



## Chapter Five

# Oil and Water in Sudan

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### Introduction

What policy and legal measures, among other interventions, may help to resolve the seemingly endless conflict in Sudan? A nation of 36 million people, wracked by conflict for 34 of the last 45 years, it has generated some four million displaced people during the course of its war. It is estimated that over two million Sudanese people have died as a result of fighting and related starvation and disease.<sup>1</sup>

According to the International Crisis Group, “there will always be abundant excuses to justify the continuing war in Sudan ... However such justifications sound increasingly hollow in the face of decades of suffering ... The time has come for a concerted international peace effort to break the logjam of violence in Sudan.”<sup>2</sup> Indeed, the reordering of global relations in the so-called ‘War on Terror’ and Sudan’s historical harbouring of its suspected architect, Osama Bin Laden, has created an opening for peace building.

This chapter seeks to distinguish itself from many other analyses of Sudan’s long-running civil war. Our primary concern, in contrast to other anatomies of the war which trace their roots to Arab-African, Muslim-Christian, and other essentially identity-based dichotomies, is to identify how environmental and ecological variables contribute to the war and how it is waged in Sudan.

Departing from conventional wisdom requires a novel framework for analysis. Our analysis is guided by a hypothesis linking five ecological variables to the conflict cycle. We expect that competition for scarce resources will emerge as a causal factor. We also anticipate that an important determinant will be the struggle to exploit and control the ecological sources of surplus value – oil in particular.

Our framework tests three additional factors. One is the role of *distributive agents*, referring to those demographic, tenorial and physical factors that determine the distribution of natural resources for particular social actors or groups – the framework document cites population growth and unequal resource access. The second is *ecological trends* – the decrease in quality or quantity of renewable resources. The third issue requiring research is the question of *ecological outcomes*, defined here in terms of the net gain or loss of a natural resource for different actors involved in conflict.

Among these five variables, the role of distributive agents is ostensibly the one determinant of macro-level developments amenable to policy mitigation. The nature of these agents mirrors physical, demographic, and other essentially infrastructural variables; where the *agency* corresponds to rules, practices, traditions, and other protocols subsumed within formal and cultural institutions.

Our analysis of the Sudanese conflict cycle begins with an overview of the Sudan conflict, tracing the system's history, underlying pattern and distinctive features. This allows us to map systemic elements and cyclical dynamics of the Sudan conflict system, with a view to guiding policy interventions.

Turning to the environmental analysis, we explore the interaction between people and their environment in Sudan, illustrating how natural systems shape the north-south divide. We then reverse the telescope, and examine the patterns of resource consumption and management, revealing how a top-down approach to resource management has deepened the fissures in the Sudanese society.

The Jonglei Dam case study illustrates the top-down approach to resource management carried over from the colonial regime and how it can lead to conflict through a failure to involve affected communities in resource management decisions, and through a failure to deliver to these communities on promised benefits.

Delving into the Dinka-Nuer conflict cycle, we see how environmental factors and alternative livelihood strategies permitted the Nuer to expand at the expense of the Dinka. Indeed, we posit that conflict would continue at the heart of Sudan even were the entire country of one religion, in the face of what might be the single largest case of one community displacing and occupying another group's territory in known history.

The oil factor has assumed critical importance of late, and as such has been unpacked in the subsequent section. Our analysis here suggests that revenues from petroleum production are financing the conflict, that the oil-fields have become strategic targets for rebels, and that various foreign interests – China and Malaysia, and multinational corporations from Europe, North America and Asia – have interests that are not necessarily aligned with the promotion of peace. Noting that unregulated environmental and social aspects of oil production also have significant impacts on the conflict dynamic in the country, it stresses that if the international community were sincere in seeking peace for Sudan, it must take multilateral measures to regulate petro-revenues in the region.

The study concludes by exploring various factors critical to reform in order for peace to emerge – advocacy, emergency relief, oil production, and natural resource governance.

## Background to the Conflict

Sudan, the largest country in Africa, covers an area of 250 million hectares and is bordered by Egypt and Libya to the north, Ethiopia and Eritrea to the east, Central African Republic to the west and Kenya and Uganda to the south. Sudan is a country of diverse cultural, religious and ethnic orientation, with bountiful natural resources from land and vegetation to minerals that could foster a rich and dynamic socio-political economy. The reality has been the reverse, as the Sudan has been plagued for centuries with resource-related conflicts.

Southern Sudan is rich in natural resources; regions to the north are less so. Common language and religion reinforce the social base of the Sudanese state; the unity of southerners stems mainly from a shared sense of oppression and marginalisation. Northern society and economy reflect long-standing external linkages; southern society is very much a product of spatial and historical isolation. The northern polity and economy is highly centralised; southern polity and economy is decentralised and fragmented. These contrasts belie the Sudanese 'Arab' characterisation of their homeland as *dar es islam* (land of peace), which is at least partially a function of their perception of the 'African' south as *dar al harb* (land of war).

Analysing the ecological sources of the Sudanese conflict, however, forces us to look beyond the obvious dualities between north and south, Christian and Muslim, African and Arab. Instead, it directs one to examine the linkage between macro and micro levels of the conflict. This, in turn requires that we trace the history of conflict in the region, disaggregate regional aspects of the problem, investigate the localised ecological and environmental elements, and specify how they articulate within the larger conflict.<sup>3</sup>

### Historical Context

Distinction between north and south remains a core issue that has pervaded not just political and social aspects of the war, but is a key factor of ecological conflicts in the Sudan. As is the case with most of Africa, Sudan has been subject to a long history of natural and human resource pillage by the West and the East. Pre-colonial Sudan experienced centuries of foreign invasions primarily for the following reasons:

- the pillage of natural resources, prominently ivory, gold and timber trade; and
- the capture of human resources through the slave trade.

Though the search for resources remained a major motivation, the dynamics of these invasions evolved to incorporate religious and cultural dimensions. The Turkish-Egyptian conquest in the 19<sup>th</sup> century established the first formal administration of the Sudan under a vast monarchy spreading from Egypt to Lake Victoria.

While Islam had already gained significant ground in the Sudan prior to this period, the Turkish-Egyptian rule facilitated the spread of Christianity through missionaries and explorers from Europe and America who came to voyage the length of the Nile and its tributaries, the White and Blue Niles. Slave trade peaked during this period, until it was abolished in 1847. The centralised nature of the Turkish-Egyptian administration was unfamiliar and unpopular both in north and south Sudan. This gave rise to the Mahdist Revolution in the late 1800s.

The Mahdi declared a *Jihad* and set out to spread Islam not only in the north but also in the south, aggravating southern tribes who were mainly animist and did not embrace Islam. Consequently, the southern tribes supported the British against the Mahdists in the Battle of Omdurman in 1898. In 1899, Britain and Egypt established a joint condominium rule, with the British first among equals in wielding political control.

Increasing tensions between the north and south over resources, ethnic, religious and cultural differences complicated the condominium regime. The Milner Report of 1922 resulted, from 1930–1944, in a southern policy with a ‘Closed Districts Ordinance’ whose aim was to:

- reduce the wanton exploitation of resources in the south;
- abolish the slave trade;
- preserve cultural diversity of the black southerners;
- check the spread of Islam in the south and into central Africa; and
- initiate the separation of African Sudan from Arab Sudan.

As part of this effort to divide the north from a strengthened south, the southern policy also implemented the ‘Permit to Trade Order’. This order sought to exclude Egyptian, northern Sudanese and other Muslims from trading in and with the southerners, but encouraged southerners to trade with East Africans and Christian traders from Greece and Syria.

Egypt and the northerners greatly resisted the southern policy. The rising movement among Eastern African countries towards independence could not include southern Sudan, which was comparatively under-developed and fractured by intertribal differences. Consequently, the British introduced a ‘New Southern Policy’, promoting integration of the south with the north as equal partners, a reverse of policy by the colonial masters. Many southern Sudanese deemed this effort at unifying north and south a fatal blow to the stability of the country.

In 1947, the British proposed a legislative assembly to unify the north and the south. Recognising the absence of political structures in the south and the need to secure the rights of the south to manage their affairs and resources, the Juba Conference was convened to rationalise the participation of the south in national politics. It was quickly established that while

economically, the south could not stand on its own, the south did not want to be subject to the north.

A Constitutional Commission was established in 1951 to propose safeguards for the south. The commission had an inherent weakness in that it had only nominal southern participation. While proposing some measures that favoured the south, the commission rejected the call for a federal system of governance for Sudan.

Similarly, the Anglo-Egyptian Agreement in 1953 that granted self-governance to Sudan did not include participation by the south. Marginalisation of the south in the independence process continued, leading to armed uprising in the southern province of Equatoria in 1955, and the walk-out of the southern delegation. This open opposition compelled the northern elite to 'consider' a federal system of governance for the south. Based on this guarantee, the southern representatives agreed to participate in the declaration of independence on 1 January 1956.

In 1958, a military force, under General Ibrahim Abboud, seized power and began a campaign to suppress opposition and accelerate the 'Islamicisation' of the south. At the same time, the Anya Nya (Snake Poison) rebel force, which began to form in the year before independence, emerged as a military threat to the state. The Anya Nya campaign for southern self-determination ended in 1972 when the warring parties accepted the Addis Ababa Accord, a formula granting the south regional autonomy.

## Efforts towards Peace

The section below summarises many of the past and ongoing efforts at peace in the Sudan, all of which have grappled to a lesser or greater extent with the difficult issues of religion, ethnicity, and resource control.

The Addis Ababa Accord reached in February 1972 between the government of Sudan under President Numeiri and the South Sudan Liberation Movement (SSLM) or Anyanya II Movement established regional self-government in the southern provinces of Sudan including Bahr El Ghazal, Equatoria and Upper Nile. It was during this peaceful phase in the Sudan that oil exploration and discovery occurred.

The agreement established a system of governance in Sudan that provided for extensive autonomy and self-rule in the south. The Addis Ababa Accord failed, however, to establish real autonomy. The executive powers of the regional assembly, including the governor, ministers and commissioners, were all to be appointed or approved by the president of the republic. The president also retained veto powers over any bill he deemed contrary to the national constitution. In effect, though the southern region was provided on paper with extensive autonomy in the management of its affairs, it was all subject to the direct approval of the presidency.

The current phase of the conflict involving the National Islamic Front (NIF) Government and the Sudan People's Liberation Movement/Army (SPLM/A) under the command of Dr Colonel John Garang de Mabior started in 1983. The Koka Dam Agreement of March 1986 during the premiership of Sadiq Al Mahdi and his governing ally El-Mirghani is notable, as it was entered into by the SPLM/A of Dr Garang and El-Mirghani heading the National Alliance for National Salvation. The Koka Dam Agreement called for the convening of a national constitutional conference to discuss the problems of Sudan and the repeal of the September 1983 Laws that introduced *Sharia* as a national law. As a prerequisite to the national constitutional conference, the Koka Dam Agreement called for the dissolution of the government of Sadiq Al Mahdi and its replacement by a new Government of National Unity incorporating all political forces in the Sudan.

The constitutional conference was never held as Sadiq Al Mahdi rejected the agreement. His government was particularly opposed to the repeal of *Sharia* as national law and the dissolution of his government.

The Asmara Agreement reached in 1995 between the National Democratic Alliance (NDA) – opposition groups in the north – and the southern SPLM/A, was a significant attempt to address the fundamental north-south issues of the Sudan. The Asmara Declaration called for the establishment of a decentralised government comprising northern and southern entities or regions with extensive powers allocated to each region vis-a-vis the central governing unit.

Issues of environmental and natural resource management were included in the distribution of powers between the central authority vis-à-vis the southern and northern entity. The Asmara Agreement places the management of natural resources and the environment prominently under the two entities or concurrently with the central entity. The exception remains the issue of mineral resources which is placed under the central authority, however, recognising the right of the host entity to fix a reasonable percentage of returns of the revenue accruing from the exploitation of mineral resources.

The Asmara Agreement was a major step forward in identifying the factors needed for peace in the Sudan, as it brought together most of the major stakeholders. It was greatly limited, however, by its omission or denial of the government of Sudan as a partner in the peace equation.

The Khartoum Peace Agreement of 1998 was signed by the government of Sudan and several splinter groups from the SPLM/A under Dr Riek Machar, Dr Lam Akol and the late Commander Kerubino Bol. It established a coordinating council to manage the affairs of the south, and the right to self-determination through a referendum after an interim period of four years under a federal system of governance.

The Khartoum Peace Agreement provided for southern citizens to participate in all federal political and constitutional institutions in numbers com-

mensurate to relative population size. Given, however, that southerners remain a significant minority in the Sudan, this basis for representation did not place north and south on an equal footing.

Most environmental and natural resource management powers are vested under state governments with the exception of mining and oil projects that are considered national resources and are under the domain of the federal government.

Though the Khartoum Peace Agreement is still under implementation, key proponents of the agreement – including the late Commander Kerubino Bol and Dr Riek Machar – defected from the agreement and resumed rebel activity, arguing that the government of Sudan had no intention of upholding its end of the agreement.

Several initiatives have sought to resolve the conflict with limited success. Non-African initiatives include those led by former United States president Jimmy Carter in 1989; calls by the Intergovernmental Authority on Development (IGAD) Partners Forum (IPF); and, most recently, negotiations in Switzerland in 2002 convened by the United States. Mediation efforts have tended towards a ‘quick-fix’ approach emphasising immediate cessation of hostilities without necessarily addressing the core issues of the conflict. This incomplete approach has produced half-hearted ‘partial ceasefires’ by the major belligerents – and the war continues. There is a sense of fatigue on the part of western nations in the face of the endless Sudan conflict.

Likewise, African-led mediation efforts have made few gains on the key issues. The inability of track one peace initiatives directly to challenge the parties to the conflict on contentious issues such as state and religion, the right to self-determination for the south, and the more recent issue of oil, has greatly limited any movement in negotiations. Relevant initiatives include the Abuja peace talks and the IGAD Sudan peace process.

The Sudan peace process, initiated by the Inter-governmental Authority on Development, has included seven countries since 1993 to date: Djibouti, Ethiopia, Eritrea, Kenya, Somalia, Sudan and Uganda. It was not until 1997 that a Declaration of Principles (DOP) was signed by the two parties, the government of Sudan and the SPLM/A as the framework for a peaceful and just settlement of the conflict in the Sudan. The key components of this consensus statement were:

- securing unity of the Sudan through the establishment of a secular and democratic state; and
- affirming the right to self-determination for the south as per the borders of 1 January 1956, through a referendum.

Until the recent signature of the Machakos Protocol, negotiations towards the implementation of the DOP bore little fruit.

A Joint Egyptian-Libyan Initiative was started in 2000 to mediate between the government of Sudan, and the National Democratic Alliance (NDA) – the umbrella grouping for the northern opposition groups and the southern SPLM/A. Other than being more inclusive in structure, this initiative did not address the most contentious issues of the conflict, steering away from self-determination for the south, and from separating state from religion, both of which are opposed by Egypt and Libya.

On 20 July 2002 the Sudanese government and the SPLM/A signed the landmark Machakos Protocol, although renewed fighting soon thereafter raised fears of a lack of commitment to the accord on the part of the signatories. Fighting has been particularly intensive in the oil fields in western Upper Nile (Wahdah/Unity State). Under the deal, the parties agreed that a referendum for the population of southern Sudan – the scene of fierce fighting between Khartoum and the SPLM/A since 1983 – be conducted in six years' time to choose between secession or to remain within a united Sudan. In the interim, negotiations are to continue on the modalities of a cease-fire and the normalization of the situation to facilitate the return of over three million displaced Southern Sudanese to their home areas. The Sudanese government and the rebels also have to agree on the disengagement of forces and whether they want to invite foreign observers to monitor the truce. Ahead of the negotiators lies the intricate issue of the sharing of power and wealth, particularly oil revenue during the six-year interim period up to 2008.

