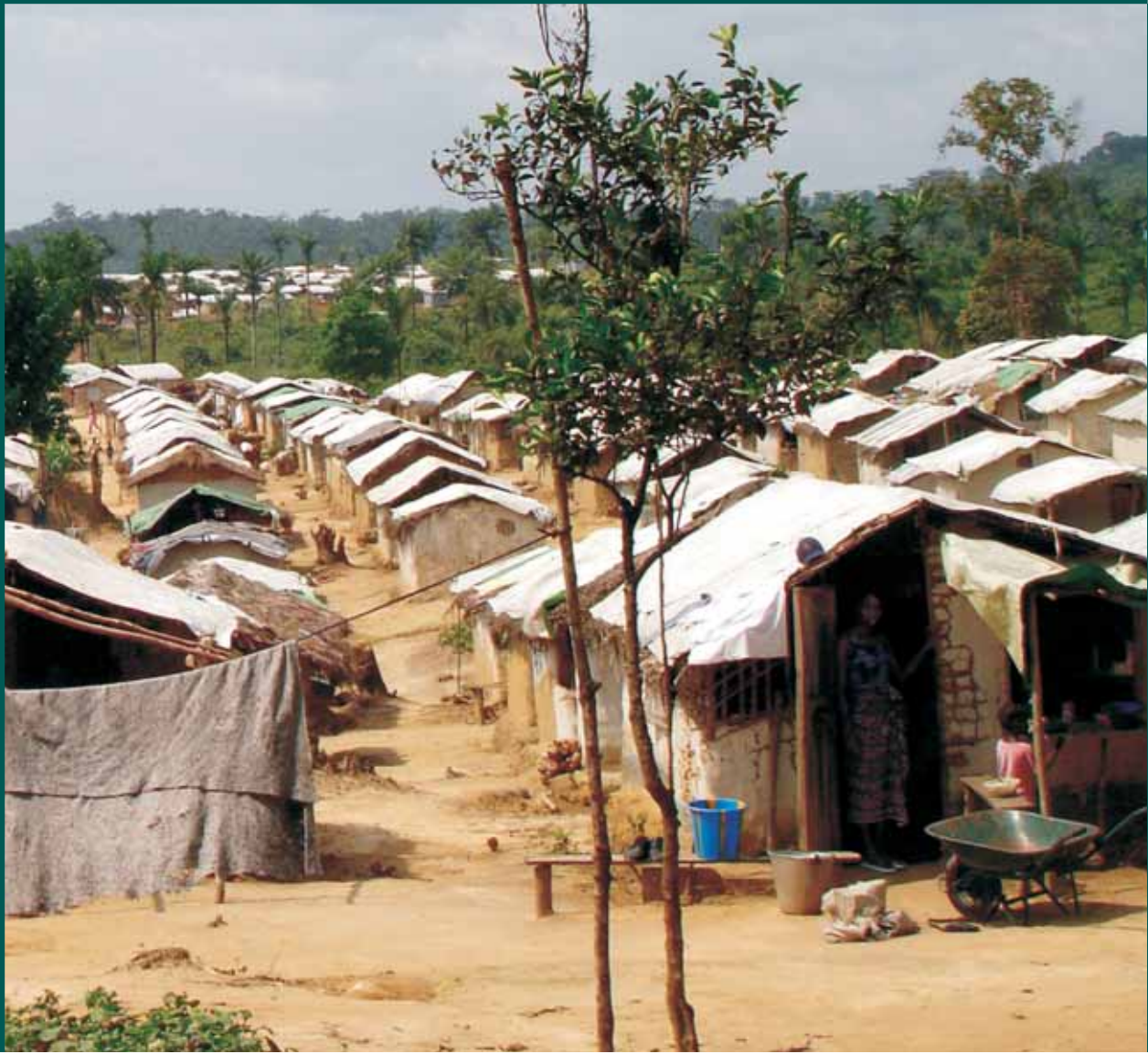




# Environmental considerations of human displacement in Liberia

A guide for decision-makers and practitioners



## ABOUT THIS *GUIDE*

The environmental impacts of human displacement are not always fully appreciated. Some, like the loss of vegetation cover, are immediate and lasting while others, such as water pollution or depletion of groundwater reservoirs, may take longer to become apparent.

This *Guide* illustrates the importance of taking environmental considerations into account when dealing with displaced people such as refugees or IDPs, as well as when preparing for resettlement and reintegration. Although the circumstances of planning and managing a refugee or IDP camp may be quite different, some of the environmental issues may well be the same. This *Guide* therefore provides decision-makers and practitioners with a generic overview of the key environmental issues and concerns relevant to displacement, and directs readers to additional technical information. Extracting useful learning from one situation and demonstrating how such knowledge could be applied to others is indeed one of the main purposes of this document.

The environmental impacts of refugee operations, in particular, have been highlighted in the past decade through work by the United Nations High Commissioner for Refugees and other agencies. UNEP recognizes that a considerable wealth of information already exists on the basic aspects of environmental management and displaced populations. The purpose of this *Guide* is not to duplicate such information but rather to make it more readily available in Liberia and other post-conflict situations. For this reason, some of the most relevant technical guidance published by other organizations has been reproduced on a compact disc included with this *Guide*.

This *Guide*, however, goes beyond merely restating facts and figures which may already be known to some of its intended users. Following a request from the Government of Liberia and other UN agencies, UNEP has tailored information relating to camp management and environmental rehabilitation to the specific needs of Liberia, as it emerges from almost 15 years of conflict. With the advent of peace, hundreds of thousands of people – both those who remained within the country as IDPs and those who fled to neighbouring countries – are on the move. The *Guide* includes a series of specific case studies which not only describe how and when environmental considerations were taken into account, and the marked improvement that followed in certain situations, but also illustrate problems that arose with regard to natural resource use and management on account of ill-informed decisions or decisions not being taken at all.

The main focus of this *Guide* is on planned camp situations. Some of the principles and techniques, however, are equally applicable in other settings, such as dispersed settlements. Core issues such as proper sanitation and hygiene, as well as access to safe drinking water and security remain the same, regardless of the circumstances. These and a range of other issues should also be borne in mind when planning for the resettlement and reintegration of displaced populations.

# H

## OW TO USE THIS GUIDE

The underlying challenge addressed in this *Guide* is how to deal with environmental matters at times of mass human displacement. This *Guide*, which is arranged in five main sections, distils best practices from a range of humanitarian operations and referenced sources. Direct reference, however, is given to the situation in Liberia through a series of Case Studies. In addition to having hosted close to 500 000 internally displaced persons for almost 15 years, Liberia is now faced with the new challenge of resettling and reintegrating nearly 800 000 people. The issue of conflict-induced human displacement and its impact on the environment is discussed in the **Introduction** to this *Guide*.

Issues and impacts relating to the **Environment and the Camp Management Cycle** are examined in Section 2, from the initial identification of a potential site for a camp (2.2), through its planning (2.3), establishment (2.4) and management (2.5), to eventual closure (2.6) and rehabilitation of the environment (2.7). Although written with a focus on the entire camp management process, many of the lessons learned are equally applicable to resettlement and reintegration.

Section 3 (**Environmental Concerns in the Resettlement and Reintegration Process**) looks in more detail at some of the main environmental issues in relation to the return process. This is aimed mainly at decision-makers, since it is they who have the authority to ensure that environmental considerations are adequately taken into account at such times.

Given the many links between the different stages and activities of an operation and the physical environment, particular attention is given in Section 4 (**Environmental Considerations Relating to other Sectors**) to some of the main options for dealing with issues such as domestic energy (4.1), water and sanitation (4.2), construction (4.3) and agriculture (4.4). This section illustrates that the “environment” is not only about planting trees and promoting fuel-efficient stoves, but encompasses a whole range of inter-related issues which are essential to build and re-establish people’s livelihoods and their security, for example income-generating activities (4.7).

To help field practitioners, in particular, apply some of the principles and best practices described above, some additional guidance is provided in Section 5 (**Tools and Approaches for Improved Environmental Planning and Management**) on a range of helpful tools and approaches. Contingency planning is outlined in Section 5.1. Also included in this section are some of the proven means of conducting an environmental assessment (5.2), of establishing a monitoring system (5.3) and of organizing an evaluation (5.4).

This *Guide* draws on a vast array of experience documented by many agencies (UN agencies, government departments and national and international organizations) and individuals. Detailed **References and Additional Reading** materials are listed in Section 6. The full text of many key references is included on a compact disc housed on the inside back cover of this *Guide*. Certain tools are also found on the CD: others are likely to be added to this resource in future and can be accessed on:

<http://postconflict.unep.ch/liberia/displacement/>



DAVID STONE



GRANT WROE-STREET



UNEP LIBERIA

As part of UNEP's awareness-raising and capacity-building support to Liberia, practitioners from a range of government agencies and national and international non-governmental organizations attended a series of training workshops focussing on the environmental considerations of human displacement, which included on-site visits and assessments (top left). Guided tuition was provided by UNEP staff and technical advisors (top right). Consultation was also held with local community stakeholders to, for example, determine some of their needs following closure of former IDP camps with regard to possible rehabilitation of the environment (bottom). Information gathered in Liberia has been incorporated into this *Guide*.



# Environmental considerations of human displacement in Liberia

A guide for decision-makers and practitioners

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## ABBREVIATIONS AND ACRONYMS

ARC	American Refugee Committee
CAP	Consolidated Appeal Process
EFA	Environmental Foundation for Africa
FLR	Forest Landscape Restoration
GIS	Geographical Information System
IASC	Inter-Agency Standing Committee
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
IFRC	International Federation of the Red Cross and Red Crescent Societies
ILO	International Labour Organization
ITTO	International Tropical Timber Organization
IUCN	The World Conservation Union
LRRRC	Liberia Refugee Repatriation Resettlement Committee
NGO	Non-governmental organization
NTGL	National Transitional Government of Liberia
OCHA	Office for the Coordination of Humanitarian Affairs
PRA	Participatory Rural Appraisal
RFTF	Results-Focused Transitional Framework
RRS	Resettlement and Reintegration Strategy
RSAP	Rural Shelter Assistance Project
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNMIL	United Nations Mission in Liberia
WFP	World Food Programme

### Measurements

kg	kilogramme
km <sup>2</sup>	square kilometre
ha	hectare
m	metre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre

## GLOSSARY

Basic definitions for terminology used in this *Guide* are provided below.

**Biome** – A biological subdivision of the Earth’s surface that reflects the ecological character of vegetation, e.g. rain forest or desert.

**Carrying capacity** – The maximum number of a given organism, or population, that a particular environment can sustain.

**Consultation** – A two-way exchange of information, comments, ideas and suggestions. Consultation outputs are considered as inputs for decision-making; they must be taken into account, but need not determine decisions.

**Disclosure** – Provision of culturally acceptable (e.g. language to be used) and timely information to stakeholders, giving them a chance to understand it, seek clarification and respond in an informed manner during consultations.

**Ecologically sensitive area** – Habitats such as wetlands, aquifer recharge zones, important wildlife habitats and so forth which are, or might be, sensitive to degradation or destruction by human activities.

**Ecosystem** – A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, as well as the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest, or the Earth’s biosphere – but it always functions as a whole unit. Ecosystems are commonly described according to the main type of vegetation (e.g. forest ecosystem, old-growth ecosystem or range ecosystem).

**Ecosystem integrity** – The degree to which the fundamental ecological processes (e.g. water and nutrient cycling, the flow of energy and biodiversity) are maintained.

**Ecosystem services** – The benefits which an ecosystem provides, which include storing water, preventing soil erosion, nutrient recycling and serving as a source of genetic diversity (see also Box 1).

**Ecosystem services value** – A measurement of the economic value (expressed in this instance per hectare per annum) of specific ecosystems such as a wetland or tropical forest (based on Costanza et al., 1997).

**Ecosystem services value zone** – A map of the estimated average global value of annual ecosystem services per hectare.

**Entry point** – The geographical location where displaced people cross from one country to another or from a conflict zone to a more secure area.

**Family plot** – A piece of land allocated to an individual family (in this context an IDP, refugee or returnee family) for their own management.

**Forest Landscape Restoration (FLR)** – A process that aims to regain ecological integrity and enhance human well-being in deforested or degraded forest landscapes.

**Internally Displaced Person (IDP)** – The term “internally displaced person” relates to persons or groups of persons who have been forced or obliged to flee or leave their homes or places of habitual residence as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized border (UN Guiding Principles on Internal Displacement, 1998).

**Organic waste** – Waste material that comes mainly from animal or plant sources. Organic waste can generally be consumed by bacteria and other small organisms.

**Participation** – A process by which stakeholders are active and equal partners in decision-making, and may have shared ownership and control over project/programme design and implementation (and also eventual evaluation).

**Permaculture** – Permaculture is the design of sustainable human habitats. It is based on the observation of natural systems and uses ecological principles to increase diversity and productivity of local human ecosystems. Permaculture designs incorporate food, energy and shelter for people and animals while linking the needs and outputs of each element of the system. The result is a dynamic yet stable system that sustains itself. Permaculture designs can be developed for any climate and on any scale, from household plots to entire villages.

**Protected area** – Portions of land protected by special restrictions and laws for the conservation of the natural environment. They include large tracts of land set aside for the protection of wildlife and its habitat; areas of great natural beauty or unique interest; areas containing rare forms of plant and animal life; areas representing unusual geologic formations; places of historic and prehistoric interest; areas containing ecosystems of special importance for scientific investigation and study; and areas that safeguard the needs of the biosphere.

**Refugee** – As defined in the 1951 Convention and the 1967 Protocol Relating to the Status of Refugees, a refugee has had to leave his/her country “owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership in a particular social group or political opinion”. According to the 1969 OAU Convention and the 1984 Cartagena Declaration, refugees may also be persons fleeing the indiscriminate effects of armed conflict, situations of generalized violence, foreign aggression or other circumstances which seriously disturb public order.

**Rehabilitation** – The full or at least partial restoration of (in this instance) degraded landscapes and/or impaired ecosystem services to their state prior to the arrival of refugees or IDPs. In some situations, landowners may deliberately choose not to rehabilitate impacted lands but rather to leave them in the state they are in (e.g. under agriculture or forest) or to transform them. A rehabilitation programme should, however, leave a former hosting area safe for future habitation and use.

**Reintegration** – The achievement of a sustainable return, i.e. the ability of returnees to secure the political, economic and social conditions to maintain their lives, livelihoods and dignity.

**Resettlement** – Action(s) necessary for the permanent settlement of persons displaced or otherwise affected by a disaster to an area different from their last place of habitation (UN Department of Humanitarian Affairs, 1992).

**Returnee** – A refugee or IDP who has returned to his/her country or community of origin, whether spontaneously or in an organized manner.

**Transit camp or transit centre** – A temporary arrangement (perhaps already existing municipal structures) to accommodate displaced people securely, where they may be registered and wait for further assisted transportation to an established camp. Transit camps may exist for a few days or several months.

**Vulnerability** – The extent to which a community, structure, service or geographic area is likely to be damaged or disrupted by the impact of a particular hazard (Tobin and Montz, 1997).

**Water catchment** – An area, often a combination of mountain ranges and basins, that ‘catches’ rainfall or snow. Water from rain or snowmelt is absorbed into the soil and stored in underground reservoirs, or is fed into a river, aquifer, or lake.

**World Heritage Site** – A designated and protected site of great cultural significance or a geographic area of outstanding universal value. Mount Nimba (shared between Guinea, Côte d’Ivoire and Liberia) is a World Heritage Site recognized by Guinea and Côte d’Ivoire, but not by Liberia.



# F

## OREWORD

Human displacement has featured prominently in Liberia's recent history. The country's protracted conflict forced an estimated 800 000 civilians from their homes. More than half of these people had, until early 2006, been living as internally displaced persons (IDPs), many of them in congested camps built for this purpose. Others found themselves living under similar conditions as refugees in neighbouring countries which had granted them asylum.

One cannot expect such a massive scale of population upheaval – and the associated humanitarian relief operations to assist them – to have had no consequences. Clear social and economic impacts were apparent from the outset; many remain today. What was not taken into account until recently, however, was the impact of this displacement on the environment.

The urgency of humanitarian concerns during refugee and IDP movements means environmental considerations are not always taken into account. This places extra responsibility on organizations and authorities to incorporate such considerations into the planning process. Failure to do so will likely have a negative effect on the very people they seek to help. In a worst case scenario, new cycles of displacement could be sparked over conflict relating to the use of natural resources.

A number of potential environmental impacts associated with refugees and IDPs were highlighted – perhaps for the first time – as a result of UNEP's work in 2003 and 2004, as part of the United Nations and World Bank Joint Needs Assessment for Liberia. A large body of environmental management knowledge was known to exist from previous refugee operations – including UNHCR's *Environmental Guidelines* (UNHCR, 1996 and 2005), a range of UNHCR environment-related handbooks, and the Norwegian Refugee Council's *Camp Management Toolkit* (2004) – but virtually no such information was specific to Liberia. Moreover, there was little knowledge in Liberia that these resources actually existed and could help with planning and decision-making.

UNEP sought to address this gap as part of a broader project entitled '*Strengthening Capacities for the Integration of the Environmental Dimension in Refugee and IDP Settlements and Flows in Angola, Liberia and Sierra Leone*'. Financial assistance from the governments of Norway and Sweden enabled an appropriate response to be implemented in Liberia. Starting with basic needs assessments and a review of existing literature, two capacity building workshops were designed and organized in Monrovia for Liberian practitioners and decision-makers.

