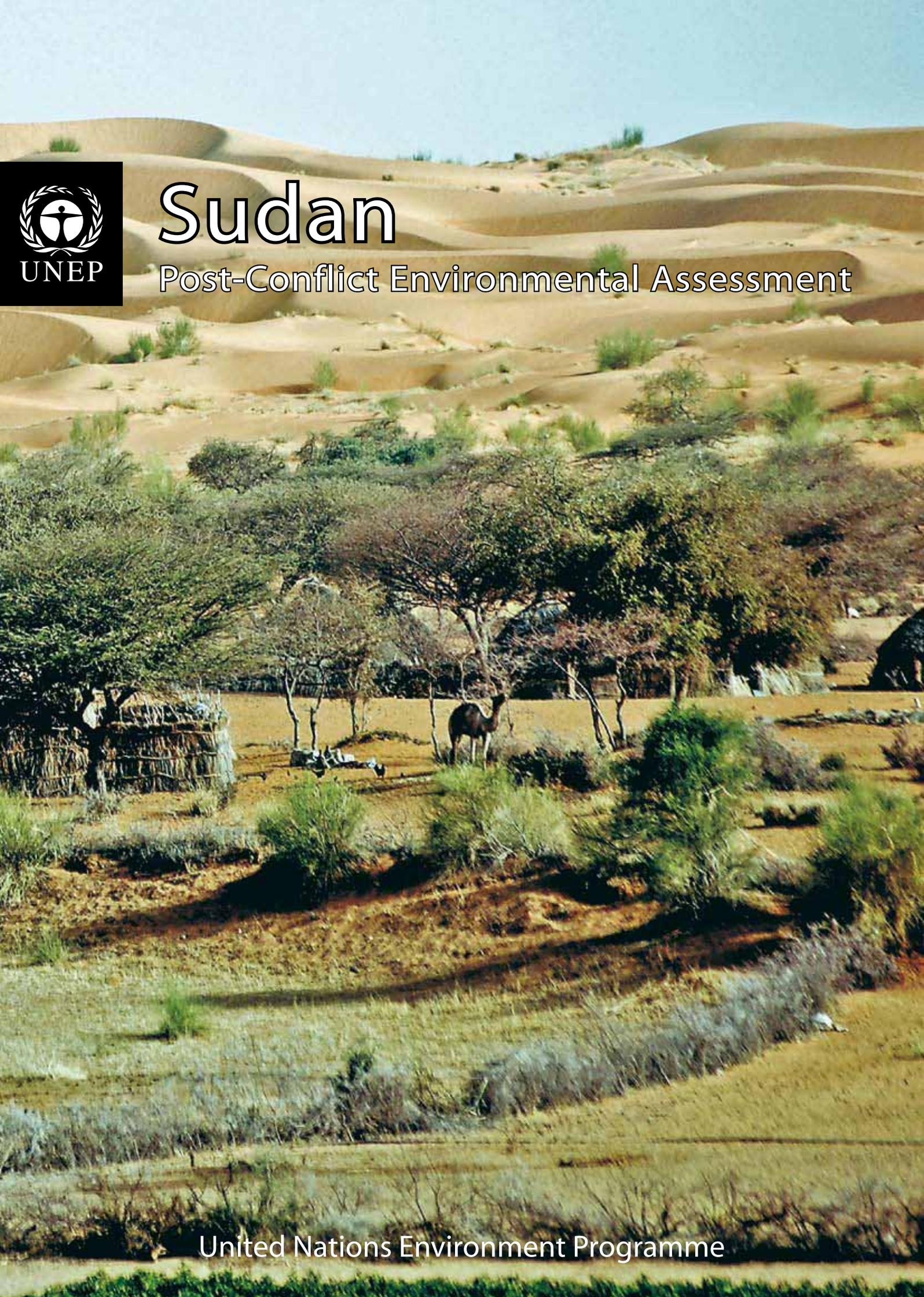




# Sudan

## Post-Conflict Environmental Assessment







# Synthesis Report

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This report by the United Nations Environment Programme was made possible by the generous contributions of the Governments of Sweden and the United Kingdom

## Synthesis report

### Introduction

In January 2005, after more than two decades of devastating civil war, the Sudanese central government in Khartoum and the Sudan People's Liberation Army in the south signed a historic Comprehensive Peace Agreement. This landmark achievement – which was followed by the adoption of an Interim Constitution – brought peace to most of the country for the first time in a generation.

