

Population Displacement and the Environment

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.



Population displacement and the environment

5.1 Introduction and assessment activities

Introduction

Over five million internally displaced persons (IDPs) and international refugees currently live in rural camps, informal settlements and urban slums in Sudan. This represents the largest population of displaced persons in the world today. Living conditions in these settlements are in many cases appalling: they are crowded and unsanitary, food and water are in short supply, insecurity is high, and livelihood opportunities are generally lacking. Some of these temporary settlements have existed for over twenty years with no improvement, and the conflict in Darfur is generating a new wave of displacement that is worsening the situation.

This massive population displacement has been accompanied by major environmental damage in the affected parts of the country. This is not a new phenomenon, but 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. Moreover, environmental degradation is also a contributing cause of displacement in Sudan, so that halting displacement will require concurrent action to halt environmental degradation.

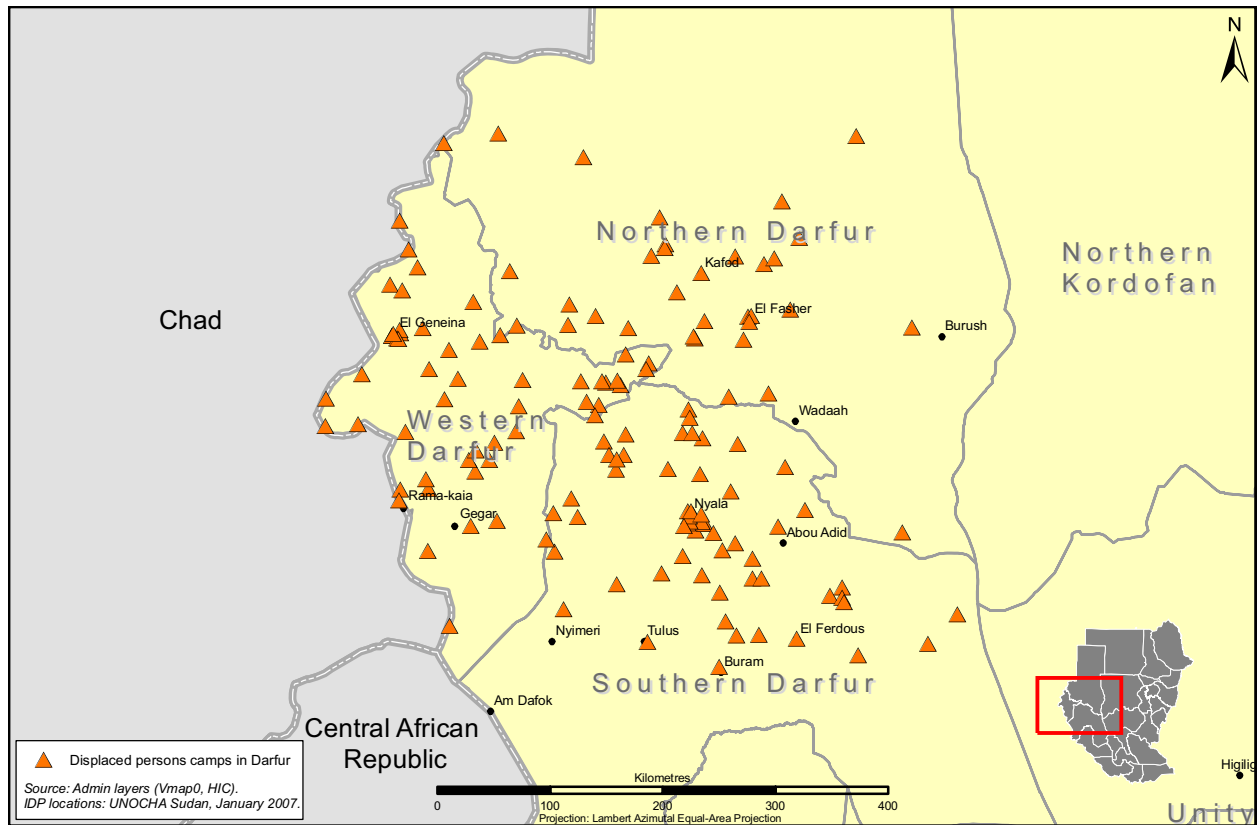
Assessment activities

The assessment of displacement-related issues was included in UNEP's general fieldwork, which covered many of the areas where displacement had occurred and where returnees were expected. The environmental impact of displaced populations was a principal theme of the fieldwork in Darfur, while the impact of returnees on the rural environment was one of the main subjects of UNEP's work in Jonglei state. Locations visited include:



Dinka teenagers, who were raised in Ugandan refugee camps, wait to board the barge bringing them back to Bor district, Jonglei state

Figure 5.1 Displaced persons camps in Darfur



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- IDP and refugee camps in Darfur: Mornei-Um Shalaya, Zalingei, Kalma, El Fasher-Abu Shouk, Kebkabiya, and Kutum-Kassab;
- villages on the outskirts of El Geneina, Western Darfur, destroyed and deserted as a result of conflict;
- IDP settlements in Port Sudan, Khartoum and Juba;
- Jonglei state way stations and return sites in Bor and Padak districts; and
- rural return sites in the Nuba mountains, Southern Kordofan.

Interviews with displaced persons took place at all of the above locations.

These displacement-specific activities were considered sufficient to obtain an overview of the issues, particularly for Darfur camps and for the Southern Sudan return process.

5.2 Overview of population displacement in Sudan

The world's largest displaced population

Over the past few decades, Sudan has witnessed more involuntary movement of people within and around its territory than any other country in the world. At the end of 2005, UNHCR estimated that some 700,000 Sudanese refugees lived outside the country [5.1]. Sudan has also offered asylum to a significant number of refugees from other countries in recent years, primarily from Chad, the Democratic Republic of Congo (DRC), Eritrea, Ethiopia, Somalia and Uganda.

Some of the highest numbers of refugees in the country were recorded during the 1990s: in 1993, for example, Sudan was host to some 745,000 refugees, the majority from Eritrea (57 percent), Chad (19 percent), and Ethiopia (2 percent) [5.2]. By the year 2000, the overall number had dropped to around 418,000 [5.3]. Estimates for 2005 indicate that approximately 147,000 refugees were officially recognized in Sudan [5.1]. The steady decline in

numbers over this period is attributable to restored peace and security in neighbouring countries, and to a series of successful repatriation exercises.