Several key issues that are centrally relevant to the resolution of the conflict emerge from an overview of the major agreements and peace initiatives:

- Generally, there has been some recognition of the need to ensure good governance over economic and natural resources and to ensure equitable distribution of wealth and power in order to foster a harmonious society in the Sudan.
- Most initiatives recognise the need for the decentralisation of economic and political powers to enhance the management of affairs.
- Most initiatives have assumed that decentralisation is a southern concern that does not necessarily permeate the whole of Sudan.
- There is an emerging recognition that the conflict in the Sudan is increasingly over critical resources. For this reason, peace initiatives are increasingly seeking to address the issue of environmental and natural resource management definitively. The means to do so, however, remain elusive.

## Overview of the Environment

### A tale of Two Rivers: Ecological sources of the North-South Divide

Analysing Sudan from a comparative perspective subsumes critical geographical differentials distinguishing the southern Saharan fringe from the lush regions below. North Africa and Arabia form an environmental and cultural continuum separated by the Red Sea. The camel and the Mediterranean coastline made lateral communication in the north relatively easy compared to crossing the vast, waterless desert to the south.

But the fact that, with proper preparation and organisation, traders *could* cross the sands enhanced the strategic position of communities in the Sahel, the zone of semi-arid and sub-humid savanna stretching from Senegal to the Horn of Africa. Long-distance commerce and trade with forest communities to the south contributed to the emergence of a number of medieval states located along the arc of the River Niger. States like Timbuktu, Djenne, and Ghana came and went, and conflict remained a localised phenomenon.

This was also the case both before and after the regional violence precipitated by the campaigns of Osman Dan Fodio. Environmental comparative advantage underpins the symbiosis linking savanna and forest communities. Exchange reinforced the co-evolutionary dynamic responsible for West Africa's regional commonalities that developed over time. The distribution of Fulani herders from Guinea to Cameroon illustrates the regional scale of agro-pastoral connections binding the western Sahel to adjacent agricultural areas. The Senegal, Niger, and Volta river systems reinforced and complemented the eco-zone symbiosis.<sup>4</sup>

The western Sahel developed the same religious, cultural and economic oppositions present in Sudan. The presence of oil has been equally contentious. Yet contemporary incidents of conflict indicate a breakdown of traditional protocol – and not the collapse of the regional social-environmental dynamic – as recent incidents of farmer-herder conflict in Cameroon demonstrate. Even the periodic eruptions of violence plaguing modern Nigeria, the region's microcosm, derive from internal political competition, and not regional factors. Indeed, the whole region would catch fire if they did.

Just as environmental zoning and river networks fostered exchange and interaction, the highly compartmentalised structure of the region's ethnic communities serves to buffer and contain conflict from spreading beyond their epicentre. This configuration of environmental forces and social units, however, become progressively attenuated beyond the eastern flank of the Niger Basin.<sup>5</sup>

The similar combination of ethnic patchwork and ecological zoning in the eastern Sahel displays a certain internal equilibrium over time, but with external contact and modernisation this pattern breaks down in Sudan. The

Islamic polity developing in the central and northern zones came to establish hegemony over the more humid regions to the south. Control of the state has facilitated the exploitation of environmental resources by the mainly 'northern' elite. The secession movement embodying the southern peoples' response suffers from the region's endemic fragmentation.<sup>6</sup>

This inversion of the modernised Christian agriculturalist domination of the traditional agro-pastoralist and marginalised nomad theme in Sudan is also at variance with the general pattern for the greater Sahel. When we use the optic of environmentally conditioned dynamics to analyse the greater region, the Nile River emerges as the chief feature distinguishing the region that became modern Sudan from the rest of the original *Bilad es Sudan*.

Eastern and western Sahel share a common set of historical attributes: a tradition of long-distance trade dating back to the proto-history era; the rise of regional states since the early period of the last millennium; the spread of Islam via mystical sects; ethno-linguistic units that decrease in size as humidity increases; consistently unpredictable nature of rainfall across irregular cycles of dry and wet climate over the last 2000 years, and a relatively stable configuration of ethnic communities – at least for the past several hundred years. The pilgrimage to Mecca long provided the only traditional albeit tenuous link to the outside for the otherwise spatially isolated region.

The historical role of the Nile, the only major river in the world running from south to north, contrasts markedly with West Africa's waterways.<sup>7</sup> The Niger, Senegal, and Volta Rivers provided a basic communication network spanning West Africa's forest savanna continuum. The Nile axis has funnelled external influence into the African interior since pharaonic times. Until recently the influence was mainly episodic; the expanse of desert separating central Sudan from Egypt limited the impact to a spatially circumscribed pocket.

But outside forces exerted a certain accumulative effect owing to the combination of physical and spatial barriers and the twin-pronged connection to Egypt and the Arabian peninsula provided by the river and land route to Port Sudan. The result was the emergence of the 'riverain Arabs', a mercantile class that assumed control of the centralised modern state and has successfully expanded large-scale agriculture while capturing resources from the south to concentrate power in the hands of the traditional-modern elite.

Deng asserts that Sudan's economy has long been the domain of these 'riverain Arabs'. Mansour Khalid, one of the few SPLM members from the north, states that all power in Sudan is concentrated within a ruling elite, composed of:

“... the politicised Arab/Islamic rulers coming from the urban and semi-urban centers of the northern and central Sudan in Khartoum, White Nile, Gezira, and Kordofan provinces, which exert a political and economic hegemony over the marginalised social and cultural groups living in rural

and outlying regions of the country, including some parts of the geographic north.”<sup>8</sup>

The drainage basin below the junction of the Blue Nile and White Nile, in contrast to the gradual succession of ecological gradients in West Africa, provided a formidable barrier to interaction for the southern Sudanese. One set of forces spawned by the isolation below, and another driven by the external influences accruing above began to reach a critical threshold during the early 1800s. The result was a struggle between centralising institutional interests concentrated at the junction of the White and Blue Niles and centrifugal forces embedded in the wider environment.

Specific aspects of these centralising forces and decentralising initial conditions periodically resurface within the conflict cycle. State organisation, modern economy, and external linkages generally support centralising tendencies. Corresponding environmental forces derive strength from the region’s cultural diversity, localised ethnic organisation and indigenous political traditions, and subsistence strategies varying across ecological niches. Sudan’s north-south conflict system is therefore the product of the inability to resolve tensions generated by these environmentally created polarities.

Unpacking the variables along these lines separates ecological determinants from the identity and religious aspects of the conflict. Identity and religion have been used by both sides to mobilise their internal populations and to attract external support, yet are a feedback from the environmentally created north-south poles. Viewed through this lens, the battle over the control and extraction of resources – be they ivory and humans, or timber and oil – take analytical priority over other factors of race, religion, and the African-Arab dichotomy commonly cited as determinants of north-south enmity.<sup>9</sup>

The larger pattern of conflict across Sudan thus reveals demographic and environmental forces operating underneath the political and social chaos. Decreasing rainfall in pastoral areas, environmental degradation in agricultural islands, and technological-economic stagnation are over time combining to intensify ethnic conflicts over subsistence resources in both the south and the north.<sup>10</sup>

Northern communities and so-called ‘neutral’ minorities have increasingly engaged in struggles over land and natural resources since the Sahel famine of 1974–76. Most conflicts involve ethnic dyads: Baggara raids on the indigenous inhabitants of the Nuba Mountains; Rufa’a nomads versus Gamk and Uduk farmers in the Ingessana Hills; ‘Arab’ tribes’ clashes with the Fur in the Jebel Marra Massif region; and the Rashaidah pastoralists encroachment on the Beja.

Sudan’s estimated annual population growth during the 1990s is estimated to fall between 2.5 and 2.8%. Even in the south, where mortality from war and famine has claimed hundreds of thousands of people, such Malthusian

checks have impacted more on population demography than population growth. The war boosted what was a trickle of economic emigrants into a steady flow of refugees fleeing their home areas to the north. Despite horrendous living conditions, their underclass status, and periodic harassment including the flattening of shantytowns by government bulldozers, the numbers of internally displaced southerners accumulating in the north continue to grow.<sup>11</sup>

Structurally, the Sudan conflict is not about whether the south's resources are sold on the market, acquired through coercion, or remain on or in the ground: it is about arriving at an adaptive arrangement where natural wealth promotes the welfare and progress of all Sudanese and their regional neighbours.

## Environmental Governance

Governance issues are central to explaining the role of ecology in conflict in Sudan. Important governance-related issues are the following:

- The exploitation of natural resources remains skewed towards primary resources such as land, minerals and water resources. Conflict has emerged between exploitation of natural resources in the south to benefit a northern dictated 'national' development policy and the livelihood needs of southern peoples.
- Competition over primary resources caused by the converging trends of rising population and rising resource exploitation, often without the participation of local communities in decision making, has created a structural state of resource scarcity for many.
- Unsustainable patterns of resource utilisation compounded by increasing pressure for the same resources has fostered localised degradation of land and some natural resources. The consequence is rising competition and conflict over increasingly scarce resources.
- Imposition of centralised administrative systems dating from the Turkish-Egyptian rule in the 19<sup>th</sup> century onto customary systems for land ownership and control.

Exploitation of primary natural resources is based on the traditional economic practices of the population in the Sudan, predominantly agro-pastoralists, supported by the colonial policy of resource extraction carried over in Sudan's post-independent economy. The result is an erosion of the primary natural resources base. According to Suliman:

“when the colonial powers introduced their market economy in Sudan towards the end of the last century, they simultaneously restricted its development and expansion by indigenous Sudanese in order to maintain

political and economic control. After independence ... a Sudanese 'national bourgeoisie' began to evolve from a primary mercantile social class now ostensibly freed from colonial control. There were, nonetheless, several strong barriers to the development and progress of a middle class whose European equivalents had brought about the industrial revolution. In Sudan, they lacked the major prerequisites for industrialization – namely capital, technical and scientific know-how and markets – and so their focus shifted from manufacturing production to the extraction of natural resources."<sup>12</sup>

The limited development of other non-primary natural resources to drive the Sudan economy, coupled with unsustainable exploitation patterns, have created a pseudo-state of scarcity within an abundant resource base. Its not that there is not enough – its that people do not have enough.<sup>13</sup>

Inappropriate development policies, largely carried over from the colonial era, have exacerbated resource scarcity, resulting in weak economic performance that is worsened by the application of inappropriate technologies and underdeveloped human resources. Financial resources that could stimulate the development of non-traditional resources and diversify the economy have not done so. Instead, owing to the north-south divide, the emphasis of national resources remains focused on security, and not much needed development of both north and south Sudan.

Sudan has a population of 30.3 million people based on the 1993 census, with an annual growth rate of 2.6%. The population is projected to reach 58 million by the year 2025. The average population density of Sudan is one of the lowest in Africa. Economic development in the Sudan is uneven and is concentrated in urban centres in the north and along the Nile River, where most of the population is concentrated. Population pressure in these areas is increasing, leading to outbreaks of social, religious, ethnic and economic tension.

Sudan comprises flat plains overlaying the Basement Rocks, found in most of Africa, and the Nubian Sandstone. The soil regimes include the Desert Zone, the Qoz Sands in the north and Rocky Plains to the east, the Central and Southern Clay Plains and the Hilly Upland areas in the middle of the country. Vegetation cover is defined by fluctuations in climate, particularly rainfall. Most of the north and east have scarce desert vegetation that is subject to high water stress.

The mid-region of the country is divided into two vegetation zones: the Sudano Zone which receives an average rainfall of 400–800 millimetres giving rise to savanna vegetation, and the Sahelian Zone that is south of the Sudano Zone which receives moderately high rainfall ranging between 800–1 200 millimetres.

The south of the country receives above 1 400 millimetres. It sustains most of the forests and vegetation cover in the country. Swampy vegetation and

grasslands occur in the Sudd and Machar Swamps in the south of the country.

Agricultural production was the basis of the Sudanese economy over the decades until the recent exploitation of oil reserves in Unity state. Agricultural policy pre- and post- independence emphasised cash crop production. However, with recurrent droughts and famine, government policy in the agriculture sector attempted to strike a balance between cash and food crop production with the joint aim of enhancing food security and promoting economic growth.

Large-scale mechanised agricultural production in the mid-regions of the Sudan, supplemented by irrigated agriculture was emphasised in Sudan under colonial administration. As the north is dominated by arid and semi-arid lands, agricultural production was intensified in the mid-regions of the country. This resulted in extensive degradation of soils and limited access to land for peasant farmers who historically inhabited the region. Consequently, there is increasing pressure for these populations to push southwards in search of arable land. Diminishing productive land in the north may be the reason for the northern government policy of annexing southern regions. In 1958, Southern Blue Nile was taken from the southern province of Upper Nile; Kafia Kingi was annexed from Bahr El Ghazal and Bentiu was almost annexed to the north by Numeiri.

Agricultural intensification and modernisation adversely affected traditional peasant farming by inflicting severe social and environmental changes on peasant communities. As a result northern Sudanese peasants have abandoned customary natural resource uses in favour of other unsustainable methods. In addition to the intensification of agricultural practices, harmful uses of natural resources are spreading due to a growing population and the absence of a comprehensive national land use policy.

Land tenure in the Sudan remains contentious. There is general recognition that property rights are, and have been, based on customary rights and value systems. However, the interpretation of customary rights varies. Formal land registration was initiated in 1925 under the Land Settlement and Registration Ordinance. In 1970 the Unregistered Land Act was enacted, which placed all unregistered land as of 1970 under the ownership of the government. The Act placed most land, including what was perceived as tribal or communal lands, under the control of the government. However, the Land Registration Ordinance maintains that customary rights to land can be invoked under various legal provisions. The allusion that customary rights to land must first have a proven legal basis is perceived to be an inherent contradiction within the Act for communities in the Sudan who subscribe to customary laws and value systems.

Sudan consumes the energy equivalent of 13 million tons of petroleum, of which 83% comprises traditional biomass fuels such as wood and charcoal.

Most of rural Sudan remains dependent on these traditional fuels under dwindling forest and vegetation cover. Hydroelectricity accounts for approximately 5% of energy production and petroleum consumption accounts for 12%. Sudan has exploited 53% of its estimated hydropower potential.

Valuable mineral resources may be found in most parts of Sudan. These include gold, silver, uranium, chromite, iron, bauxite, tin, copper, zinc, iron ore, lead manganese, granite, marble, kaolin and gypsum. The development of the mineral wealth could expand and diversify the economic base. However, the exploitation of these resources may create further fissures between different groups in the country, as was the case with oil exploitation. The prevailing notion of 'national resources' under the current federal structure is more acceptable for northern communities than southern communities seeking greater control and management over their resources.

Access to water contributed to the recent phase of the Sudanese conflict. Though the River Nile traverses Sudan, water stress attributed to access and quality of water remains high. The Nile, including its tributaries, the White and Blue Nile and River Atbara provide domestic, industrial and large-scale irrigation waters. There are four man-made water reservoirs including Roseires, Sennar, Khashim El Girba and Jebel Awlia.

Due to the flat topography of most of the Sudan, there are swampy areas that have arisen owing to slow and low movement of water especially during the floods: the Sudd Swamp, the largest swamp in Africa, and the smaller Machar Swamp. These swamps permit a high level of evapo-transpiration reducing the feed to the River Nile and its subsequent flow.