Now, thanks to the rapid development of its oil industry, Sudan is one of the fastest-growing economies in Africa. Direct investment and international aid are starting to flow into the country on a large scale, and some parts of Sudan are undergoing brisk development.

As it focuses on recovery and development, however, the country faces a number of key challenges. Chief among them are several critical environmental issues – such as land degradation, deforestation and the impacts of climate change – that threaten Sudan's prospects for long-term peace, food security and sustainable development.

In addition, complex but clear linkages exist between environmental problems and ongoing conflict in Darfur, where violence and insecurity continue to prevail despite the signing of a peace agreement in May 2006.

Not only are the adequate management and rehabilitation of natural resources fundamental prerequisites to peacebuilding in Darfur and the rest of Sudan – they must be considered national priorities if the country is to achieve long-term social stability and prosperity.

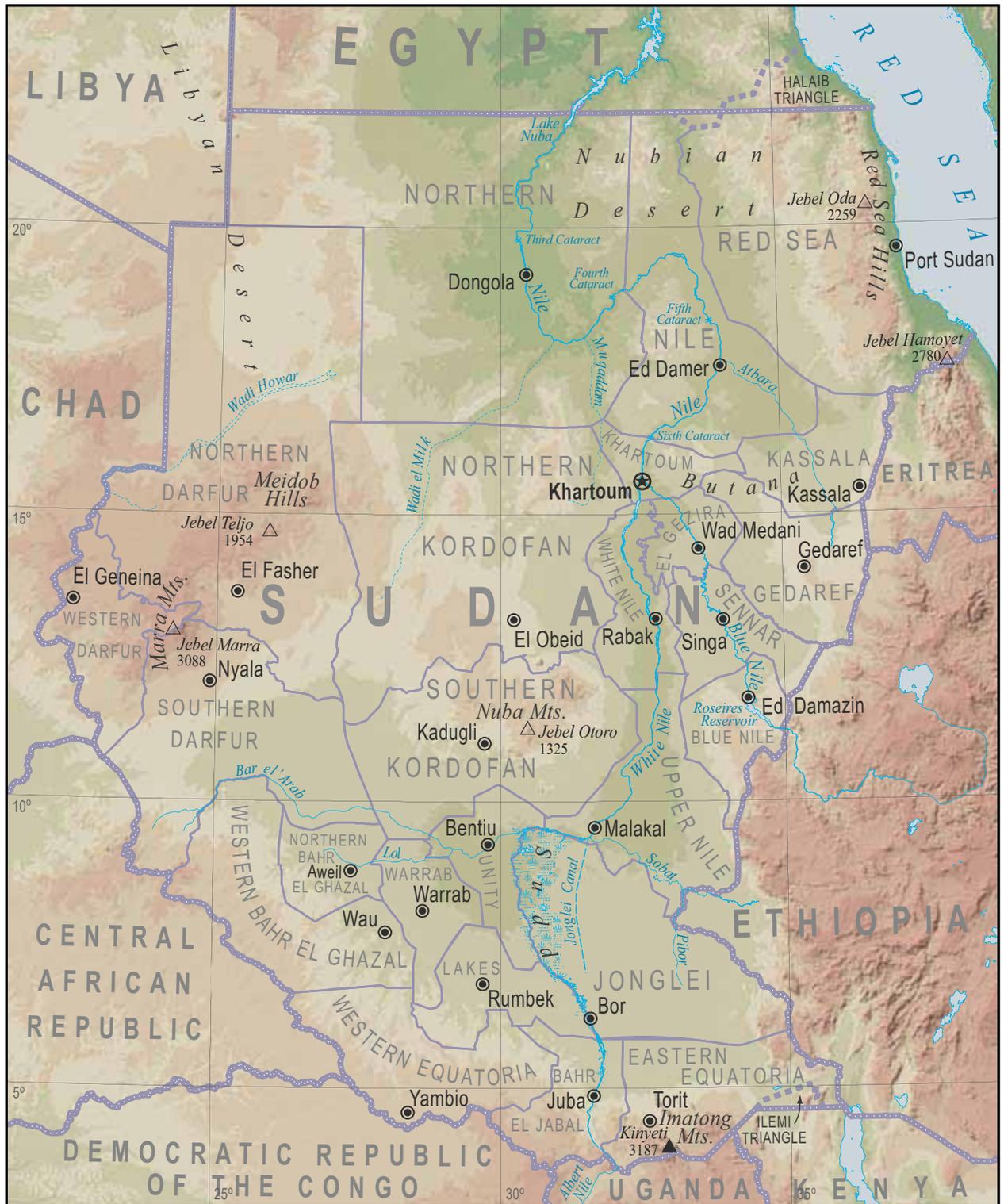
### Post-conflict environmental assessment