The majority of refugees now seeking asylum in Sudan (77 percent) are Eritrean people [5.4] who live mainly in formal camps in the east. The influx of Eritrean refugees has been steady since 2003, as tension has increased in that country. In addition, there are 29,000 refugees from Uganda, DRC, Somalia, Ethiopia and other countries. With the exception of some 5,000 refugees from Chad, most live in Khartoum, Juba and other urban areas.

Besides hosting hundreds of thousands of refugees, Sudan has also generated more IDPs than any other country in the world – an estimated 5.4 million (see Table 6), or more than half the total IDP population on the continent [5.6, 5.5]. The International Displacement Monitoring Centre estimates that two million IDPs now live in Khartoum, most of whom have moved in with family members or set up squatter communities in neighbourhoods and fields around the capital. IDPs today account for 40 percent of Khartoum's total population [5.5]. In addition to squatter areas such as Soba Arradi, which hosts some 64,000 people, four official camps have been established to house IDPs: Omdurman es Salaam (120,000 people), Wad el Bashier (74,800 people), Mayo Farms (133,000 people) and Jebel Aulia (45,000 people).

Table 6. Location and number of internally displaced people in Sudan [5.5]

Location (state)	Number of IDPs
Khartoum	2,000,000
Northern	200,000
Red Sea	277,000
Kassala	76,000
Gedaref	42,000
Sennar	60,000
Blue Nile	235,000
White Nile	110,000
Upper Nile	95,000
Kordofan	189,000
Unity	135,000
Bahr el Ghazal	210,000
Equatoria	26,000
Greater Darfur	1,950,000
Total	5,805,000

Since 2003, internal displacement has occurred at an unprecedented rate in western Sudan. The Darfur crisis is reported to have affected some 2.4 million people, of whom 1.8 million are IDPs. Hundreds of thousands of people have already died, while conditions in many camps are far below international standards. In 2004, it was estimated that 465,000 households in Darfur would be in need of food assistance early in 2005 due to crop failure [5.7]. The same report noted that 90 percent of IDPs had lost their livestock, impeding income generation and water collection, and hindering return. Forty percent of the resident population had also lost their livestock.

The duration of displacement and the prospects for return

In Sudan as elsewhere, displaced populations return to their homelands if and when it is possible. For returns to take place on a large scale, however, a number of pre-conditions must be met:

- The original cause for displacement should have been removed, and physical security restored;
- Prospects for a livelihood in the homeland should be better than in the displaced location;
- Essential or important services (such as water, medical aid and schooling) should be available in the homeland and ideally equivalent to those in the displaced location;
- A practical means to travel back to the homeland safely (with possessions) should be available; and
- The return process must be sponsored or affordable for the displaced.

Because of these conditions, temporary displacements for any reason tend to turn into long-term processes or even permanent moves. Temporary settlements that exist for over a decade are not uncommon in Sudan. In Port Sudan, for instance, the UNEP team met IDPs from Northern Kordofan who had lived in informal settlements for twenty-three years and had no intention of returning to their homeland (see Case Study 5.1).



IDP camp residents told UNEP that they would rather remain in the Port Sudan area than return home, due to employment opportunities and improved education

CS 5.1 Fringe dwellers at Port Sudan: rural populations fleeing drought and seeking livelihoods in the cities

This informal settlement located in a *wadi* (seasonal riverbed) adjacent to the Port Sudan landfill is a typical example of uncontrolled urbanization triggered by natural causes. It houses over 500 families, the majority of which came from the El Obeid region in Northern Kordofan.

Interviewed residents stated that they had originally abandoned their farms due to extended drought and arrived in the region twenty-three years ago. The community was forcibly moved from a better site nine years ago by a land dispute and expanding urban development. The current site is seasonally flooded and has few amenities, aside from local schools and a water point installed by an aid project.

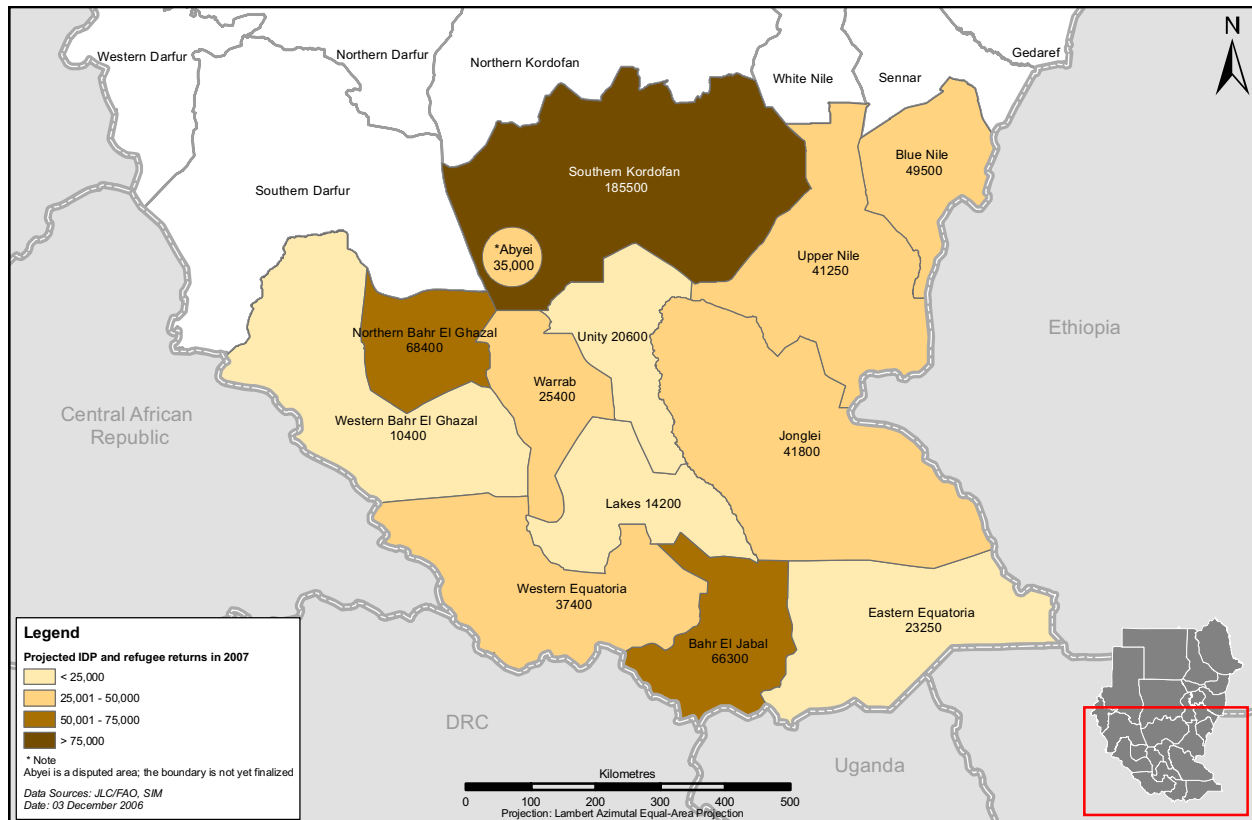
Despite the long-term nature of the settlement, all of the dwellings are temporary constructions. When asked about the potential for return to Northern Kordofan, the residents expressed no desire to do so, explaining that local employment and availability of schools were the determining factors in their decision to remain in Port Sudan. As the residents have no land tenure, however, they are at risk of being moved to even more distant fringes of Port Sudan as the city expands.

