudan crisis in regional and global geopolitics. Here Sudan is considered as part and parcel of a sub-regional conflict nexus involving Chad, Ethiopia, Eritrea, Uganda and the Central African Republic. Civil conflicts in these contested states have historically spilled across national borders and have been characterized by inter-country tit-for-tat destabilization (Marchal and Bawtree, 2006; Marchal, 2007; de Waal, 2007). In a global context, there has been struggle over influence in the region between the US, China and France. There is a sense that China's interests in oil exploitation, and the US's recent collaboration with Sudan in the fight against terrorism, have often compromised political objectives to solve local conflicts (Jok, 2007; Berg, 2008). While issues of national politics, regional and global geopolitics remain important, we aver that equally important to an understanding

of Sudan's contested landscape is the role of climate change and oil development in fomenting land conflicts. We submit that hitherto the latter factors have not been accorded the attention they deserve.

Using the case of Southern Kordofan State, we draw connections to land conflicts in Darfur for three reasons. First, Southern Kordofan is one of the major destinations for people displaced by Darfur's recurrent drought and war. Second, oil exploitation in both Southern Kordofan and Darfur has been associated with massive population displacement and related grievances. Third, the proliferation of firearms in Southern Kordofan and Darfur has contributed to a rise in fatal clashes between settled farmers and nomadic groups (de Waal, 2007).

We will first analyze how climate change has brought about a shift in the southward movement of nomadic groups thereby bringing increased pressure on scarce resources in areas of destination. We will then turn to a discussion of how the rise in oil exploration and exploitation has been fueling local and national conflicts. We will, in the final analysis, discuss how the convergence of climate change, oil exploitation and civil war rendered community land boundary demarcation in Southern Kordofan a difficult task in light of the uncertainties and contingencies in people's lives.

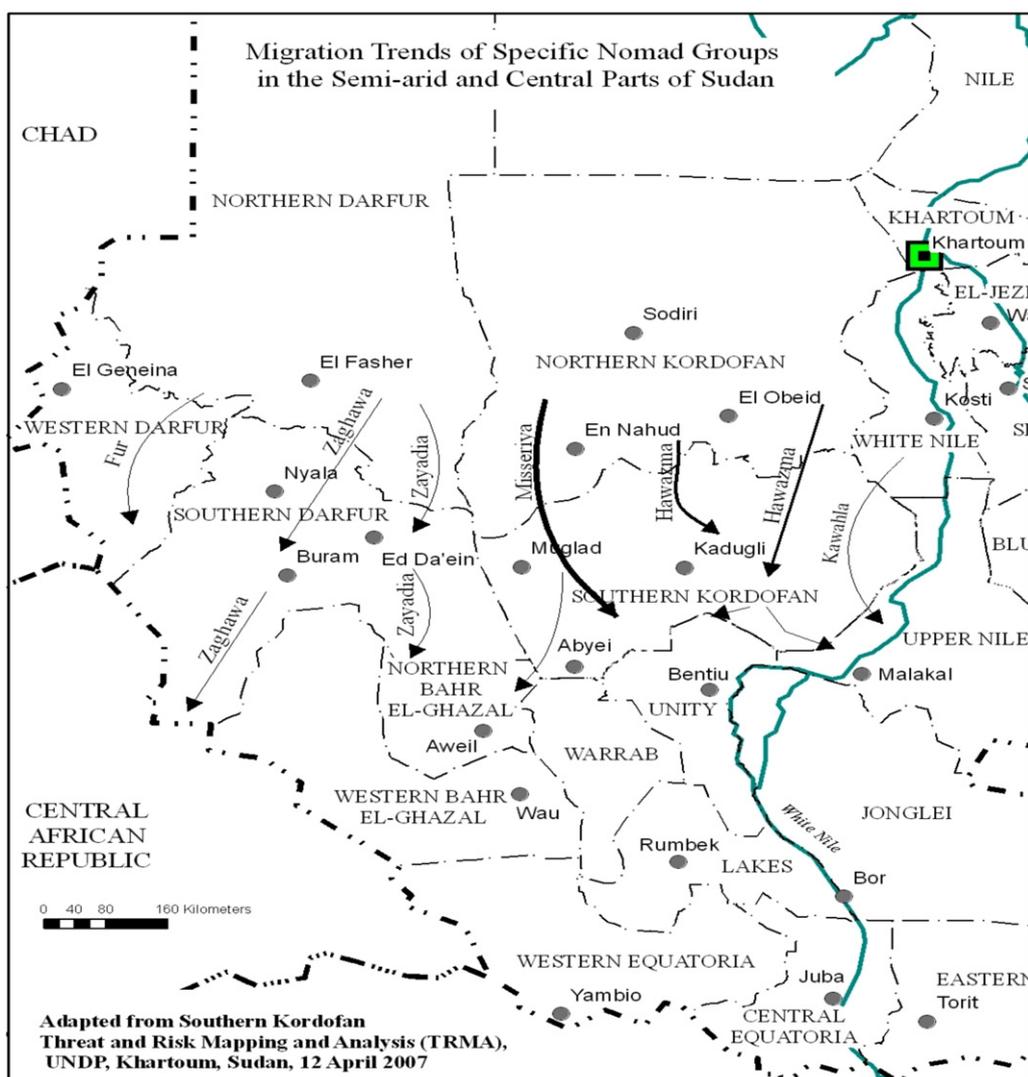


Fig. 2. Migration Trends of Specific Nomad Groups in the Semi-Arid and Central Parts of Sudan.