With a view to gaining a comprehensive understanding of the current state of the environment in Sudan and catalysing action to address the country's key environmental problems, the Government of National Unity (GONU) and Government of Southern Sudan (GOSS) requested the United Nations Environment Programme (UNEP) to conduct a post-conflict environmental assessment of Sudan. The goal of the UNEP assessment was accordingly to develop a solid technical basis for medium-term corrective action in the field of environmental protection and sustainable development.



*A group of southern Sudanese travels down the White Nile aboard a ferry, returning to the homeland after years of displacement due to the civil war.*

Sudan general map



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

**Legend:**

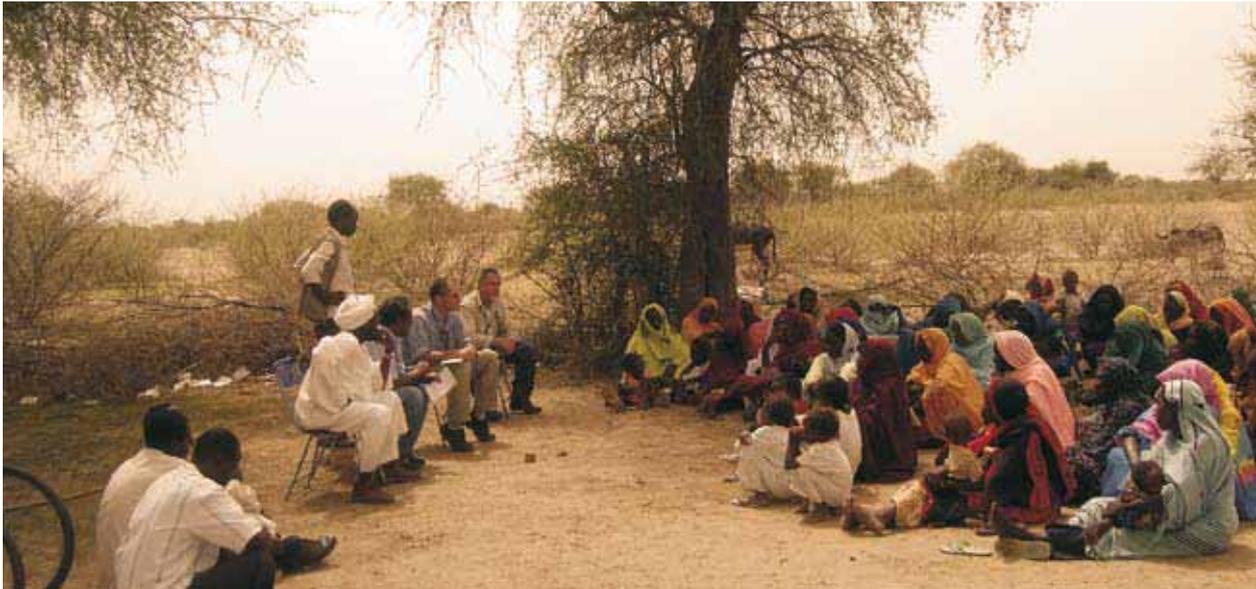
- International boundary
- State boundary
- Administrative boundary
- Marsh
- Lake and reservoir
- River
- Impermanent river
- Canal
- National capital
- State capital

**Height in metres:** 0 to 2000

**Scale:** 0 to 500 Kilometres  
Lambert Azimuthal Equal-Area Projection

**Sources:** SIM (Sudan Interagency Mapping); FAO; vmapiv0, gns, NIMA; srtm30v2, NASA; void-filled seamless srtm data, International Centre for Tropical Agriculture (CIAT), available from the CGIAR-CSI srtm 90m database; various maps and atlases; UN Cartographic Section.