Large-scale returns of southern Sudanese currently in northern Sudan and in neighboring countries are now taking place but are expected to take several years to complete (see Figure 5.2). As of November 2006, over 17,000 refugees had returned to Southern Sudan through movements organized by UNHCR. An estimated total of

500,000 people returned to Southern Sudan, Abyei, and Southern Kordofan and Blue Nile states in 2006.

In Darfur, large camps appeared in 2003 and are presently increasing in population due to the intensification of the conflict in late 2006.

Figure 5.2 Forecast returns for Southern Sudan in 2007



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5.3 Overview of displacement-related environmental issues

Displacement-related environmental issues are widespread and often highly visible in major camps, settlements, urban slums and return areas. The most significant are:

1. environmental issues as a cause for displacement;
2. impacts related to the concentrations of people in camps or settlements:
 - deforestation and the fuelwood crisis in dry-land camp areas;
 - land degradation;
 - unsustainable groundwater extraction; and
 - water pollution;
3. other impacts related to the initial displacement;
 - uncontrolled urban and slum growth; and
 - fallow area regeneration (generally a positive impact);
4. the impacts of returnees and the environmental sustainability of rural returns; and
5. international environmental impacts.

5.4 Environment as one of three major causes of displacement in Sudan

There are three principal causes of displacement in Sudan:

- conflict-related insecurity and loss of livelihoods;
- natural and environmental causes: drought, desertification and flooding; and
- government-sponsored development schemes.

The principal cause of displacement has historically been the major conflicts that have afflicted Sudan since its independence. The second is natural disasters: drought, desertification and flooding, which are discussed in detail in Chapter 3. The third cause of displacement is government-sponsored development schemes, specifically mechanized rain-fed agricultural schemes, such as the Aswan dam and the new Merowe dam. In these cases, displacement takes the form of organized resettlements and land allocation for new agricultural schemes. The environmental impact of agricultural schemes and dams are covered in Chapters 8 and 10 respectively.

5.5 Environmental impacts of camps and settlements

Governance of settlements including environmental issues

The environmental impacts of camps in Sudan vary not only according to their physical location but also to their type (IDP or refugee camps), and to how long they have been in existence.

Oversight of refugee camps is the responsibility of the UN High Commissioner for Refugees (UNHCR) which, in turn, works with a government counterpart (the Commissioner for Refugees) and a range of other agencies and institutions, national and international, as required.

Responsibility for IDP camps is much less clear, particularly in Sudan, where some are run by the government and others by local authorities, militant groups, or international NGOs. Resources (funds, technical assistance and so forth) available to IDP and refugee camps also vary considerably. In general, IDP camps tend to have fewer relief resources than refugee camps. UNEP field teams encountered many families who deliberately elected to go to a refugee camp in preference to

an IDP camp, because conditions were better in the former.

Environmental concerns have rarely – if ever – been a factor in the choice of sites for refugee or IDP camps in Sudan. No environmental assessment has ever been carried out prior to the site selection and establishment of any existing camp, nor is this a legal requirement.

A rapid environmental assessment conducted by OCHA at three camps in Darfur in 2001 highlighted another common concern which is addressed in this report: ‘While the environment is an important factor in the Darfur crisis, there is no international agency with a specific mandate to consider or incorporate environmental issues into relief operations and peace efforts. This contrasts with the case for Darfur refugees in Chad, where UNHCR has a mandate to incorporate environmental issues into relief and return efforts’ [5.8].

Deforestation and the fuelwood crisis in camp areas

One of the most significant environmental impacts of displaced population settlements is the severe deforestation that has occurred around the larger camps in the drier parts of the country.



Camp residents in Western Darfur cut wood chippings from a fallen tree for cooking fuel. The concentration of people into large settlements has also concentrated the demands on natural resources, resulting in severely deforested areas

This problem is related to the scale of the camps and to the standard of aid provision for displaced populations. Indeed, the level of assistance that displaced people receive in temporary settlements varies greatly. International refugees automatically qualify for assistance from UNHCR, while many IDPs do not. The assistance provided can include food aid, a water supply, basic sanitation facilities, tented accommodation or simply cover sheets and some basic household items.

What is virtually never provided is a source of energy for cooking food, boiling water or heating. In addition, when no formal accommodation is supplied, timber is needed to construct temporary dwellings. As a result, people living in camps and settlements are forced to find timber and fuelwood in the surrounding area. Livelihood strategies and the relief economy also play a role in the deforestation of camp areas: the collection of wood to fuel brick kilns, for example, is a major source of deforestation in a number of settlements in Darfur (see Case Study 5.2).

Deforestation is clearly visible around all major camp locations and can easily be detected by satellite in regions with otherwise good forest

cover. In Nimule county on the border with Uganda, for instance, the illicit felling of trees for firewood and to clear land for slash-and-burn agriculture on the outskirts of a local IDP camp has resulted in the deforestation of a large area surrounding the camp (see Figure 5.3).