Based on these experiences, UNEP has further assisted and encouraged national organizations and other members of the United Nations to ensure that assessments are now made of what needs to be undertaken to make former camps safe and to rehabilitate degraded sites. At the same time, UNEP has urged those agencies responsible for the return process to ensure that timely and appropriate plans and environmental management programmes are put in place for returning individuals and families, as well as receiving communities. Sound management of natural resources is equally important during this process, since these are expected to form the basis of future livelihood security strategies for formerly displaced people.

In order to strengthen the planning process, this guide also demonstrates how geographical information system (GIS) technology can be used to illustrate the value of ecosystems across the whole of Liberia and to identify environmentally vulnerable areas. It is hoped that these models will be used as a tool to inform decisions on the location and management of future camps for displaced people – should these ever be required in Liberia or neighbouring countries. At the same time, the tool could also be useful in the selection of sites for resettlement.

This *Guide on the Environmental Considerations of Human Displacement in Liberia* would not have been possible without information and assistance provided by a broad range of humanitarian and environmental agencies and organizations in Nairobi, Geneva and, most importantly, in Monrovia. Particular mention should be made of the assistance provided by the Government of Liberia, most notably by the staff of the Liberia Refugee Repatriation Resettlement Committee and the Environment Protection Agency.



## 1

## INTRODUCTION

Population movement – forced or voluntary – is a global phenomenon. It is often unpredictable and can be of sizeable proportions and long-lasting. In addition to the human suffering, social unrest and economic disruption that such events typically cause, there is a growing awareness of the impact that displaced human populations have on the physical environment.

This section highlights the different situations that define the status of displaced people (1.1, **Displaced Populations**), but with a particular emphasis on the case of Liberia (1.2, **Population Displacement in Liberia**). Liberia still hosts refugees from neighbouring countries but, until recently, was also host to approximately half a million IDPs.

In addition, it is now receiving several hundred thousand returnees, mainly from countries in West Africa. Given that considerable numbers of people are currently being physically relocated within the country, further environmental impact is probably inevitable (1.3, **Population Displacement and the Environment**).

It is important, however, to try to balance the negative impacts that often accompany such relocation with well-planned settlements, which will not only provide security and the prospect of improved livelihoods to people returning home, but also promote and enable a more sustainable management of Liberia's environment and rich natural ecosystems.

## 1.1 DISPLACED POPULATIONS

People are displaced for different reasons: war, natural disasters, loss of livelihood, and the aspiration to better prospects elsewhere are among the main causes. Some of these movements are coordinated and involve perhaps a few hundred or thousand people. Larger-scale movements of half a million people or more are more complex, lack structure or coordination and invariably have considerable social, environmental and economic impacts, many of which are negative and long-lasting.

Five broad categories of displaced persons can be identified:

- **internally displaced persons (IDPs)** – persons or groups of persons who have been forced or obliged to flee or leave their homes or places of habitual residence,



REUTERS/VASILY FEDOSENKO

23 August 2003: Thousands of Liberians head into Cotton Tree, some 50 km from Monrovia, fleeing fresh fighting east of the capital. Rebel fighters from LURD (Liberians United for Reconciliation and Democracy) have pulled out of the coastal capital but the challenges of disarmament remain. Skirmishes still take place in the hard-to-reach interior.

as a result of, or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized border (UN Guiding Principles on Internal Displacement, 1998):

- **refugees** – people who “owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, are outside the country of their nationality, and are unable to or, owing to such fear, are unwilling to avail themselves of the protection of that country...” (1951 Convention relating to the Status of Refugees);
- **returnees** – refugees or IDPs who have been able to return to their country, if not their place of origin, whether spontaneously or in an organized manner;
- **environmentally displaced people** who are the victims of worsening environmental conditions such as drought, or a disaster like a tsunami or earthquake; and
- **voluntary migrants** who have chosen to leave their homes for personal gain.

While all displaced people share the fact that they have left their former homes and livelihoods, the conditions and causes for such movements may differ considerably. So too does the level of recognition and the degree of support and protection afforded to such people by governments, other national agencies and the international community. For example, in situations where people no longer enjoy the protection of their own state and have crossed an internationally recognized border to seek safety, the United Nations High Commissioner for Refugees (UNHCR), in close collaboration with the host government, works to ensure the rights of refugees and persons seeking asylum<sup>1</sup>.

In contrast, this is not always the case for IDPs, even though they are a country's own citizens who should be able to enjoy the protection of their own government. Liberia is one of many countries where IDPs have had valid concerns for their own welfare and well-being, and have hence been a major concern for the international community. Indeed, in cases where the national government is not able to meet the needs of IDPs effectively, it has to date largely been the international community that has contributed to enhancing their protection<sup>2</sup>. As there is no single organization that deals with IDPs, a collaborative approach with a clear allocation of responsibilities among the actors involved has most often been applied in situations of internal displacement. This has been the case in Liberia.

Irrespective of their legal status, however, forced migrations have consequences for the environment; some of these are discussed in more detail later in this *Guide*. Through its experience in many post-conflict situations, the United Nations Environment Programme (UNEP) is one of the agencies concerned with such environmental impacts. In the case of Liberia, its role has been – through this *Guide* – to highlight options for better management of the environmental impacts of human displacement, with a view to protecting the country's natural resources base and preventing people's livelihoods from being further impacted.

Liberia is not alone in this situation. Worldwide, refugees and IDPs together account for at least 35 million people, but this does not take into account the significant number of people across the globe who may have been affected by a natural or man-made disaster that has caused them to move. Moreover, all evidence points to the fact that the number of displaced people is still on the increase – if sea levels continue to rise, as has been predicted, millions of people are likely to be forced from their current homes.

Given the large and increasing number of people affected, as well as the potential scale of related environmental consequences, it is imperative that governments and the international community begin paying attention to this matter.

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<sup>1</sup> For more detailed information about refugees and UNHCR's mandate please refer to [www.unhcr.org](http://www.unhcr.org)

<sup>2</sup> For more detailed information about IDPs please refer to the Internal Displacement Monitoring Centre (formerly the Global IDP Project) at <http://www.internal-displacement.org/>

## 1.2 POPULATION DISPLACEMENT IN LIBERIA

### 1.2.1 Recent history

Almost 15 years of civil war have resulted in a considerable number of IDPs in Liberia, as well as a high number of Liberians who have sought refuge in neighbouring countries. An estimated 800 000 people, of which more than half are IDPs, have been displaced as a result of the conflict. The fluctuating presence of refugees living in Liberia, mainly from Sierra Leone and Côte d'Ivoire, must further be added to these numbers (UNHCR, 2005). In a country where the population is estimated at approximately 2.9 million, these figures are a stark illustration of the scale of the upheaval that has taken place.

Since November 2003, the humanitarian community has operated under the assumption that there were approximately 500 000 IDPs in Liberia, living in official IDP camps, informal settlements or with host families and communities (OCHA/UNHCR, 2004). According to this source (based on a shelter-to-shelter survey of households in 20 of the 22 official camps in Montserrado, Margibi and Bong counties), as well as to a later



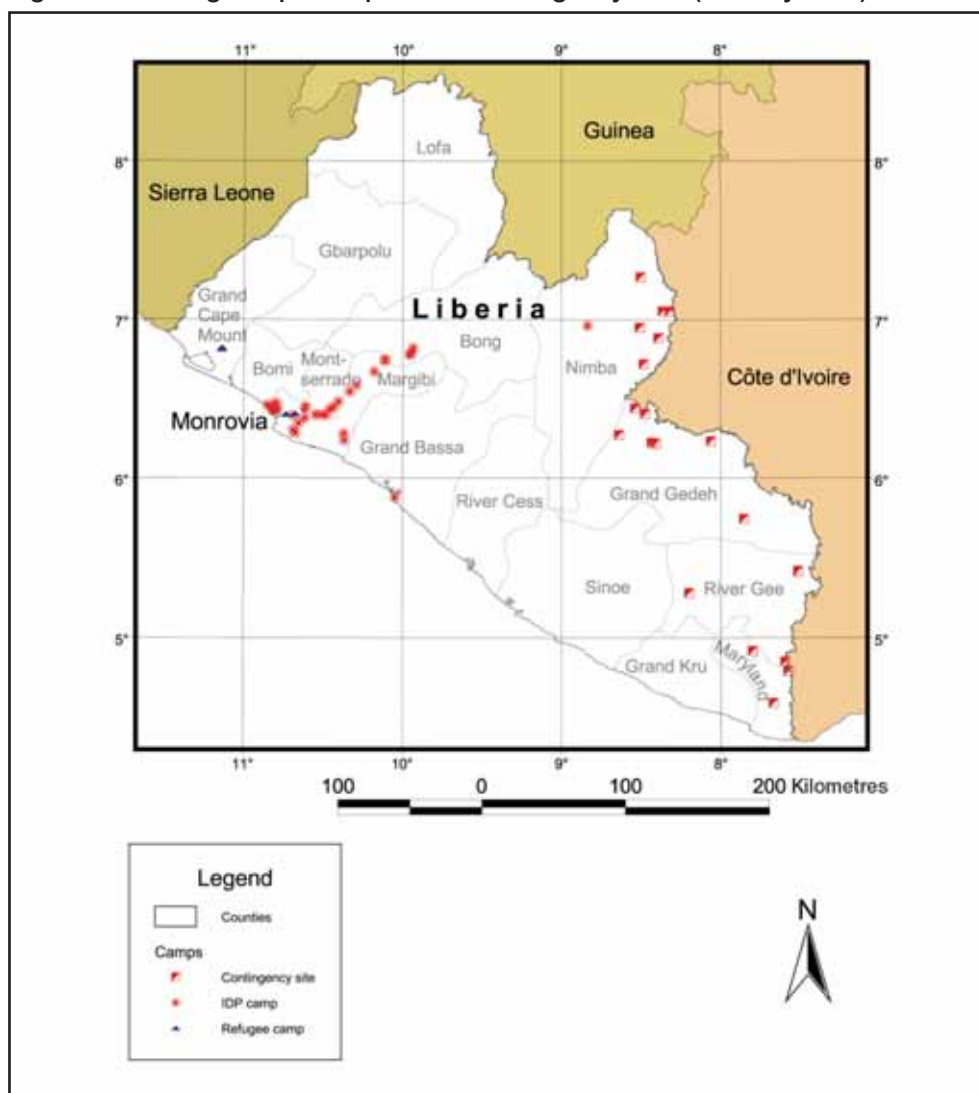
REUTERS/LUC GNAGO

17 July 2003: Refugees carry their belongings as they leave Jah Tondoh refugee camp, located about 20 km from rebel-held positions. Liberian rebels battled their way closer to the capital, Monrovia, sending weary civilians scurrying for refuge and heightening fears of a third assault on the city in two months.

registration conducted by the World Food Programme (UNHCR, 2005), 261 886 people were living in the 20 official IDP camps that were surveyed. Wilson IDP camp in Montserrado County was the largest in the country, housing over 28 000 people. Sinje 3, in Montserrado County, was Liberia's smallest camp, with just 2 482 residents. Montserrado county, however, hosted the most displaced people: 163 523 at the height of the conflict, more than twice that of Bong County.

Figure 1 illustrates where IDPs and refugees have been hosted in Liberia. Also shown are a number of possible contingency sites or possible entry points for refugees in the event of a renewed crisis in Côte d'Ivoire, which might cause people to flee into Liberia (see Case Study 12 for more details).

Figure 1. Existing camps and potential contingency sites (January 2006)



## Location of IDP and refugee camps indicating the scale of environmental vulnerability of each camp

Until recently, Monrovia hosted a high concentration of IDPs and refugees, both within and around the city, as well as in camps spread out to the north-east along the road to Gbarnga (Figure 1). To the north of the city and the St Paul River, nine camps were located within a radius of just 4 km, constrained by the sea on one side, the St Paul River to the south and a smaller river to the north. Remaining camps in this region were more evenly spread out along the road, some 4-10 km apart.

Given the population density, the crowded living conditions and the need to obtain basic items such as fuelwood, building poles and thatching materials from the surrounding environment, it is not surprising that a range of environmental impacts have become apparent. The close proximity of these camps to each other also meant that the zone of impact was extensive and contiguous, stretching from the coast to almost 120 km inland. Moreover, it passed through an agricultural area as well as a large industrial plantation, and skirted around areas of mixed agriculture and forest near Gbarnga.

Finally, a drainage and catchment analysis undertaken as part of UNEP's vulnerability mapping exercise, revealed that fifteen of the existing camps in this region were situated upstream of the proposed Marshall protected area, located on the coast, south-east of Monrovia (see Figure 2). Given the high number of people who lived in this catchment as a result of the protracted conflict, water flowing to the coast could bear a very high level of silt and other pollutants.

Figure 2. Catchments with camps that drain into the Marshall wetlands

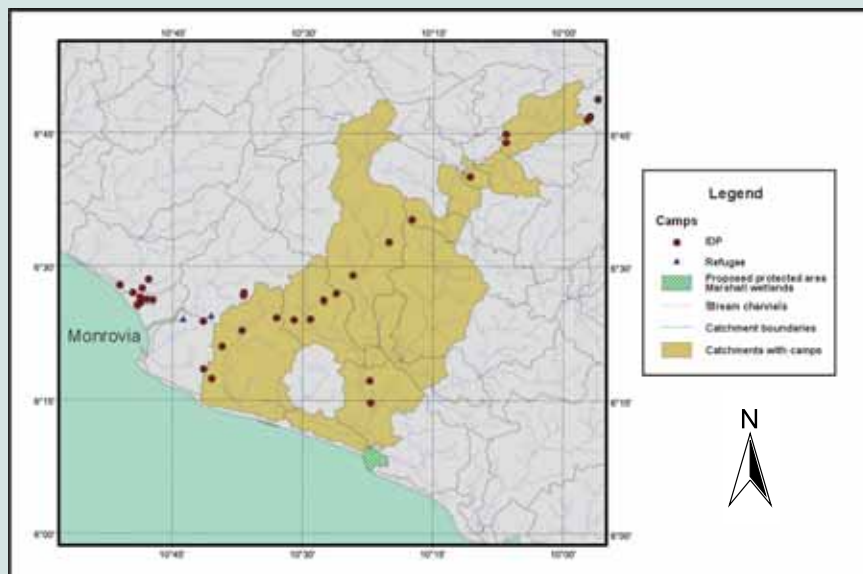


Figure 3 shows the location of refugee and IDP camps in Montserrado and neighbouring counties, together with an analysis of the **environmental vulnerability** – a measure of the threat to the surrounding ecosystems – of the camps' location. The vulnerability zones range from low (green), to medium (blue), and high (magenta and red).

### Box 1. What is an ecosystem service?

Ecosystem services are the benefits that an ecosystem provides. Some of the services and functions fulfilled by Liberia's terrestrial environment – its forests, rivers and lakes primarily – include:

- storing and retaining water;
- regulating water flows;
- preventing soil erosion;
- acting as a refuge for biological diversity;
- acting as a source of important genetic resources;
- nutrient recycling; and
- cultural and recreational functions.

In this part of the country, the highest ecosystem service values are found along the coast. Buchanan IDP camp in Grand Bassa County was the only camp in the entire south-eastern region but, as it was in close proximity to a coastal area of high ecosystem service value (see Box 1 and Case Study 3), it was in an environmentally highly vulnerable situation. Additional information on this technique is described in Section 5.1 (**Contingency Planning**) and Annex III.

In order to minimize their environmental impacts, camps such as these should be more

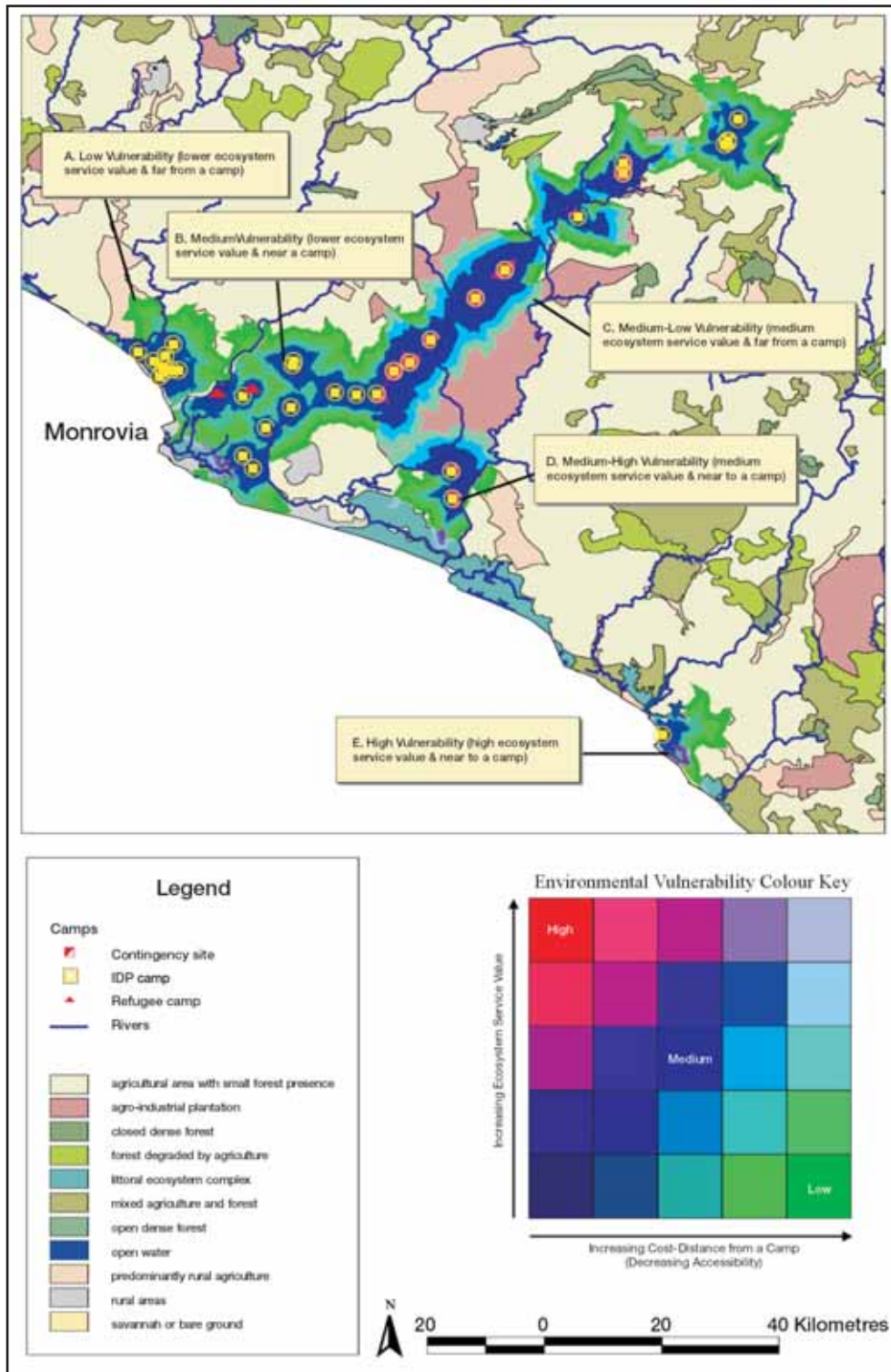
widely spaced in the landscape and, ideally, be smaller. Either step would prevent the environmental footprints of such camps from converging, and hence place less pressure on the local environment. Attention, however, also needs to be given to the location of camps in relation to the drainage network, as some impacts may be experienced off-site, further than the precise camp location, where drainage networks converge.