Climate change and nomadic migration

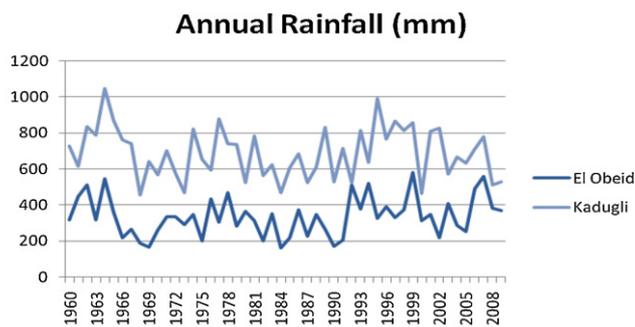
The evidence suggests a pronounced decline in rainfall over the west and central Sahelian zone during the previous 40 years (Ahmed, 1980; Teklu et al., 1991; Hulme, 1992; McCarthy et al., 2001; UNEP, 2007). This decline has contributed to an ecological crisis in the Sahel which has threatened the lives of both people and livestock. Large numbers of Baggara Arabs and their animals have been pushed southward to the savanna belt in the hope of finding better pasture and more water for their animals. Although such migration has been practiced for long periods of time, Sin documents an increase in southward movement by nomadic groups following the major drought of 1973 (1998). He explains how the northern arid and semi-arid zones favor camels over other types of livestock. The natural habitat of camels lies north of 14°N (Khartoum is at 15°37'N). After the drought of 1973, camel herders migrated as far south as latitude 10°N (the southern boundary of Southern Kordofan) even though this area implies disease vectors such as trypanosomiasis.

Teklu et al. (1991) make reference to a baseline survey in Sodiri district, Northern Kordofan indicating that northern pastoralists have increasingly shifted their southward movement (darat graz-

ing) to October instead of waiting until January. Another survey showed that since 1979, 43% of nomads had changed the areas where they spent the dry season months (October–June). By 1983, the Kababish tribe of the north was found deep in the southern reaches of Southern Kordofan. This southward shift in grazing has affected the semi-nomadic Zaghawa of northern Darfur who seasonally move close to the Bahr el Arab (Tubiana, 2007). The World Bank (2010) sees the trend towards southward migration by nomadic groups as an effective response to climate change. Sudanese farmers are not convinced. Migration trends of nomadic groups are shown in Figs. 1 and 2.

Data from the Government of Sudan's Meteorological Authority show a general decline in annual rainfall at El Obeid (Northern Kordofan) between 1965 and 1992, and also higher year-to-year rainfall fluctuations around the trend line up to 2009 (Fig. 3). The trend is similar at Kadugli (Southern Kordofan), although Kadugli has a higher annual mean rainfall (689 mm compared to 336 mm at El Obeid).

The decline in annual rainfall is more noticeable at Rashad (Southern Kordofan) and the trend has led to a narrowing from 1987 to 2009 of the difference between rainfall received at El Obeid and Rashad (Fig. 4).

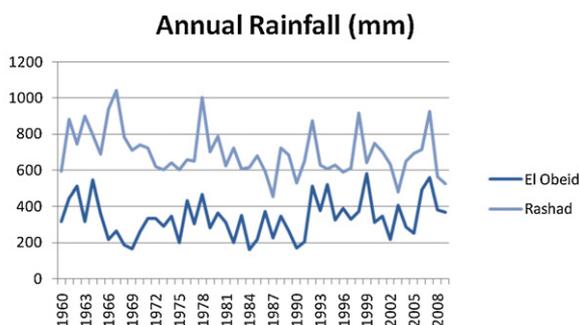


Data Source: Meteorological Authority, Government of Sudan, February 24, 2010

Fig. 3. Annual Rainfall—El Obeid and Kadugli.