In drier regions, the effects are more difficult to detect but even more damaging. Much of northern and central Sudan is relatively dry, with low woodland density and slow growth rates. Tree cover is particularly sparse in Northern Darfur and northern parts of Kassala, two regions that host large displaced populations. Besides, the majority of settlements have been established in locations that were already occupied, and where the existing burden on forest resources may or may not have been sustainable.

In eastern Sudan, camp-related deforestation has been occurring for at least twenty years. Corrective measures (prohibitions) were put into place by UNHCR and the Forests National Corporation (FNC) to prevent refugees from cutting down trees for fuel, but as their ongoing energy needs were not addressed, these were not effective.

Figure 5.3 Deforestation at Nimule



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A brick kiln at Abu Shouk camp in Northern Darfur. One large tree is needed to fire approximately 3,000 bricks

In this mango orchard near Kalma IDP camp in Nyala, Southern Darfur, large amounts of clay have been extracted for use in brick-making. This has exposed the trees' root systems and will eventually lead to their death

CS 5.2 IDP brick-making, water use and deforestation in Darfur

Brick-making has become an important source of income for IDPs in Darfur, but has also caused considerable environmental damage around the camps. The impacts of the process include increased water consumption, damaged farmland and deforestation.

The clay for the bricks is dug from borrow pits by hand, in areas that were often previously farmed. In the wet season, these pits fill with stagnant water and contribute to environmental health problems such as malaria. The water necessary for the manufacturing process is obtained either from watercourses or from deep boreholes with submersible pumps installed by the aid community. The rate of extraction from such boreholes is not monitored, and may in some cases not be sustainable. Finally, trees are needed to fire the bricks in temporary kilns – local studies have found that one large tree is needed to fire approximately 3,000 bricks.

Simply banning such activities is not an appropriate or feasible option. A practical solution that still provides a livelihood for brick workers is urgently needed for Darfur as well as other parts of Sudan. One such option could be to use compressed earth technology rather than bricks. This would require a comprehensive introduction programme addressing both the demand and supply issues.

It should be noted that the international relief community is a major customer for the bricks, particularly to build the two-metre high compound walls required by international security standards. In Darfur especially, the relief economy has become a significant factor in the deforestation process.

In Darfur, fuelwood collection is effectively uncontrolled. Camp residents reported journeying up to 15 km to find timber, and UNEP fieldwork inspections revealed extensive deforestation extending as far as 10 km from the camps. This has contributed to a major security issue, as displaced women and girls are often at risk of rape, harassment and other forms of violence when they leave the camps to collect wood. This risk, however, is one they often have no choice but to take, since there are few other sources of cooking fuel or income available to them [5.9].

The fuelwood outlook for the major camps in Northern and Western Darfur is unpromising. Substantial deforestation has taken place over the last three years and the camps are likely to remain occupied for a number of years to come. In addition, renewed fighting since late 2006 has created a new wave of displacement and new camps.

It is possible that some camps in Darfur will exhaust virtually all viable fuelwood supplies within walking distance, resulting in major fuel shortages and/or high fuel prices. Without fuel for cooking, aid food such as cereals, legumes and flour cannot be eaten. This would add an additional facet to the ecological and human rights issues already troubling Darfur.

Some fuel conservation measures were noted by UNEP and reported by others. Though it is not universal, the use of fuel-efficient stoves, for instance, was found to be well established in Darfur. However, a detailed 2006 study by the Women's Commission on fuelwood and associated gender-based violence in Darfur showed that fuel conservation measures alone would not suffice, as the wood saved through the use of efficient stoves would continue to be gathered to be sold on local markets [5.9].

Finally, a number of very small tree plantations and nursery projects have been set up in Darfur, Khartoum state and Kassala (principally in the form of 'food for work' programmes for camp residents), but these are much too limited to meet current needs.

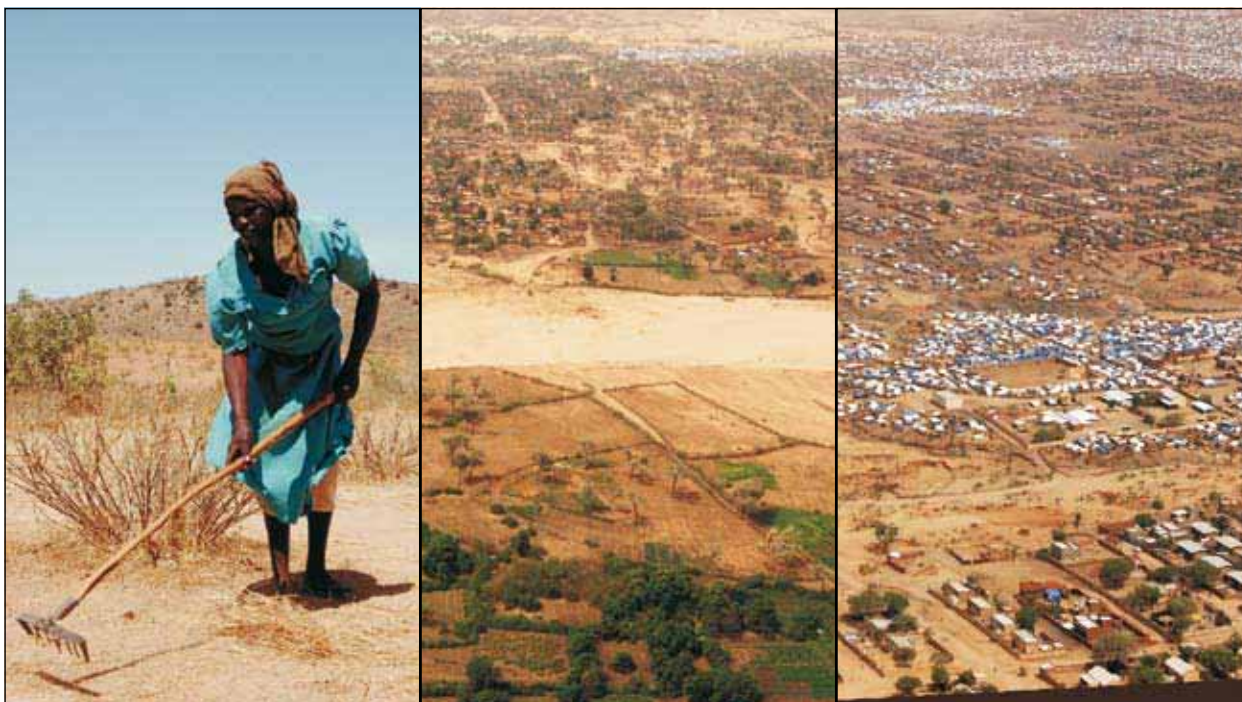
Land degradation in camp areas

Land degradation in camp areas is caused by over-harvesting of seasonal fodder and shrubs by camp residents and their livestock (commonly goats). Aside from its environmental impact, this activity places camp residents in direct competition and potential conflict with local residents (see Case Study 5.3).