## 1.2.2 An improved situation

After the signing of Liberia's peace accord in August 2003, the installation of a transitional government and the deployment of a UN peacekeeping force, it became possible for people to start returning home. In addition to the large number of IDPs living in Liberia, 341 300 Liberians had sought refuge outside the country, mainly in Guinea (149 600 people), Sierra Leone (67 200), Côte d'Ivoire (74 200) and Ghana (42 400).

Starting in earnest in 2004, Liberian refugees began to return spontaneously from the borders of neighbouring countries. Tripartite agreements signed in September 2004 between the Government of Liberia, UNHCR and, respectively, the governments of Côte d'Ivoire, Ghana, Guinea and Sierra Leone, provided a legal framework for more

Figure 3. Environmental vulnerability of refugee and IDP camps around Monrovia





formal repatriation operations and spelled out the rights and obligations of each party. UNHCR launched and facilitated a voluntary repatriation operation for Liberian refugees in October 2004.

Encouraged by the improved security situation, a number of IDPs also started to return to their areas of origin, or moved elsewhere in Liberia. By April 2006, the return of almost 60 000 refugees to Liberia had been facilitated. Similar assistance had been provided to more than 314 000 IDPs. An estimated 200 000 people are believed to have returned spontaneously, mostly from the border areas of neighbouring countries. Most of these people have returned to Lofa County, followed by Grand Cape Mount, Bomi, Montserrado, Bong, Nimba, Grand Gedeh and Maryland counties (UNHCR, 2006).

Closure of IDP camps began in mid-2005 and, by the end of April 2006, all IDP camps in Liberia had been formally closed. Some IDPs are, however, still living on former camp sites and may opt to remain in these areas, where they have lived for the past few years. Their status will need to be determined in due course by the relevant authorities.

Also in April 2006, under the auspices of UNHCR and LRRRC, plans were implemented for a multi-sectoral camp closure and rehabilitation assessment strategy. Among other things, these plans make provisions for Environmental Assessments (see Section 5.2) to identify any environmental concerns on the sites, such as erosion, pollution or the presence of non-biodegradable waste. The results of these assessments are expected to help make decisions regarding any future site rehabilitation.

In addition to the above, however, Liberia has also offered asylum to a number of refugees from some of its neighbouring countries. Since the failed coup attempt in Côte d'Ivoire in September 2002, thousands of Ivorian refugees have sought safety in eastern Liberia. Most of these people originate from the districts of Danane, Man and Toulepleu in the western and south-western parts of Côte d'Ivoire (UNHCR, 2005). The majority (12 455) live in camps and communities in Grand Gedeh, Maryland, Nimba and River Gee counties, with a small number (122) residing in Monrovia (UNHCR, 2005).

Sierra Leonean refugees also sought asylum in Liberia at the outbreak of the civil war in their own country in 1991. At the peak of this operation, an estimated 120 000 Sierra Leonean refugees took refuge in Liberia – an official registration in 1998 counted 91 000 people. With the restoration of peace in 1997, a voluntary repatriation operation was initiated and by July 2004, over 13 400 Sierra Leonean refugees had been helped to return home. Camp-based assistance to Sierra Leonean refugees ended on 30 June 2004 (UNHCR, 2004). Almost 3 500 people, however, opted not to return home. Some have chosen to remain in what are now closed camps, while others have dispersed within Liberian communities. Efforts are currently underway to try to integrate these refugees into Liberian society.

## 1.3 POPULATION DISPLACEMENT AND THE ENVIRONMENT

Environmental degradation is happening across the planet, but it is particularly intense and widespread where large numbers of people are forced to live together. Deforestation, loss of vegetation and soil cover, erosion, pollution and the accumulation of waste materials are among the most common and prevalent environmental concerns associated with large-scale human displacement. If livestock accompany displaced people, additional issues of concern are overgrazing, water pollution, disease transmission and potential conflict with local communities over access to grazing lands and watering points.

Evidence from many past and ongoing relief operations demonstrates that the scale and suddenness of refugee and IDP flows can rapidly change a situation of relative abundance of natural resources to one of scarcity. This can lead to increased competition which, in turn, can provoke conflict over natural resources with the host population. Degradation of the natural resource base often also places additional pressure on the social and economic structure of a community. For example, a large influx of people can lead to the breakdown of traditional systems of natural resource management. Reduced availability of natural resources also comes with an economic cost for the host community – an increased demand for housing materials, food and fuel, for example, forces up prices in local markets. Likewise, when refugees or IDPs are finally able to return to their homes, or some other destination, it is often the host community that is left with the burden of site clean-up and rehabilitation.

A number of impacts, such as cutting trees for fuel, are immediately visible and tend to dominate the international community's response in terms of the type of project that is supported. Equally serious, however, are the often irreversible impacts on areas of

### CASE STUDY 2

#### **From abundance to scarcity – addressing needs and protecting the environment**

One year after their arrival in Liberia, Sierra Leonean refugees at VOA-1 camp found themselves in serious conflict with their host communities.

Fuelwood and palm leaves for thatching were formerly abundant in the area, but the arrival of refugees soon led to a shortage on account of the unprecedented demand: more than 15 000 refugees were housed at VOA-1, representing approximately 5 000 homes and families.

To address the fuelwood issue UNHCR, through the Environmental Foundation for Africa, trained refugees and people from the host communities to produce and use energy-efficient cooking stoves. Subsequent training allowed more refugees to have access to these stoves, all of which helped reduce the demand for fuelwood. This, in turn, helped reduce the pressure on the dwindling vegetation cover.

high environmental value. Encroachment on ecologically fragile areas such as national parks or watersheds can undermine ecosystem integrity and jeopardize the functioning of ecosystem services (see Box 1).

The environmental impacts of human displacement cannot be addressed in isolation. Local and national authorities, the displaced population and the host community, as



GRANT WROE-STREET

A wide range of natural resources are used by IDPs and refugees for various purposes. Charcoal production was practised at many camps (such as Salala IDP camp, top left) often for commercial resale. Wooden poles, too, were gathered for construction purposes as well as resale (Samukai refugee camp, top right). Such demand, coupled with the high population density of many camps, transforms landscapes like that of Maimu IDP camp (bottom) which was formerly a rubber and oil palm plantation.

well as national/international humanitarian and development agencies must all engage in efforts to ensure environmentally sound responses to displacement.

Particular attention should be given to gender concerns, including the different roles which men and women have in that society. Addressing gender issues in the context of humanitarian assistance involves looking at the different needs and interests, power imbalances and inequalities that exist between women and men (NRC/Camp Management Project, 2004).

### CASE STUDY 3

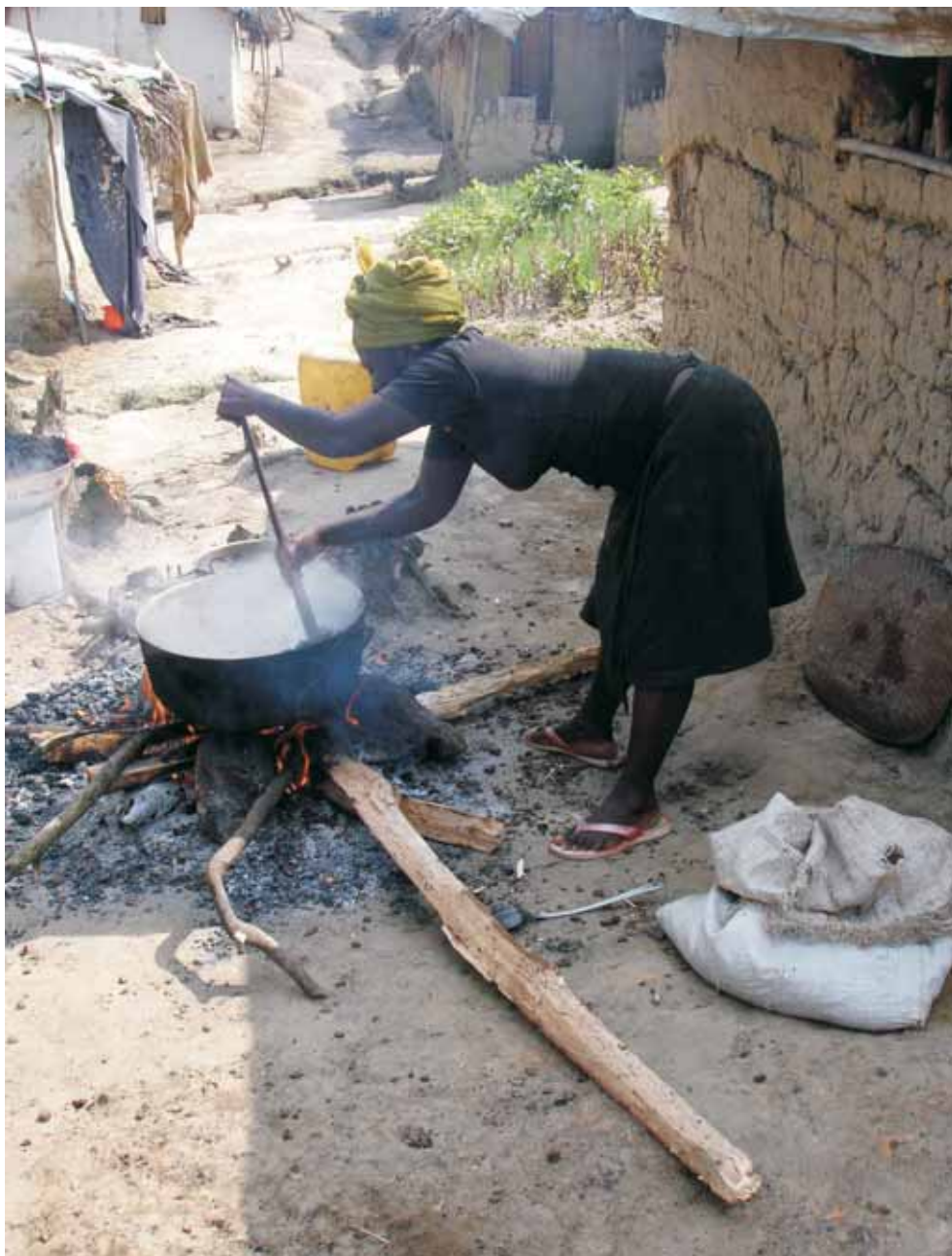
#### Ecosystem values and the location of camps

Attaching a monetary value to an ecosystem as a whole, or to the services it provides, can be contentious. It does, however, serve as a basis for assessing the comparative economic value of land as an alternative to the typical assessment of commercial value derived from the direct exploitation of resources. Combining these data with other layers of available information is a useful first step towards analysing the environmental vulnerability of specific countries, regions or catchments. This has been undertaken in Liberia as part of a contingency planning exercise along the border with Côte d'Ivoire – showing how the potential extent of the environmental impacts of a camp can be modelled. The same methodology was applied to obtain an overview of the extent of the impacts of existing and former camps in Liberia

Agricultural production and agro-industrial plantations have visibly modified parts of Liberia, a formerly densely forested country. Central Liberia has experienced the most change in this respect, while the north-western and south-eastern regions retain a more natural, forested land cover. Much of Liberia's border with Côte d'Ivoire, for example, is characterized by high ecosystem service values on the Liberian side of the border in the south-east and lower ecosystem values in the northern Nimba district. This is a function of a more natural forested environment in the south and a more modified agricultural environment in the north.

Most of the recent and existing IDP and refugee camps are located in the more modified central region, in and around Monrovia, and along the road from Monrovia in the direction of Margibi (Figure 1). This central region is characterized by lower ecosystem values than the more eastern and western regions. Most of the sites identified as possible camps in the event of a refugee influx from Côte d'Ivoire, however, are in the higher ecosystem value zone of eastern Liberia.

For more information on this subject, please see Section 5.1, **Contingency Planning**, and Annex III, **Environmental vulnerability mapping with specific reference to camps for displaced people**.



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Energy-efficient stoves can significantly reduce the amount of wood or charcoal used for regular cooking. The preparation of certain food items such as palm oil, however, may require people to use larger cooking pots than are normally used. Energy-saving practices, such as drying and splitting wood, for example, can nonetheless help reduce the amount of wood actually required.

At the same time, recognition must be given to the actual scope and breadth of environmental issues. Indeed, environmental considerations are most often associated with fuelwood, water and sanitation, but the impacts of waste management, the choice of site for a camp and its subsequent design and layout, the decision on what sort of food(s) to provide and many other issues can all impinge on the environment and, therefore, need to be taken into account.

Environmental protection, however, should not be viewed as “preservation for preservation’s sake” of natural resources, such as trees or wild animals. Rather, many recent experiences highlight how environmental management is central to the personal security and protection of displaced people. Men, women and children are frequently attacked or abused when collecting basic resources such as fuelwood or water. Protecting the environment and preventing conflicts from arising over the use of natural resources are therefore important aspects of personal security and the protection of displaced persons.

Unfortunately, there is no single blueprint for managing the environment in situations of human displacement. Planners, managers and decision-makers hence need to be aware of the main environment-related issues, and their potential implications. They also need to be well informed of possible solutions and actions that might assist them. This requires an understanding of the tools and experiences which are available to ensure that actions taken are based on the best available judgements and respond to the needs of both the displaced and the host populations. This *Guide* summarizes some of the general considerations which should be taken into account at such times, with specific references to Liberia.

Most camps for displaced people are likely to have an environmental impact. The scale and duration of that impact is influenced by a number of factors, some of which stem from the initial choice of camp site, or the manner in which it was managed, i.e. whether or not environmental considerations were taken into account during the operation of the camp.

This section examines a range of issues and impacts relating to the camp management cycle, specifically concerning the **identification and selection of a site** (Section 2.2), **planning** (2.3) and **establishing the camp** (2.4), **managing the camp** (2.5) and, eventually, **planning for its closure** (2.6) and **rehabilitation** (2.7).

## 2.1 INTRODUCTION

At the outset of a humanitarian emergency, displaced populations need almost immediate access to basic life-saving goods and services such as food, water and shelter. If these essential elements are not provided in time, displaced people often have no other choice than to look to the surrounding environment to cover their basic needs for survival.

A lack of consideration for the environment during the emergency phase can have long-term consequences. While it is reasonable to acknowledge the high element of unpredictability during a humanitarian emergency, the prevention and mitigation of environmental impacts require that effective planning be carried out as early as possible. For instance, the camp location and layout, and the design of shelters will, to a large extent, determine the impacts on the environment in the immediate and longer term. A camp situated on a steep hillside, for example, is likely to cause more erosion than one on relatively flat ground, if appropriate drainage channels are not constructed. Likewise, if no provision is made for shelter materials or if no supports are provided for plastic sheeting or canvas covers, it is likely that wooden poles will be cut from the surrounding environment. Sound environmental planning and practical interventions in the early stages of an emergency can avoid irreversible impacts on the natural resource base, as well as costly interventions at a later stage, when the need for rehabilitation arises.

This section outlines some of the most common, recurrent issues and concerns arising in the camp management cycle and discusses some of their possible solutions and alternatives. For ease of description, the camp management cycle is divided into



Maimu former IDP camp shortly after people had returned home, April 2006: unless environmental considerations are taken into account early in the camp planning process, impacts such as the wide-scale clearance of vegetation cover, soil erosion and more are almost inevitable.

the following six phases, although some environment-related issues are common to all of them:

- camp site identification and selection;
- camp planning;
- camp establishment;
- camp management;
- camp closure; and
- rehabilitation.

Also discussed and highlighted in this section are some of the main responsibilities of host governments, UN agencies and other organizations providing relief support. Specific standards for a number of sectors – such as those developed by UNHCR (see Section 6, **References and Additional Reading**) or the Sphere Project (2004) – are also provided as background information.



Several other stages might occur even before a site has been identified or selected, including, for example, a preparedness phase during which early warning mechanisms might begin to highlight a potential crisis. The arrival of entire families of asylum seekers across a border previously only crossed by individuals looking for work is one such indicator of a pending emergency (Corsellis and Vitale, 2005). Contingency planning should then be undertaken to identify the likely needs of a possible influx, which calls for close coordination between government authorities, humanitarian organizations and those communities likely to be impacted by the influx.