Ground water resources include primarily the Nubian Sandstone, which is shared between Libya, Egypt, Chad and Sudan. Libya, however, has embarked on an ambitious groundwater extraction project – 'the Great Man-Made River'. This massive water development scheme draws its waters from the Nubian Sandstone via 4 000 kilometres of underground pipelines and 2 000 kilometres of ducts from 270 wells in east-central Libya for irrigation, domestic and industrial use in Benghazi and Sirte. The Nubian Sandstone aquifer is essentially a non-renewable resource estimated to be 15 000 years old, having percolated down during the glaciations of northern and central Europe. Present-day recharge rates range from minimal to nil in most parts of the aquifer. Water stress in all four countries is high and therefore the demand for aquifer water from the Nubian Sandstone is projected to increase significantly, making it a potential source of trans-boundary conflict.

Furthermore, there are increasing environmental concerns over Sudan's development of large-scale irrigation projects – such as the Gezira Agricultural Scheme – which have resulted in high levels of siltation and water pollution. These impacts affect the potential use and the users of residual water downstream. High levels of salinity resulting from irrigation have likewise accelerated soil deterioration.

Sudan has not yet developed a national master water plan to rationalise the use and management of water in the Sudan. Failure to do so may manifest itself through acute water shortages and rising conflicts among competing water users.

## Environmental Management

Formal environmental management in Sudan was initiated during the British-Egyptian condominium rule. The British Rule from 1898–1956 protected, controlled and managed the environment, establishing rules and policies to conserve wildlife, guard against over-fishing, destruction of forests, savanna and swamp environments that provided habitat to wildlife. The British also established game parks and game reserves. However, Mayak notes that environmental management declined in post-independence Sudan.

Environmental management and awareness increased after the Stockholm Conference in 1972. Several units were established within key ministries to manage various aspects of the environment, such as the Forestry Department, Pastures Department, Land Use Committee, Natural Resource Commission and Water Resources Administration. Various development strategies and programmes were adopted in post-independence Sudan but did not fully address the issue of environment and natural resource management. The Economic Recovery Programme (1978–1985) supported by the World Bank under Jaffar Numeiri created an over-regulated economy that in effect reduced production under state-owned large-scale production systems.

A comprehensive approach to the management of the environment was initiated in 1986 at the National Economic Conference and adopted in the Four Year Economic Salvation Programme (1988–1991) under Sadiq Al Mahdi which initiated economic liberalisation in the Sudan. However, the programme stalled following the coup in 1989.

The Three Year National Economic Salvation Programme was adopted by the National Islamic Front (NIF) Government with the assistance of the International Monetary Fund (IMF) as a medium-term measure to reactivate the economy and create an environment for external investment and foreign aid. The current National Comprehensive Strategy (1992–2002) adopted a comprehensive long-term liberalisation policy. It established a High Council for the Environment and Natural Resources, headed by the president of the republic, to set policies and plan for the management of the environment and coordinate efforts by different agencies towards this effort. Of the 26 states of the federation in Sudan, 10 have established state councils for the management of the environment headed by the state governors or *Walis*. In 1995, a Ministry of Environment and Tourism was established supported by the High Council for Environment as its technical arm. In March 2000, an Emergency Environment Act containing provisions for the protection of the environment

was enacted. Recently, the Ministry of Environment and Tourism with the assistance of the Sudanese Society for Environmental Conservation prepared an environmental planning and strategy document.

Sudan has been a unitary state right from the initial formal system of administration under the Turkish-Egyptian Empire in the 19<sup>th</sup> century. With the objective of devolving power to local and state levels, federalism was introduced in 1992 through the creation of 26 states covering 150 provinces. Analysts of the federal system of governance argue, however, that while the structure is federal in character, the devolution of economic and political power has not truly been effected, and that greater effort is needed to empower the states and lower levels of government to manage their resources. This failure to devolve control over resources is considered a major factor in the conflict.

The constitution of the Sudan has been changed several times with the objective of rationalising and recognising the full diversity of the Sudan, and achieving political, social and economic security. Reforms have achieved nominal success. Examples include the transitional constitutions of 1956 and 1957 and the Numeiri Constitution of 1973, which included the Southern Province Self-Governing Act of 1972. The New National Constitution that entered into force in 1998 has also been criticised as having strong Islamic inclinations and for centralising excessive power with a strong executive.

Resource ownership and control is centralised under the Constitution of the Sudan of 1998. Article 9 states: "All natural resources under the ground, on its surface or within the territorial waters of Sudan are public property and shall be governed by law. The State shall prepare plans and prompt the appropriate conditions for procuring financial and human resources necessary to exploit these resources." Under the constitution key natural resources remain national resources managed by the federal government.

Legislation on the environment is drawn from statutory, customary and Islamic (*Sharia*) law. However, Sudan has not carried out a comprehensive review of environmental legislation in line with the recommendations of the United Nations Conference on Environment and Development (1992). Contradictions arising from the various sources of environmental legislation, some in existence since before independence, remain an area that could cause conflict over the management of the natural resources.

Issues of politics and power sharing are key to understanding competitions over land and natural resources in Sudan. Although it is relatively easy to acknowledge past inequities but effectively addressing the present undermines the system and endangers vested interests at all levels of the political and economic hierarchies.

## Case Study 1: the Jonglei Canal

Top-down development models are an important dimension of Sudan's civil war. According to the United Nations Development Program (UNDP) Strategic Framework Document for Sustainable Water Management, sound and equitable water management practices can have stabilising effects on society, particularly when stakeholders are involved in the decision-making processes. The stalled Jonglei Canal project in the Sudan is an example of a water resource development project that was mooted and initiated without sufficient consultation and sharing of information with local communities. Consequently, it became part of the increasing social, economic and political tensions that started the current conflict in south Sudan.

Jonglei means 'alien god' in Dinka. To many southerners, this 'alien god' was a foreign promise of development imposed upon them, and thus unacceptable.

The Jonglei Canal was first mooted in 1904 by Sir William Garstin of the Egyptian Ministry of Water in order to increase the flow of water from the Nile to meet the increasing demand for water in Egypt. Almost 50% of water passing through the Sudd is lost through evapo-transpiration. The objective of the Jonglei Canal was to harness this water through the construction of a canal and several dams.

The First Nile Agreement between Sudan and Egypt was signed in 1929. The governments of Sudan and Egypt established the Jonglei Investigation Team in 1948 to study the impact of the proposed canal. The study indicated that the canal would have severe impacts on the livelihoods of local communities populating the region, including the Nuer, Dinka and Shilluk, as well as on the ecology of the Sudd Swamp upon which local livelihoods were based.

In 1959, the Second Nile Agreement was signed between Sudan and Egypt increasing Sudan's share of the Nile waters after Egypt built the Aswan High Dam to store and regulate its share of the Nile waters. The two countries established a Permanent Joint Technical Commission for Nile Waters to manage further Nile water projects.

By 1973, Sudan had exhausted its share of the Nile waters yet required more water for irrigation projects in the mid-regions of the country. The Jonglei Canal project was subsequently launched, without sufficient consideration of the likely negative impacts identified by the Jonglei Investigation Team.

Southern communities strongly opposed the canal for the following reasons:

- The canal would greatly change their way of life especially pastoralists whose grazing systems would be curtailed by construction of the canal. The canal would block movement of livestock and wildlife and divide communities.

- Flooding of the canal especially during the rainy season meant that many villages would require resettlement.
- Speculations on the large number of Egyptians (1 000 000) who would be settled in the Jonglei area to build the canal caused fear of an impending occupation of the south by the Egyptians;
- The fear that the ecology of the Sudd would change and that as it drained, it would be utilised for mechanised agriculture by the northern government.

Unlike previous designs of the Jonglei project, the design implemented in 1974 incorporated rural integrated development projects targetting local populations affected by the canal. The projects included the establishment of irrigation farming, cattle centers and social services among other developmental programmes.

As the canal project continued, costs began to mount and ways were sought to reduce expenses. Plans to build bridges across the canal were shelved and flood embankments along the canal were built lower than originally planned, resulting in the drowning of many animals. Moreover the promised development projects were not implemented, deepening suspicion among the southern Sudanese communities. Many southern Sudanese felt that the project was established to benefit north Sudan and Egypt at their expense. In 1983–84 the rebellion by the SPLM/A brought a halt to the construction of the canal.

Perhaps one of the greatest lessons to be learnt from the canal is the need for participation by local communities in the development and implementation of national projects to exploit and develop natural resources.

## **Case Study 2: Nuer-Dinka Violence**

The Nile is the chief geographic feature moulding Sudan's unique historical trajectory. Outside influences followed the course of the Nile Valley as far as the swampy barrier imposed by the Sudd, and then spread outward. The geographic divide of the Sudd separated the Islamicised north from fiercely independent traditional pastoral groups inhabiting the vast flood plain and the environment beyond it.

The Sudd, the swamp at the heart of the Nile, is an environment unlike any other in the world. Water floods large areas for over four months a year, then recedes during an extended dry season forcing the dispersed inhabitants towards the rivers. The region's chief inhabitants are the Dinka – the single largest ethnic group in Sudan – and the Nuer, a closely related community that hived off from the Dinka in the distant past. The long-standing rivalry

between these two communities manifests as an ethnic rift compromising the southern people's campaign for self-determination. The following case study traces the roots of this conflict to the flood plain environment.

### The Nile Flood Plain Conflict

Sahlins<sup>14</sup> describes the Nuer as “transhumant mixed farmers with a pastoral bias”. The Dinka can best be described as “transhumant mixed farmers with an agrarian bias”. The Dinka occupy an eco-zone supporting a more generalised system of land use. Specialised adaptation to flood-prone lower areas poor for agriculture distinguishes the Nuer from their more numerous cohorts. They developed methods for rearing cattle in disease-prone areas, allowing them to concentrate on livestock. In addition to a common emphasis on livestock, both groups also fish, and occasionally hunt wild animals.

Small but critical differences in elevation are the real measure separating the two communities and their subsistence strategies; small variations in altitude across the flood plain produced a patchwork of mixed Dinka-Nuer settlement. Southall describes their distribution from the point of view of the two groups: “the Nuer see the Dinka country as a fringe of their own, while the Dinka see the Nuer country as a wet enclave in the midst of them”.<sup>15</sup>

The flood plain itself displays an asymmetrical pattern of variation across seasons, years, and climatic cycles. The unpredictability is a source of social uncertainty that reinforces dependence on the web of social relations so consistently cited to account for the persistence of ethnic identity. Inter-marriage and cooperation among these groups, however, are the norm in most cases, and internecine raiding among clans and lineages blurs the rigid aspect of Dinka-Nuer opposition.

These intermingled communities nevertheless stress their differences over the multiple cultural features they share in common. Indeed, while relative harmony may prevail most of the time, the eruption of Nuer-Dinka conflict is the eventuality characterising their relationship since before the first appearance of external forces to the immediate present. The phenomenon arguably lies at the historical crux of the *Dar al Harb* designation. Regardless, the government in Khartoum has benefited greatly from the tendency of Nuer-Dinka hostility consistently to resurface. It is therefore necessary to examine the ecological parameters of this conflict within the civil war.

### The Nuer Expansion

Around 1818 the Nuer began to expand at the expense of the Dinka and they eventually occupied most of the lower areas of Nile flood plain. Nuer expansion reached its limits in 1895, representing the single largest case of one community displacing and occupying another group's territory in known history.

The expansion led to a fourfold increase in Nuer territory between 1818 and 1890, to a total area of 35 000 square miles – prompting Kelly to term it as “one of the most prominent cases of ‘evolutionary success’ contained in the ethnographic record”.<sup>16</sup> According to him the inflation of the traditional bride price paid in cattle fuelled this phenomenal expansion. Kelly’s and other structural hypotheses, however, become *sui generis* secondary explanations after factoring for how ecological conditions within the flood plain favoured the Nuer livestock-based economy.

This statement provides a theoretical template for focusing on the demoeological causes of social behaviour and change. Demographic processes and ecological trends provide basic criteria for analysing Dinka and Nuer conflict over time. Insofar as their resistance is a central factor in the civil war, these processes, trends, and evolving differences among groups help us assess the political ecology of the current conflict.<sup>17</sup>

Several historical caveats are in order before we examine the ecological dynamic underpinning the flood plain conflict system.

The greater flood plain region as the Nilotic cradle land is the source of periodic out-migrations over the past two thousand years. Ancestors of the present-day highland Nilotes are believed to have left during the first millennium AD; the plain’s Nilotes began trickling out over 1 000 years ago. Major movements of the river-lake Nilotes, Lwo-speaking peoples who share the most direct linguistic links to the Dinka-Nuer-Shilluk complex, occurred over a period of some 500 years prior to 1840.

These ‘migrations’ likely involved small groups, clans, and even clusters of households who probably moved only small distances at a time; in all instances they trekked to the south, settling a large swath of present-day Uganda and Kenya. Archaeological evidence indicates the earliest peoples to depart relied upon foraging and fishing; later emigrants were agro-pastoralists. The pattern of migrations generally follows the onset of drier alternations in the long climatic cycles.

Herring observes that “the position of the early Luo homeland(s) cannot be determined with any precision, but it seems likely that it was on the flat swampy clay plains in the south-central Sudan, and/or on some of the larger ridges within this region, and/or on the more elevated periphery of the Ironstone Plateau”.<sup>18</sup>

This prompts us to infer that the flood plain and its environs are, despite the difficulties associated with its alternating extremes of flooding and dryness, a fecund and resource-rich area supporting higher population growth than other areas over the long term. The robust population growth during wetter times would have naturally led to conflict during drier cycles when biotic resources decline. For a long time out-migration provided an outlet for when population exceeded the environmental carrying capacity, but during the 1700s most areas to the south were effectively filling up.<sup>19</sup>

The onset of the Nuer expansion corresponded with the closure of this outlet and a period of higher than usual humidity.<sup>20</sup> Wetter conditions in the Nile Basin are magnified in the flood plain, and this together with increasing population densities ostensibly combined to trigger the expansion – the Nuer's specialised adaptation to the swampy lower areas of the flood plain being the other critical enabling factor.

While both groups occupy parts of the central clay plain, the Nuer expansion filled the lowest part of a basin bounded to the south by the Ironstone Plateau and to the north by the Nuba Hills. Nuerland appears to have been a mosquito-laden swamp, poor for cattle, which had not been long occupied prior to the nineteenth century. Dinka areas are less infested by the mosquitoes whose sheer numbers force the Nuer and their cattle into smoke-filled byres at night. The Dinka occupied the higher ground to the north, south and west of the depression, and prospered in respect to relative size of the two populations.<sup>21</sup>

### Ecological Factors Facilitating the Nuer Expansion

The environmental differences demarcating the Nuer and Dinka lands engendered significant behavioural and livelihood differences. In the wet season, for example, the Dinka characteristically observe a second phase of transhumance. This is not possible for the Nuer. During the same period they are forced back by the wider flooding of their country into the isolation of their separate villages, which provide the only dry stands for the herds.<sup>22</sup> The distinct ecological habitat of the Dinka, together with a closer relation between kinship and territoriality, allowed the Dinka to stay close to their home camps throughout the year.

Nuer social structure features segmentary lineages, a common feature of nomadic or transhumant groups that need to mobilise political support among kinship units scattered across large areas on a periodic but unpredictable basis. Clan organisation characterises the more sedentary Dinka.<sup>23</sup> These two kinship-based systems represent the traditional *distributive agents* for the resources of the flood plain environment. Though cattle and grain are equally necessary for survival, cattle served as the traditional systems' capital – and bride wealth provided the primary mechanism for redistributing wealth across kin-linked households. The wider distributive requirements of the Nuer lineage system required more cattle than the Dinka.