The zone outside Abu Shouk camp in El Fasher, Northern Darfur, is completely devegetated

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Camp residents seeking out livelihoods comb the drylands surrounding the camps. In this case, women are gathering fodder 13 km from the camp to sell on the local market

The prime agricultural land adjacent to the wadi in El Geneina has been cultivated by townspeople for many years, and is hence not available for camp residents

The IDP camps are all located on the fringes of town, facing waterless plains. Over the last four years, they have gradually become extensions of the town, which is benefiting economically from the associated influx of aid and labour

CS 5.3 Krinding IDP camp, Western Darfur

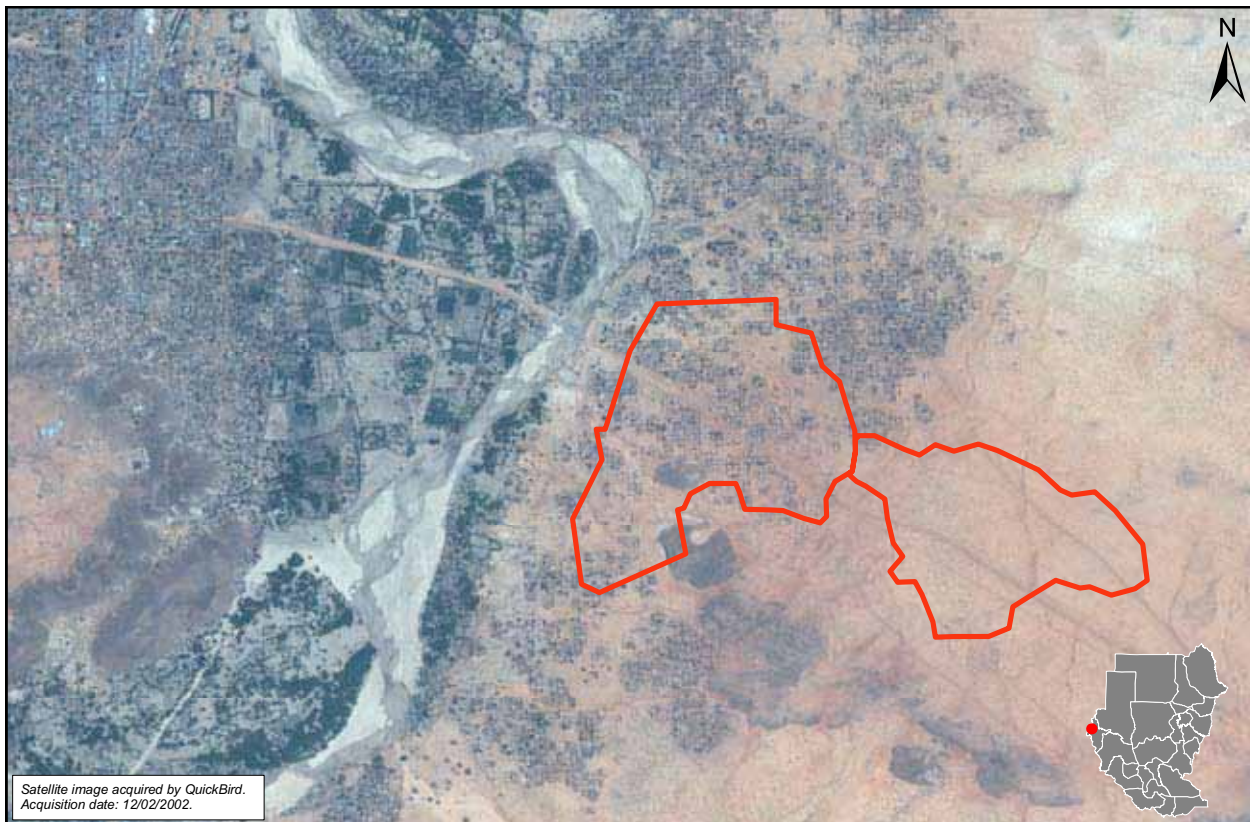
The Krinding IDP camp on the outskirts of El Geneina, Western Darfur, provides an example of the emerging urban environmental issues associated with the Darfur crisis. In economic terms, El Geneina in 2007 is a thriving town driven in part by the relief economy associated with the concentration of IDP camps and related activities in the region. Krinding (one of several camps in the El Geneina area) is located approximately four kilometres south-east of the town centre. Satellite images (see Figure 5.4) and photographs clearly show that the camp is effectively becoming an extension of the town, a fact confirmed by ground inspections. The environmental implication of this situation is that town and camp residents must now share or compete for the natural resources of this relatively dry and infertile region.

Most of the IDP camp residents were originally farmers, but the circumstances here and in most camps in Darfur severely restrict the potential for agricultural self-sufficiency and rural livelihoods. In El Geneina, the prime agricultural land next to the *wadi* was already being intensely utilized (principally for orchards and market gardens) prior to the creation of the camps. Unable to obtain a share in this prime land, the camp residents are left with very limited opportunities for agricultural livelihoods, as other available lands (to the east of the camps) are essentially waterless and suitable only for low-intensity grazing, fodder and fuel collection.

Thirteen kilometres outside the camp, UNEP interviewed a group of women from Krinding harvesting fodder for sale in Geneina markets. This provided a small insight into the practical links between the environment, natural resource competition, camp life and human rights. The women had walked from the camp without escort in a region UN security specialists considered so violent that the UNEP site visit required a dedicated armed escort from the African Union peacekeeping troops. The rape of female camp residents on such gathering missions is unfortunately routine in this region.