Environmental considerations should ideally be taken into account as early as possible in the contingency phase. A number of assessments that are routinely carried out during this phase – such as shelter requirements and water and sanitation provision – have direct bearings on the level of access to, and use and reliance on natural resources, and possibly whole ecosystems. Additional guidance on this subject is provided in Section 5.1, **Contingency Planning**.

## 2.2 CAMP SITE IDENTIFICATION AND SELECTION

### 2.2.1 Introduction

Effective camp planning and management starts with the identification and selection of the physical site. Many IDP camps develop spontaneously but some, and most refugee camps and settlements, are planned to some degree. National authorities play a decisive role at this stage, as the identification of sites and subsequent negotiations with landowners or village communities are normally undertaken by the government. In the case of refugee camps or settlements, other mandated agencies such as the UNHCR also play an important role, even though national authorities have the final say. Negotiations should, however, include all relevant stakeholders, such as the local community, district authorities, local chiefs, landowners, service providers (also known as sectoral agencies) and so forth.

Given the impact it may have on the local environment, as well as on local communities, the selection of a site for a camp or settlement is very important. Environmental considerations are not the only concern – social, economic, health and security issues also need to be taken into account, but they are not examined in much detail in this *Guide*.

According to a number of sources (UNHCR, 1996 and 2005; UNHCR, 2000; Corsellis and Vitale, 2005) large camps should be avoided. Indeed, large and very densely populated camps generate a higher risk of environmental damage in their immediate vicinity (UNHCR, 2000). As a general rule, camp populations below 20 000 are likely to be more environmentally sustainable. Even smaller camps are preferable. Yet for various reasons, large camps are often unfortunately the only available option. Apart from a higher risk of environmental damage in the immediate vicinity of large camps, high

population density can also seriously increase health and security risks, and make it more complicated to establish manageable relations with surrounding communities regarding the use of natural resources.

The number of displaced people located in a particular camp is commensurate with the pressure on the surrounding environment. The population size of a camp should therefore be determined based on the carrying capacity of the surrounding environment, and a maximum size for a potential camp be defined already in the very early stages of the site selection process. Establishing the maximum size of a camp population should always be done with caution, as it is much easier to adjust the total site capacity upwards, rather than reduce an existing capacity. Thus, apart from the expected number of arrivals, unplanned surges in numbers and future population growth must be taken into account. Population growth and the arrival of more people may see the camp expand by up to 4.5 per cent per annum (Sphere Project, 2004).

It is also important to consider the possibility of dispersing the displaced population into a number of smaller settlements over a wider area, as this reduces pressure on the land and can avoid potential tension with local people over natural resources. However, this principle has a few exceptions: in fragile environments, for example, it may be better to contain non-sustainable demand on the environment in a more concentrated area to avoid impacts on areas of higher ecosystem value.

## **Box 2. Shelter arrangements for displaced people**

The environmental impact of shelter provision and construction may vary according to the type of shelter arrangement made for displaced people. Three categories are often recognized.

**Dispersed settlements:** The displaced population spontaneously finds accommodation within the households of families already living in the area. The displaced population either shares existing accommodation or sets up temporary accommodation nearby and shares water, sanitation, cooking and other services with pre-existing households. This form of settlement often has limited environmental impact.

**Mass shelter:** Displaced populations find accommodation in pre-existing facilities such as schools, hotels, gymnasiums or similar communal or municipal buildings. These are normally in urban areas and are often intended as temporary or transit accommodation. Their impact on the immediate environment is also quite limited in terms of shelter requirements.

**Camps:** The displaced population finds accommodation in formal, purpose-designed sites equipped with a range of services, for example water and sanitation, education or health facilities. Most camps are recognized by the national government but some, usually small, may develop spontaneously and not be similarly recognized.



REUTERS/IVASILY FEDOSENKO

Town of Salala, 4 September 2003. Tens of thousands of people streamed into Salala on Wednesday and Thursday after reports of a rebel attack near their camps to the north in Totota.

Another useful principle to influence decision-making is the “minimum 15 km buffer”. This is the approximate distance of a one-day return journey on foot. If two or more camps are to be established in a given region, it is advisable that they be separated by at least 15 km (see for example the clustered arrangements of IDP camps around Monrovia, Figure 3). The same principle should be applied to create a buffer zone between a camp and the boundary of an ecologically sensitive area.

### 2.2.2 Some key considerations

The site selection process should be based on a combination of on-site assessments (see also Section 5.2, **Environmental Assessment**) and consultations with local authorities and stakeholders (see below).

Some general issues that should be taken into consideration at this time include:

- security;
- availability of adequate, safe drinking water;

- the anticipated (or known) number of displaced people;
- access to basic services such as health care, education and legal protection;
- access, e.g. for the delivery of food provisions and other services;
- climatic and seasonal conditions;
- the potential risk of conflict with the local population over natural resources; and
- respect for traditional cultural values.

A more complete checklist of **criteria for site selection** is presented in Annex II. All of these factors should be analysed and verified by means of systematic site surveys to define the carrying capacity of a particular site and its surroundings. Some additional points that may help this process are briefly described below.

### *Data gathering*

Topographical maps and aerial photography (including satellite images, if available) are valuable tools in the process of site identification. Local knowledge should also be sought (see Box 3). Surveys to assess potential sites for firewood harvesting, land availability and so forth can help make informed decisions on the carrying capacity of a particular site.

#### **Box 3. Useful sources of information**

**Topographical maps:** These are an important tool when analysing information on slopes, rivers and streams, watersheds, vegetation cover, land use, and environmentally sensitive areas. Contour lines showing altitude above sea level are useful reference points on such maps.

**Local knowledge:** Analysing the behaviour of host communities can provide useful information on local habits such as use of fuel for cooking and heating, or the choice of materials for, and methods of, shelter construction, all of which can help build a picture of people's reliance on natural resources. Discussions with local people can also help determine their willingness as well as the feasibility and the conditions under which the host population may be inclined to share natural resources with the displaced population.

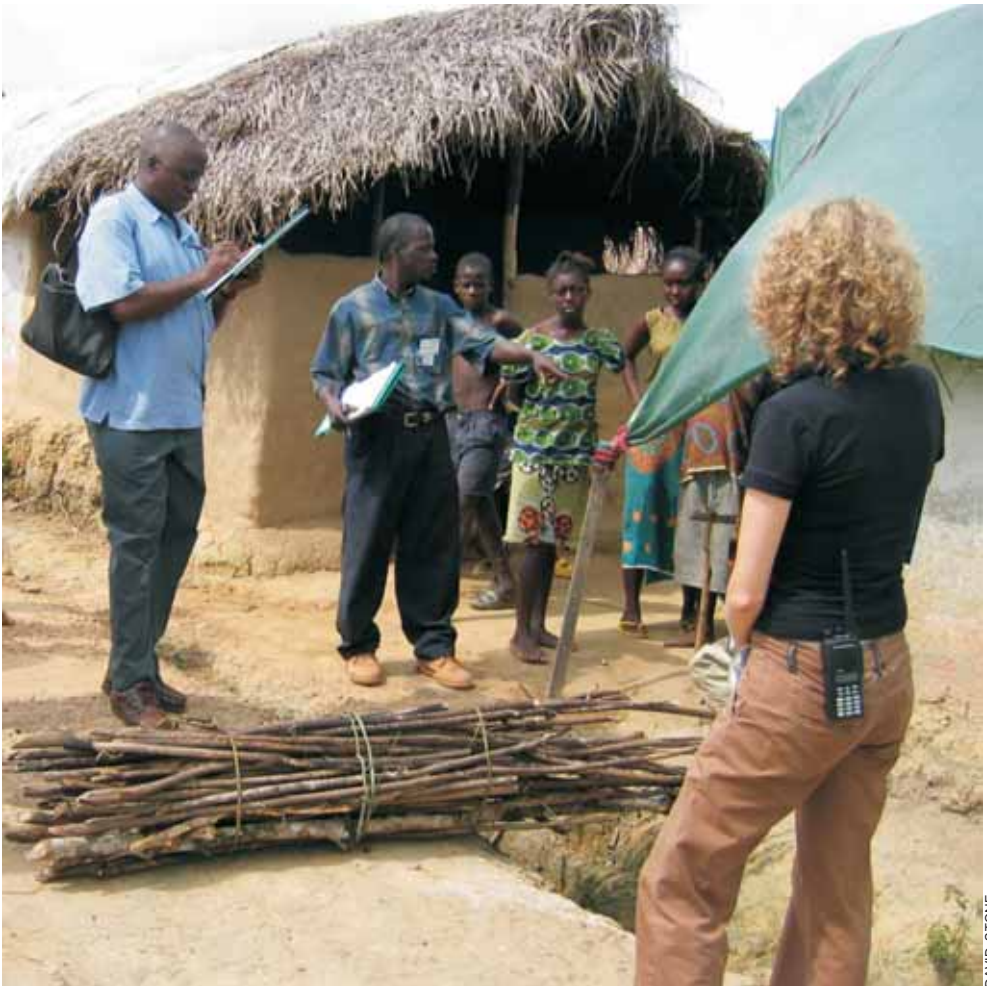
### *Baseline surveys*

Although an emergency may not always allow for systematic site surveys, it is the crucial phase to prevent, or limit, the environmental damage that may occur from improperly situated or poorly planned camps. For instance, if the camp population is allowed to engage in farming and animal husbandry, appropriate areas for agriculture and grazing must be identified as early as possible. If this cannot be conducted during the initial emergency phase, such surveys should be commissioned as soon as possible in

the follow-up phase. If fuel is not provided, displaced people most often turn to wood as their main means of cooking and heating.

On a sustainable basis, it is assumed that 500 people need 1 km<sup>2</sup> of undisturbed forest to cater for their annual fuelwood consumption needs of 600-900 kg/person/year (Sphere Project, 2004).

Given the significance of the environmental consequences of cutting trees, wood harvesting sites should be selected as a matter of priority. The selection of such sites is



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Baseline surveys are an essential component of sound environmental management. Household surveys of cooking methods and the amount and type of fuel used are necessary in order to manage locally available natural resources and prevent conflict from arising.

best based on recent surveys which, at a minimum, should consider the following aspects:

- the availability of wood resources;
- the anticipated needs of both the displaced and host communities;
- the suitability of tree species for fuelwood and construction purposes;
- regulatory measures guiding the access to, and use of, wood resources; and
- opportunities for income-generating activities (e.g. making charcoal).

### *Identifying needs*

Experience shows that allocating a small piece of land to individual refugee or IDP families has a number of advantages, from an environmental perspective as well as from a social point of view. For example, the survival rate of trees planted and raised under the control of families or households is generally higher than trees planted on communal areas. Hence, camps should preferably be built according to the principle

of “*one family – one plot*”, by which the characteristics and needs of the family and the wishes of the community guide the size and physical organization of plots. Ideally, the size of an individual family plot should allow for vegetable gardening, construction of family latrines, a compost pit and, perhaps, space to keep some small livestock such as poultry (see Section 4.5, **Livestock**).

As so many environmental considerations influence the establishment and management of camps and settlements, a comprehensive approach to site identification and selection – where cross-sectoral and socio-economic relations and conditions are all

#### **Box 4. Household plots**

While there are recommended minimum area requirements for refugee sites, these should be applied cautiously and with flexibility. They are a rule of thumb for an initial calculation, rather than precise standards.

UNHCR recommends that the surface area per person be a minimum of 45 m<sup>2</sup>, including space for a small vegetable garden attached to the family plot, or a minimum of 30 m<sup>2</sup> excluding garden space. The figure of 30 m<sup>2</sup> includes the area necessary for roads, foot paths, educational facilities, sanitation, security, firebreaks, administration, water storage, distribution and space for shelter construction. It does not include any land for significant agricultural activities or livestock (UNHCR, 2000).

For a site of 20 000 people the following calculation is used (assuming in this case that space is included for a vegetable garden): 20 000 people x 45 m<sup>2</sup> = 900 000 m<sup>2</sup> = 90 hectares.

considered – should be applied. Some key environment-related issues to bear in mind when selecting a site are outlined in Table 1.

### 2.3 CAMP PLANNING

To the extent possible, all camps should be conceived and planned as if they were to remain longer than initially expected, even though the intention should always be for these structures to last only for the absolute minimum time required.

A well thought-through site plan should determine where and how to build different camp elements and where special environmental measures might be necessary. The latter might include the establishment of drainage channels, the installation of new, or protection of existing, greenbelts, as well as terracing.

A comprehensive assessment of environmental impact (see Section 5.2, **Environmental Assessment**, for more details) should be undertaken during this planning stage, to identify problems and, if necessary, to plan for remedial activities to be implemented during the camp management phase. Some issues that need particular attention are:

- the layout and size of a household plot;



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Large camps are likely to have a greater impact on the environment than small, widely separated camps. Originally designed to host approximately 8 000 IDPs, Salala Camp housed more than 24 000 people at its peak. Formerly covered by secondary forest, the site was almost completely cleared of vegetation. This, combined with soil erosion, compaction from vehicles and people, and the high density of shelters and people, has resulted in an area of more than 100 acres being extremely heavily impacted.

**Table 1. Some issues, implications and suggested norms regarding the environmental considerations of site selection**

ISSUE	POTENTIAL IMPLICATIONS	SOME SUGGESTED NORMS <sup>3</sup>
Population density of IDPs/refugees	High population densities have a greater impact on the environment	Camp population should not exceed 20 000 people
Population density of local communities	If the host community is overwhelmed by the number of IDPs or refugees, local rules and access to resources may be negatively affected	Local population should not be in extreme minority vis-à-vis the number of people arriving/being settled
Camp layout	Many design elements can have major impacts on the environment, e.g. housing arrangements or the location of water points or roads	Clustered layout can facilitate shared cooking; adequate water points (maximum of 250 people per tap stand); maximum of 20 people per latrine
Household plot size	Larger plot sizes will enable families to become more self-sufficient (see below)	200-300 m <sup>2</sup> is the recommended plot size per family or household
Reliable access to safe drinking water	If people do not have access to adequate safe water, they may be forced to collect this from streams or other sources	Each person should have access to 15 litres of water per day; dwellings should not be more than 100 m or a few minutes' walk from water points
Sanitation	If the groundwater table is high (even through seasonal fluctuation) contamination is a risk	Latrines should be located at least 30 m from water points and the bottom of the latrine pit should be a minimum of 1.5 m above the water table
Slope	Water drainage and flooding; soil erosion; excessive water run-off	The site should be above flood-prone areas, preferably on gentle (2 to 4 %) slopes. Avoid flat areas and those with a slope of more than 10 degrees
Avoid areas prone to flooding	Loss of life; loss of shelter; disease transmission	Check slopes, drainage rates and ground-water absorption rates. Also determine whether the water table fluctuates seasonally
Accessibility	Inaccessible sites will be cut off during periods of heavy rainfall	Sites should permit year-round access for delivery of provisions and supplies
Proximity to village or other camp	Environmental (and other) impacts will be greater on account of population pressure	At least 15 km between camps
Ecologically sensitive site	Loss of biological diversity; damage to ecosystem functioning (e.g. absorption of rainfall and retention of groundwater)	Camps should be at least 15 km from a site of ecological importance (international, national or local). If this cannot be observed, additional protection/negotiation measures may be required
Land quality	Land on the household plot should ideally be suitable for growing limited amounts of crops	A soil survey should be carried out and the results used to influence camp selection and eventual layout
Natural or man-made hazards	Flooding, fire, pollution	The site should not be within reach of a natural hazard (e.g. a volcano) or easily identifiable potential man-made hazard (e.g. a large dam)
Availability of natural resources	Displaced people may rely heavily on resources such as fuelwood or wild game An abundance of natural resources (and lack of protection) may encourage accelerated depletion for income generation	Access to and use of natural resources should be regulated
Waste management	The terrain may not allow for safe disposal of solid waste	Dwellings should be more than 15 m from a waste container or household pit and 100 m from a communal pit. Safe waste disposal sites must be identified (consider impacts on groundwater and the local community) for additional waste

<sup>3</sup> Some of these (but not all) are based on principles for refugee camp/settlement establishment.



- water-related issues;
- sanitation needs;
- maintaining vegetation cover;
- preventing soil erosion;
- ensuring that appropriate construction materials are used;
- designing camp infrastructure with recycling in mind; and
- establishing a basic Environmental Action Plan.

These issues are described in more detail below.

### *Layout and size of household plot*

Consideration should be given to the design of shelter arrangements and the size of household plots. Each family should receive a small plot of land – an area of 200-300 m<sup>2</sup> is appropriate, but may be ambitious in some situations. The plot should, however, be large enough to permit the construction of a family latrine approximately 8 m from the shelter.



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The crowded conditions of many camps like Salala meant that families were not provided with anything resembling the recommended standards for a household plot.

The physical layout of the camp is equally important: a clustered layout, for example, promotes family or communal cooking (and therefore reduces the amount of fuel needed), but this arrangement is not appropriate for every situation.

### *Take water-related issues into account*

People need water for a number of vital basic needs, such as drinking, cooking and personal hygiene. Considerable quantities of water are also often required for live-stock, agriculture and the manufacture of mud bricks. Ensuring adequate (and easy) access to safe drinking water is therefore a priority concern in every operation. A number of water-related measures should, nonetheless, be taken into account to avoid environmental damage.

To avoid water pollution, for example, graveyards must be located at least 30 m from groundwater sources used for drinking water, with the bottom of any grave 1.5 m above the groundwater table. Surface water from graveyards must not enter the settlement (Sphere Project, 2004). Similar care should be taken when siting pits for non-biodegradable waste as well as for latrines.