Kelly's<sup>24</sup> argument that this factor – bride price-fuelled Nuer expansion – is based on the observation that the *ideal* Nuer bride wealth requirements are almost twice the number of cattle the Dinka *ideally* require. The actual Nuer bride wealth payments recorded by Evans-Pritchard<sup>25</sup> in the 1930s were between 20 and 30, whereas 30 or 40 years earlier they had been 40 and often even more. The acceptable number of cattle for Nuer bride wealth payments varied to a degree in relation to herd sizes at the time, which were in turn affected by pestilence and drought.

The Dinka occupied fringes of the basin offering larger dry areas during the rainy season, and correspondingly greater opportunities to utilise agriculture as an element of their economy. The environmental basis of Nuer economic prosperity hinged on control of the best grazing lands, found in the wettest parts of the basin. The Nuer adapted to the “dead flat clay plain” subject to extreme flooding in the rainy season. This area of poorly drained clay soils is only marginally suitable for cultivation and prone to crop failure, but provides the richest pasture for their cattle. At least part of the value of the area was in the diversity of forage grasses.<sup>26</sup>

Their relatively low agricultural productivity forced the Nuer to maximise their herd sizes by whatever means possible, including raiding, in order to substitute milk and meat for plant foods. A greater area susceptible to flooding acted to reinforce the Nuer cattle monoculture, while also presenting an opportunity to increase the size of their herds. Because cattle reproduce at a greater rate than humans, inflated bride wealth levels were a natural outcome of the expansion. But as the data cited above indicates, the number of cattle required could also shrink with shifts in the demographic and environmental parameters.

Bride wealth appears to be a dependent variable that varies with the respective modes of production. The amount of bride wealth paid is a consequence of the need for and availability of labour: mobility increases this need. Because the Nuer are more mobile than the Dinka, more labour is required to manage the cattle. The Nuer’s inflated bride wealth was, therefore, also a function of rising labour requirements created by territorial expansion.

A mode of production that secures for its population a greater number of cattle is clearly advantageous in the Nuer environment. This advantage is more acute in times of critical food shortages due to the frequent incidence of floods and occasional drought experienced on the clay flood plain. Nuer grain supplies are particularly susceptible to such disasters (83% are floods); resulting shortages are reported to occur with a four-in-ten probability for several central and Zeraf Nuer groups.<sup>27</sup> The Ghazel-Jebel triangle, occupied by the Nuer Jikany, Jagei, Leik, and Dok, is the “most extreme ecological” environment in the region, and is subject to “almost total flooding in the wet season”.<sup>28</sup> Livestock provided a means to procure other food supplies in the face of what were often severe grain shortages.

Even in circumstances where the Nuer strove to maximise the production of animal resources, grazing area alone could not have been the sole focus of Nuer-Dinka competition. Also in short supply in the central basin was dry land upon which a human population could live at the height of the rainy season and shelter their cattle.<sup>29</sup> This explains why the territorial conflict went beyond the marginal lowlands previously utilised by the Dinka on an occasional basis.

The Nuer adapted to their swampy niche, then expanded through a complex of mechanisms that included assimilation and intermarriage. The Nuer expansion was a gradual intrusion into Dinka territory, punctuated by violent thrusts, but followed by longer periods of small-scale raiding at Dinka expense, a kind of parasitic relationship in which the superior-fighting Nuer depended upon nearby Dinka for the production of additional subsistence resources.

Gradually the surrounding Dinka who tired of such treatment became Nuer through a process of assimilation. The frequency at which Dinka survived raiding and were incorporated through capture or voluntary assimilation is in sharp contrast to other patterns of Nilotic pastoral raiding, where the victims (including women and children) are slain.<sup>30</sup> The Dinka were both then and even now the more prosperous party due to their more 'stable' economy. Such a process should not be seen as deliberate 'conquest', but rather, the product of contrasting cultural adaptations to varied ecological conditions.

In summary, the Nuer expansion represents a largely successful systematic effort to reduce population pressure and to improve living standards, or at least to prevent their deterioration. Through competition and low-level exclusion, the Nuer controlled the richest and most variable grasslands while obtaining sufficient high ground for wet season protection and aggregation. The Dinka, who themselves had been expanding to occupy the fringes in a more mixed savanna-woodland environment, sacrificed some quality in terms of pasture, but adapted (in terms of thermodynamic effectiveness) through an increased reliance on agriculture achieved through more sophisticated agricultural practices.

Population density, in the context of the flood plain, must be reckoned according to population size per unit of area to dry land during the flood time of the year.<sup>31</sup> In the light of the hypothesis that the larger region's population was approaching the saturation point designated by existing subsistence technologies, perhaps the Nuer specialised mode of eco-niche production based on cattle represented the only option available during the final century of the pre-colonial era. Regardless, both Dinka and Nuer populations were thermodynamically effective in relation to exploitation of their particular habitats.

Although both groups were highly vulnerable to environmental fluctuations, the more monocultural Nuer economy was especially so. Salzman<sup>32</sup> underscores that the notion of "egalitarian pastoralists" reflects an economy where there are no permanent shortfalls or surpluses; he further observes that "when most of the productive resources are open and available to all, and are the product of one element of production, that is livestock held as family property, differences in accumulation are likely to be ephemeral".

Proponents of the 'new range ecology' characterise this ephemerality of subsistence resources – shortfall as well as surplus – as a quality of disequilibrium environments, which in turn is cited to explain East African pastoralists' markedly opportunistic orientation.<sup>33</sup> High levels of mobility and

livestock raiding – both to recoup herd losses and for predatory accumulation – exemplify this pastoralist opportunism.

Technically, range ecologists define disequilibrium environments in terms of unpredictable and low rainfall whose annual median is less than 400 millimetres. The flood plain and its long and short cycles of flood and drought arguably constitute, certainly in respect to human settlement, a different but equivalent example of environmental instability. The region's non-linear climatic patterns, unpredictable levels of flooding for several months (four to six in most areas) followed by months of drought, biological vectors supporting a variety of endemic human and livestock diseases, and opportunistic cultural behaviours combined to foster a uniquely dynamic but often dangerous environment.

Historically, surplus realised from its extremes of fecundity and crisis resulting from resource shortfall explain the dynamics of human population growth and movement. Periods of material bounty followed by contracting resources generated both conflict and the export of excess population to the savanna region to the south, where immigrants could find conditions suited to their mixed subsistence economy.<sup>34</sup> At a certain threshold (approximately 500 years ago) this pattern of surplus shortfall triggered the periodic migrations of Dinka-like agro-pastoralists to the south.

The impact of strong Nilotic political institutions across large areas of East Africa via this diaspora attests to conditions of endemic social conflict in the cradle land. Even Francis Deng<sup>35</sup> concedes that Dinka society (and the Nuer by extension) tolerates high levels of social violence. Apparently the outside interlopers visiting the spatially isolated region during the early 19<sup>th</sup> century witnessed sufficient jostling among its communities to reinforce the *dar al harb* designation.

The counterfactual hypothesis mentioned in the preceding section proposed that centrifugal forces rooted in the southern environment, more than Sudan's ethnic/racial plurality, constitute a major factor sustaining the long-running conflict. The notion of *dar al harb*, from this perspective, subsequently transformed from folk model into ideological justification as the centralised polity developing at the junction of the White Nile and Blue Nile began to systematically exploit southern resources.

### The Contemporary Nuer-Dinka conflict

We now assess how the complex of ecological variables and historical trends manifest within the three cycles of the north-south current conflict. This takes us back to the five variables highlighted in the study's conceptual frame: competition for scarce resources, ecological sources of surplus value, distributive agents, ecological trends, and ecological outcomes. The southern region's environmental-historical pathway identified here establishes a foundation for evaluating the role of these variables across the traditional-contemporary continuum.

The traditional end of the continuum emphasises adaptation to unpredictable seasonal extremes, and the influence of the environment's non-linear qualities on subsistence and land use strategies. Lineage and clan structures mediated local resource distribution; raiding and intermarriage served as mechanisms for wider redistribution and spread risk; surplus in the form of livestock was reinvested in wives and kin networks.

But increasing population densities and the Nuer expansion into the region's most problematic ecological niche indicate that by the middle of the century demographic growth was pressing against the region's highly elastic ecological parameters. The Dinka, as noted above, were also expanding on the flood plain periphery. They continue to do so even now – personnel from non-governmental organisations based in Rumbek and Mundry county rank herder-farmer conflict as the leading form of resource-based competition.

The concept of population pressure cannot be divorced from consideration of the efficiency with which productive systems supply a given population with sufficient material means of subsistence. All populations are under some degree of population pressure. An increase in population density does not necessarily result in an increase in population pressure – if the increase in population density is accompanied by a proportionate increase in *per capita* productivity. For example: population density is higher today in Holland than it was in the 14<sup>th</sup> century, but population pressure is lower.

Herring<sup>36</sup> claims “the stereotyped image” of a Lwo cattle complex has been greatly exaggerated. He observes that cattle are an element of subsistence strategies with important cultural and religious roles, but kept only where they could be maintained. For some migrating communities this component grew in importance but not until the 19<sup>th</sup> century. Except for the exceptional attention cattle receive from the Dinka and Nuer, he claims, pastoralism was not an entrenched practice among the Lwo. The concomitant observation highlights the Nuer expansion as the high point of pre-colonial subsistence technology specialisation.

During the same period the trend of out-migration to the south gave way to influences from the ‘Arab’ north flowing in. The penetration of the Nile Basin beneath the confluence of the Bahr Ghazal and Zeraf Rivers circa 1820 marks the turning point. Considering the massive changes and developments overtaking the southern region's inhabitants since that time, the technological stasis prevailing up to the recent present is indeed remarkable. Respondents across the board underscore the ‘primitive’ state of subsistence production everywhere in southern Sudan. Development of basic infrastructure (such as roads, communications, potable water) is only slightly higher.

The conquering agents of the Ottoman Empire built garrisons along the river, set up telegraph lines, and instituted taxation. Expansion of irrigation agriculture spreading down the river from Egypt demanded labour; the occupying

forces required slave-soldiers for their army. These markets saw previously slender ties of trade based on ivory and other commodities eclipsed by demand for human captives.

### Cycle One: Nuer-Dinka violence

These developments instigated the first cycle in the ongoing north-south conflict, and began to undermine the symbiotic ethnic relations existing along the north-south buffer zone in the process. The southerners initially gave as well as they got – until modern European weapons tipped the balance against them several decades later.<sup>37</sup> Southerners supported the rise of the Mahdi, and then assisted the British to depose him,

The relationship between the assimilated north and the south's diverse isolated population subsequently crystallised along the lines of racist ideology justifying the plunder of southern resources, and initiated the predatory trajectory hardening Sudanese identities into an Afro-Arab polarity. Ottoman agents also brought the legalistic code of the *Sharia*, which Sudanese Muslims found abstract and austere compared to their mystical and syncretistic practices.<sup>38</sup> Previously, the spread of different Sufi *tariqa* complemented the sectarian quality of Islam and local society. The *Sharia* factor exerted a levelling and homogenising effect that also solidified the foundation of north-south conflict.

European contact brought additional changes in the region's infrastructural conditions. The colonial administration maintained a clear passage along the Bahr al Jebel and White Nile, and steamer transport along rivers throughout Nuer and Dinka lands, between administration centres at Malakal, Wau, Meshra'er Req, Abwong, and others. Roads were built and maintained across the clay plain. Nuer and Dinka began to participate to some extent in external commercial markets by selling grain, hides, cattle and other items to merchants. Some have even taken to the role of "keepers of small bush stores".<sup>39</sup>

This observation actually underscores the limited impact of infrastructural development. The real significance of the Nile transport improvements, the rail line to Wau, and the south's rudimentary road network is that this infrastructure facilitated access to the region's natural resources. Since the 1800s the south has served mainly as a reservoir for labour distinguished by the extremely low investment in human capital over time.

Markets are simple and localised, barter is more common than currency, and the circulation of even the most basic commodities (such as clothing, tools, medicine) is restricted to major 'nodes'.<sup>40</sup> The British administration adopted a *laissez faire* policy for the south; colonial missions provided most of the services available, and even this was interrupted when Khartoum banned missionaries after independence. Outside Juba and the scattered

small administrative islands, southern Sudan has remained in a time warp characterised by social and technological stasis.

Sudan's overall population recorded a sharp dive during the 17 years under the Mahdi, but has grown steadily since. Kelly's inference that the Dinka grew faster than the Nuer during the post-Mahdi period is predicated on the logic that they lived close to most major river ports and administration centers. And though most of the Nuer remained isolated on the periphery, census data from the 1930s indicates a steady increase in their population densities, corresponding to their increase from 247 000 to 460 000 in the short span of 25 years up to the 1950s.<sup>41</sup>

Differentials in cattle and cultivation between the Nuer and Dinka remained relatively constant according to empirical data on cattle per capita from the 1950s. Among the Bor district southern Dinka there was a cattle per capita ratio of 1.66, whereas the Lou Nuer had 2.26 cattle per capita<sup>42</sup>. Barbour observes that "In the central part of the region [the Southern Clay Plains] the supply of grain barely suffices for subsistence even in the good years, and when conditions have been bad imports from central Sudan are necessary, paid for by the sale of cattle".<sup>43</sup> More recently, the Nuer have imported from three to six hundred metric tons of grain in years of short-ages.<sup>44</sup>

### Cycle Two: Nuer-Dinka violence

In the absence of detailed information on the grass-roots impact, we can assume the Anyanya rebellion – the second cycle in the north-south conflict – halted whatever limited progress was realised in the south until it ended with the Addis Ababa Accord in 1972. The following period witnessed an impressive spurt in infrastructural and social development, until the resumption of hostilities by the SPLA in 1983 – the third and still unresolved cycle in the conflict.

The prominence of elites from Equatoria in the leadership of the Anyanya indicates that most pre-independence education occurred in the ecologically stable band spanning the two provinces bearing that name. Many refugees displaced by the war came from the same population. Individuals from the younger generation of these refugees subsequently benefited through education and exposure to outside contacts. Equatoria has been relatively less affected by the current war. The SPLA captured western Equatoria and a portion of eastern Equatoria during the early phase of the war. The government retook Torit and surrounding areas, and most of eastern Equatoria remains under government control.

Dinka defectors from the military and elites provide the core leadership of the SPLA/SPLM. During the peak of its military success the movement also incorporated many affines from the Shilluk, Nuer, and groups in Equatoria.

Despite official statements that the SPLM/SPLA seeks a united Sudan, many rural Dinka see the movement as an organisation defending its interests in opposition to the competing interests of other ethnic groups.<sup>45</sup>

Macro-level data for Sudan is, of course, hard to come by. But we can identify basic demographic, technological, and economic trends – and their consequences. One indication is the population's greater vulnerability to ecological vagaries – particularly in the more remote flood-prone areas. And except for those who migrated to work on large state schemes, most of the population depends upon technologically static mixed subsistence production. Despite other commercially valuable commodities, on the local level the economic importance of livestock and cattle remains paramount.