UNEP/DEWA/GRID-Europe 2006



*Consultation with local stakeholders formed a large and continuous part of UNEP's assessment work, as here in the small village of Mireir, Southern Darfur*

## Assessment process

The post-conflict environmental assessment process for Sudan began in late 2005. Following an initial appraisal and scoping study, fieldwork was carried out between January and August 2006. Different teams of experts spent a total of approximately 150 days in the field, on ten separate field missions, each lasting one to four weeks. Consultation with local and international stakeholders formed a large and continuous part of UNEP's assessment work, with the total number of interviewees estimated to be over two thousand. Parties consulted include representatives of federal, state and local governments, NGOs, academic and research institutions, international agencies, community leaders, farmers, pastoralists, foresters and businesspeople.

The assessment team was comprised of a core UNEP team and a large number of national and international partners who collaborated in a range of roles. These partnerships were crucial to the project's success, as they enabled the fieldwork, ensured that the study matched local issues and needs, and contributed to national endorsement of the assessment's outcomes. UNEP also worked closely with the Government of National Unity and the Government of Southern Sudan, and specific efforts were made to align UNEP activities with a government initiative known as the National Plan for Environmental Management.

## Summary of the findings

The assessment identified a number of critical environmental issues that are closely linked to the country's social and political challenges.

### **Strong linkages between environment and conflict: a key issue in the Darfur crisis**

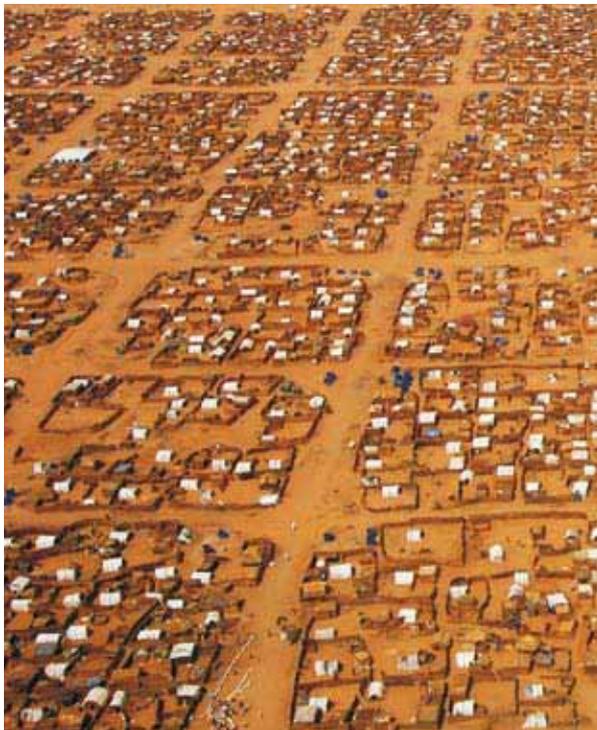
The linkages between conflict and environment in Sudan are twofold. On one hand, the country's long history of conflict has had significant impacts on its environment. Indirect impacts such as population displacement, lack of governance, conflict-related resource exploitation and underinvestment in sustainable development have been the most severe consequences to date.

On the other hand, environmental issues have been and continue to be contributing causes of conflict. Competition over oil and gas reserves, Nile waters and timber, as well as land use issues related to agricultural land are important causative factors in the instigation and perpetuation of conflict in Sudan. Confrontations over rangeland and rain-fed agricultural land in the drier parts of the country are a particularly striking manifestation of the connection between natural resource scarcity and violent conflict. In all cases, however, environmental factors are intertwined with a range of other social, political and economic issues.