Money from the sale of gathered fodder and fuelwood is a small but vital supplement for camp residents who are otherwise completely dependent upon aid. Such efforts, however, bring camp residents in direct competition with locals (both pastoralists and agriculturists) for scarce natural resources, and undermine the sustainability of rural livelihoods in the area.

Figure 5.4a El Geneina (12.02.2002)



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Figure 5.4b El Geneina (15.06.2006)



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The water container queue at a wellpoint in Abu Shouk camp. Each water point services over a thousand people

Unsustainable groundwater extraction in Darfur camps

The provision of clean water is a standard component of the aid supplied to the major camps and settlements in Sudan by the international community. This can be difficult to achieve for a combined camp population of several million, particularly in arid regions. The acknowledged standard for water supply is 15 litres per person per day, and wherever possible aid agencies aim for this as a minimum.

In Darfur, the larger camps are commonly supplied with water via a network of groundwater boreholes fitted with either hand pumps or electric submersible pumps. For the larger camps, supplying to standards all year round is proving to be possible but difficult, requiring numerous deep boreholes (between 30 and 40 m in most cases), and there is a major uncertainty as to whether this rate of supply is sustainable in the drier regions and areas with low-yield aquifers.

In some cases, there are signs that it is not: Abu Shouk camp in Southern Darfur has a population of 80,000 and rising, requiring more than 1,000 m³ of water per day. In 2006, five of twelve boreholes ran dry, indicating a substantial drop in the water table. Unfortunately, as of March 2007, groundwater level monitoring is not being

conducted for any camp in Darfur, making it impossible to determine whether incidents such as the dry wells at Abu Shouk are isolated or rather the foretaste of a much larger problem looming in the future.

Short- to medium-term localized groundwater shortages are unlikely to have a major or permanent environmental impact. However, camps without a viable water supply may need to be moved, with all of the attendant issues, costs and risks that this would entail.

Water pollution

The concentration of a large number of people in temporary dwellings raises concerns for sanitation and bacteriological contamination of surface and groundwater. The standard solution is the construction of pit latrines, though these are not in place everywhere (this is particularly the case for IDP camps).

The most severe pollution problems were observed in IDP camps in the more humid regions of Sudan. UNEP field teams found major water pollution issues surrounding all informal camps visited in Southern Sudan. These same areas were epicentres for the cholera epidemic of 2006 (see Chapter 6). As detailed in Chapters 6 and 10, a lack of field data constrains more detailed analysis of this topic.

5.6 Other environmental impacts of displacement

Uncontrolled urban and slum growth

The majority of displaced people in Sudan are located in or close to towns and cities; there are over two million in the Khartoum region alone. Large-scale migration from the countryside to urban centres has been largely uncontrolled, with the result that a large number of urban slums or informal squatter settlements have been established. Urban slums are associated with a series of environmental and social problems, and are covered in detail in Chapter 6.

The urban issues associated with the north-south conflict have been ongoing for over twenty years. In contrast, the Darfur crisis is now creating new urban problems, as the majority of the displaced person camps are tightly linked to the regional towns and cities and are fast becoming a permanent part of those settlements.

Fallow area regeneration

One minor positive impact of historical displacement has been the natural regeneration of vacated lands. Large areas in the conflict zones have been partly or completely depopulated for a number of years, and this has eased the pressure on the land from farming, grazing, burning and

timber-cutting. The fallow period for the vacated areas ranges from five to twenty-five years. In the moderate to high rainfall regions, the result has been the re-growth of forests. UNEP field teams saw 'new' forests of this type throughout the Nuba mountains and north of Bor in Jonglei state. The distinguishing characteristics of 'new' forests are heavier undergrowth, the lack of fallen and older trees and fairly uniform maximum tree sizes.

The 'new' forests represent a return to a wild habitat that is expected to be reversed if the displaced populations return in equal or greater numbers than were originally present. As such, they represent both a livelihood burden (as trees need to be cleared to grow the first crops) and a windfall asset that could in theory be sustainably managed.

5.7 Environmental implications of the return process

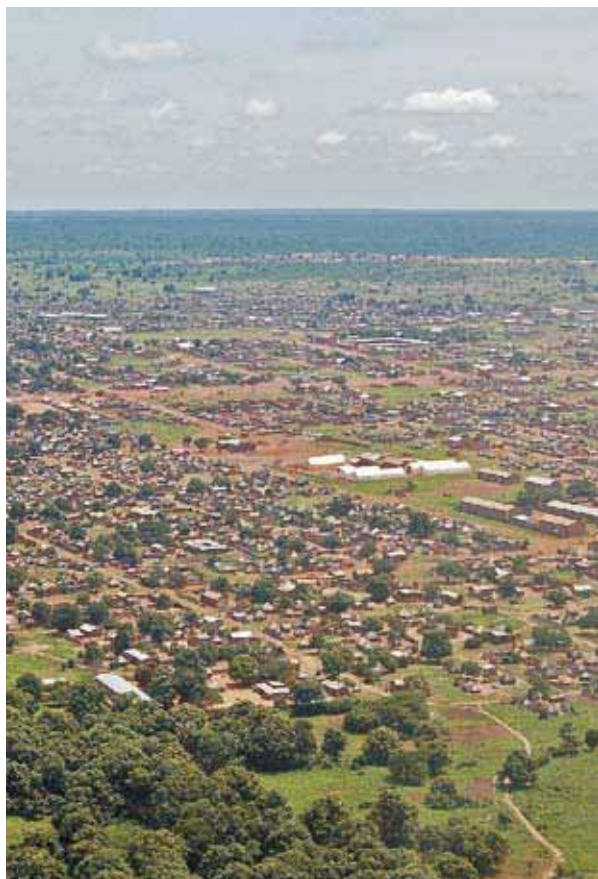
The population return process for Sudan has very significant environmental consequences, which are presently not being addressed. Two major return processes are currently underway:

1. The ongoing return process for the approximately four million people displaced by the north-south conflict. Due to a range of practical, economic and political constraints, this is expected to take several years;



The population return and recovery process in Southern Kordofan has led to a surge in deforestation

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Wau township, Western Bahr el Ghazal. One environmentally significant consequence of the return process for Southern Sudan will be the rapid growth of urban centres

2. The future return process for the approximately two million displaced in Darfur. The current instability is preventing this process from even being planned.