Lineage and clan retain their function as distributive agents, although the presence of developmental and relief agencies has enhanced the role of traditional chiefs. Social relations are critical for coping strategies, and those who are not well placed in local webs of relations are the most vulnerable in the face of political and environmental vagaries.<sup>46</sup>

The SPLM began establishing border police posts, courts, and other mechanisms of local governance in 1985. By 1989 the SPLA controlled a large area of southern Sudan and could lay claim to a measure of administrative capacity. The resulting political legitimacy and coordinated action by commanders in the field saw the movement achieve impressive results in controlling communal raiding. The inter-tribal peace conference at Akobo in 1990 successfully addressed Nuer, Anuak, Murle, and Dinka hostilities.<sup>47</sup> For a while these successes concealed the leadership's internal wrangles, soldiers' abuse and pillaging of local communities, and the sway of commercial opportunities on field commanders.

But then the SPLA lost ground, and the position of the SPLM began to unravel during the 1990s. What began as an internal political dissonance catalysed the renewal of Dinka-Nuer conflict, and this in turn precipitated the demographic-environmental trends listed above into a series of disasters.

The evolution of the SPLA/M reveals the influence of the flood plain environment. Initially, mutual hatred of the northern regime united the military officers who, like their Anyanya predecessors, turned their arms against the state. But over time ethnically marked but environmentally based centrifugal forces began to erode the movement's solidarity from within. Surplus, in the form of military success of the early 1990s, followed by shortfall in the form of the drought and famine of 1995–96, exacerbated internal dissension; Khartoum then moved to exploit the factionalisation of the struggle.

### Cycle Three: the Nasir revolt – Dinka versus Nuer revisited

The most recent episode of Nuer-Dinka violence began with the Nasir Declaration of 1991, which led to the formation of the SSIM/A (Southern Sudan Independence Movement/Army). The resulting war within a war was

clearly the product of struggles within the movement's leadership, and not traditional frictions between the SPLA/SPLM's core ethnicities. Two high-ranking SPLA leaders launched the rebellion; Dr Riek Machar is a Lou Nuer, Dr Lam Akol a Shilluk. Machar and Akol exploited disenchantment with the movement's authoritarian structure and systematic human rights abuse to start a new movement. But what began as a challenge to John Garang de Mabior's leadership precipitated a complicated chain reaction of factionalisation mirroring the south's ethnic divisions.

Though beginning purely as an affair of the south's educated and military elite, the Nasir Revolt had tragic consequences on the ground. The fall of the Mengistu government forced the SPLA to evacuate key bases inside Ethiopia. The government bombed fleeing civilians and a humanitarian crisis ensued. The donor presence became politicised as the southern cause mutated into a syndrome of highly personalised plots and conspiracies.

Although the Nasir Declaration pre-empted Garang's alleged plot to eliminate dissident elements within the movement, Machar himself resorted to similar tactics. If his actions reflected unrestrained personal ambition, Machar saw himself as inheriting the mantle of the prophet Ngundeng.<sup>48</sup> The Nasir 'rebellion' became a more exclusively Nuer affair when Machar dismissed Akol, and drove away or alienated other leaders who had joined him out of genuine disillusionment with the SPLM.

The rebellion quickly grafted onto traditional ethnic hostilities. SSIM/A military presence mainly depended on *Jiech Mabor* armed civilians and alliances of convenience with warlord factions, also being supplied with weapons by the NIF government, like Kerubino's roving militia. Machar's ill-fated scheme to open a corridor to Kenya turned into a cattle-raiding affair displacing large numbers of Dinka in the Bor-Jonglei region. Many smaller communities in eastern Eatoria rejoined the government. The Toposa never left. Although many Nuer chiefs refused to back Machar, some SSIM/A commanders exploited hostilities between the Lou and Jikany clans of the Nuer for personal benefit.

The hasty exodus from Ethiopia had caught Operation Lifeline Sudan (OLS)<sup>49</sup> unprepared, despite plans to preposition food for such an eventuality. Logistical glitches, the government of Sudan bombing of the fleeing civilians, and incidents of locals attacking refugees exacerbated the mayhem – which took place against the backdrop of unconcealed donor distaste for the SPLA/M. Riek Machar exploited OLS officials' antipathy for Dr Garang at this juncture by cultivating a liberal and humanitarian image. One official based in Lokichoggio gave Machar a British military uniform; he sealed his public relations coup by marrying a lissome English woman employed by a child welfare organisation.

This placed Machar in an enviable position to benefit from OLS largess when he launched his anti-SPLA/M rebellion. The role food relief had

assumed at this juncture is further underscored by the fact that, after his falling out with Machar, Dr Akol repositioned himself in his Shilluk homeland.

Drought conditions struck again in 1995. The calamity repeated on a larger scale the civilian suffering experienced during the evacuation of Ethiopian refugee camps in 1991. Communities were dispossessed of their cattle and removed from their fields. Famine and displacement, abetted by factional hostilities, and the diversion of famine relief supplies culminated in a humanitarian disaster that killed an estimated 250 000 people.

Dr Garang's statements and behaviour during this period did nothing to improve his nasty image. Machar's manipulation of the donor-relief factor for his personal benefit helps explain why Garang recently declared the southern cause would have been better off without the NGO presence. Perhaps, but the movement's meltdown enhanced the role of OLS and its umbrella of NGOs.

## The Fragmented Present

The deepening southern crisis marking the present juncture in the conflict is best described by the 3 D's – displacement, dependency, and divide and rule tactics adapted to south's fissionary proclivities. The situation evolved along lines consistent with the centrifugal forces expanding into the vacuum, which affected a corresponding shift in the institutional configuration.

The SPLA regained some of the territory lost to the government, but fragmentation of its pan-ethnic structure significantly diminished its offensive capacity to local operations. The south remains a highly militarised region – where the soldiers guard their home areas – until an entrepreneurial commander musters enough resources and/or incentives to mobilise them for an offensive strike. The SPLM top leadership hit a new low after its 1997 shoot-out in a posh Nairobi neighbourhood, the rank-and-file devolving into a network of competing ethnic interests. Local administration stabilised as a front for patron-client ties fuelled by exploitation of timber, gold, minerals, and other commodities.

The state of war prevailing since 1988 has seen the southern region become a chronic basket case dependant upon international relief. The local scope of NGOs as provider of services normally the province of the state increased accordingly. Their importance on the international-grass-roots interface reinforces traditional institutions of clan and lineage; unlike other areas experiencing state entropy or collapse, most local Non-Governmental and Community-based Organisations (NGOs and CBOs) are too few and their capacity too weak to carve out a larger role for themselves.

The mainly Christian organisations that continue to assist the SPLA operate outside the OLS umbrella. The NGOs operating under the OLS are at best

ambivalent about the liberation movement; and to the degree that the south's external 'partners' engage with the SPLA/M, it is through its third arm, the Southern Sudan Relief and Rehabilitation Association. The SPLA's human rights abuses and factional conflicts and the NIF government's opportunistic manipulation and ethnic cleansing campaigns aggravate the problem. Relief and commercialisation and corruption appear to be thriving hand in hand. Or, as a long time OLS staffer commented, food relief flights no longer return empty.

So where does this leave the Nuer and Dinka conflict? Ultimately, internal fragmentation in the movement for an independent New Sudan has encouraged the government to further exploit ethnic fault lines and political rifts. Disruption of the traditional Dinka-Nuer economic symbiosis, which formerly operated despite periodic raids and counter-raids, has left the grain-hungry Nuer the more vulnerable party. The government has filled this gap by extending its divide and rule tactics to the purchase of Nuer military commanders and lineage chiefs. This has facilitated the state's capture of the big prize – unchallenged control of the oil reserves lying under the "dead flat clay plain".

### **Case Study 3: Private Sector Participation in Oil Production in Sudan**

As the previous sections show, the sources of conflict in Sudan are many, and the disparity between the two regions – north and south - is extraordinary. Conflict would likely rage on should oil production not continue. Yet the discovery of oil and its subsequent exploitation has become a major issue in the conflict. The Numeiri government annexed the oil-bearing lands to the north, creating Unity state, upon discovering oil in the south. The government of Sudan considers oil a national resource while the southerners consider the oil a southern resource.

There can be little question that access to and control of petroleum wealth plays a critical role in sustaining and escalating the Sudanese civil war. Arguably, the degree of stability and control enjoyed by the government in the north is at least partially a function of the southern resources it controls.<sup>50</sup>

This case study urges the integration of the links between resource extraction and community insecurity in corporate management decisions, and calls for greater international political will in preventing the sale of valuable commodities – not only oil, but also timber, diamonds, gold and other minerals that are central to conflict in Sudan and elsewhere in sub-Saharan Africa.

#### **Links between Resource Extraction and Conflict**

The Sudan civil war is the result of complex and cumulative causal factors. This case study focuses on those rooted in natural resource extraction.

Ecological conflicts may involve:<sup>51</sup>

- control over natural resources;
- means to manage or produce the natural resource;
- means to add value to the natural resource; and
- distribution of income from natural resources production.

In framing this study, it is important to distinguish between the ecological sources of conflict, and the political and economic sources of conflict. Oil is essentially an economic resource. It has little value to the traditional peoples of the region in terms of their survival, representing economic wealth only to the extent that it can be found, extracted from the ground, processed and shipped to industrial centres for use.

Yet the Dinka are the major source of troops for the SPLA/M. Agriculture and pastoralism are the paramount form of subsistence and wealth for the Dinka.<sup>52</sup> Some 39% of the country's GDP comes from agriculture and this sector is the major source of livelihood for the country's people.<sup>53</sup> This case study will explore the impacts of oil exploration and production on the agricultural practices of the Dinka peoples.

Three key issues underpin our analysis of the role of oil production in the Sudan civil war, including:

- access to and control over the oil fields and the land areas they represent;
- the right to participate in decision making over the allocation of oil rights and share in the benefits of oil production; and
- environmental impacts of oil exploration and production and social consequences resulting from these.

This study also concerns itself with one broader question. While the linkages above can often lead to conflict, the link is by no means unbreakable. Many studies illustrate that vulnerability to economic and ecological shocks decreases as economic wealth increases.<sup>54</sup> It is frequently alleged that growth of national income is a prerequisite for poverty alleviation and sustainable development, and that natural resource wealth has a clear role in generating that income. The section below critically analyses this relationship.

### Resource Wealth: Cause of Conflict or Source of Stability?

Poverty is the primary source of conflict in Sudan, and conflict in turn entrenches poverty. Three-quarters of the 20 least-developed countries have experienced civil conflict in the last decade.<sup>55</sup> Conversely, "peace is most commonly found, where economic growth and opportunities to share in that growth are broadly distributed."<sup>56</sup>

A recent study by the World Bank indicates that “countries which have a substantial share of their income (GDP) coming from the export of primary commodities are dramatically more at risk of conflict”, in particular during periods of economic decline.<sup>57</sup> Moreover, “in some cases, average per capita growth rates actually have been lower [in resource-rich] than in resource-poor developing countries, and some resource-rich developing countries remain among the world’s poorest.”<sup>58</sup>

Conflicts in Sierra Leone, the Congo and Nigeria demonstrate the absence of a critical factor required to translate resource wealth into widely shared peace and prosperity. While resource scarcity has often been a focus for environmental security research, it forms only one of the ecological sources of violent conflict. It follows that abundant valuable natural resources should provide the basis for peace, yet the opposite situation often applies where resources are abundant.

Foreign direct investment in the petroleum sector can diminish the likelihood of conflict by increasing economic growth. However, the benefits of economic growth resulting from foreign direct investment must be widely distributed if it is to mitigate conflict. Yet the anticipated economic gains from large-scale development projects financed through foreign direct investment are often unevenly distributed, thus exacerbating existing social tensions. It must be critically questioned why the exploitation of rich resources does not result in greater peace dividends.

This gap between natural resource wealth and social prosperity is often explained by the distribution of impacts and benefits. The World Commission on Dams concluded “groups bearing the social and environmental costs and risks of large dams, especially the poor ... are often not the same groups that receive ... the social and economic benefits.”<sup>59</sup> A 1998 IFC/World Bank assessment of four natural resource extraction projects in Colombia, Papua New Guinea and Venezuela concurred, stating that “frequently ... national governments reap the most benefit from these projects, while social and environmental costs tend to be borne by local communities.”<sup>60</sup> This represents a failure to meaningfully involve affected communities in critical environmental decision-making processes that affect them.

In many instances, the large stream of income from a single natural resource, being extracted almost entirely for export, can distort investment, and leave the country’s economy vulnerable to global commodity price fluctuations – actually constraining development.<sup>61</sup> In 1998, for example, the Asian financial crisis led to a 40% decline in Zambian copper sales, its primary export, nearly doubling that country’s inflation rate. Diversification is essential in such cases to guard against external economic shocks such as sharp decreases in the value of agricultural commodities and natural resources.

Likewise, a non-democratic government’s need to distribute economic benefits broadly in order to maintain social order may be reduced by revenue

streams emerging from resource extraction, which can be used to finance repressive state institutions and to maintain patrimonial networks. Wealth earned through the production of natural resources can be channelled from state coffers to private bank accounts through corrupt government officials. In spite of its oil wealth, for instance, Saudi Arabia's domestic debt exceeds its GDP. Nigeria made US\$ 300 billion in oil revenues during the last 25 years, but 60% of its people live on less than US\$ 2 a day.<sup>62</sup>

Finally, armed groups may seek to generate revenue or accumulate personal wealth through the production and export of natural resources, and through extortion of 'protection' funds from companies in the region. A World Bank study claims that in many cases, "rebellions either have the objective of natural resource predation, or are critically dependent on natural resource predation in order to pursue other objectives."<sup>63</sup>

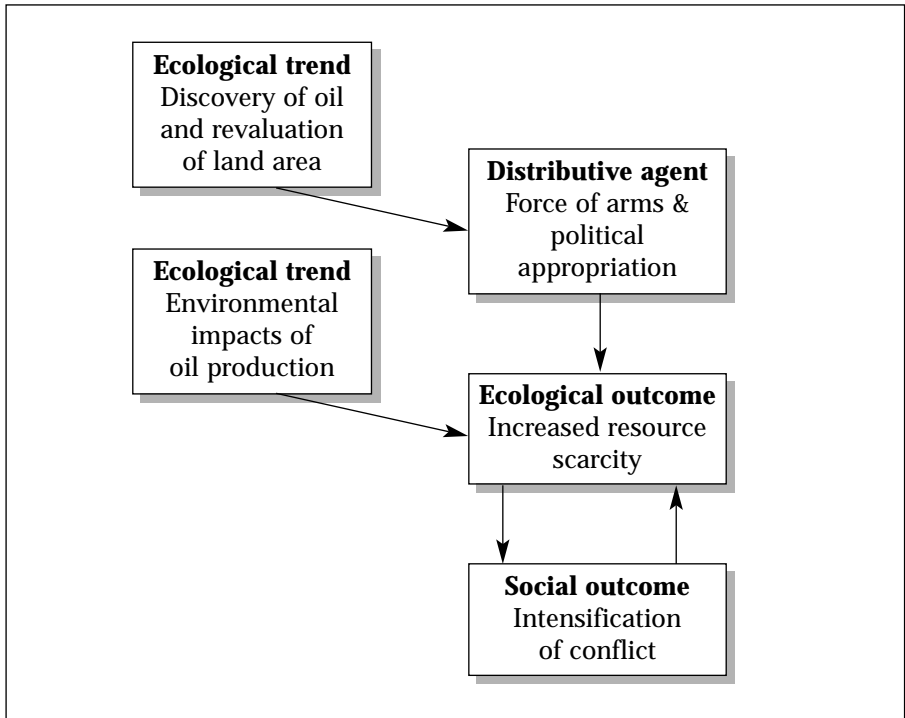
Civil war in Sierra Leone was sustained by its readily accessible diamonds, which rebel groups sold to international brokers to finance arms purchases. Likewise, in the Democratic Republic of Congo, the conflict is now driven by open competition for minerals and other easily looted resources. As a special assessment mission of the United Nations reported to the Security Council in 2001, "the conflict in the Democratic Republic of Congo has become mainly about access, control and trade of five key mineral resources ... Business has superseded security concerns. The only loser in this huge business venture is the Congolese people."<sup>64</sup>

In summary, oil production can reduce the likelihood of conflict through economic development that is evenly distributed between different social and economic groups. On the other hand, oil production may contribute to conflict by generating the inequitable distribution of benefits, as well as cause adverse social and ecological impacts. Moreover, it may provide a source of funds to sustain repressive state institutions, fuel official corruption, or sustain armed opposition.