These southward movements by nomadic groups have brought them into increasing conflict with settled farmers in Southern Kordofan. A number of factors contribute to increased resource-based conflicts. The Unregistered Land Act of 1970 declared state ownership of all unregistered land, and this was soon followed (1971) by the abolition of traditional leadership. These two events had severe consequences in Southern Kordofan. The passage of the Unregistered Land Act facilitated the massive expansion of rainfed mechanized farming schemes (RMF) that is associated with excessive deforestation. Then, following the oil crisis of the early 1970s – and the drastic decline in revenue earnings from the export of gum Arabic – charcoal suddenly became a competitive energy source for urban dwellers deprived of affordable petroleum products (Elnagheeb and Bromley, 1992, 1994). Later, increased urbanization, partly induced by the civil war, perpetuated the demand for charcoal. In detailed accounts, Whitney (1987), af Ornas and Salih (1989), Ibrahim (1987), and Elnagheeb and Bromley (1992) show how the interaction of persistent drought, unsustainable land-use practices on the various farming schemes, high rates of human and livestock population growth, overgrazing, poor forest management practices, and perverse agricultural policies have all conspired to exacerbate deforestation.

The expansion of RMF schemes in Southern Kordofan deprived nomadic herders of much of their traditional grazing migration routes. Likewise, traditional smallholder farmers had their land expropriated to facilitate the establishment of the RMF schemes. The ensuing conflicts were frequent and serious (Elnagheeb and Bromley, 1992; Salih, 1992; Suliman, 1993; de Waal and Ajawin, 1995; Lane, 1998; Salam et al., 2002). Salih (1990) refers to the situation as a fight over shrinking land. Competition over land was exacerbated by the civil war which prevented nomadic groups from proceeding further south to their traditional destinations in Upper



Data Source: Meteorological Authority, Government of Sudan, February 24, 2010

Fig. 4. Annual Rainfall—El Obeid and Rashad.

Nile and Unity States. And the war brought about an influx of people fleeing the conflict in Southern Sudan.

In 1971 the government escalated the conflict by abolishing traditional leadership. The contested lands were primarily common property regimes (*res communes*), and “fundamental to the operations of common property regimes are the authority systems that sanction rights, enforce rules and define the contexts in which agreements are negotiated (Swallow and Bromley, 1995, p. 109).” The erosion of traditional authority undermined the common property regimes, thereby increasing overgrazing and land-use conflicts between farmers and nomads. When already-weak authority structures become less effective in implementing new institutions (rules) to govern behavior of individuals and groups, common property regimes become open access regimes (Bromley and Cernea, 1989; Bromley, 1992).¹

The shift in nomadic migration has also been observed in Darfur, but the scarcity of pasture and water in northern Darfur has been more acute than in Northern Kordofan. Amidst diverse social and political causes, the Darfur conflict began as an ecological crisis, arising in part from climate change (Faris, 2009). Data provided by the Government of Sudan’s Meteorological Authority show a decline in annual rainfall received at El Fasher (Northern Darfur) between 1963 and 1984, and a continuation of dry conditions up to 2009 (Fig. 5). Rainfall variability over the period 1960–2009 was more pronounced at El Fasher (Northern Darfur) and Nyala (Southern Darfur) than at El Obeid (Northern Kordofan). Semi-arid lands like Darfur are particularly vulnerable to rainfall variability as a slight shift in seasonal rainfall could lead to rapid degradation of the resource base.

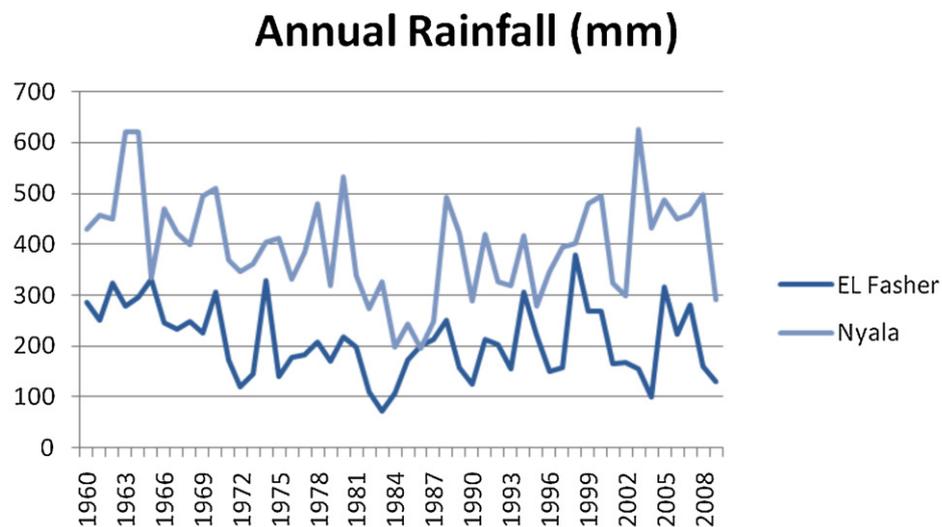
Climate change is assuredly implicated in these conflicts—forcing pastoralists to move south in search of pasture (UNEP, 2007). Because of the deterioration of semi-desert grazing lands, the Zaghawa began migrating from their tribal land at the end of 1983 and settled south of El Fasher (Northern Darfur), and then further south around Buram, El Daein and Legeediba in Southern Darfur. Sedentary farmers have suffered because the new settlers took up residence in the better rainfall areas of the south—especially the Jebel Marra Highlands and surrounding alluvial plains (Teklu et al., 1991).