### *Give due attention to sanitation*

Water and sanitation are two inter-related sectors. Sanitation includes the disposal of human excreta, wastewater and drainage, as well as household waste, dust, and insect and rodent control. Failure to maintain adequate standards of sanitation can result in health risks caused by contamination of the environment and by pests and vectors such as mosquitoes, flies, cockroaches or rodents. Outbreaks of disease among the displaced population can quickly be transmitted to the local population, and vice versa. A basic system should rapidly be elaborated for the disposal of human excreta, as well as for waste management. These systems should match the demands of local site conditions. Wherever available space permits, family (as opposed to communal) sanitation facilities should be preferred.

Latrines should be equipped with fitted concrete slabs. If this is done correctly, it ensures easy hygienic cleaning and eliminates the need for additional secondary wood slabs, thereby reducing the demand for timber (see also Section 4.2, **Water and Sanitation**).

Camps are often located in remote areas where little waste treatment infrastructure exists. Camp planners and managers therefore need to be creative and look for opportunities to design and operate appropriately scaled systems to deal with waste. Waste, for example, could be siphoned off into marshes or ponds where aquatic vegetation and microbes would break it down, releasing nutrients that could in turn benefit other organisms. The use of composting toilets – where waste from latrines is eventually reduced to rich compost to use as fertilizer – should also be considered, although this may meet with some cultural resistance if the purpose is not carefully explained and the composting process not well controlled.



GRANT WFOE-STREET

Unless adequate care is given to the location, design and maintenance of sanitation facilities, as well as waste management disposal, disease and health risks will always be a concern in crowded camps. Gender concerns also need to be reflected in many design and maintenance aspects of camp management, including the provision of adequate lighting, and having secure access to separate washing and toilet facilities for men and women (see also NRC/Camp Management Project, 2004, and Sphere Project, 2004).

### *Maintain vegetation cover*

Maintaining an appropriate level of vegetation cover results in a better microclimate, as it provides shade, wind-breaks, dust control and a natural cooling effect in tropical situations. It also reduces the need for larger scale on-site rehabilitation after camp closure. As a principle, camps should be planned in such a way that as much vegetation cover as possible is maintained. If heavy equipment is necessary to prepare the site, indiscriminate bulldozing or radical clearing should be avoided at all costs.

When constructing infrastructure and roads, existing trees and other vegetation should be spared as much as possible, since maintaining the vegetation cover protects soil fertility and helps maintain soil structure. The more densely populated a camp is, however, the more vegetation will proportionately have to be cleared. Greenbelts should

## CASE STUDY 4

### Protecting vegetation cover despite high population density

Sinje camp in Grand Cape Mount County was host to more than 20 000 Sierra Leonean refugees in 1999, making it the largest refugee camp in Liberia. The camp was almost joined to the host community of Sinje town, comprising only about 75 houses. Although it is now closed, the site is a classic example of good maintenance of vegetation cover. Apart from planting fast-growing exotic trees within the camp, many indigenous trees, including wild oil palms, were left scattered all over the camp.

The main objective of planting additional trees was to ensure that the site would be quickly restored to its pre-influx state when refugees left. Today, this objective has been fully achieved. Existing trees were saved by marking those which should not be felled with red paint, and by explaining the significance of this action to the refugees through a series of awareness-raising activities.

This project was implemented by the Environmental Foundation for Africa, with support from UNHCR.

constitute an integral part of the camp layout from the beginning. In modular camp planning approaches, this is most easily obtained by establishing greenbelts around residential blocks of shelters (UNHCR, 1996 and 2005).

The removal of vegetation cover and rapid flow rates of rain on heavily compacted soils quickly leads to a loss of soils and formation of gullies. Unless gullies are treated promptly, they will continue to grow each season.



DAVID STONE

## *Avoid erosion*

As mentioned above, topographical factors must be taken into account. In terms of camp planning, it is important to map all relevant natural and existing physical features. By understanding the topography and the relationship between different natural and/or physical features, it is possible to plan a site properly and thereby avoid large-scale erosion problems.

For example, roads and drainage patterns should be planned in such a way as to make optimal use of natural contours, to prevent erosion and flooding. Irrespective of the slope, an effort should always be made to align access roads, foot paths and any buildings/constructions along contour lines – in other words across slopes and not up and down the slopes.



GRANT WHOE-STREET

Maimu IDP camp, November 2005: Roads and other access routes should preferably be constructed along contour lines and slopes to help reduce the risk of erosion.

### CASE STUDY 5

#### **Tumutu camp: site assessment aids planning**

Tumutu IDP camp, located in Bong County in central Liberia, was laid out taking environmental conditions into account. The camp, prepared by the Norwegian Refugee Council, followed basic site selection and layout criteria. Tumutu was one of the few camps where the NRC had the opportunity to carry out a site assessment and an overall physical layout of the camp before IDPs moved in.

Basic site selection criteria were considered, including: the year-round availability of water; year-round accessibility; access to other local settlements; availability of vegetation and fuelwood; and avoidance of ecologically sensitive areas like national parks.

The layout of the camp also considered the needs of individual households, especially space for gardening. Appropriate provisions were made for roads, drainage, sanitation facilities, distribution centres and so forth.



Daubing the wooden frames of household shelters with mud helps protect poles from insect and microbial attack, thus preventing the need for repeated construction.

### *Use appropriate construction materials*

For shelter construction, it is important to ensure that appropriate materials are fully available, and that these are either environmentally benign or have been gathered in a sustainable manner, such as through controlled cutting in designated woodlots. If this is not possible, alternative building methods must be explored and promoted, or shelter materials such as tents have to be brought in from outside the region or country. Cheap and simple methods can be introduced for environmentally friendly shelter construction: one option is sun-dried mud bricks (but see also Section 4.3, **Construction Materials**). In addition, construction waste should be recycled or properly disposed of by the camp management agency.

### *Design camp infrastructure with recycling in mind*

Early planning for the location and establishment of a camp should take into consideration the potential future use of any infrastructure that might remain after a camp has eventually been closed. Schools, clinics or dispensaries, as well as water treatment and distribution facilities may be beneficial for local communities once refugees or IDPs have vacated the area. From an environmental point of view, re-use and recycling of camp infrastructure may also reduce the need for disposing of construction materials. Early planning of the potential future of camp infrastructure is therefore important.

## *Draw up a basic Environmental Action Plan*

A simple natural resource management plan should be drawn up during the camp planning phase. The plan should be based on environmental data and information compiled during the site identification and selection process. If more information is acquired, the plan (see Box 5) can later be expanded and consolidated.

While the initial work to generate a skeleton plan might rest with the agency responsible for camp management, responsibility for revising and implementing the plan should, as time progresses, gradually be shifted to the displaced population, local government and host community.

### CASE STUDY 6

#### **Waste collection and disposal in Liberia**

Waste collection services either ceased to function or operated at very low levels after the outbreak of conflict in 1989. Prior to the conflict, solid waste in central Monrovia was managed by the Monrovia City Corporation, supplemented by a private waste collection system. During the conflict, however, waste collection vehicles and equipment were either looted or destroyed. Waste transfer stations and depots were also heavily damaged (UNEP, 2004).

In camps for displaced people, waste management is/was the responsibility of the displaced population and the camp management teams, which included non-governmental organizations, UN agencies and the LRRRC. Two waste management practices – composting and burying – were promoted but not sustained. Composting was tried at the Fendell IDP camp in Montserrado County but failed because of the lack of willingness on the part of the IDPs to separate biodegradable and non-biodegradable wastes.

Although in most instances best practices were followed in the construction of latrines, the management of human excreta, wastewater and solid waste in general posed serious challenges in all camps. Camp management invariably had to spend more time than initially envisaged on water and sanitation activities, including awareness-raising and the regular treatments of wells.

## **2.4 CAMP ESTABLISHMENT**

A lack of consideration for the environment during the actual establishment of a camp can have long-term environmental consequences. Effective planning needs to be carried out as early as possible. Some guidance is given in Table 2, but these and other considerations should be examined on a case-by-case basis, as there is no single formula that can be applied when it comes to establishing a camp. Issues such as the location, the potential size of the camp and the speed with which it might be established also need to be taken into account.

**Table 2. Some issues to bear in mind during camp establishment**

ISSUE	POTENTIAL IMPLICATIONS
Camp size	As a rule, camps should host less than 20 000 people to be more environmentally sustainable, but in arid or semi-arid conditions or more ecologically sensitive areas, this figure might be as low as 5 000 people
Water points	People must be provided with adequate safe drinking water, as well as water for other purposes (e.g. personal hygiene and livestock)
Washing and laundry facilities	People should be provided with clean, hygienic and safe washing facilities
Sanitation	Latrines should be constructed downstream of wells and water sources. Concrete latrine slabs of the appropriate size should be used
Vegetation cover	Excessive removal of vegetation or ground cover can result in soil erosion, flash floods, dust and costly rehabilitation programmes
Waste management	Accumulated waste, if not routinely collected, can encourage disease and vermin; it also leads to localized pollution (e.g. of groundwater) The camp should be kept as clean as possible; composting of biodegradable items should be encouraged; a camp waste management plan should be established
Access to natural resources	If IDPs or refugees have open access to natural resources, such as forests, they may tend to exploit these for quick personal gain. This can result in significant environmental degradation
Soil compaction	Hard soil leads to greatly increased run-off of rain which, in turn, can result in erosion and the formation of gullies
Infrastructure planning and orientation	Construction along contour lines rather than up and down them can help reduce or avoid soil erosion, flash floods and gully formation. Wastewater should be evacuated through proper drainage channels to prevent standing water
Keeping of livestock	In-camp keeping of livestock should be restricted to penned, small animals; this may mean that "zero-grazing" is required (see Section 4.5, <b>Livestock</b> ). Separate watering areas need to be designated for livestock outside of the camp. Attention needs to be given to animal waste, especially with regard to ground and surface water contamination
Agriculture	Identify possible areas outside of the camp where larger scale agriculture might be practised and regulated. Unregulated agriculture soon leads to wide-scale clearance of vegetation

The location and layout, as well as the nature of materials used for shelter construction, determine some of the camp's potential environmental impacts. The techniques and technologies used for the preparation of a site also have important implications. A careful selection of appropriate technologies and their application may lessen such impacts considerably and thus provide a more pleasant camp environment from the beginning. These considerations, moreover, can greatly help reduce the need for later camp rehabilitation (Section 2.7, **Environmental Rehabilitation of Former Camps**).



## Environmentally conscious site preparation

During the preparation of some camps for displaced people in Liberia, some environmentally-friendly infrastructure construction practices were taken into consideration.

Apart from using heavy machines for the construction of roads, topsoil was not removed. In most instances, displaced people themselves used cutlasses to clear the camp sites, leaving topsoil intact. The protection of existing trees in the process was minimal, except in Sinje Refugee Camp in Grand Cape Mount County, where a considerable number of existing trees were left standing. Although forest-related materials were used in the construction of huts, they were daubed with mud, a practice which was found to protect the wood from decay, thus extending the lifespan of the construction material.

When constructing infrastructure such as roads, communal buildings, school compounds and distribution and feeding centres, existing trees and bush cover should be protected to the extent possible. Topsoil removal outside of planned construction sites and road building should be avoided. Removed topsoil should be stored for possible later use.

Displaced people often use natural resources from the immediate camp surroundings to construct their shelters. The trees felled for this purpose, which are typically straight and young, are the fastest-growing and therefore contribute the most to the productivity of a given forest. Extracting them is hence very damaging to the environment. As mentioned above, if it is not possible to provide appropriate building materials in a sustainable way, alternative building methods must be explored (see Section 4.3, **Construction Materials**).

## 2.5 CAMP MANAGEMENT

In general, an operation shifts to the camp management phase once the population in a given camp or settlement becomes relatively stable. Activities developed during this phase should be proactive and take a longer-term approach to managing natural resources. For example, early environmental awareness-raising programmes – informing displaced people about local and national environmental laws and practices – are key in setting the parameters for sound environmental behaviour. Such programmes should be introduced before non-sustainable environmental practices become habits.

An underlying principle for the formulation and implementation of environmental measures is inclusiveness: for displaced and local people to endorse and practise sound environmental management, it is important that they have actively taken part in the process of identifying problems and developing responses. To the extent possible, all

stakeholders should be involved: displaced and host populations, local and national government, UN agencies, national and international NGOs, community-based organizations, and others as appropriate.

Furthermore, sound environmental practices around camps cannot be seen in isolation and should be placed within the broader context of national, regional or district level development or natural resource management plans.

### **Box 5. What is an Environmental Action Plan?**

An Environmental Action Plan is a simple strategy outlining the intended actions to be taken by specific groups within a community or by specific agencies with regard to environmental management, most often for a given site and a fixed period of time.

Ideally this plan is produced with, or by, stakeholders from an affected community, using input for example from a Rapid Environmental Assessment (REA). Such a plan would take the assessment's recommendations on measures to mitigate and monitor impacts and combine them within a systematic framework of operation. The framework, in turn, would identify the allocation of responsibilities, resources and specific time periods to individuals and organizations so that they can implement mitigation and monitoring in the most cost-effective way.

Possible steps to consider when developing such a plan are:

- Identify **environmental threats/concerns through baseline studies**.
- Identify **root causes**.
- Identify **needs**.
- Set clear and meaningful **objectives**.
- Determine practical and appropriate **activities** to attain these objectives.
- Discuss and assign **responsibilities**.
- Identify what **resources** are needed and at what stage of the process they will be required.
- Discuss and agree on an **implementation schedule**.
- Discuss and establish an appropriate **monitoring and evaluation** system.
- Determine **next steps**.

One of the clearest benefits of having an action plan of this nature is that it outlines the responsibilities and actions to be taken. This serves as a very useful planning, management and monitoring tool.

For more information on how to conduct an Environmental Action Plan, please refer to the FRAME Toolkit produced by UNHCR and CARE International (2005).

A first step towards sound environmental management is therefore to make people aware that access to, and use of, natural resources cannot be taken for granted. The most successful way to obtain this is to combine incentives for sustainable use of natural resources with the enforcement of rules and regulations for their use.

Actions that can help camp managers and others to monitor and manage the environment at this stage include the:

- completion and implementation of an Environmental Action Plan (see Box 5);
- establishment of local (camp) Environmental Management Committees to encourage or allow people to express their opinions more freely (there might, for example, be separate men and women groups);
- environmental awareness-raising within the camp and among surrounding communities (see Case Study 8);
- identification of needs for specific capacity-building and training, e.g. with regard to forestry or livestock extension services;
- identification and support of environmentally sound practices by making them more attractive in terms of profitability and workload; and
- establishment of practical monitoring systems, with an emphasis on those which the community members themselves are able to manage.

Special consideration should also be given to a range of sectoral issues such as domestic energy, agriculture, livestock and income generation, all of which are discussed in more detail in Section 4, **Sector-Related Considerations**.

## 2.6 CAMP CLOSURE

### 2.6.1 Background considerations

Many of the activities carried out during the establishment and running of a camp leave the camp site a far different place than it was before the arrival of the displaced population. These changes may be beneficial, neutral or harmful to the local environment. For example, a refugee camp located at the border of a nature reserve may have had negative impacts on what ought to be a pristine environment. Some actions are likely to be necessary in this instance to repair the damage caused and prevent additional damage from taking place. On the other hand, previously uncultivated land developed for agricultural production by the displaced population can be a benefit to the local population; in this case, a return of the land to its original state might not be desirable.

## Refugee environmental awareness-raising programme, Liberia

In 1998, the Environmental Foundation for Africa (EFA) embarked upon the implementation of a UNHCR-funded Refugee Environmental Awareness Programme in Liberia. The main objective was to raise environmental awareness and develop practical schemes for environmental management in six refugee camps. The philosophy behind the project was that camps could act as learning centres and that skills learned by the refugees could be transferable to their home communities when conditions allowed them to return.

The main areas of environmental degradation associated with the establishment of camps were:

- reduction in soil fertility, increased erosion of topsoil, and reduced agricultural productivity;
- decreased quantity of wood available for use in construction and cooking, decline in the availability of certain tree crops, degradation of forest habitat and subsequent loss of forest products, and indiscriminate hunting of wildlife by refugees and returnees; and
- altered natural water systems and water pollution.

The three main components of the resulting programme were:

- awareness-raising and environmental education involving, among other things, a school programme, public meetings, environmental videos shown to a wide range of audiences, and the production of picture-based information booklets on nature conservation;
- domestic energy conservation training and demonstration, involving extensive promotion of fuel-efficient clay stoves and a training programme, including a manual and video documentary on the construction of energy-saving stoves; and
- agroforestry, which involved training and the establishment of tree nurseries and woodlots, as well as tree planting.

The main strength of the programme was its community-based and participatory approach. Another was its focus on the school system. Given that the concept of environmental awareness and education was quite new for Liberia – particularly in areas where the vast majority of inhabitants were illiterate subsistence farmers – the programme was seen as a crucial step in preparing future generations to act responsibly towards their environment.

Sources: UNHCR/EESS Environmental Newsletter, Vol. 5, Issue 1, April 2000; UNHCR, 2002



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Waste collection, separation and safe disposal should feature prominently in any camp closure plan. Poorly closed latrines may be re-opened to extract slabs which, as in the case of Maimu former IDP camp, are either re-used, resold, or broken to extract the metal reinforcing rods. Re-use of as much waste material as possible is strongly recommended.

All camps should ideally be closed down in a responsible manner. Special attention should therefore be paid to what local authorities and local communities wish to see take place on former camp sites, instead of automatically returning land to its pre-influx state. In this regard, ownership and user-rights of the former camp site should be clarified as early as possible. If this is not the case, many of the introduced remedial measures may be lost. Where agroforestry has been practised, for example (see Section 4.4, **Agriculture**), it is advisable to try to ensure that this practice is continued (given its many benefits for people and for the environment), rather than allow the cutting of planted trees for fuel or for construction purposes.