The diagram on the next page presents the hypothesis guiding this case study. The hypothesis holds that the discovery of oil in southern Sudan has greatly intensified the northern effort – both politically and militarily – to appropriate and control the region for expanded production of oil, while marginalising the area's traditional inhabitants. The remainder of this chapter will seek to support these alleged links.

The chain of causation is believed to hold the following sequence: First, discovery of oil leads to a government attempt to appropriate oil-bearing lands. Second, efforts to appropriate land from groups without giving them a voice in the decision-making process and without what they perceive to be equitable compensation leads to rising social tensions and outbreaks of rebel activity. This rise in social tensions is compounded by the environmental consequences of oil production that degrade the natural environment which sustains subsistence-based livelihoods. Finally, oil revenues finance the

Hypothesis: ecological marginalisation of ethnic groups in oil-bearing regions



government's military action and purchase of advanced weaponry, intensifying the military campaign against the inhabitants of the oil-bearing regions and the rebels. Rebels, for their part, target facilities for oil production and export due to their central importance to the government and to the companies upon which the government depends for revenues.

### Discovery of Oil and Political Appropriation<sup>65</sup>

The last two decades of oil exploration and the battle for political control in Sudan are closely correlated. This section explores the history and current allocation of oil concessions in the country. It demonstrates that the discovery of oil in the south led the central government to claim ownership of oil-producing regions that historically were in the south. This sparked the formation of the Sudan People's Revolutionary Army and violent protest by the local inhabitants, culminating with the cessation of oil exploration and production in the Sudan.

Exploration for oil in Sudan began in the late 1950s, and was largely conducted offshore in the Red Sea. Chevron first discovered natural gas in 1974,

120 kilometres south-east of Port Sudan. The remaining offshore efforts were largely unsuccessful. In 1975, Chevron began exploring in south-western Sudan. It was not until 1980, however, that it located significant oil in the Unity oilfield north of Bentiu, followed by the Heglig field in 1982. Today it is estimated that Sudan sits on about 1% of the world's oil reserves, or between 600 million and three billion barrels of oil.<sup>66</sup> This is of moderate size by global standards (about 10% of the North Sea reserve), with a value of several billion dollars, depending on world prices for crude oil.

At this time, Chevron allegedly played a key role in supporting the Numeiri government, lobbying for United States financial and military support.<sup>67</sup> The prospect of substantial oil revenues and the Chevron-brokered United States political backing may have emboldened Numeiri in his dealings with southern Sudan, permitting him to break the accords that maintained peace in Sudan for nearly 10 years.

Under the 1972 Addis Ababa Accords, the central government controlled oil exploration and production, but the southern regional government had rights to all government profits on exports from the region and taxes from private businesses there.<sup>68</sup> In 1980, Numeiri redrew the borders between north and south, creating a new province – Unity state – around the town of Bentiu. This state was allegedly to be shared as an asset for both regions, but in practice brought oil-producing areas under central government jurisdiction, effectively disenfranchising the south.

The creation of Unity state and the decision to site an oil refinery for domestic production in the north instead of the south increased tension further. The formation in 1981 of the White Nile Petroleum Corporation by Chevron and the central government, with no southern representation, sparked further enmity.<sup>69</sup>

In the wake of a petrol shortage in 1983, John Garang and other senior army officials of southern origin defected from the government to form the Sudan People's Liberation Army (SPLA). That year, the SPLA launched its armed struggle against the north, followed shortly by the imposition of *Sharia* law by the Khartoum regime. The civil war has raged between the SPLA and the government ever since.

In the face of this mounting internal dissent, Numeiri may have been seeking through the proclamation of *Sharia* to consolidate his power by winning over the religious right, in particular the National Islamic Front. In any case, opposition to the central government culminated in 1985 with a general strike that paralysed the country, and with Numeiri being deposed by the army in favour of a new election. The Faustian bargain he struck with the extreme right was a foretaste of what was to come, as in 1989 the National Islamic Front (NIF) staged a military coup under General al-Bashir, and took power from the democratically elected government.

In 1984, an attack by the SPLA on the Chevron oil operation in the Unity

field killed three employees and prompted Chevron to suspend its operations, along with France's TOTAL and other major operators. Chevron attempted to resume operations in 1988 – reportedly supporting a Baggara militia in the region to protect its operations – before withdrawing in 1990 in the wake of the military coup.<sup>70</sup>

The decision to withdraw was apparently made as a result of the rising tide of conflict and the falling price of oil at the time. Chevron had tax breaks and political risk guarantees from the United States government, and was allegedly able to cover its losses of over US\$ one billion, in spite of selling its stake for only US\$ 25 million to Concorp, a Sudanese construction company.<sup>71</sup>

Other companies would not have the benefit of such extensive financial guarantees. Following Chevron's retreat from Sudan in 1992, United States oil industry presence has been minimal and the United States government sanctioned the Sudanese government for sponsoring terrorism and harbouring Osama Bin-Laden, among other suspected terrorists.

The government of Sudan would learn from this first experience, as well. Since the SPLA managed to successfully attack Chevron's oil operations in Unity field in 1984, and bring about the withdrawal of Chevron, a key priority of the NIF has been to prevent similar disruptions and maintain firm control over oil areas. Ensuring a secure environment to enable oil production is a central aspect of NIF economic policy since 1992. Khartoum used a variety of strategies to achieve this, including the military and paramilitary appropriation of land, adoption of a scorched earth policy, the arming of militias and use of hunger to reinforce its control of the oil-bearing lands.

The oil fields are the heart of the contested area between the forces of north and south. Demand for land used by Nuer pastoralists increased greatly upon discovery of oil on the "dead flat clay plain".

Talisman Energy operating in south Sudan alleges that the oil field area "has never known permanent habitation" owing to flooding in the rainy season, being home instead only to nomadic Arab tribes.<sup>72</sup> Yet evidence suggests to the contrary that the area may have been home to both Dinka and Nuer groups, who competed for access to land for grazing livestock and for settlement. Competition between the Dinka and Nuer intensified following the arrival of oil companies. According to one assessment by the Canadian government, "while there have always been pressures on the Dinka in the Heglig-Ruweng area, with Arab nomads driving their cattle south and fighting with the Dinka against the Nuer, the situation worsened with Chevron's arrival in 1976."<sup>73</sup>

In February of 1992, the government of Sudan began military offensives to clear villages in the Unity region through December 1993, allegedly to prepare the area for resumption of oil production.<sup>74</sup> According to Christian Aid, "across the oil-rich regions of Sudan, the government is ... clear[ing] the land of civilians."<sup>75</sup> These offensives continued in and around the oil producing

areas through 1999. It is reported that between April and July 1999, the population in Ruweng county fell by half. Leonardo Franco, UN Special Rapporteur, concluded this was a strategy by the government of Sudan to create "a swath of scorched earth" around the oil fields. According to the Canadian Assessment Mission, "Over the years, the series of attacks and displacements are leading to a gradual depopulation, as only a percentage of those who flee return."<sup>76</sup> According to the United States Committee for Refugees, some 55 000 newly displaced peoples fled the oil zone in 2000 and early 2001.<sup>77</sup>

Lundin Oil, a Swedish oil company, has a 40% stake in Block 5A. Allegedly, in order to guarantee the safety of the oil company's operations and clear an area for a road to the concession, the government waged war against the local communities, who were forcibly evicted and their villages razed.<sup>78</sup> Likewise, Talisman Energy, a Canadian energy firm, was accused of allowing Sudanese government defence forces to use the company's airstrip to launch raids on surrounding villages, in order to secure oil-producing areas and infrastructure, using government helicopter gun ships and bombers.<sup>79</sup>

In 1989, the Bashir government passed the Popular Defence Forces Law, which provided for paramilitary training and the creation of militias to carry the *jihad* against the Christian influence in the south.<sup>80</sup> In the regions of Bahr-al-Ghazal and western Kordofan, the government armed the Murahaleen, bands of nomadic Arab tribes, forming militias "funded and militarily deployed by the Sudanese Army" in order to protect its oil concessions.<sup>81</sup> According to the UN Special Rapporteur to the Human Rights Commission, "the Murahaleen do not only target rebel camps or armed individuals, but also civilians, in a very intensive manner. Usually, food crops are destroyed, men are killed, and women and children are abducted."<sup>82</sup>

The government of Sudan also recognised the need to identify southern allies to fight on their behalf to protect oil-producing areas. To that end, the NIF exploited the volatile SPLA movement. Under the government's 'Peace from Within' process, several former SPLA commanders broke with John Garang and signed a separate agreement with Khartoum in 1997. The agreement promised to give them 75 percent of oil proceeds – a pledge that is still embodied in the country's constitution. Manipulating the rivalries between these commanders and John Garang of the SPLA, Bashir offered them high posts in the government. This strategy was designed to draw their forces onto the side of the government and establish a buffer zone of NIF-friendly forces between the SPLA and Bentiu.<sup>83</sup>

The government of Sudan has granted only limited access to humanitarian organisations operating in the oil-producing areas, arguably allowing hunger to complete the 'scorched earth' policy. According to the World Food Programme, the town of Bentiu experienced a 24% malnutrition rate in 2000. "Sudanese government officials regularly blocked relief assistance to about

15 locations”<sup>84</sup> including to the Nuba Mountains, and in 1999 many humanitarian organisations were forced to evacuate from Bentiu.<sup>85</sup> The Sudan military also targetted humanitarian vehicles and food distributions, a practice condemned by the UN Special Rapporteur to the Human Rights Commission.<sup>86</sup> By all indications fighting has escalated in recent months following the signing of the Machakos Protocol.

### Recent Oil Exploration and Production

The success of the NIF government’s policies to secure control of oil-producing areas must be viewed in relation to the rush of oil companies to claim concessions in southern Sudan. In 1994, Concorp sold the Chevron concession to the Canadian State Petroleum Company, which was bought out by Arakis Energy, a firm subsequently purchased by Talisman Energy in 1998. Talisman (formerly British Petroleum Canada), with a particular expertise in sophisticated exploration and production techniques, is the world’s third largest independent producer of oil. The purchase of Arakis made Talisman 25% of the Greater Nile Petroleum Operating Company (GNPOC).

By the end of 2001 GNPOC comprises four companies controlling 12.2 million acres of concession land and a US\$ one billion pipeline extending from the oil fields in Bentiu to the Red Sea coast at Port Sudan.<sup>87</sup> The Chinese National Petroleum Company has a 40% stake, with Malaysia’s Petronas Carigali holding 30%, Talisman with 25%, and Sudan’s national oil company Sudapet holding the remaining 5%. Yet the GNPOC is not alone operating in the Sudan. At that point many of the major oil companies were active in Sudan, namely:

- Agip (Italy)
- China National Petroleum Corporation (CNPC)
- Elf-Aquitaine (France)
- Gulf Petroleum Corporation (Qatar/Sudan)
- Lundin Oil/IPC (Sweden)
- TotalFina (France/Belgium)
- Mobil (USA)
- National Iranian Gas Company (NIGC)
- OMV-AG (Austria)
- Petronas (Malaysia)
- Royal Dutch Shell (Netherlands-United Kingdom)
- Talisman Energy (Canada)

Currently, over 240 000 barrels of oil are produced daily in Sudan, contributing as much as US\$ 500 million per year to government revenues. It seems

likely that in the interests of global energy security, and in view of current dependence on oil from the Middle East, the importance of Sudan as an alternative source of oil will grow, and with it, the proportion of southern territory (already producing some 80% of the country's total production) consigned to oil exploration.

## Environmental Impact of Oil Exploration and Production

The environmental consequences of oil production are another source of conflict between the government and the local communities. Environmental degradation contributes to resource scarcity, and thus to the loss of traditional livelihoods for the Nuer and Dinka pastoralists.

Large-scale oil production and transport has a significant impact on the landscape and local environment. Contamination of soil and water is a common consequence of oil production, particularly in locations where environmental regulations are non-existent or not enforced. In Ecuador, for example, oil and water separation stations in the Oriente generate more than 3.2 million gallons of liquid waste each day, most of which has been discharged untreated into the environment.<sup>88</sup> Groundwater is particularly susceptible to contamination from the 'formation water', extracted along with oil during drilling. This 'formation water' is contaminated both with oil and with heavy metals and is therefore toxic.

Further impacts stem from the burn-off of excess natural gas, which had a devastating effect on water quality and biota there and in other regions as well, most notably Nigeria.<sup>89</sup> This burning releases methane, sulphur dioxide, and toxic compounds. The high temperatures can also exacerbate the risk of fires.<sup>90</sup>

Oil spills are also a concern. According to the Ecuadorian government, the trans-Ecuadorian pipeline has spilled about 17 million gallons of oil since it began operating in 1972.<sup>91</sup> This has not only a direct environmental impact, but raises the potential for large explosions as well. With regard to the Sudan pipeline, the potential for accidental leakage, and for intentional leakage resulting from rebel sabotage, has not been assessed. It should be noted, however, that the livelihoods of many southern peoples in Sudan rest on unpolluted Nile water.

According to *Sudan Update*, Talisman's Environmental Impact Assessment and Emergency Response Plans are not public.<sup>92</sup> As a result, it is difficult to know what impacts are projected, and what mitigation measures are in place. What can be alleged with some certainty, however, is that the willingness and capacity of the government of Sudan to mitigate the ecological impacts of oil production is low. Likewise, engaging in emergency spill response is very difficult, since it would expose the team to the direct risks of the conflict. In sum, resource scarcities will grow as ecological impacts worsen.

The social consequences of oil production are likewise significant for the conflict dynamic. One source is the result of a rapid influx of workers – including those from competing ethnic groups, bringing with them new diseases, prostitution and other social ills. There are wider ramifications as well. It is reported that approximately 7 000 Chinese labourers were brought over to build the Port Sudan pipeline. Some 2 000 of these are alleged to be prisoners who were promised reduced sentences for their work.<sup>93</sup> The impact of this vast influx of foreigners, working in extremely difficult conditions, has not been documented.

### Social Outcome: Intensification of Conflict

According to 2001 report of the UN Commission on Human Rights, “the government [of Sudan] rejected all accusations that oil revenues would be used to fuel the war and claimed that they were instead invested for the development of the south. So far the government has not provided sufficient evidence supporting this claim.”<sup>94</sup> In fact, oil revenues have funded military activities against southern rebels and peoples. In the two years since large-scale oil production began in 1998, military spending in Sudan effectively doubled.<sup>95</sup>

According to the UN Special Rapporteur to the Commission on Human Rights, “exploitation of the oil reserves has led to a worsening of the conflict.”<sup>96</sup> The report continues “since 1998 the Sudanese Government had been making serious efforts to democratize the country ... [yet] an increase in military activities has also been observed”<sup>97</sup>. The report notes that in May 2001 the government launched its biggest offensive against the rebels in the Nuba Mountains since 1992. According to a 2001 article in the *Washington Post*, “Sudan’s annual take from oil ... has clearly tipped a stalemated war in the government’s favor. The oil fields are new government garrisons, with soldiers camped every three miles on the main road, and tanks and helicopters in plain sight around airfields.”<sup>98</sup>

This case study demonstrates that the conflict in the Sudan has been exacerbated by competing claims to access to and control of oil-producing areas and to the right to participate in making decisions over the allocation of oil concessions and benefit sharing. The conflict also relates to environmental impacts of oil exploration and production, and the social consequences of these.