UNEP's analysis indicates that there is a very strong link between land degradation, desertification and conflict in Darfur. Northern Darfur – where exponential population growth and related environmental stress have created the conditions for conflicts to be triggered and sustained by political, tribal or ethnic differences – can be considered a tragic example of the social breakdown that can result from ecological collapse. Long-term peace in the region will not be possible unless these underlying and closely linked environmental and livelihood issues are resolved.

### **Population displacement: significant environmental impacts**

With over five million internally displaced persons (IDPs) and international refugees, Sudan has the largest population of displaced persons in the world today. In Darfur, internal displacement has occurred at an unprecedented rate since 2003, with some 2.4 million people affected. This massive population displacement has been accompanied by significant human suffering and environmental damage. Areas around the larger camps – particularly in Darfur – are severely degraded, and the lack of controls and



*Sudan has the largest population of displaced persons in the world today. Nearly two million are in Darfur, in large settlements such as Abu Shouk IDP camp in El Fasher, Northern Darfur*

solutions has led to human rights abuses, conflicts over resources and food insecurity. Although this is not a new phenomenon, the scale of displacement and the particular vulnerability of the dry northern Sudanese environment may make this the most significant case of its type worldwide.

In addition, the large-scale return of southern Sudanese to their homeland following the cessation of the civil war is likely to result in a further wave of environmental degradation in some of the more fragile return areas.

### **Desertification and regional climate change: contributing to poverty and conflict**

An estimated 50 to 200 km southward shift of the boundary between semi-desert and desert has occurred since rainfall and vegetation records were first held in the 1930s. This boundary is expected to continue to move southwards due to declining precipitation. The remaining semi-desert and low rainfall savannah on sand, which represent some 25 percent of Sudan's agricultural land, are at considerable risk of further desertification. This is forecast to lead to a significant drop (approximately 20 percent) in food production. In addition, there is mounting evidence that the decline in precipitation due to regional climate change has been a significant stress factor on pastoralist societies – particularly in Darfur and Kordofan – and has thereby contributed to conflict.

### **Natural disasters: increasing vulnerability and impacts**

Sudan has suffered a number of long and devastating droughts in the past decades, which have undermined food security and are strongly linked to human displacement and related conflicts. The vulnerability to drought is exacerbated by the tendency to maximize livestock herd sizes rather than quality, and by the lack of secure water sources such as deep boreholes that can be relied on during short dry spells.

Despite serious water shortages, floods are also common in Sudan. The most devastating occur on the Blue Nile, as a result of deforestation and overgrazing in the river's upper catchment. One of the main impacts of watershed degradation and associated flooding is severe riverbank erosion in the narrow but fertile Nile riverine strip.

### **Agriculture: severe land degradation due to demographic pressure and poorly managed development**

Agriculture, which is the largest economic sector in Sudan, is at the heart of some of the country's most serious and chronic environmental problems, including land degradation in its various forms, riverbank erosion, invasive species, pesticide mismanagement in the large irrigation schemes, and water pollution. Disorganized and poorly managed mechanized rain-fed agriculture, which covers an estimated area of 6.5 million hectares, has been particularly destructive, leading to large-scale forest clearance, loss of wildlife and severe land degradation.

In addition, an explosive growth in livestock numbers – from 28.6 million in 1961 to 134.6 million in 2004 – has resulted in widespread degradation of the rangelands. Inadequate rural land tenure, finally, is an underlying cause of many environmental problems and a major obstacle to sustainable land use, as farmers have little incentive to invest in and protect natural resources.



*A typical mechanized agriculture landscape in Dali, Sennar state. An estimated 6.5 million hectares of savannah vegetation have been cleared for mechanized rain-fed agriculture in Sudan*



### **Forestry: a deforestation crisis in the drier regions, risks and opportunities in the south**

Deforestation in Sudan is estimated to be occurring at a rate of over 0.84 percent per annum at the national level, 1.87 percent per annum in UNEP case study areas. It is driven principally by energy needs and agricultural clearance. Between 1990 and 2005, the country lost 11.6 percent of its forest cover, or approximately 8,835,000 hectares. At the regional level, two-thirds of the forests in north, central and eastern Sudan disappeared between 1972 and 2001. In Darfur,

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