Some herders from Darfur have been moving east to Southern Kordofan, further compounding grazing conflicts in the receiving areas. Both the World Bank (2010) and Parry et al., (2007) observe increased social tension and political conflicts in the receiving region. Conflicts tend to focus on community land boundaries, and they have been difficult to solve because of recent oil developments, and the long-running civil war.

Oil and civil war

As in the rest of Sudan, oil has not engendered peace and prosperity but the exact opposite—but especially in Southern Kordofan (Shankleman, 2006). Beginning in 2000, oil has become a major component in Sudan’s economy—accounting for 80% of exports, the bulk of foreign investment, and some 40% of government revenues. There is reason to believe that the government has used this new windfall to finance the civil war. Spending on defense and security in 2002 was estimated to be approximately \$1 million a day, aided by government oil revenues estimated to be approximately \$1 billion a year (Shankleman, 2006).

¹ Babiker et al. (1985) observe that where nomadism is no longer viable because of a combination of the factors discussed above, elder members of the family tend to settle in Southern Kordofan while younger family members continue the migratory system.



Data Source: Meteorological Authority, Government of Sudan, February 24, 2010

Fig. 5. Annual Rainfall—El Fasher and Nyala.

Oil development

Southern Kordofan State has the bulk of proven oil reserves in territory that is said to belong to northern Sudan, with most of those reserves located in the contested Abyei area (International Crisis Group, 2007). In terms of actual production, data presented by the International Crisis Group (2007) show that by 2003 more than one quarter of Sudan's oil production was coming from Abyei. The advent of oil production in Abyei is considered to be the source of instability in Southern Kordofan and the rest of Sudan (Verney, 1999; Niemeyer, 2006; Coalition for International Justice, 2006). Indeed, Human Rights Watch (2008) suggests that Abyei, occupied by the Ngok Dinka, and on a seasonal basis by Arab Misseriya cattle-herding nomads, remains a flashpoint as the central government (the "North"), the Government of Southern Sudan, and local communities position themselves for the referendum of early 2011. That referendum will decide whether Abyei will join Southern Sudan, or will remain part of Southern Kordofan (administratively part of the North). Obviously the central government wants Abyei oil revenues for itself.

Contestation over Abyei has expressed itself in both national and local settings—the National Congress Party (NCP) of the North against the Sudan People's Liberation Movement (SPLM) of the South, and the Ngok Dinka against the neighboring Misseriya. At the national level there is tension over the issue of oil revenue sharing which manifests itself in conflict over the demarcation of the North–South border. In recognition of the centrality of Abyei to the peace process, a protocol to the Comprehensive Peace Agreement (CPA) – the Abyei Protocol – established special wealth-sharing provisions for revenue from Abyei oil fields. According to the Protocol, the Government of Sudan would receive 50% of revenue from Abyei, the Government of Southern Sudan 42%, and Bahr el-Ghazal state, Southern Kordofan, the local Dinka and Misseriya people 2% each.

Implementation of the Abyei Protocol began with border demarcation. The Abyei Boundaries Commission (ABC) was established to demarcate the area of the nine Ngok Dinka chiefdoms transferred to Kordofan in 1905. Residents of this demarcated Abyei area would then vote to remain in the north or join the south

in the 2011 referendum. The ABC presented its findings to the Presidency on July 14, 2007 but – in violation of the CPA – the NCP rejected the report. It seems that the NCP had not expected the ABC to locate so much oil wealth within Abyei where it would be subject to the 2011 referendum. By placing the fields within Abyei, the government was obligated to share half the revenue with others (International Crisis Group, 2007).

In May 2008 fighting broke out between the North's Sudan Armed Forces (SAF) and the South's Sudan People's Liberation Army (SPLA). The town of Abyei was almost entirely destroyed. More than 50,000 people were displaced—both Ngok Dinka and other tribes. Tensions over the demarcation of the North–South border had intensified. The International Crisis Group (2007) reports that after the discovery of oil in 1979, President Nimeiri altered boundaries so that oil-rich areas from southern Sudan would become part of northern Sudan. Over the past decade the Sudan government has continued to alter boundaries to ensure that oil fields would not be situated in southern Sudan. "The government changed the boundaries in 2000 (creating a fourth locality, Heglig, in Abyei province), and again in 2005 (to include a fifth locality, Sitep). In each case, the size of Abyei locality became smaller, as oil areas were carved out (International Crisis Group, 2007, p. 5)." The boundary changes add to the complexity of the Abyei issue and further deepen the SPLM's distrust of the government.