While southern self-determination was a possibility in the absence of oil and was accepted in the Addis Ababa peace agreement of 1972, the discovery of oil contributed to the destruction of this fragile peace. Oil money is indeed a key component in Sudan’s war. As long as revenues generated from oil production are used to finance military activities, there will be no peace. Unfortunately, oil production in Sudan is likely to continue and expand considering the geopolitics of oil internationally.

For example, China's involvement in Sudan entails both political and economic collaboration.<sup>99</sup> China is reportedly desperate to secure oil sources over the long term to fuel its development efforts, which explains the several billion dollars invested in Sudanese infrastructure, including airports and dams. Likewise, it is one of the primary arms suppliers to the government of Sudan. It follows that it is in China's interest to continue sale of arms to Sudan, and for the Sudanese government to stabilise the security of the oil fields. Likewise, in the wake of the September 11 attacks in the United States, OECD countries will be more anxious to ensure a diversified range of sources for oil.

One option for peace building is to involve the private sector in community development and dialogue with local leaders. Talisman Energy, for example, is working in partnership with non-governmental organisations to survey local water requirements and to develop community wells to cover unmet needs. Furthermore, more sensitive operations for producing oil may allow concession lands to be shared rather than cleared of people at the point of the gun. There are many compelling precedents. For example, Placer Dome needed to protect nearly 70 kilometres of electrical cables providing its Porgera mine site in Papua New Guinea with power.<sup>100</sup> Guarding the whole length of the electricity supply network was impractical. Ultimately, through attention to community interests, Placer Dome was better able to ensure security of the power supply than would have been possible through security forces. By engaging positively with the communities in which it operates, a responsible company might actually reduce its need for complicity in violence.

Many companies engaged in Sudan, however, lack the exposure to public and international pressure being felt by Talisman Energy. In spite of this lack of public exposure, should the Khartoum regime ever fall, the remaining oil companies may find their continued operations in the country to be under threat. For this reason companies should begin now to take actions to normalise relations between north and south Sudan, and to address the interests of all relevant stakeholders. They have a potentially vital mediating role to play between the interests of the people and those of the central government.

A shared interest in security in order to benefit from oil revenue might be possible, but only with international commitment to remove – or at least control – the economic incentives for the elite who perpetuate the Sudan civil war for their own ends.

## Conclusion

This analysis has outlined some of the ecological underpinnings of what is a long and unresolved conflict, periodically erupting into cycles of predation, rebellion, and violence over the past 150 years. There are many areas requiring

more detailed information, including the nature of resource flows in and out of the Sudan, and the internal variables influencing the politics on both sides of the divide – but there are three general points to be emphasised:

- There are clear environmental and ecological longitudinal determinants of the conflict. The Nile River system created a natural division leading to the polarisation of African-Arab identities. When we treat this variable as a constant, and as a mutually reinforcing feedback loop, the importance of other material variables also emerge as dynamic factors within the current conflict equation. The respective factors of socio-economic centralisation in the north are mirrored by environmental disequilibrium in the south and have exerted opposite impacts over time.
- As a consequence, the state took root in Khartoum, and has gradually grown in strength. The government has manipulated this advantage to its benefit, and the violence arising out of the disunity of the southern movement has played into its hands. It is difficult to ascertain to what degree actual military combat is responsible for the suffering inflicted on the southern civilian population over the past half-century. We can infer, however, that it is the population in the contested border zones – the Abyei Dinka, the Nuba, and perhaps Shilluk to the west – that has suffered most directly from the war; others have suffered from the secondary phenomena it generates.
- From a systems perspective, the conflict has grown more complex and fuzzier with each cycle. Past experience indicates that the ethnic protagonists (e.g. Baggara vs. Dinka) of the border zones can manage local conflict and even achieve high levels of cooperation – when left to their own devices. The beneficiaries of the war, in contrast, are the elites on both sides who camouflage their struggle to control critical natural resources through ideologies of identity and resistance. The most valuable of these commodities by far is the Bentiu oil. Its value deems it unlikely that the north will revert to the former north-south border; it is equally unlikely that the SPLA/M can dislodge the regime from this area by military means.

Sudan's unique position as microcosm of the continent's Arab-African divide acts as a magnet for external forces arraigned on the Western-Islamic divide. Stereotyped perceptions of regional and ethnic differences informing successive political regimes since the Turkish-Egyptian penetration of the southern region generates self-fulfilling feedback into both the north-south conflict cycle and the regional frictions that prolong it. Even if we reject the culture wars thesis as irrelevant, it is not possible to ignore the role of international feedback in perpetuating the Sudan's north-south struggle.

Selective exploitation of information to influence conflict outcomes has become an established tactical adjunct to military strategy. The role of

western media represents another critical feedback loop into Sudan's conflictive conjunction of traditional culture, regional resources, and African-Arab identities. Journalists' selective focus reminds us that sectarian information flows and advocacy interventions often act to reinforce a given conflict cycle. There is the example of the Christian organisation, which by sensationalising the revival of slavery in Sudan, attracts financial support for redeeming African victims. But the cash payments for 'slaves' has increased the numbers of southerners captured for resale. Such examples of negative or unintended outcomes alert us to the methodological pitfalls of advocacy.

Most methodologies for managing or resolving conflict nevertheless subsume some form of advocacy. Simply stated, advocacy is pleading the cause of others; the role of advocate presupposes active engagement.<sup>101</sup> Advocacy can be an efficient and effective problem-solving adjunct to developmental interventions. The record of developmental failures attests to how it can also reinforce and aggravate problems it intended to resolve. While advocacy has almost become *de rigeur* in many developmental contexts, experience highlights certain problems latent in the formulation of an advocacy strategy.

Locally based NGO staff, with strong and reliable sources of information, may be in the best position to activate early warning systems and subsequent humanitarian interventions. NGOs can take a leadership role in establishing information flows from local communities or regions on human rights abuses, which then serve to activate the international community.<sup>102</sup> But the south's extreme material and political weaknesses, prioritising the delivery of food and emergency inputs over other forms of developmental intervention, can also contribute to regional and local conflicts in different ways.

The provision of relief food is often a contentious exercise prone to external and internal bias and manipulation. This holds equally true for the case of the government in Khartoum, the rebel movement, and the communities requiring assistance. Agencies in the north are accused of using food relief as a lever for pro-sectarianism, but the same is also true for many western church and relief agencies operating in the south.

This is primarily an OLS conflict management problem at this juncture. Observations presented in Greathead et al<sup>103</sup> provide a good preliminary guide to some of the problems arising in connection with the delivery and distribution of food relief; no doubt other OLS reports and analyses contain substantial information concerning the issues.

The conflicts engendered by emergency relief led the OLS coordinator to propose that organisations active in the south adopt the 'working for peace' theme in 1999. Though widely accepted as a guiding principle for NGO advocacy, apparently it has yet to be translated into a specific policy, or set of policies.<sup>104</sup> The efficacy of any attempt to integrate relief provision and peace work is obviously a function of coordination among organisational entities not famous for cooperation either on the ground or at higher levels.

Networking and coordination are nevertheless critical to avoid creating tensions between different areas in the course of providing relief and aid.

The need to establish the internal capacity and an institutional framework enabling the inhabitants of the region to benefit from the country's considerable resources is central to the conclusions presented here. There is little to indicate relief has developed local capacity, both in basic areas like transport and grass-roots NGO food distribution. Capital formation, in a land where the NBA's Manute Bol was once reportedly the wealthiest individual, is obviously weak. In regard to developing administrative and private sector capacity, the southern leadership has missed the boat. The 1990s were the SPLM's lost decade, during which they squandered most of their political capital at home and abroad.

Though peace work obviously cannot contend with all the causes contributing to Sudan's conflict cycle, identifying its systemic attributes, including the ecological variables explored here, generates practical criteria for advocacy and developmental programmes matched to local conditions, including the material deprivation resulting from decades of instability and warfare. One lesson underscored by the critical influence of even small ecological variations across an environment argue for the participatory, bottom-up approach to assistance that is fast becoming the new developmental orthodoxy.

Two phases of armed liberation struggle claiming between an estimated one million and 1.5 million lives up to this point make the fact that the south is ensnared in a cycle of violence whose individual and aggregate effects will continue to perpetuate itself beyond the achievement of any political settlement. Mitigations for the current situation, however, are not amenable to macro formulae. For example: the south, as described by one Nairobi-based programme director, "has no roads, no schools, no hospitals and little else in the way of services; the best course of action depends on where one stands in the variegated landscape and the particular lenses through which any given individual views the conflict."<sup>105</sup>

Internal antagonisms among communities in the south represent an embedded source of violence operating largely independent of the issues underpinning north-south opposition. Many such ethnic divisions are traceable to, or co-terminous with, group adaptations to ecological niches. Many of the conflicts crystallising along these fault lines involve competition over scarce resources. This is one source of communal violence; another is the prospect for capture of environmental resources and control of surpluses by ethnic 'distributive agents'. The latent political ramifications of a new ethnic regime replacing the old racial-religious regime, either in the event of settlement leading to a reunited state or to the proposed state of the 'New Sudan' rank high in the minds of southerners in Equatoria and elsewhere.

The Dinka are by far the largest ethnic population in not just the south, but in all of Sudan. Most commentators familiar with the subject reaffirm the

problem of Dinka dominance. Whereas the Anyanya began as an Equatorial initiative, the dilemma is more acute in the current context due to their ascendant position in the SPLA/M. Variables such as 90% illiteracy and the indigenous Dinka cultural complex to conclude that regardless of the SPLM's official ideological stand and content governance policies, for the Dinka such content is understood in terms of their traditional warrior ideology.

Direct dependence on subsistence production highly susceptible to climatic vagaries augurs for an increasing trend of violent competition over natural resources. Factionalisation among leaders and other problems responsible for the localisation of the resistance movement decrease concern of Dinka dominance. There is, therefore, greater likelihood of conflict between the numerous antagonistic ethnic dyads.

Early in 2002 the Church-led Track Two processes, in the form of the New Sudan Council of Churches sponsored Wunlit Dinka Nuer Meetings in Bahr al Ghazal represented the main approach to ethnic conflict management. This, and similar meetings for peace making and reconciliation like the 1994 Nuer Lou-Jikany meeting in Akobo have produced effective but fragile accords. Our analysis of initial conditions, emphasising factors like the instabilities of the flood plain environment and other centrifugal forces (e.g. spatial separation and variation), suggest that underlying ecological causes of local conflict often work in tandem with political factors to undermine such accords over time.

In interviews on the subject, Sudanese staff of northern NGOs tended to presume if not peace, the lowering of hostilities is imminent, and suggested the knowledge exists to make 'getting it right in the beginning' the logical theme of advocacy strategies for southern Sudan. The region's endemic uncertainty and other factors, however, caution against focusing on the positive scenario to the detriment of forces suggesting this might also be the most precarious and dangerous juncture in the decades-long struggle.

Sometimes these intercommunal disputes feed into larger contexts of national war, such as the Baggara Arab and Dinka in Sudan, as well as the Isaaq and Ogadeni in eastern Ethiopia, Somaliland and, during Siad Barre's reign, Somalia. Agriculturalists on both sides of the divide are increasingly in conflict with pastoral groups, such as southward-moving Dinka pastoralists and the Mundri, and the Baggara Arab pastoralists and the settled Fur communities in western Sudan.

Indeed, current empirical conditions mirror the conclusions generated by Fearon and Laitin's<sup>106</sup> macro-level analysis of factors driving modern civil wars around the globe. The authors proposed to test the thesis that the nationalism and grievances of culturally distinct minorities is responsible for contemporary civil wars. Their findings however, contradict the 'highly influential conventional wisdom'. The analysis differentiates between minority and ethnic sub-nationalism and the grievances and ambitions of insurgent

bands; the wars of the post-1989 era are the product of longer-term processes where the presence of the former is statistically inconsequential.

Rather, the material conditions favouring insurgency by the latter emerged as the primary determinant of violent conflict. They state:

“Ethnic antagonisms and nationalist sentiments may help an insurgent group at the margin, but other factors are much more important. In brief, we argue that insurgency is favored by (1) poverty and slow economic growth, which aid the recruitment of fighters; (2) a rural base area (preferably with rough, inaccessible terrain), and local knowledge of the population superior to the government’s, which allows rebels to hide from superior government forces; and (3) a financially and politically weak central government, which facilitates the operation of an insurgent band.”<sup>107</sup>

Certainly from the perspective of these economic, environmental, and political criteria, Sudan’s southern region remains highly conducive to insurgency. The extensive flood plain is surrounded by bush and savanna divided by a network of large rivers. The south-western rim is dense jungle, the south-eastern rim is a vast tract of rocky hills and dry bush, the south-western belt is lush but conditions are primitive. The south’s culturally distinct populations speak a diverse range of languages. Internal transport and communication is extremely difficult. Topography and spatial factors combine with high value timber and minerals to designate it a guerilla’s paradise with vital commercial and linguistic links extending beyond the greater cross-border region’s several overlapping conflict subsystems.

Most land in Africa is held under customary tenure systems. In many cases, traditional or customary law remains in effect – until the discovery of valuable resources such as minerals or oil, or developments from outside increase its value. At this point new or existing legislation is usually employed to disenfranchise the indigenous occupants. Most national constitutions recognise customary law as secondary to statutory law, and include provisions for enacting the principle of eminent domain in situations where the exploitation of ecological resources is in the national interest. Of course this proviso is not necessary where the government has consigned ownership of unregistered or common properties to the state.

The new demarcation of the north-south border following the Addis Ababa Accords was a primary catalyst for the renewal of hostilities by the SPLA/M. The NIF government also granted Arab Baggara pastoralists legal entitlement to land held customarily by Abyei Dinka, leading to conflict. Sudan is hardly unique in respect to this. The use of legal instruments to disenfranchise indigenous peoples and other disaffected minorities occupying ecologically rich areas was well established under colonialism and persists today.

Even in western democracies, the same outcome obtains due to the uni-

versality of the eminent domain principle and the absence of legal recognition of common property rights where statutory rights may prevail. The plethora of cases and abuses arising across the modern world has fuelled the rise of new social movements that advocate for the rights of indigenous peoples. Pressure by new social movements resulted in the formulation of the UN Declaration on the Rights of Indigenous Peoples.<sup>108</sup> However, the declaration is non-binding. In the Sudan political power and domination is more important to determine land and resource rights. Although the capacities of southern elite to stake claim to land and resources has decreased, as noted earlier, difficult and dangerous ecological conditions in the south underscore the vulnerability of northern ambitions. However, in most instances where minority or opposition groups have successfully claimed land and resource rights, it was through political negotiation. Political negotiation remains the most viable option for southern peoples to claim greater rights.

Political, policy and legal change to strengthen opposition and minority rights, therefore, is the foundation for peace building in Sudan. The international framework to protect and encourage the rights of such groups is weak, yet is nonetheless helpful in establishing norms and principles for negotiations leading to real policy and legal changes.<sup>109</sup> Sudan's diverse social and ethnic configuration means that issues of group and minority rights are central to conflict management and peace-building strategies.