The key environmental question is whether the return areas will be able to support the new populations. Unfortunately, in some specific cases, it is clear that the return process will not be environmentally sustainable in the medium to long term. In the worst cases, environmental issues will make the process unsuccessful and lead to renewed displacement.

The strongest evidence for this unwelcome prediction is the current condition of many of the proposed return areas, where long-term land degradation is visible even with a reduced population. This is particularly clear in the drier Sahel belt and the area immediately southwards.

Badly degraded drylands cannot support high-density rural populations: crop yields are low and livestock-rearing is problematic due to a lack of fodder. Populations living on badly degraded land are frequently forced to move; this is already a common occurrence in the drier states such as Northern Kordofan.

UNEP has conducted a preliminary analysis of the environmental sustainability of the return process for each of the twenty-five states, based on the following factors:

1. current population density;
2. future return population and net impact on population density;
3. current land quality/extent of degradation, estimated by using a combination of desk studies, field reconnaissance and satellite data; and
4. rainfall, as the strongest indicator of resilience to environmental stress, particularly from overgrazing.

While virtually every state has environmental issues associated with displacement and returns, the most vulnerable states are considered to be Darfur (all three states, but especially Northern Darfur), Southern Kordofan, eastern Kassala, northern Blue Nile, northern Upper Nile, and northern Unity state.

The situation in Darfur is particularly clear. Many regions of Northern and Western Darfur are undergoing desertification and land degradation at a significant rate. The rural areas of these regions are now partially depopulated due to the conflict, though some tribes (principally pastoralists) are still present. Given the current condition of the land and the increasingly dry climate, traditional rural livelihoods are no longer viable, so large-scale returns to these areas cannot be recommended.

For most of Southern Sudan, the situation is relatively positive in that the higher rainfall provides for greater agricultural productivity, and hence a greater capacity to absorb returnees. Nonetheless, certain areas – particularly those surrounding major towns – are expected to come under significant stress from the predicted large-scale returns.



Food distribution at the Bor way station. UN-supported returnee families are supplied with two months worth of foodstuffs, seeds, tools and other items to assist their re-establishment

Part of a group of 75 orphans delivered to Padak county under the care of three women and an elder. The urgent priority for returnees such as these is to establish a livelihood, usually crop-raising

The dominant livelihood for most rural Dinka people is a combination of cattle-rearing and slash-and-burn agriculture. While the planned return areas were found to be generally in good to moderate condition, it is doubtful that they could provide sustainable livelihoods for the projected 47 percent increase in population

CS 5.4 The environmental impact of the return of the Dinka to Bor county, Jonglei state

The return of the Dinka people to Bor county in Jonglei state provides a case study in the likely impact of returnees on the rural environment of the south. The Dinka people are agro-pastoralists, combining cattle-rearing with wet season agriculture, and migrating seasonally according to the rains and the inundation of the *toic* (seasonal floodplains). A large proportion of the Dinka in Jonglei state were displaced from their home rangelands by the north-south conflict, and fled to the far south of the country or to refugee camps in Uganda. Localized displacement also took place as people left conflict hotspots and fled to the towns for safety. The conflict and displacement were accompanied by major cattle losses due to theft and abandonment, though some stock was retained and transported south.

In 2006, the UN and a range of NGOs commenced a managed return programme for the Dinka. Able-bodied men drove the cattle up from the far south of the country to the rangelands, while women and children were transported by barge and truck. This organized process of preparation, transportation and provision of supplies resulted (by the second half of 2006) in approximately 7,000 people returning to Jonglei state over a period of six months. This was accompanied by a substantial number of spontaneous and unassisted returns. Each assisted family was supplied with approximately two months worth of food, shelter items, seeds and agricultural tools. Livestock was not supplied.

For the people arriving at the start of the rainy season, the immediate priority was to establish shelter, clear a smallholding and plant a range of crops. This resulted in an upsurge of slash-and-burn clearance and tree felling in the return areas. The geographic extent of this clearance was focused on areas with permanent water supplies and access to community services (roads, schools, and clinics).

The UNEP team inspected a wet season agricultural area located 5 km east of the Nile and 10 km north of the township of Padak. Residents within the local *payam* (district administrative unit) provided relatively detailed statistics on what the returnee process meant for them: for a 180 km² area, the payam had a population of 19,000, giving a density of approximately 100 per square kilometre or one person per hectare. The Jonglei state government had provided the local administrator with an estimate of 9,000 returnees to the *payam* over a few years. Several hundred had already arrived as of April 2006, but when or whether the figure of 9,000 would be reached (particularly when contrasted with the rate of return monitored by the UN) was unclear.

The region still had good tree cover and large patches of fallow land. There was no sign of major overgrazing, soil erosion or soil fertility problems. As such, it was determined that the agricultural livelihood of the current population was probably sustainable. However, whether the area could sustain the projected 47 percent population increase was far from clear, and a significant risk of environmental degradation and food insecurity remained for the longer term, as well as the possibility that some of the population might have to migrate further.

5.8 International aspects of environment and displacement in Sudan

The export of environmental problems to neighbouring countries

The countries neighbouring Sudan host some 700,000 Sudanese refugees. In addition to a range of chronic environmental problems, these countries suffer from the impact of numerous large camps.

Refugees from Darfur in north-eastern Chad, for example, are a considerable burden to their host communities due to their sheer number (400,000 people). Since their arrival in 2003, pressure has mounted significantly on scarce natural resources such as water, fuelwood and fodder for livestock, access to which has often been a source of conflict in the region.

Uduk refugees from the Upper Nile province now living in Gambella refugee camp in western Ethiopia have, in the thirteen years since the camp was established, seriously degraded an area of almost 400 km² by clearing it for agriculture. Rehabilitating this and other areas will require considerable time and resources if the welfare of hosting communities is not to be further degraded.

5.9 Conclusions and recommendations

Conclusion

The links between displacement and the environment in Sudan are clear and significant. Environmental degradation is one of the underlying causes of displacement in dryland Sudan. Unless the process of widespread desertification and other forms of land degradation are halted, large-scale displacement is expected to continue, whether or not major conflict goes on.