Attention should also be drawn to the future use of any services that might have been established on the site, such as water supply, or the construction and servicing of schools and clinics. Rather than just abandoning this infrastructure, local communities may wish to see it maintained. Early dialogue on this matter is therefore important so that camp management is able to seek mutually beneficial solutions.

Early planning for camp closure and hand-over to authorities or communities is strongly advised – leaving this until the last moment will likely jeopardize the rehabilitation process: peoples' attention will be focused on repatriation or resettlement, while humanitarian agencies and donors may not wish to see funds diverted or want to get further involved at this stage. Planning of this nature is best addressed through a

## Camp clean-up: quick removal of shelter

Within one week of assistance being distributed to IDPs in Unification Town IDP camp (Montserrado County), almost 90 per cent of the huts had been demolished by the IDPs and local communities, making this one of the most rapid initial camp clean-up exercises to date.

The initiative was undertaken by the camp management agency, the American Refugee Committee (ARC) in collaboration with LRRRC, the IDP Unit and IDP leaders. A cash incentive of US\$2 per day was provided by ARC for the demolition work, which is thought to have contributed positively to the success of the demolition and clean-up exercise.

simple closure and rehabilitation plan (see also Section 2.7, **Environmental Rehabilitation of Former Camps**) that clearly documents (at least for the environment-related components) what the expressed wishes are for future use of the site and any remaining infrastructure, and outlines the responsibilities of government, camp management, community representatives and others.

Consideration for the local community and/or those remaining should include:

- local social issues – how will closure affect them?;
- removing obvious risks – making the site safe (see below);
- use of remaining infrastructure (with/without additional physical rehabilitation) – schools, water points. Who will maintain future services?
- physical changes made to land area (e.g. agricultural plots).

Finally, it is important that all those involved be aware of what is taking place.

### 2.6.2 Making a former camp site safe

Closed and abandoned camps typically generate many safety risks. Open wells or latrines, among other issues, can pose a significant hazard to people, livestock and wildlife. Due consideration must hence be given to sewage systems, latrines, waste pits and specific forms of waste (household and construction) that the camp population or camp management agency may leave behind. Concrete slabs used for latrines, for example, should be broken and buried as part of the in-filling process of latrines. If they can be re-used elsewhere, they should be removed and cleaned with lime before further use. Latrines, however, should still be filled in and made safe.



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Due consideration should be given to the closure of any camp, particularly to ensure that the site is left safe and that any dangerous and/or hazardous materials are removed and adequately disposed of. Some materials such as roofing thatch and construction poles are best left to degrade naturally on-site, but tins, glass, batteries and concrete slabs should be removed if they are not going to be recycled by people still occupying or living near the site.



GRANT WROE-STREET

Other possible features which may require attention are:

- solid, non-biodegradable wastes;
- erosion gullies;
- uncovered wells that should be properly capped;
- environmental sanitary risks from latrines;
- left-over chemicals or medical supplies;

## Camp closure: different options for different needs

Although it was originally intended to host around 8 000 IDPs, Salala camp in Bong County was finally host to more than 24 000 IDPs at the end of 2005, when plans for resettlement were made. The camp, spread out over some 225 acres, was established on former economically-viable plantations of wild oil palm, oranges and rubber trees, as well as secondary forest. Wide-scale clearance of vegetation took place during the camp establishment process, resulting in serious erosion, loss of topsoil and the formation of gullies.

Prior to the establishment of Salala camp, an agreement was signed between the local government authorities, Salala community and the landowners, stipulating that infrastructure developed on the site would be left intact for the landowner's use. No specific plan was made for environmental rehabilitation prior to closure. Salala was officially closed in April 2006.

In some of the other camps in the same county, local communities and landowners have started to use the former sites as farms, because of already existing food crops planted by IDPs while in the camps. Crops such as vegetables and bananas that were planted by IDPs are now supplementing the food needs of many local communities.

- risks of pollution or contamination of water sources from left-over pesticides or other chemicals;
- used engine oil;
- burial sites which should be clearly demarcated and made safe;
- hospital waste; and
- severely depleted vegetation or denuded sites that may develop erosion gullies and/or result in the siltation of water courses.

The camp closure and rehabilitation plan should take into account a possible desire to re-use certain buildings, services and other physical amenities on the site. Some of these may be in good repair but the local community may also request that these be upgraded before the camp is finally closed and the site is handed back to the relevant authority or individual.

Preparations for camp closure should further ensure that clear instructions are given to returnees regarding what is expected, for example that they are to knock down their shelter and separate or pile waste materials together. Waste should be collected and removed as soon as possible after the camp is vacated, although the collection could



start even before the camp is empty. A Waste Task Force should be established, trained and equipped to take overall control of waste management as part of the closure plan. This Task Force should have clear terms of reference.

The checklist on page 44 was developed by participants in a 2006 UNEP workshop in Liberia on "Population Displacement and the Environment: Key Considerations of Camp Closure, Rehabilitation and the Return Process". It may serve as a guide for use in future camp closures in Liberia and elsewhere.

## 2.7 ENVIRONMENTAL REHABILITATION OF FORMER CAMPS

### 2.7.1 Background considerations

Environmental rehabilitation should be a continuation of environmental activities – and should start while IDPs or refugees are still present – rather than a separate activity in the camp management cycle. Depending on how environmental issues have been addressed during the different phases of the displacement operation, it may be necessary to undertake some degree of environmental enhancement or rehabilitation of the former camp site. Such rehabilitation could for instance consist of breaking up heavily compacted soil and carrying out a reforestation programme. Ownership of these new trees must, however, be established first, to ensure that they are properly cared for in the future.

One important consideration in the preparation of environmental rehabilitation is the physical scale of the operation, whether it is on a:

- landscape level, such as a watershed (which might encompass several mountain ranges, floodplains and valleys, all of which may have been affected to some degree by the existence of the camp);
- ecosystem level, such as a forested area or wetland; or
- site level, which takes into account the camp's physical limits and, if applicable, its extension into a neighbouring community.

While similar actions may be required for each of these scenarios, the response mainly depends on decisions taken by government or the humanitarian community. A camp may be "closed" merely by removing and safely depositing all waste materials from the site (with consideration given to recycling certain materials), or by back-filling and ensuring that all former latrines are filled in and wells capped. Alternatively, closure may entail a much greater effort, sometimes even at a distance from the camp site. If fuelwood, charcoal or building materials were provided to IDPs or refugees, for example, some replanting may be necessary at the sites where these materials were sourced – which may be tens or hundreds of kilometres away. Likewise, if range lands outside

## Guide to camp closure

- ✓ Draw up and set in place an effective and all-embracing decommissioning plan. This should include measures to address issues such as housing, security, water, and sanitation. Input should also be sought from local community representatives, national authorities and key service providers, with clearly defined roles. The plan should have a time frame for implementation.
- ✓ Implement, as part of this plan, an awareness-raising and sensitization programme regarding camp closure.
- ✓ Assemble a qualified decommissioning team, including some members with environmental experience. The team and its members should have clear terms of reference. Ensure that the team has the necessary logistical support.
- ✓ The decommissioning plan should include the rehabilitation needs and options for the camp site. Consult all interested stakeholders regarding future rehabilitation options.
- ✓ Engage the donor community ahead of time to provide assistance during rehabilitation.
- ✓ Inform and involve host communities, especially with regard to the possible future use or destiny of remaining facilities. Clearly define ownership of remaining assets.
- ✓ Train the host community/communities on the maintenance of remaining facilities.
- ✓ Identify waste disposal sites. Training, e.g. in sorting waste with a view to re-use/recycling, may need to be provided to the decommissioning team members.
- ✓ Clearly define the available methods of waste disposal: all potential health hazards should be removed or buried.
- ✓ Provide protective equipment (clothing and handling materials) for those engaged in waste disposal.
- ✓ Conduct the demolition of former shelters in an organized and not haphazard manner.
- ✓ Close and cover abandoned latrines and wells properly. Disinfect latrines and slabs kept for re-use with, for example, lime.
- ✓ Develop and implement erosion control mechanisms.
- ✓ Demarcate and fence off waste pits (if continued use is expected); alternatively fill waste pits properly if they are not to be used.
- ✓ Clearly demarcate burial sites to avoid future health risks.
- ✓ Develop a monitoring and evaluation plan that includes allocated responsibilities.
- ✓ Use the services of environmental NGOs during the camp closure process.
- ✓ Keep a detailed account of the closure process to allow the lessons learned to be incorporated into the report for knowledge gathering and application in other situations.

## Rehabilitation the right way

When a camp in Unification Town was decommissioned by the American Refugee Committee, it was carried out in a systematic manner and a clean-up campaign was organized. Household waste was buried in deep pits and pit latrines were back-filled. Some biodegradable substances – mainly forest-related construction materials – were left on the site to help enrich the soil. To avoid water pollution, bath structures were properly drained, and streams and waterways cleaned and cleared. With the full participation of host communities in all activities, burial sites were demarcated and communities informed of their locations.

the camp proper were used for animal grazing, rehabilitation may be required at considerable distances from the camp.

Rehabilitation involves the identification of the actual changes made to the site, landscape or specific ecosystems as a result of the establishment and operation of the camp. Old photographs, satellite images as well as consultations with local people are useful sources of information on the prior condition of a site. Site assessments are necessary to determine whether the changes that have taken place have been positive or negative, bearing in mind the expressed needs of the community (if present) and the potential uses to which the site might be put after the displaced population departs.

In addition, rehabilitation involves an assessment of the seriousness of the negative impacts in terms of their long-term effects on the environment and the livelihoods of the host community. The approximate economic value associated with these impacts, and some indication of what action is needed to overcome them also need to be factored into the site rehabilitation plan.

As is the case for the establishment and management of camps, physical rehabilitation should be carried out on a site-by-site basis. In areas where soil compaction has taken place – perhaps as a result of the extended stay of IDPs/refugees, or as a result of soil erosion and weathering – heavy machinery may be required to break up the soil and assist with landscaping. This depends, however, on the intended future use of the site, as do all other aspects of site rehabilitation.

In order to maximize the environmental, economic and social functions of former camp landscapes, a systematic process of rehabilitation must be carried out, taking into account the needs of landowners, land users and residents in and around the former camps. It should also take into account broader landscape functions and ecosystem services to ensure that they are viable, productive and multi-functional landscapes over time.



Rehabilitation of former camps should take into account the fact that natural resources may also have been extracted far from the camp itself. At Salala (above), local community members hired IDPs to cut wooden poles in forested areas at some distance from the camp. Deliberate selection of specific tree species from such locations may have a negative impact on local biodiversity.

## 2.7.2 Rehabilitation at the landscape level

One framework approach suited for camp rehabilitation and resettlement planning is Forest Landscape Restoration (FLR)<sup>4</sup>. This is defined as “*a process that aims to regain ecological integrity and enhance human well-being in deforested or degraded forest landscapes*”. This approach focuses on restoring not just trees but the integrity of the entire landscape, based on the socio-economic and environmental needs of local beneficiaries. It is determined by stakeholders who live in, use or benefit from the landscape, or downstream users who may benefit from some of the functions that a restored landscape may provide, such as improved water flows (see also Box 6).

While each landscape and situation is unique, as are the differences between former camps and resettlement areas, the following general principles should help guide decisions relating to FLR:

- remaining areas of undisturbed or well-managed natural forest should be protected;

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<sup>4</sup> While the intention of this *Guide* is to be specific to refugee and IDP camps and resettlement areas in Liberia, this approach is also relevant to Liberian forest policy decision-makers and practitioners who deal with issues of land and forest management in Liberia. Other areas of Liberia besides former camps are degraded, such as mine sites or areas cleared for timber, and could benefit from the ideas and information presented here. Information on FLR has been adapted from ITTO and IUCN, 2005.



Heavily compacted and eroded soils in camp landscapes offer a particular challenge for rehabilitation. Natural regeneration is likely to be quite slow on such surfaces: meanwhile, gullies will continue to expand unless treated. Some degree of mechanical intervention may be required in such cases to break up the soils to allow some replanting to take place.

- creating forest linkages or corridors between remaining natural forest areas can help foster biological diversity within landscapes;
- secondary, or re-growth, forest should only be cleared after some form of assessment shows that such an action is justified. In many cases, these forests provide important goods and ecosystem services, especially to local communities;
- areas prone to erosion, such as hill slopes or river banks, should be stabilized;
- it should be assumed that landscapes vary: it is rarely the case that a single tree species is the most suitable to a specific landscape, or that land users wish for only one type of activity;
- plantations established to produce sawlogs should use high-value timber species; and
- plantations established to produce pulpwood should be located on flatter areas, since the shorter rotations and more frequent harvesting increase the risk of erosion.

In Liberia, most former camp sites and certain resettlement areas are found in deforested or degraded forest landscapes. Many of these are likely to have formerly contributed

a number of goods and services to local communities, such as rubber, timber, charcoal, agroforestry and agricultural produce. Many of these lands are now deforested or degraded as the result of IDPs or refugees having been settled on them.

### 2.7.3 Considerations when applying Forest Landscape Restoration in a former camp area

To apply FLR (see Box 6) in a camp or resettlement setting, an assessment of the impact of the camp on a number of features and conditions must first take place. This evaluation might include considerations such as:

- land tenure – who owns and/or uses the land and landscape?
- past and present uses of the landscape;
- scale of impact – is the impact local to the immediate landscape or have more distant areas been affected (e.g. by wood collection or charcoal production);
- topography – what are the main contours of the landscape?
- climatic and rainfall pattern and trends;
- soil – what types of soil are present?
- soil cover/vegetation – what type of vegetation is found on the landscape?
- biodiversity – what biodiversity is present?
- water resources and their nature – surface or underground?
- goods and services – what goods and services does the landscape provide, e.g. timber, fuelwood, fodder, grazing lands, medicinal plants, non-timber forest products, water, thatch, polewood and so forth;
- agriculture – what agricultural practices are taking place?
- animal husbandry – what type of livestock is found in the landscape?

Some of these issues are described below in more detail (see also Section 4, **Sector-Related Considerations**, for additional information on certain of these sectoral activities).

#### *Topography*

A topographical approach is a good starting point to begin assessing a camp or resettlement landscape, as it may have a bearing on what actions are eventually

## Box 6. Forest Landscape Restoration

The approach adopted by Forest Landscape Restoration (FLR) differs from conventional restoration approaches in several ways. It allows, for example, practitioners and community members to think creatively about what they want from their land and what the optimum suite of goods and services might be in the short- medium- and long-term. It also provides an opportunity to have a more holistic vision of the landscape – a move away from narrow or habitual viewpoints. Specifically FLR:

- takes a **landscape-level view**: this does not mean that every FLR initiative must be large-scale or expensive but rather that site-level restoration decisions need to accommodate landscape-level objectives and take into account likely landscape-level impacts;
- is **adaptive and responsive to people's needs** and can be modified by stakeholders over time;
- is a **collaborative process** involving a wide range of stakeholder groups;
- operates on the principle of **balance**, that is, that restoration efforts need to result in both improved ecological integrity and enhanced human well-being at the landscape level;
- **can be applied not only to primary forests** but also to secondary forests and even agricultural land;
- **can be implemented in a phased approach** so that certain elements can be initiated immediately, followed later and periodically if so desired by additional activities; and
- **does not necessarily aim to return forest landscapes to their original state**, but rather is a forward-looking approach that aims to strengthen the resilience of forest landscapes and keep future options open for optimizing the delivery of forest-related goods and services at the landscape level.

recommended toward restoration, and where these should take place. Mapping topographic features helps to acquire a fuller sense of the physical arrangement of the landscape.

Knowing that the landscape has steep hills that already have erosion problems, or are prone to erosion during the rainy season, helps to determine whether vegetation should be quickly planted to stabilize vulnerable soil, or if additional mechanical measures such as gabions are required. If the landscape is rocky, restorative actions can be planned around those permanent features, so as to integrate them into an overall plan rather than considering them an obstacle. The presence of deep ravines or water catchments, or springs, can also help determine if these sites would benefit from forest restoration, which would help stabilize them and assist in water catchment and flow.



Environmental awareness raising featured in the environmental management campaign at Samukai former refugee camp. Compared with many other former camps in Liberia, considerable numbers of trees remain at this site, offering shade and protecting the soil from erosion and nutrient loss. Such a site requires little in the way of rehabilitation.

## Soil

It is important to assess the state of the soil to get a sense of what possible vegetative cover may be established or re-established. In highly compacted and hard soil, or where deep gullies exist, it may first be necessary to break the soil in some fashion to allow planting. Where the soil has been heavily compacted, this might require a mechanical intervention.

Soil erosion may indicate that vegetative restoration is a priority for a particular site. If the soil of a given site is arable and potentially suitable for agriculture, the site could be prioritized for this purpose, while others may be better suited for other uses. A phased approach of quickly establishing vegetation and tree cover with fast-growing – ideally leguminous – species has the dual benefit of stabilizing and enriching soil with leaf litter, and contributing to the establishment of a humus layer, which makes the soil more productive over time. The soil in degraded forest lands is generally characterized by low fertility, poor structure, absence of fungal or root symbionts, and a lack of suitable habitat for tree seed germination. In these situations, activities are better focused on recovery and maintenance of primary processes such as hydrology and nutrient cycling, rather than attempting to replace forest structure and functions immediately. It may also be best to introduce hardy exotic species as a first step as these can begin to improve soil conditions for a more diverse mix of species as soon as they are planted.