To the Misseriya, the Abyei boundary demarcation – and the referendum on joining the South – threaten the loss of their claimed grazing "rights." In meetings with people in the Abyei area, the ABC found considerable misunderstanding concerning boundary demarcation. Residents believed that the new boundaries would create a barrier to the interaction between Misseriya and Ngok Dinka communities. Community members insisted that historically there had been no fixed boundaries between the two groups (Pettersen et al., 2005). The meetings induced the ABC to establish a buffer zone separating the Ngok Dinka and Misseriya in which the two groups would share isolated occupation and use rights. The ABC concluded that both groups had established secondary rights along their boundary.

While boundary demarcation created tensions among groups that had traditionally cooperated, oil exploration created serious resentment because of associated systematic destruction and

forced removal of people and their animals.² Human Rights Watch reports that "...in the 1980s government troops and horseback militia of the Baggara, Arabized cattle nomads of Darfur and Kordofan, invaded from the northwest, destroying communities and expelling much of the population from the initial exploration areas, in Blocks 1, 2, and 4, dangerously situated on the North–South border of Sudan (Human Rights Watch, 2003, p. 49)." In 2003, following attacks on the population of Darfur by central government forces and janjaweed allies, the Ministry of Energy and Mining began issuing concessions for oil exploration in western Sudan. The central government has shown interest in developing Block C (which stretches from southern Darfur through Western and Northern Bahr el-Ghazal) and Block 12 (which encompasses nearly all of Northern and Western Darfur and which runs along the Chadian border). Block 12 covers most of the area where pillage, murder and forced removals at the hands of the central government and their janjaweed allies have occurred (Coalition for International Justice, 2006).

In Southern Kordofan, communities were unhappy with the new oil fields, roads, and a pipeline—all of which blocked traditional livestock routes, reduced forest areas and farmland, and obstructed access to good water sources for both sedentary and nomadic populations. Communities were forced to bear costs for which they had not been compensated, nor were they receiving any benefits from the oil development (International Crisis Group, 2007).

Civil war

When the North–South war, which began in 1983, reached Southern Kordofan in 1985, it was waged in the context of a politically and ethnically divided population that was reeling from the effects of a deep drought. The Nuba's long-standing grievances over slavery and land dispossession provided fertile recruitment ground for the SPLA/M. Baggara Arabs, who had lost substantial grazing land to the RFM schemes in Southern Kordofan, were armed by the government to fight the SPLA (de Waal and Ajawin, 1995; Rahhal, 2001). The use of Baggara Arabs as government militia remains one of the major sources of grievance, suspicion, and mistrust between Baggara nomads and sedentary Nuba farmers (Suliman, 1993; Salih, 1995).

In 1992, on the pretext of fighting the SPLA, the government declared a Jihad (Holy war) against the Nuba people. In a scenario reminiscent of slave raiding, there were massive forced removals of Nuba from their villages with hundreds of thousands forcibly displaced to mountains, government towns, and "peace camps." Some took refuge in SPLA controlled areas (de Waal and Ajawin, 1995). A United Nations Report (2005) estimates that more than half of all Nuba people were displaced during the civil war. During the war some nomad routes were closed and were then settled by people displaced from other areas. Local governance broke down as larger political structures took control of the countryside. Nomad grazing routines became less predictable and more problematic (Manger, 1994; de Waal and Ajawin, 1995; Saeed, 2001). The Nuba struggled on small farms made worse by increasing population pressure and constricted community boundaries. During earlier peaceful times the Nuba had begun cultivating land in the plains and, in the process, expanding their boundaries. These gradual expansions created mixed ethnic groups in the plains, and customary land boundaries have been evolving in response to these changing levels of insecurity (Simpson, 1991; Salih, 1991; Manger, 1994).

Despite the 2005 Comprehensive Peace Agreement (CPA), the inhabitants of Southern Kordofan remain deeply scarred by the civil conflict, and by continued fighting over access to land and water in the plains. There are reports of young Arabs carrying new G3 rifles and talking of driving non-Arabs out of the mountains. "Fears were first aroused at the time of the CPA negotiations, with the emergence of a shadowy, Arab supremacist movement calling itself the Awlad al Ferik ('Sons of the Cattle Pens') that claimed the SPLA wanted to drive Arabs out of the mountains (Small Arms Survey, 2008, p. 4)." The gravity of the hostility and tensions was apparent when young Arabs, riding camels, tried to disrupt a conference of Koalib Nuba in Um Burumbita, brandishing new G3s and shouting "This is our land." In some attacks by Arabs on the Nuba, mango trees were cut down and farm gates opened, allowing cattle to devastate crops (Small Arms Survey, 2008). The meting out of violence by Arab nomads against Nuba tribes was not particularly new. But it was different this time because the nomads were predominantly young, well armed, and were more willing to use force.