The displacement of over five million Sudanese into slums, camps and informal settlements has been accompanied by major environmental damage to the often fragile environments where these settlements have developed. The larger camps, particularly in Darfur, have been epicentres

of severe degradation, and the lack of controls and solutions has led to human rights abuses, conflicts over resources and food insecurity.

The population return process is expected to result in a further wave of environmental degradation in some of the more fragile and drier return areas. In the worst cases, such as Northern Darfur, large-scale rural returns may be simply untenable as the remaining natural resources are so limited and degraded that rural livelihoods can no longer be supported.

Background to the recommendations

Because international humanitarian aid organizations are by far the strongest actors in the area of IDP and refugee camp management, recommendations linked to camps and returns are generally addressed to this community. Nonetheless, close government involvement (by both GONU and GOSS) is necessary and assumed. All recommendations are short-term (0.5 - 2 years).

Two key policy issues must be addressed by the relief community. First, the current approach to the environmental impact of camps in Sudan, particularly regarding deforestation, is largely to ignore it (with some creditable exceptions). This is not due to local attitudes or a lack of standards or other guidance on this topic – what is missing is sufficient investment in this area. This needs to be addressed at the highest level to improve the current imbalance between daily humanitarian needs and long-term sustainability.

Second, a fundamental principle of displaced population assistance is the 'right to return' to the original site of displacement. For the drier parts of Darfur, however, this issue needs to be critically examined in the context of desertification and intense competition for natural resources. Assisting people to return to areas which can no longer sustain them is not a viable solution for camp closure.

In the detailed recommendations set out below, it should be noted that while UNHCR is designated as the primary beneficiary for its role in the oversight of the displaced population issue, the actual beneficiaries are the displaced populations themselves.



Elders from Shaggarab camp and hosting communities inspect a year-old acacia tree plantation

Together with officials from the Forests National Corporation and the Commissioner for Refugees, representatives from both the hosting and the refugee communities inspect progress on preparations for a community tree nursery in Fau 5 camp

CS 5.5 Community-based rehabilitation of refugee-impacted areas in eastern Sudan

Some of the largest and longest-lasting refugee caseloads in Africa have been those of Ethiopian and Eritrean refugees settled in eastern Sudan (principally in Gedaref and Kassala states). The impact of such a large number of people – some 1.1 million refugees at its climax in 1985 – has been significant in environmental as well as social and economic terms.

In October 2002, a multidisciplinary assessment mission developed a comprehensive proposal to address the issue of camp closure and rehabilitation needs in the affected area. Initiated by UNHCR and the Government of Sudan, the Sustainable Options for Livelihood Security in Eastern Sudan (SOLSES) Programme was conceived as a scaling-down exercise of UNHCR's presence in the region, with simultaneous preparation for the hand-over of assets to local communities and authorities, as well as some environmental rehabilitation. Needs assessments were carried out to evaluate peoples' actual and anticipated needs from a range of environmental resources, as well as for health and education facilities, and water and sanitation.

The environmental component of the SOLSES Programme is managed by IUCN - The World Conservation Union. Its point of departure is the engagement of beneficiaries (both refugees and local communities) with clear links to the state's development plan and processes, through community environmental management planning.

By November 2006, Community Environment Management Plans had been established for nine refugee-impacted areas in the central states (Sennar and El Gezira), as well as for the Setit region in Kassala state. The development of such plans has been an important part of the overall needs assessment of affected communities, some of which include refugees who are not able to return to Eritrea. Many of these people have lived in camps for more than thirty years, and are essentially already integrated into the local community (in some instances it is no longer possible to determine between a camp and a local village).

Support through SOLSES is intended to build peoples' capacities and expertise so that they might become self-sufficient and, at the same time, less reliant or better able to manage the natural resources they still depend on.

Agroforestry and community/compound tree-planting have become an important component of the work to support sustainable development and income generation. In its first year alone, the sale of products from a two-hectare irrigated agroforestry plot in the Mafaza former refugee camp generated USD 1,200 in revenue. Developing management plans for forests that were established in the past fifteen to twenty years, and ensuring that these resources are cared for in the future are also part of the overall strategy. In 2005, for example, more than 14,000 ha of forest were handed over to local communities or state authorities for future management. In addition, the programme is working with local communities and forestry authorities to reafforest important areas as community forests.

As community members become more familiar and convinced of the approaches promoted through SOLSES, the programme is also helping to respond to other pressing needs, far beyond the original concept of environmental rehabilitation, such as the provision of clean water and waste disposal, the use of agricultural chemicals, and the diseases caused by dirty water or mosquitoes. It is important that environmental concerns, issues and opportunities be pro-actively built into all SOLSES and related activities in the future.

5 POPULATION DISPLACEMENT AND THE ENVIRONMENT

Recommendations for the international community

R5.1 Implement an IDP and refugee camp environmental and technical assistance project for Darfur. This project should include the provision of training, technical advice and guidelines for camp planners and management staff, and a number of small demonstration projects at the larger camps.

CA: TA; PB: UNHCR; UNP: UNEP; CE: 1.5M;
DU: 3 years

R5.2 Develop and implement a plan to resolve the Darfur camp fuelwood energy crisis. There are numerous options available and many studies have been conducted, so any major programme should be preceded by a rapid options analysis and feasibility assessment. Major investment is needed to address this large-scale problem.

CA: PA; PB: UNHCR; UNP: UNEP; CE: 3M;
DU: 3 years

R5.3 Conduct an environmental impact assessment for the return process for Southern Sudan and the Three Areas, and develop plans for impact mitigation. The assessment should also provide guidelines for state, county and *payam* (district administrative unit) officials. Area plans should be developed for identified hotspots.

CA: AS; PB: UNHCR; UNP: UNEP; CE: 0.5M;
DU: 1 year

R5.4 Conduct an environmental impact and feasibility assessment for the return process in Darfur. The assessment should be a multi-agency effort and focus on the potential for the projected return areas to adequately sustain rural livelihoods in the event of peace.

CA: AS; PB: UNHCR; UNP: UNEP; CE: 0.3M;
DU: 1 year



The devegetated outskirts of this IDP camp near Zalingei in Western Darfur clearly illustrate the impact of the concentrated exploitation of natural resources that were scarce to begin with