## Vegetation

Vegetation is a key landscape feature of FLR and can serve to restore a former camp in a variety of ways. In highly degraded or deforested landscapes, it is desirable that some vegetative cover be quickly established to stabilize soil and provide shade, wind-breaks, fodder, fuelwood or other goods or services, as determined by concerned stakeholders. Within the landscape, remnant secondary forests, plantations or sacred intact forest patches may remain. Areas around these should be considered as good candidates for natural regeneration, assuming there is a seed source nearby and the seed dispersal mechanisms favour local dispersal.

Plantation forestry has a place in the FLR approach if it makes sense in the landscape and responds to users' needs. However, reforestation with plantations alone cannot be expected to replace all the forest functions that have been lost or compromised.

## Agriculture

In many former camp and resettlement areas, agriculture is likely to be a main form of subsistence for many households. It is important to assess how agricultural productivity can be maximized in those areas of the landscape best suited for it, taking into account such factors as water availability, slope and competition with other land uses. It should be easy to assess which, if any, agricultural activities are currently being carried out.



GRANT WROE-STREET

Once IDPs had left Maimu III, some of the remaining IDPs as well as members of the host community broke down the remaining shelters. The mud which had formerly covered the shelter was used to enrich the soil. A range of cash crops, such as bananas, was then planted.

Based on this information, and integrating information on soil types and conditions, water availability, local uses and needs, market opportunities and so forth, the role and location of agriculture activities can be proposed. This can include a series of different approaches, such as mixed fruit tree and perennial crops, cash crops of trees and market produce, and market and/or home gardens. Taking into account overall site conditions and the expressed needs of local populations, an adaptive, or phased approach should be considered, for example, where strict agriculture production would be mixed with and/or eventually substituted for other uses, such as forest regeneration.

### *Animal husbandry*

Like agriculture, animal husbandry activities can be included in a plan for a given landscape, but careful assessment is needed, as these could have a direct impact on the success or failure of agriculture or vegetative restoration activities. It is important to determine whether domestic animals are present and, if that is the case, to know which species are present in what numbers. It is also essential to reflect upon how these animals might be controlled or monitored, and whether they have open access and free range. If vegetative restoration or planting is to take place, animals should be controlled to ensure that the vegetation can be established and protected. These efforts are usually more labour-intensive and costly if animals are present and not adequately controlled.

### *Biodiversity*

Biodiversity is an important indicator of the health of the overall landscape, in this instance, of its capacity to recover from the impact of having supported displaced people. It is important to include biodiversity-related considerations in camp rehabilitation plans so that it is not unduly affected and that conditions can be optimized to foster it further.

If some of the biodiversity has remained intact, it is important to determine what has made it possible, as it may provide guidance on which species to plant in preference to others. Information should also be gathered from local people about the value and use ascribed to the various species found. Using native and existing biodiversity helps to create a landscape that is likely to have increased environmental value. Strict ecological restoration to maximize biodiversity on a landscape may not be possible or realistic, so consideration should be given to options like restoring key features, such as water catchments, corridors, secondary forests and mixed agroforestry systems.

### *Water*

Investigating available water resources on the landscape is important not only to find sources for watering future plantations, but also to protect the sources themselves

from potential further damage. If, for example, a stream runs through part of the landscape, it may be necessary to restore a natural buffer around it to help shade it from evaporation during the dry season. This, in turn, can potentially prevent flash floods during the rainy season if the stream is prone to flooding. A low-lying swamp or spring can also be vital for subsistence or market gardening.

Other key factors to take into account are the water table across the landscape, the seasonality of the water table and surface waters, possible options for irrigation, and opportunities for water harvesting.

### *Goods and services*

The overall goods and services derived from various environmental resources on the landscape must also be assessed. This will help to determine what species are valued by local populations, and help design a FLR plan that is responsive to those needs. It will also help maximize the restoration of a well-balanced suite of functions and benefits.

Goods and services might include fodder, fuelwood (for fuel or charcoal production), construction timber, medicinal plants, non-timber forest products and so forth. Once the social and economic needs of a community are identified, they should be analysed and compared with the requirements for a restoration of maximum ecological function to the landscape. Interventions should ideally provide a steady stream of goods and services over time, such as swamp agriculture in the dry season, fuelwood plantations on marginal lands and other combinations of goods and services that provide for the needs of the local communities while contributing toward environmental sustainability.



DAVID STONE

A wide range of natural resources are routinely gathered by displaced people – nuts, fruit, medicinal plants, honey and so forth. Much of these are probably consumed directly at the household level although some may also be traded.

The checklist below may help users determine how to assess the potential scope of FLR in this context.

## 2.7.4 Establishing a Forest Landscape Restoration, or land-use, plan

A minimum amount of information is required before effective planning and implementation can begin. However, there is often a tendency to spend too much time and

### CHECKLIST

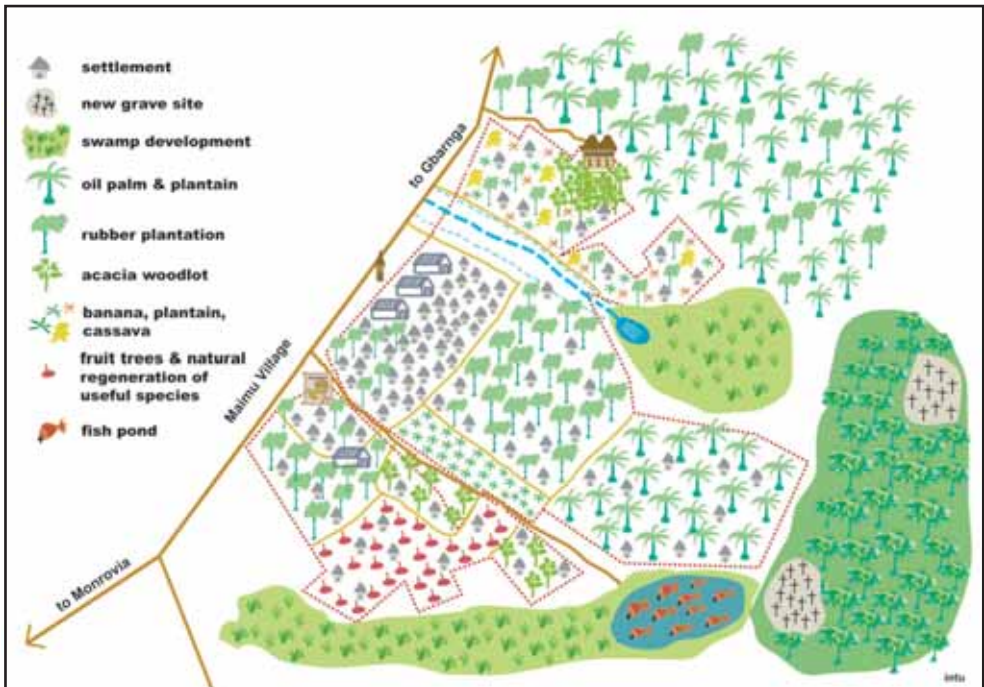
#### Assessing the scope of Forest Landscape Restoration (FLR)

- ✓ What is the physical scale and limit of the landscape being considered?
- ✓ What is the current status of the landscape in terms of its overall condition? Is it highly degraded (without tree cover, with exposed and eroding soil and polluted or compromised water flows), degraded (with some vegetative cover, but that is not optimal in terms of scale or species composition), or not too degraded (fairly good tree and vegetative cover which produces some goods and services)?
- ✓ What exists on the landscape in terms of vegetation, water, biodiversity, wild or domestic animals, and agricultural production?
- ✓ What is the condition of the soil? Is it its natural condition or has it been modified? Is it possible to plant in the soil as is, or are some modifications required? Are there areas of soil erosion and, if so, what is the extent of it in terms of area and intensity?
- ✓ What kinds of plants grow or might grow on the site?
- ✓ What are the goods and services derived from the landscape? Is the current use appropriate to the condition of the landscape?
- ✓ Will certain behaviours have to change to allow for best practices to restore the landscape to improved functionality?
- ✓ What are the ideal landscape functions to restore in the short- medium- and long-term to, for example, quickly stabilize soil, create shade, promote agroforestry, restore degraded forests, and so forth?
- ✓ What native species are on the landscape, how are they or could they be used? What biodiversity is on the landscape, how is it used and how could it be used?
- ✓ What resources exist to meet domestic energy needs in terms of fuelwood or charcoal?

effort collecting information simply because it is available. It is generally better to begin with a minimum amount of information and to build on this as the need arises, and adapt the situation during the implementation process. Some of the most common types of information required are outlined in Table 3, along with suggested sources.

One important element of a FLR plan is likely to be the need to balance trade-offs. In a degraded or deforested former camp area, it is frequently necessary to negotiate trade-offs between different needs and priorities, and to find a compromise between them. The FLR approach specifically recognizes the need to enhance human well-being *and* restore long-term ecological integrity at the landscape scale. This approach acknowledges that some site-level specialization, such as plantations, is inevitable, and that trade-offs between economic, social and conservation values must be considered. Individual site-level trade-offs, however, should be balanced at the landscape level. This recognition encourages more adaptive forms of management than might otherwise occur.

Figure 4. Landscape rehabilitation options for Maimu I and II



A model of environmental rehabilitation for part of the former Maimu IDP camp as developed by participants at UNEP's capacity building workshop, Monrovia, April 2006. The design offers a wide range of options, not only the restoration of rubber and oil palm, which constituted the former land cover. Special attention has been given to diversification, to include cash crops, woodlots and fish farming.

**Table 3. Some components of the landscape-related information needed for planning Forest Landscape Restoration strategies and activities**

KEY COMPONENTS OF A LANDSCAPE MOSAIC	USES OF INFORMATION	SOURCES OF INFORMATION
<b>Land use</b>		
Land-use patterns – different categories of forest, agricultural and plantation land	Strategic planning	Maps (including locally-drawn maps, e.g. using PRA – participatory rural appraisals) and aerial photographs
Trends in land-use, such as whether IDPs are still present or not; whether vegetation cover is increasing or decreasing; whether land is becoming more or less degraded; or whether there are changes in the area of land set aside for agriculture	Determining overall restoration and rehabilitation strategies	Discussions with key informants, landowners, camp workers, NGOs, government officials, local farmers, IDPs, scientists, women and youth groups, as appropriate. Remember that local views can differ from official views and IDP views, and that cross-checking may be necessary
Population patterns and labour availability, particularly the status of IDPs who may be leaving or returnees	Identifying the labour pool for ongoing and perhaps new activities; identifying spare time in the agricultural calendar that could support restoration and rehabilitation activities	Official records from camp managers; former plantation records; discussions with key informants, particularly local people
Local knowledge of land use history; planting and harvesting practices; ecological aspects such as ethnobotany (uses of plants for medicine)	Cross-checking information derived from official and local sources to inform others about restoration and rehabilitation strategies	Discussions with local communities, aid workers, NGOs and others who have lived or worked in the area
<b>Drainage</b>		
Physical landscape features such as contours, streams, swamps, springs, drainage lines, or erosion gullies	Planning restoration and rehabilitation strategies	Maps, including local community maps, aerial or land-based photographs
<b>Land tenure</b>		
Land ownership or traditional land local use rights	Identifying key stakeholders, such as known landowners, or pre-camp land users	Legal boundaries will give the official legal situation. Discussions with IDP or pre-camp land occupiers or managers will give local views of use rights, which could differ from the official or traditional views
Historical legacy of tenure; access and use rights	Determining restoration and rehabilitation strategies that will be sustainable in the local context	Official records; discussions with landowners and users, camp workers, government officials, NGOs and local people (again, remember that official perceptions may differ from local ones)
<b>Environmental and biological Impacts</b>		
Valuable and/or threatened species; areas of high biodiversity; eroding areas; fragmented habitats; weeds or pests	Determining restoration and rehabilitation strategies	Maps, including local PRA maps, and aerial or land-based photographs; plantation records or other documents; local and specialist knowledge (government, NGOs, private sector, scientists)
<b>Other</b>		
Infrastructure, including roads, camp structures, villages, schools, clinics	General planning purposes (short-, medium- and long-term)	Maps, including local PRA maps, and aerial or land-based photographs
Geology and soil types	Proposing, for example, appropriate species for planting in different sites	Maps, including local PRA maps; local knowledge

Preventing environmental degradation or destruction from taking place during an emergency is an important aspect of successful camp establishment, management and closure. Equally important, however, is that due consideration be given to natural resource use planning and management when preparing for the return of displaced people, regardless of whether they are IDPs or refugees.

Early planning is paramount to the return process. So, also, is some knowledge of what the current state of the environment is in the anticipated area of return, as well as what the needs of the returnees might be, and possible livelihood options that might be available to people when they do eventually resettle. The impacts of the return process on the environment, families and communities should also be included in the resettlement planning process.

Section 3.1 presents an **overview of the environmental challenges** posed by the return process. Some **key concepts** are presented in Section 3.2 which also examines some information on current best practice with respect to the return process. Some of the most relevant decisions taken with regard to the return process in Liberia, specifically from an environmental perspective, are examined in Section 3.3 (**The Return and Reintegration Process in Liberia**). Section 3.4 looks at some of the main ways of **strengthening inclusion of environmental considerations** in this phase, including the essential roles of consultations and participation.

### 3.1 BACKGROUND

A continuing priority for the international community is to guarantee a smooth transition from supporting emergency relief for newly displaced populations to longer-term development for those who are able to return to their homes or home area, and for those who cannot do so and whose needs indicate that a new settlement must be created to house them permanently.

These situations present a particular challenge in the post-conflict context, when the reintegration of returnees raises a different, and new, set of issues for camp management and closure, for example. After the initial return assistance phase normally provided to returnees by humanitarian agencies, individuals, families and communities are often left to their own devices. This is not always as successful as planned or desired.

Refugees and/or IDPs can be assisted to return to their communities of origin by government and/or service providers such as UNHCR and its implementation partners. Alternatively, refugees and/or IDPs may spontaneously decide to go home by means of a series of individual/household-level decisions. Both forms of return are likely to impact the local environment, albeit to different extents.

Before becoming displaced, these people were most likely integrated in their own respective communities. On return therefore, they need to be reintegrated after a period of absence, which can be as long as several decades. In some cases, this happens virtually automatically, as returnees rejoin their communities via existing networks of kinship and affiliation to a village or town.

In other instances, however, their resettlement and reintegration needs to be planned and facilitated. Planned reintegration can be based on the creation of a new settlement – which might be a spatially distinct settlement or an extension of an existing settlement – for a specific population who can neither continue to live where they are currently located, nor return to their previous homes. Thus, a new, permanent settlement is required where housing, infrastructure and various types of support are provided by way of assistance.



DAVID STONE

Issues governing the selection of a new camp for IDPs or refugees during an emergency are equally valid to the process of identifying and planning a new settlement for returnees. Here, an area is being cleared for housing and limited gardening activities: surrounding vegetation will remain to protect nearby water resources and soil cover.



Particular attention should be paid to the natural resource base during this phase, as the depletion of natural resources or the impairment or destruction of environmental goods and services, for example, can diminish the returnees' opportunities for establishing sustainable livelihoods. It could, at the same time, undermine the livelihoods of people already living in the area of return, and, if not addressed early in the process, significantly weaken the chances of lasting peace as fresh conflicts could emerge over accessing or using natural resources. Indeed, there is a risk that natural resource depletion and environmental degradation drag a community or even a country into a vicious circle of poverty, political instability or renewed armed conflict, all of which would only add more pressure on scarce resources and contribute further to poverty and suffering.

Government clearly has an important role to play in the process of building sustainable livelihoods for returnees. Yet post-conflict governments have often turned to natural resources such as minerals or timber to restart the economy. The return and reintegration phase, however, is precisely the time when short-term needs must be reconciled with longer-term sustainable practices; caution should be exercised during the planning phases to ensure that ecosystems and specific natural resources which could help rebuild livelihoods are not jeopardized.

Environmental concerns related to the reintegration of returnees are varied and complex. For example, refugees or IDPs often return to areas that have been affected by combat, in which infrastructure has been damaged and destroyed, where unexploded bombs and shells may be found in homes and businesses, and land mines discovered in farmers' fields. For some people there is a tendency to turn to natural resource exploitation, either to generate income (e. g. through hunting or the manufacturing of charcoal) or to make a start at rebuilding livelihoods (e.g. through land clearance for agriculture).

### 3.2 KEY CONCEPTS IN THE RETURN PROCESS

In all return processes, there are two distinct situations with their own dynamic characteristics. First, there is the situation of refugee or IDP camps, where specific environmental impacts have and will continue to occur, so that the cumulative impact on the environment and livelihoods of refugees/IDPs is continually changing. Moreover, refugees and/or IDPs may have gained new skills and knowledge of livelihood strategies that they did not have in their communities of origin.

Second, this process of change is also likely to have occurred in the area of the displaced peoples' origin, to a lesser or greater extent since the displacement of many of its inhabitants. Cultural, socio-economic and environmental aspects may all have been significantly altered (see Box 7).

Return and reintegration – once initiated either in a spontaneous or planned manner – links these two situations. Ideally, the process should ensure that natural resources

## Box 7. Potential sources of conflict during the resettlement process

In the absence of refugees or IDPs, and given Liberia's favourable climate, significant natural regeneration has taken place in many counties. Satellite images show that there is greater vegetation cover today than seven years ago. In addition, many of the earlier established plantations (oil palm, teak and rubber primarily) have now matured. Other changes have occurred:

- some land and buildings have been taken over by family/neighbours who remained;
- families have grown;
- livelihood coping strategies have changed considerably;
- non-residents have moved into certain areas and use different land-use practices; and
- refugees/IDPs have begun to return, spontaneously, and are exploiting natural resources.