Since the signing of the CPA in 2005, land disputes have become more pronounced with the return of nomads to areas that were inaccessible during the civil war. The Nuba insist that the Arabs in the region have become more aggressive. In the words of a leader of an Arab murhal (a migrating livestock herd) "because the Nuba think they won the war with the signing of the CPA, they now think they can take the land. We will not allow them, and we will fight them if they try. It is government land and they do not own it. . . (International Crisis Group, 2008, p. 10)."

The interaction of climate change, oil development and civil war has created a profound sense of insecurity among the inhabitants of Southern Kordofan. Oil development and the civil war have caused massive population displacement—the State had the highest number of Internally Displaced Persons (IDPs) in Sudan. The dislocated population has been rendered more vulnerable to the effects of climate change. Food insecurity and the resulting social tension have created a vicious cycle of civil strife. Through forced removals, many people have experienced both an undermining of their land claims, and the abrogation of their customary patterns of land use. The high level of risk and uncertainty has affected how people think and act about customary boundaries.

Conflicts over boundaries

Southern Kordofan is one of three transitional states that experienced some of the most severe fighting during the civil war. It has a population of 2.2 million out of which 1.5 million are Nuba sedentary farmers, while the remainder are Baggara pastoralists and Jellaba merchants (Klugman and Wee, 2008). The region implemented a customary land tenure program³ through bilateral development assistance over the period 2006–2009. The program provided material and technical support to local communities and the state government for the demarcation of community land boundaries, and for the development of land laws recognizing customary land claims.

The customary land tenure program was enthusiastically received among Nuba communities who saw it as an opportunity to secure their land against further expropriation for the establishment of RMF schemes. However, implementation stalled because of the many unanticipated challenges. We discuss them in terms of community-level challenges and state-level challenges.

³ The senior author was based in Sudan over the period 2007–2009 where he worked as a State Land Advisor with responsibility for guiding the technical aspects of the customary land tenure program.

² There has been environmental degradation as well.

Community-level challenges

Population pressure and boundary encroachment

During negotiation over boundaries, the work of boundary committees was often stalled by different communities accusing others of boundary encroachment. Community representatives explained that following the signing of the CPA, and with the semblance of relative peace, Nuba people were moving out of the overpopulated hills and settling in the plains. Indeed, even before the CPA, people from hill communities had been settling on land abandoned during the civil war.

Population pressure was most acute in communities like Otoro, Heiban and Tira that occupied contiguous hills and that were now becoming overcrowded from an influx of returnees. The Otoro in particular resented identification and demarcation of community boundaries because they saw boundaries as constraining the desired expansion of their area. Neighboring tribes alleged that the Otoro were in fact encroaching on their land. One of the neighboring tribes, Shuwaya, complained of Otoro taking over their land during the war in areas where people had been displaced. When members of the Shuwaya tribe attempted to return after the war, the Otoro refused to leave—claiming the land was now theirs. The neighboring tribes alleged that people from Otoro who had settled on their land were cutting down mango trees in order to destroy evidence of existing land rights.

Newcomers

Many communities found themselves contending with new groups living among them. Some newcomers were nomads, while others were displaced people who settled in “gaps” between (even within) communities. The new settlements have been a source of tension between the Nuba – who claim to be autochthons (the earliest known inhabitants of Southern Kordofan) – and Arab nomads who are thought to have migrated from northern and western parts of Sudan to settle in Southern Kordofan. In meetings to discuss customary land claims, Nuba elders insisted that over the years the Arab nomads who wished to settle were “given” land but now the Arabs wished to claim ownership of the land.⁴ In a similar dispute between the Kawalib tribe (Nuba farmers) and the Ayadiga (Arab nomads), the Kawalib argued that the Ayadiga had settled on their land and were now claiming it as their own. The tensions have their roots in contention between the Arab pastoralists and Nuba farmers over the ownership of the Nuba Mountains (SPLM's preferred name for Southern Kordofan).

Negotiations between boundary committees became more difficult when communities claiming autochthony wanted the “newcomers” to be part of their community, while the latter wanted to be recognized as separate communities and to have their land demarcated accordingly. In some cases, ownership of the land occupied by “newcomers” had historically been the subject of dispute among neighboring communities—a matter that further complicated boundary negotiations.

Overlapping boundaries and conflict over patches of resources

Boundary committees in every community had difficulty reaching a compromise concerning overlapping boundaries. Conflicting land claims along the boundary would sometimes involve more than two communities.⁵ Sometimes, when boundary committees managed to reach an agreement, their various communities (constituents) refused to endorse the agreement. Since the process of

boundary negotiations tended to be a long and tedious matter, once agreements were rejected by the various communities, the entire process had to be started over. In some negotiations, committees accused each other of substituting new expanded boundaries for traditional boundaries.

Contestation over boundaries was most acute where segments of a boundary contained highly valuable resources—fertile soil, lush valleys, and permanent water sources. To bolster claims over contested areas, some communities planted fruit trees and built tukuls (huts), while other communities constructed boundary markers and presented them as the old colonial demarcation. At the center of these strategies was the desire by each community to secure their livelihood through ensuring continued access to as broad an ecological unit as possible.