Any agreement, including the implementation of the recent Machakos Protocol, will have to address the issue of land and resource rights as a substantive source of the conflict, with a view to redress ongoing competitions to control valuable ecological capital. The central issues in Sudan's civil war underlying land and natural resources relate strongly to the character, content, and dispensation of governance. The policy recognition of the heterogeneity of the Sudan population in ethnic, religious and cultural characteristics should translate into equal rights and responsibilities for all citizens regardless of gender, religion or race. Reform of critical environmental decision-making processes must inform a fairer political dispensation in Sudan and not be done in isolation. Furthermore, equality between ethnic and religious groups, as well as between different sexes, must be enshrined in any new constitution. More specifically the following issues require attention in policy and legal reform processes:

- Decentralisation of significant economic and political powers to lower levels of government.
- Community empowerment over land and natural resources. This should encompass official recognition of common property rights, official recognition of customary systems for managing land and natural resources and public choice in decision-making processes at all levels.
- Economic diversification in south Sudan to decrease dependence on subsistence production.

- Equity as a guiding principle in allocating rights to land and resources, and the distribution of economic benefits.
- Development of a comprehensive land and natural resource development and use plan through participatory, inclusive and public process. This process should address needed policy and legislative reforms and explore monitoring tools such as Environmental Impact Assessment and Conflict Impact Assessment that can be employed in the development of a comprehensive national strategy to develop and use land and natural resources.

## Endnotes

- 1 J Prendergast, et al, *God, Oil and Country: Changing the Logic of War in Sudan*, International Crisis Group, London, 2002, p 29.
- 2 Ibid, p 219.
- 3 The challenge to researching the ecological sources of conflicts in sub-Saharan Africa, as these issues suggest, is to identify patterns of linkage and interaction between environmental factors and conflict that policies may address. See J Lind, R Kitevu, and C Huggins, 'Background Documents: Policy Research on the Ecological Sources of Conflict in Sub-Saharan Africa', African Centre for Technology Studies (ACTS), 2001. Mimeo, p 6.
- 4 Mungo Park, the first westerner to enter the interior, emphasised the importance of these trade conduits in his 1799 account.
- 5 Elements of the civil strife Chad experienced after independence point to the structure of north-south antagonism characterising the Sudanese conflict. But upon closer inspection, the Chadian conflict is more a function of colonial empowerment of the agricultural Sara vis a vis the *laizzez faire* administration of northern tribes.
- 6 One can imagine an equivalent situation where a modern state established in Timbuktu consolidated control over the Sahelian zone and extended its tentacles into more humid areas to the south.
- 7 The Niger inscribes a west to south-east east loop, the Senegal arcs in a north-westerly direction, and the Volta drains to the south. Florida's St. Johns River, the only other south to north river in the world, is approximately 200 miles long.
- 8 Quoted in FM Deng, *War of Visions: Conflict of Identities in the Sudan*, The Brookings Institute, Washington D.C., 1995, p 446.
- 9 E.g. *ibid*.
- 10 P Verney, P, *Sudan: Conflict and Minorities*, Minority Rights Group International, London, 1995.
- 11 R Cohen and F M Deng, 'Exodus Within Borders: the Uprooted Who Never Left Home', *Foreign Affairs*, July/August 1998.
- 12 M Suliman in D Buckles (eds.), *Cultivating Peace: Conflict and Collaboration in Natural Resource Management*, IDRC with the World Bank, Ottawa and Washington D.C., 1999, page unknown.
- 13 See A Sen, *Poverty and Famine: An Essay on Entitlements and Deprivation*, Oxford University Press, Oxford, 1981.

- 14 M Sahlins, 'The Segmentary Lineage: An Organization of Predatory Expansion.' *American Anthropologist*, no 63, 1961, p 327.
- 15 A Southall, 'The Nuer and Dinka Are People: Ecology, Ethnicity, and Logical Possibility,' *Man*, no 11, 1976.
- 16 R Kelly, *The Nuer Expansion: The Structure and Development of an Expansionary System*, University of Michigan Press, Ann Arbor, 1985, p 69. Kelly's book reviews the available history of migratory movements of Nuer and Dinka groups during the last 170 years, establishes a chronology of the impact of Nuer aggression against the Dinka, and documents the failure of the latter to resist these attacks, resulting in the wholesale expropriation of Dinka lands and cattle.
- 17 Established criticisms of environmental determinism regard it as simplistic and incapable for explaining the varying outcomes that grow out of similar conditions. But it is nevertheless a truism that factors of climate and environmental shifts exert impacts on populations over the longer term that include migration, warfare and conflict, and cultural adaptations. Archaeological data demonstrate that even among prehistoric subsistence populations such impacts and responses are hardly simple (J L Jones, G M Brown, L M Raab, J L McVickar, W G Spaulding, D J Kennet, A York, and P L Walker, 'Environmental Imperatives Reconsidered: Demographic Crises in Western North America during the Medieval Climatic Anomaly.' *Current Anthropology*, no 40, 1999); rather, it posits "a complex, causal, and nonlinear relationship between people and their environment. J Haas and W Creamer, *Environmental Imperatives Reconsidered: Demographic Crises in Western North America during the Medieval Climatic Anomaly*, *Current Anthropology*, no 40, 1999, p 160.
- 18 R Herring, 'The Influence of Climate on the Migration of the Central and Southern Luo' in A B Ogot, *Ecology and History in East Africa*, Kenya Literature Bureau, Nairobi, 1979, p 81.
- 19 R R Atkinson, *The Origins of the Acholi of Uganda*, Fountain Publishers, Kampala, 1994.
- 20 Ominde, 'Ecology and Man in East Africa' in A B Ogot (ed.), *Ecology and History in East Africa*, Kenya Literature Bureau, Nairobi, 1975, p 17.
- 21 Lienhardt, *The Western Dinka*, in J Middleton and Tate (eds), *Tribes Without Rulers*, Routledge and Paul Keegan, London, 1958, p 100. A Southall, 'The Nuer and Dinka Are People: Ecology, Ethnicity, and Logical Possibility,' *Man*, no 11, 1976, p 491.
- 22 Lienhardt, op cit.
- 23 Southall views the differences in Nuer and Dinka social organisation as products rather than causes of the Nuer expansions.
- 24 Kelly, op cit, p 112.
- 25 Evans-Pritchard, *The Nuer*, Clarendon Press, London, 1940, pp 82-3. There is also a minimum of about 16 cattle acceptable as payment (at that time), below which the Nuer will not permit marriage.
- 26 Lienhardt, op cit, pp 99-100.
- 27 Kelly, op cit, p 97.
- 28 Southall, op cit, p 470.
- 29 Evans-Pritchard, op cit, pp 111-112.

- 30 Cf. R Dyson-Hudson, and J T McCabe, *South Turkana Nomadism: Coping With an Unpredictably Varying Environment*, Ethnography series FL 17-001, Human Relations Area Files, New Haven, Ct., 1985.
- 31 Southall, op cit, p 475 and Lienhardt, op cit, p 99.
- 32 P C Salzman, 'Towards a Balanced Approach to the Study of Equality', *Current Anthropology*, no 42, 2001, p 41.
- 33 I Scones, (ed)., *Living With Uncertainty: New Directions in Pastoral Development in Africa*, Intermediate Technologies Publications, London, 1995.
- 34 R R Atkinson, *The Origins of the Acholi of Uganda*, Fountain Publishers, Kampala, 1994 and R Herring, 'The Influence of Climate on the Migration of the Central and Southern Luo.' In Ogot, op cit.
- 35 F M Deng, *War of Visions: Conflict of Identities in the Sudan*, The Brookings Institute, Washington D.C., 1995.
- 36 Herring, op cit, p 80.
- 37 Dinka clans in upper Bahr al Ghazal can still identify the 'mark' of captured Arabs integrated into their lineages.
- 38 In the north, the stage was being set for a protracted struggle between the charismatic leaders of mystical *tariqa* and the forces of international Islamic reform.
- 39 K M Barbour, *The Republic of Sudan*, University of London Press, London, 1961, pp 243-245.
- 40 The term 'towns' is a misrepresentative in most cases.
- 41 Kelly, op cit, pp 63 and 72.
- 42 Ibid, p 278 note 33.
- 43 Barbour, op cit, p 240.
- 44 Kelly, op cit, p 98.
- 45 J O'Brien, "Power and the Discourse of Identity in Sudan" in M A Salih and J Markakis (eds.), *Ethnicity and the State in Eastern Africa*, Nordiska Afrikainstitutet, Uppsala, 1998, p 69.
- 46 S Harrigan with C C Chol, *The Southern Sudan Vulnerability Study*. Nairobi: Save the Children, UK, Nairobi, 1998.
- 47 D Johnson, 'The Sudan People's Liberation Army & the Problem of Factionalism', C Clapham, (ed.), *African Guerrillas*, James Currey, Oxford, 1998, pp 65-6.
- 48 P A Nyaba, *The Politics of Liberation in South Sudan: An Insider's View*, Fountain Publishers, Kampala, 1997.
- 49 Operation Lifeline Sudan is a consortium of relief agencies operating in south Sudan.
- 50 P Goldsmith, 'Analysing Sudan's Civil War - Implications for Peace Work and Conflict Management.' Paper Prepared for Oxfam Southern Sudan Program, 2000. Mimeo.
- 51 Lind, Kitevu, and Huggins, op cit.
- 52 Goldsmith, op cit.
- 53 CIA Factbook 2001.
- 54 See, for example, P Blaikie, T Cannon, I Davis and B Wisener, *At Risk: Natural Hazards, People's Vulnerability and Disasters*, Routledge, London, 1997.
- 55 United Nations Development Programme, *Human Development Report*. New York, 1999.

- 56 Carnegie Endowment for International Peace, *Commission on Preventing Deadly Conflict*, Washington D.C., 1997, p xxxii.
- 57 P Collier, *Economic Causes of Civil Conflict and Their Implications for Policy*, World Bank, Washington D.C., 2000, p 7.
- 58 World Bank, 'World Bank Group Activities in the Extractive Industries, World Bank Mining Department/Oil Gas and Chemicals Department. 2001. Mimeo.
- 59 World Commission on Dams, *Dams and Development: A New Framework for Decision Making*, Earthscan, London, 2001.
- 60 K McPhail, 'How Oil, Gas and Mining Projects Can Contribute to Development', *Finance and Development*, no 37, 2000.
- 61 Fafo. 'The economies of conflict: private sector activities and armed conflicts.' [www.fafo.no/piccfr/ecocon.htm](http://www.fafo.no/piccfr/ecocon.htm). Waelde, T., *International good governance and civilized conduct among the states of the Caspian Region: Oil & Gas as a lever for Prosperity or Conflict*, Centre for Energy, Petroleum and Mineral Law and Policy, Dundee, 2000.
- 62 N Onishi and N. Banerjee, 'Chad's Wait for its Oil Riches May Be Long', in *New York Times*, 2001.
- 63 P Collier, *Economic Causes of Civil Conflict and Their Implications for Policy*, World Bank, Washington D.C., 2000, p 21.
- 64 United Nations, S/2001/357 Report of the Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth of the Democratic Republic of Congo, 2001.
- 65 This section draws heavily from C Lado, 'The Political Economy of Oil Discovery and Mining in the Sudan: Constraints and Prospects on Development', University of the Western Cape, Belville, 2000.
- 66 Global conventional oil reserves are believed to be approximately 1 000 billion barrels of oil, of which approximately two-thirds are located in the Middle East and Africa.
- 67 < [www.sudanupdate.org](http://www.sudanupdate.org)> .
- 68 Ibid.
- 69 Ibid, *Raising the stakes: Oil and conflict in the Sudan*, 2001.
- 70 J Harker, 'Human Security in Sudan: The Report of a Canadian Assessment Mission', Department of Foreign Affairs and International Trade (DFAIT), Ottawa, 2000, p 10.
- 71 < [www.sudanupdate.org](http://www.sudanupdate.org)> .
- 72 By Talisman Energy, among others. See Harker, op cit. The 'Harker' Mission was given the mandate by then-Foreign Affairs Minister Lloyd Axworthy "to: (a) independently investigate human rights violations in relation to slavery and slavery-like practices in the Sudan; and (b) to investigate ... the alleged link between oil development and human rights violations".
- 73 Harker, op cit, p 10.
- 74 Ibid, p 11.
- 75 US Committee for Refugees, *Mid Year Country Report – Sudan*. Washington: USCR, 2001.
- 76 Harker, p 11.
- 77 US Committee for Refugees, op cit.

- 78 The Editor, 16 March 2001, p A20.
- 79 Harker, op cit, p 15.
- 80 Goldsmith, op cit.
- 81 Special Rapporteur of the Commission on Human Rights. 'Situation of Human Rights in the Sudan.' UN General Assembly, 7 September 2001. A/56/336.
- 82 Ibid.
- 83 < www.sudanupdate.org> .
- 84 US Committee for Refugees, op cit.
- 85 Lado, op cit, p 19.
- 86 Special Rapporteur of the Commission on Human Rights, op cit, paragraph 21.
- 87 Lado, op cit, p 9.
- 88 Rosenfeld, op cit, p 18.
- 89 O Ibeanu, 'Environmental conflict management in the Niger Delta.' *Environmental Change and Security Project Report*, no 6, 2000.
- 90 Rosenfeld, op cit, p 25.
- 91 Ibid, p 18.
- 92 < www.sudanupdate.org> .
- 93 Lado, op cit, p 13.
- 94 Special Rapporteur of the Commission on Human Rights, op cit.
- 95 *Human Rights Watch*, 2001.
- 96 Special Rapporteur of the Commission on Human Rights op cit.
- 97 Ibid. paras 90 and 94.
- 98 K Vick, 'Oil money is fueling Sudan's war.' *Washington Post*, June 11, 2000.
- 99 Lado, op cit, p 13.
- 100 D Fraser, Presentation at the MMSD Experts Workshop on Armed Conflict and Natural Resources: The Case of the Minerals Sector, London, 2001.
- 101 G Henriksen, "Anthropologists as Advocates: Promoters of Pluralism or Makers of Clients", Paine, R. (ed.), *Advocacy and Anthropology*, St. John's Institute of Social and Economic Research, Memorial University of Newfoundland, 1985.
- 102 R Buell, Oxfam's Work in Conflict Situations: Conflict Workshop Report, Birmingham U.K. 1-29/2-2. Mimeo, 1996, pp 8-9.
- 103 H Greathead, T Fison, G Gatluak, K Thor, G Yoi, S Elijah, W Deng, and A Garang, *The Jonglei Field Officers Handbook: Baseline Study*. Nairobi: Save the Children UK, Nairobi, 1998.
- 104 Personal communication, Ben Newell, Director of the Carter Centre, Uganda/Southern Sudan.
- 105 Ibid.
- 106 J D Fearon and D D Laitin, "Ethnicity, Insurgency, and Civil War." Paper presented at the first LiCEP Meetings, Duke Univesrity, April 21-23, 2000. Mimeo.
- 107 Ibid.
- 108 There is a large and growing literature on this subject. The International Work Group for Indigenous Peoples publishes a quarterly journal and an annual compendium of case studies: *The Indigenous World*, Copenhagen: IWGIA. The London-based Minority Rights Group, Cultural Survival, and other organisations have also published a range of materials; many theoretical and macro-level analyses of issues are available in the anthropological record, see W.P. Handwerker,

“Universal Human Rights and the Problem of Unbounded Cultural Meaning”,  
*American Anthropologist*, vol 99, no 2, 1997.

109 T Buergenthal, ‘The Normative and Institutional Evolution of Human Rights’,  
*Human Rights Quarterly*, no 19, 1997.