Insecurity

A common source of insecurity remains the seasonal clashes between nomads and farmers. Nomadic groups, and some traditional leaders, view the demarcation of community boundaries as a source of insecurity—actually making things worse. For nomads and farmers, water points and pasture are seasonal flashpoints, and these conflicts have become highly politicized because of ethnic tensions between Nuba farmers and Arab nomads. These loci of conflict were inaccessible to boundary committees and gave rise to certain gaps in community boundary agreements.

When nomadic groups returned to areas previously inaccessible because of the war, they found boundary negotiations among sedentary communities underway. This obviously posed a threat to the nomads who feared possible denial of access to grazing and water sources. Some traditional leaders were concerned that community boundaries would restrict their drought-coping movements in which, through mutual agreements, entire villages (or nomadic camps) could move from one territorial grazing zone (dar) into a zone belonging to a different tribe. It was also feared that fixed boundaries prevented the common practice of sedentary cultivators and pastoralists coordinating their movements within their own areas—and across frontiers.

Confusion over boundaries

During efforts to implement the customary land tenure program, it was difficult for communities to grasp exactly what was being demarcated. Boundary committees tended to rely on elders for information about traditional boundaries. But of course their recollection was imprecise because so-called “traditional boundaries” had always changed in response to population growth, government policies (the establishment of RMF schemes and forest reserves), and the fragmentation (hiving off) of tribes. The elders were certain that traditional grazing areas had shrunk considerably since Arabs began to settle in parts of Southern Kordofan.

When it appeared that some limited progress towards boundary agreement might actually happen, some communities decided that they wanted a different approach. Specifically, rather than demarcate boundaries of each tribe, they wanted to demarcate the outer boundary of a number of tribes. This arose from the conviction that internal boundaries were not necessary since all the concerned communities were Nuba, but they needed the outer boundary to protect their land against expropriation by the state. Notice that they wished to create a large common-property regime for the Nuba, leaving the internal negotiations to a single community among which trust existed (Bromley, 1991, 1992). This condition satisfies what has been called the composition axiom (Larson and Bromley, 1990). The composition axiom states that complete control of a resource must be vested in a well-defined group for socially efficient use.

⁴ The meetings were convened as part and parcel of the implementation of the customary land tenure program.

⁵ This was the case with the Gigeba valley claimed by the Otoro, Abol, and Lira.

State-level challenges

Legal framework

Since the land issue was one of the reasons for Sudan's civil war, it was expected that the CPA of 2005, and the 2004 Wealth Sharing Protocol (WSP), would resolve lingering differences between the NCP and the SPLM concerning ownership of land. Without both parties accepting deferment of resolution of this potentially deal-blocking issue, the CPA might never have been signed. As part of the Peace Agreement, both parties agreed that land commissions would be established at the national and state levels to sort out, arbitrate and eventually settle conflicting land claims. This would include the development of laws for the accommodation of customary land claims. There is now a South Sudan Land Commission, but none of the others has been created.

When the customary land tenure program was implemented in Southern Kordofan, there remained deep divisions between the parties—the SPLM was pressing for the legal recognition of customary land claims, while the NCP maintained that unregistered land was owned by the government. In the absence of a legal framework for community demarcation, some Nuba leaders claimed that NCP supporters were unfairly influencing various communities to oppose boundaries until there was a State Land Commission. The entire community demarcation idea was also questioned by the NCP. The activity had, after all, begun in SPLA/M controlled areas, with SPLM support, and so some members of the NCP regarded the demarcation of community boundaries as an SPLM agenda seeking to evict non-Nuba groups from Southern Kordofan.

Incoherent and fluid state government

In the absence of an over-arching legal framework, the effort at community land demarcation was further undermined by deeply divided politics, policy differences, and serious delays brought on by the 3-year rotation of governorships between the NCP and SPLM. In 2007 the Governor of Southern Kordofan, a member of the NCP, banned community demarcation on the grounds that it was causing rather than solving land disputes between nomads and settled farmers. He argued that demarcation served to empower sedentary communities by leading them to believe that their land had now been registered—and with that they could deny pastoral nomads access to historically shared pasture and water sources. These sentiments have been corroborated by research (Petterson et al., 2005; Pantuliano et al., 2007). It is clear that the SPLM was in support of community land demarcation, and this has led to the sense that the SPLM imagined that land demarcation would consolidate – and even expand – areas under its control. In general, there was no meaningful engagement of government officials with community boundary demarcation.

In the absence of a legal (and policy) framework, community land demarcation remained community driven. While the various communities needed boundaries to help preclude future expropriation of their land by the state, they also felt that boundaries would prevent them accessing shared land and water sources. They were conflicted over their greater enemy.

Conclusion: rescuing flexible boundaries

In the post-colonial era, land tenure reforms involving community land boundary demarcation have been implemented in various countries of Africa. The reforms are generally associated with modernization and liberal economics, but their implementation in drylands has been a challenge. The case of Southern Kordofan has shown that the convergence of climate change, oil exploitation and civil war has rendered efforts at hard boundaries

a hopeless strategy in light of the daily uncertainties and contingencies in people's lives. The interaction of climate change and civil war has begotten a severely dislocated and vulnerable population. The dire situation has been exacerbated by the militarization of inter-ethnic conflicts, government policies that dispossessed both settled farmers and nomadic groups of land, and the breakdown of local governance structures. Oil exploitation has added to these worries, but while oil revenue sharing has eased north–south political tensions, oil resources are likely to remain a major source of tension in Sudan particularly in relation to the demarcation of the north–south border.

Land tenure reforms have been a challenge because of their embeddedness in divisive racial and religion politics, regional crises and the strategic interests of global powers. A lasting resolution of the Sudan crisis can be found only if its complex local, national, regional and international connections are recognized and addressed within the framework of a comprehensive strategy (Marchal and Bawtree, 2006; Marchal, 2007; Berg, 2008). Besides their pursuit of strategic and business interests, influential countries like the USA, China and France need to effectively engage the Sudan government on human rights violations. These countries working together with the United Nations and African Union need to support the implementation of credible political processes in countries that form the regional crisis complex of which Sudan is a part. Sudan needs to reform its racialized and sectarian political system to take different interests into account in decision-making processes. Such reforms would include building the capacity of the state so that oil revenue may be used for national development rather than funding civil war. This would earn the Sudan state much needed legitimacy.

At the local level, flexibility emerges as the essential adaptive strategy for community boundary demarcation. Flexible boundaries are identifiable but subject to change in response to negotiation and agreement among resource users (Swallow, 1996). For nomadic and transhumance groups, mobility, coupled with independent and opportunistic decision making are essential parts of survival strategies (McCown et al., 1979; Juul, 2002; Little, 1987; Behnke and Scoones, 1991; Behnke et al., 1993; Cousins, 2000). However, flexibility is often anathema to settled farmers whose production technique demands the ability to exclude (van den Brink et al., 1995).

Sedentary farmers, who would otherwise prefer exclusivity, will seek to diversify their livelihood strategies by hedging against fluctuations in ecological and economic conditions. Engaging in a mix of livelihood strategies requires access to different types of resources within and beyond the community boundary. This imperative obviously leads to overlapping interests in land and related resources (Meinzen-Dick and Mwangi, 2008). Where interests in land overlap, settled farmers may have the “right” to cultivate a plot, someone else may have the “right” to fruit from trees on the same plot, and nomads may have the “right” to graze their livestock on the crop stubble. The exploitation of valuable resources like water, pasture, fuel wood, building materials, fruits, and wild medicinal plants is often shared by various communities and groups. These “rights” may not be exercised on a regular basis, but they provide an important fallback option, especially during the dry season or in years of drought (Meinzen-Dick and Mwangi (2008).

It may be noted that we put the term “right” in quotes in the above paragraph. We did so precisely because all of the contestation we have discussed here is nothing but a struggle to determine who, exactly, is the legitimate right holder (Bromley, 1991, 2006). It is conceptually necessary to understand the distinction between interests and rights. Each individual – and each group – has interests that they will seek to protect and, very often, enhance. This is understood. But the conversion of interests into rights is a more

difficult matter. It is now understood that the idea of “natural rights” is incoherent. It is now generally recognized that rights – if they are to be effective and coherent – require the imposition of duties on those who seek to interfere with the interests of the rights claimant. Rights are nothing but the ratification of correlated duties on competing interests (Bromley, 1991). It is no mystery why, in a contested political landscape such as Sudan, that competing interests continue to struggle over who—exactly—has “rights to what.”

Southern Kordofan is a cauldron of these concerns. Different interests – here called “communities” – have been unable to agree upon boundaries for fear of increasing their ecological and economic vulnerability. They understand that rather fixed “community demarcation” will deny them the requisite geographic flexibility for adaptation and expansion in their quest for plausible livelihoods. They see hard demarcation as undermining long-established social and economic relations.

We insist that as long as the need to deal with risk and uncertainty remains, flexible adaptation rather than rigid boundaries remains the optimal strategy in agro-pastoral economies (van den Brink et al., 1995; Bromley and Chavas, 1989). Adaptation has both theoretical and practical significance in situations where climate change, oil exploitation, and recurrent civil war undermine traditional patterns of human–ecosystem interaction. A strategy of flexibility requires the establishment of institutional settings and processes for the enhancement of complementary relations, and for working out nascent conflicts between farmers and nomads. Only when the need arises, and when conditions allow, should the commitment to flexibility be abandoned. We close with an observation about “brittleness.” Those institutional regimes that cannot bend will, over time, break. Reformation concerns bending. Revolution concerns breaking.

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