In addition, other key trends are now visible. Given recent high mineral prices, the government sees a rapid expansion of mining in the area as a 'quick win' for generating much-needed foreign exchange, and as a lever for economic development. As a result of expectations of significant economic growth, induced development is starting to occur with increasing numbers of culturally distinct people moving into the area in preparation for expected gains. These people are not familiar with indigenous customary practices for managing natural resources and unauthorized activities such as setting fires, killing bushmeat, and ring barking of trees are increasingly occurring. Not surprisingly, tensions mount over access to houses, land and natural resources, and the use made of these assets. Conflict has so far been localized and small-scale, but the number and frequency of incidents is increasing weekly.

and ecosystems are not damaged or destroyed, thus guaranteeing that the environmental resources or assets needed for sustainable reintegration remain.

At the same time, camp closure and rehabilitation actions should achieve similar environmental objectives for the camp areas, its immediate surroundings and, most importantly, contribute to the sustainable development of the host community. The requirements for responsible camp closure and site rehabilitation are discussed and presented in Sections 2.6 and 2.7, respectively.

UNHCR's *Environmental Guidelines* (1996 and 2005) describe the return and reintegration phase of its refugee operations as the "durable solutions" phase. This means that

refugees/IDPs should ideally be provided with assistance to ensure that the influx of returnees occurs with minimum environmental harm and socio-economic tensions, and that the reintegration process is managed after resettlement to ensure that solid foundations are laid for the new, reintegrated community to develop in a sustainable manner, and share equitably in the benefits of development.

Achieving this goal, however, requires more than just assistance to returnees: it requires a new focus. The return and reintegration process, indeed, should be seen as a development opportunity. The socio-economic situation of some receiving communities may decline after people's departure and a community-based recovery programme may be needed. If, on the other hand, there has been no socio-economic decline, the return and reintegration process can be a springboard for economic development. This requires the effective use of existing assets, including environmental goods and services – and thus their careful management – so that they can play a full role in support of development.

Traditionally, humanitarian guidelines have indicated that reintegration should be carried out in a sustainable manner. UNHCR's Operational Framework (UNHCR, 2000), for example, states that UNHCR has the following mandate with respect to this topic: *"..to ensure that the return and reintegration of refugees takes place in safety and dignity and in a sustainable manner"*. Consideration for the environment, however, may not always receive consistent or comprehensive coverage at such times by agencies engaged in the return process.

### 3.3 THE RETURN AND REINTEGRATION PROCESS IN LIBERIA

Given that the return process has gathered momentum in Liberia, increasing consideration should be given to environmental matters. As part of the overall coordination structure in post-conflict Liberia, a Results-Focused Transition Framework (RFTF) has been established as a planning tool to set goals and actions in ten agreed priority areas represented as clusters, one of which addresses displaced populations. The RFTF thus provides a structure in which environmental considerations can be expressed and through which their application can be monitored.

The RFTF states that it is crucial that environmental concerns be properly addressed during Liberia's transition period and stresses the importance of focused, effective and timely action to help prevent the unjust and illegal exploitation of natural resources that has contributed to the destabilization of the country and the region (NTGL, 2005). It also declares that immediate attention should be given to the possible environmental impact of the transition process and that all new facilities and projects, including water and sanitation provision and waste management, should be subject to an Environmental Impact Assessment.

In the same context, the RFTF makes explicit reference to refugees and IDPs by saying that special attention should be paid to the impact of returning IDPs and refugees, including:

- deforestation due to fuelwood requirements around settlement areas;
- the clearance and subsequent degradation of new farming land;
- water pollution; and
- siltation of water courses due to topsoil loss.

According to the RFTF, UNHCR's *Environmental Guidelines* (1996 and 2005) should be adopted as fully as possible (NTGL, 2005).

Also of key relevance to human displacement and the environment are statements in the RFTF concerning the expansion of communities, as is the case when former IDPs or refugees (re)join already existing communities. It is noted, for example, that as communities expand, attention must be given to the way in which energy sources are used – encouraging the use of fuel-efficient stoves, promoting more efficient charcoal manufacturing and better fish-smoking techniques, as well as the sustained use of woodlots for fuelwood. Furthermore, users of diesel generators should be required to pay attention to environmental issues, including the safe storage, handling and ultimate disposal of diesel and engine oil, as well as the prevention of fuel leaks and spills (NTGL, 2005).

The Liberian Government National Community Resettlement and Reintegration Strategy (NCRRS) adopted in June 2004 by the RFTF Working Committee for Displaced Populations, and issued by Liberia's Transitional Government, outlines a comprehensive framework for the return process. Fourteen years of intermittent conflict in Liberia have created several categories of beneficiaries that require reintegration assistance. In line with lessons learned from past experiences, the NCRRS ensures that assistance is targeted to cover all vulnerable populations in order to consolidate peace and community cohesion. The objectives of the NCRRS closely reflect the developmental perspective described above, with respect to the return process:

- to support the resettlement and reintegration of internally displaced persons, refugees and ex-combatants who return voluntarily, in safety, and with dignity, to their homes, habitual place of residence, or location of their choice, and to strengthen their livelihood security and promote reconciliation;
- to generate conditions and support mechanisms, in a coordinated and structured manner;
- to develop an environment conducive to the return, and successful and sustainable reintegration and recovery;

- to give emphasis to an integrated approach that is designed to avoid disparities between different categories of displaced persons, whether IDPs, non-IDP poor, ex-combatants, war-affected communities or returnees from abroad;
- to assist the majority of displaced persons to regain their area of habitual residence before the 2005 elections, thus enabling the population to participate in the democratic process; and
- to promote national recovery that fosters peace and stability and lays the foundation for medium- and long-term development.

In addition to the NCRRS, a complementary initiative has been launched by UNDP, UNICEF, WFP and UNHCR via a joint action plan for Community-based Recovery and Restoration of Social Services in Liberia (2006-2007). This plan sets forth a specific number of environment-related initiatives, mainly in support of raising environmental awareness – in schools and within certain communities – and the development of environmental demonstration centres where people can be trained in and experience best practices with regard to fuel-efficient cooking, agriculture, tree planting and more.

Communities and areas receiving returnees are to be selected as priority sites for intervention. Two demonstration centres have already been established by UNHCR in Nimba and Montserrado counties to enhance advocacy on environmental protection, specifically by providing training, producing energy-saving stoves, through tree nursery management and the use of environmentally friendly construction technology. UNHCR has also previously organized environmental education programmes in 15 schools in Lofa, Montserrado and Nimba counties (UNHCR, 2004).

After the start of the return process in late 2004, it became clear that the capacity of receiving communities to deal with the large number of returning populations (refugees, IDPs and ex-combatants), was going to be inadequate. The lack of basic infrastructure and social services was found to be insufficient and prospects for proper reintegration within local communities were threatened.

To address this issue a pilot project, the Rural Shelter Assistance Project (RSAP) was initiated with pilot housing arrangements planned for four settings. Basic environmental considerations such as the slope of the land, use of mud bricks and ensuring that the sites are not close to ecologically sensitive areas, have at least been factored into the location and design of these sites.

During 2005 and into 2006 there has been a significant increase in post-conflict return and reintegration operations in Liberia. It is clear that the challenges faced in these operations are not only humanitarian and political, but also developmental. Developmental actions bring into play issues of environment and sustainability.

In the case of Liberia, where more than 80 per cent of returnees and host communities are subsistence farmers and may lack the initial ability to engage in alternative sustainable income-generating activities, environmental issues that need to be considered include deforestation, principally for farming and construction, and illicit mining. Timely attention and preventive measures, however, can prevent this from happening in an *ad hoc* and uncontrolled manner, thereby restricting the scale and impact of possible degradation. Thus, careful planning and preparation is essential for the smooth organization of the return process, as well as the later withdrawal of government and support agencies.

The possible actions outlined below, if taken into account, should ensure that environmental considerations are more effectively factored into the return and reintegration process.

### **3.4 STRENGTHENING ENVIRONMENTAL CONSIDERATIONS IN THE RETURN AND REINTEGRATION PROCESS**

Once an area has officially been declared safe, the return and reintegration work can begin. If at all possible, it should begin earlier, at least in broad terms, as soon as there is an expectation that a 'safe' declaration will occur in the near future. From an environmental perspective three main activities should be noted with regard to return and reintegration:

- the development, by government and major partners, of a return and reintegration strategy at county level, for example, and the subsequent formulation of a detailed programme and plan of operations to implement the strategy perhaps at district levels;
- the reintegration of refugees into society and the economy, with attention given to ensuring that resulting activities are environmentally friendly. This activity is divided into transitional (humanitarian emphasis) and consolidation (development emphasis) initiatives, which are implemented simultaneously; and
- the possible closure and rehabilitation of the settlement or emergency camp in the country of asylum, and actions to assist any remaining refugees integrate with the host population (see Sections 2.6 and 2.7).

#### **3.4.1 Approach to integrating environmental issues into return and reintegration**

From a best practice perspective, the following should be undertaken:

- estimate the number of returnees and their location in camps;

- obtain information on their socio-economic characteristics – in particular how they currently make their living, what new skills they may have acquired since leaving their place of origin, and their intended livelihoods once they have returned;
- obtain information on the status of key environmental goods and services in the receiving area, perhaps by using the technique developed in Liberia for vulnerability mapping to aid contingency site selection (see Section 5.1);
- identify the possible impacts of returnees on the environment and receiving communities, with a focus on key environmental goods and services;
- identify whether livelihoods are threatened by possible changes in the status of key environmental goods and services;
- identify measures to avoid or reduce adverse impacts and enhance beneficial impacts/exploit opportunities; and
- prepare a programme of environmental initiatives that can be implemented as a stand-alone activity or, better still, as part of an integrated sustainable development plan.

In certain return contexts, assisted reintegration can take the form of the creation of a new community or a planned extension to an existing settlement where land, houses and infrastructure are provided for returnees. This situation is very similar to the actions undertaken in cases where people have been displaced (involuntary resettlement) because their houses were to be destroyed by a large project such as reservoir or urban highway. There is extensive experience of how to manage such resettlement. Among the main lessons learned from studies on involuntary resettlement are:

- the inadequacy of just replacing lost assets, whether by direct substitution of goods lost, such as tools for tools, or by cash *in lieu*;
- the consequence of poor site selection and preparation; and
- the failure to design and effectively implement a development programme that produces a sustainable and equitable stream of benefits for the resettled returnees and the receiving communities, thus creating a good foundation for reintegration.

The steps mentioned above are equally applicable in the context of returnee resettlement. In that case, however, the focus of the analysis is the specific location and design of the new settlement. This makes Environmental Assessment (see Section 5.2) an extremely useful tool to assist with site selection and the eventual identification of a preferred site. In this perspective, specific aspects that can be the core focus of an Environmental Assessment are:

- site selection from a wider search area, perhaps a local government area that has been designated for returnee reintegration. This can be carried out using broad



To provide returnees with an opportunity of establishing some degree of livelihood security and self-sufficiency, through back-yard gardening for example, the use of heavy machinery was necessary at this site in Blotoe Town to remove the large stumps of rubber trees. Appropriate measures should, however, be taken to prevent loss of valuable topsoil and erosion from taking place.

criteria such as proximity to a protected area, topographic features such as slope, surface and groundwater resources, and/or accessibility. The result may be two or three alternative sites that meet the criteria used;

- comparative assessment of the impacts of the alternative site options, and the selection of a preferred site;
- close integration of analysis/Environmental Assessment work with site design to enable adverse impacts to be designed out – to the maximum extent possible; and
- preparation of an Environmental Action Plan (see for example Box 5).

In its *Environmental Guidelines* (1996 and 2005) UNHCR states that in the environmental planning phase for durable solutions “...an environmental impact assessment (EIA) or rapid environmental assessment (REA) should always be undertaken at an early stage of the planning process”.

As indicated above, many of the same environmental issues associated with the identification of sites for camps (see Section 2, **The Camp Management Cycle**) also



apply to identifying sites or localities for return and reintegration, particularly if a new settlement is to be created. The following points can serve as a checklist of issues/concerns that might apply to the return process.

## CHECKLIST

### Identifying sites for return and reintegration

- ✓ What is the quality of the environment within 15 km of the site (or wider area) where households are to be settled? Is it, for example, heavily forested or open land?
- ✓ Is the area currently inhabited? If so, by approximately how many communities and households?
- ✓ What natural resources are used by people already living in this area, and for what purpose?
- ✓ What is the anticipated number of people likely to be resettled?
- ✓ What is their skill and knowledge base for natural resource management?
- ✓ Have gender concerns been taken into account?
- ✓ Are there any particular environmental issues that need to be flagged, e.g. is the site in a watershed, or near a protected area or sacred forest?
- ✓ Is safe drinking water available in sufficient quantities to support returnees without reducing its availability for existing communities?
- ✓ Are those being resettled being encouraged or enabled to engage in agriculture or other forms of land exploitation? If so, is the land suitable for agriculture?
- ✓ Will the anticipated use of land add pressure on existing communities?
- ✓ Is land tenure likely to be an issue?
- ✓ Are there traditional forms of natural resource management which returnees should be made aware of?
- ✓ What, if any, technical assistance is or might be available to help people rebuild livelihoods?
- ✓ Are opportunities for income generation likely to be based on sustainable natural resource use?
- ✓ Have efforts been made to create an environmental management committee within the community?

Additional points to take into consideration can be obtained from **Annex II: Selected Criteria to Assist with the Process of Camp Site Selection**.

### **3.4.2 Infrastructure provision**

In certain situations the repatriation of returnees is complicated by poor accessibility. During periods of conflict and as a result of natural disasters, transport infrastructure such as roads and bridges can be badly damaged or even destroyed. These need to be either repaired or reconstructed. Such infrastructure provision, however, can damage the environment if it is not carefully assessed and managed. Some of this damage might be immediate and localized (e.g. increased siltation in a river), while other impacts might be more diffuse and only apparent in the longer term. A road cut through a forest, for example, allows more open access which can, in turn, result in deforestation, increased hunting and so forth, all of which contribute in the long-term to a possible loss or impairment of a broad range of environmental goods and services.

Most countries have laws requiring EIAs for certain types of roads and bridges. These need to be respected if applicable to the infrastructure projects being proposed. Also, agencies such as UNHCR have specific Environmental Guidelines that must be followed by the implementation partners and contractors who are actually responsible for the work (e. g. a provision that a certain number of local trees must be planted for every tree felled). The key to success here is Contractor Control through monitoring and enforcement procedures via contractual conditions.

### **3.4.3 Environment and integrated development during return and reintegration**

The return and reintegration process is generally less effectively supported by governments and agencies than emergency situations. Returnees are usually given repatriation assistance for travel and a non-food item package – comprising utensils, tools, seeds and other materials – prior to departure. On arrival, they may receive some building materials to help construct a shelter or house. In some instances, however, promised building or roofing materials do not materialize. This forces returnees to seek building materials (primarily construction poles and roofing materials) from nearby forests, thus causing unnecessary local environmental harm.

Also, the early period of reintegration (sometimes considered to be subdivided into “transition” and “consolidation” periods) is important for sustainable return and reintegration. Important components of both these periods include the provision of support which might range from access to microfinance credit to infrastructure rehabilitation and wider area development programmes. Possible options for alternative and sustainable livelihood activities include fish farming, pond/swamp development, small-scale animal husbandry, cash crop agriculture and innovative income-generating activities such as soap making and blacksmithing. Non-sustainable livelihood activities such as commercial hunting, pit sawing, slash-and-burn agriculture, excessive use of forest-related construction materials, and the wide-scale collection and uprooting of medicinal plants should be avoided as much as possible.

## Box 8. Examples of possible environmental initiatives

**Targeted environmental projects**, which should focus on the issue of people's livelihoods as a whole and complement other developmental initiatives. By taking a broader, integrated and more holistic approach to providing support, the environment is less likely to be degraded. Future options for livelihood support are most likely going to be improved if wise use is made of the natural resource base. Forests or woodlands, for example, can provide a long-term return for people if managed correctly. If a significant number of trees are removed for housing or for a quick profit – without the establishment of woodlots – options for long-term sustainability are almost immediately lost.

**Environmental awareness-raising** has proven to be an effective and lasting means of altering people's behaviour. This can have positive implications not only for local natural resources but also for people's own livelihoods and well-being. Awareness-raising is as important in the early planning stages of the return process – when arrangements are being made for shelter construction, water and sanitation provision, as well as land for cultivation – as it is when people are actually physically resettled in such areas. Awareness-raising activities could include the staging of local dramas and practical demonstrations, such as the use and maintenance of energy-efficient stoves, hygiene education, promotion of the use of sun-dried mud bricks, and guidance on the sustainable harvesting of forest resources.

**Strengthen existing community natural resource management systems.** Traditional respect for such management can be a powerful mechanism to ensure continuing delivery of key environmental goods and services. However, such systems are vulnerable to sudden increases in population pressure and to influx of people who have learned other ways of natural resource management or who have lost respect for traditional customary management processes. Care needs to be taken not to rely completely on this mechanism.

UNHCR's *Environmental Guidelines* (1996 and 2005) indicate that any specific suite of environmental initiatives should be part of a broader development programme. Before inclusion, a check needs to be made that the proposed actions are compatible with other development-related activities being undertaken in the area and, specifically, for the same beneficiaries. By this means, duplication of effort can be avoided, any potential conflicts identified, and actions taken to avoid them.

### 3.4.4 Consultation, participation and disclosure

Consultation with representatives from the returnee, host and receiving communities – with a specific focus on the use that is to be made of natural resources – is crucial throughout the entire return process. Without such consultations, projects and programmes are less likely to achieve their objectives and there is a risk that ecosystems or specific natural resources be damaged or destroyed.

Consultations must be carried out with key stakeholders to obtain information, comments, suggestions, and ideas to help shape decisions on projects/programmes. At minimum, key stakeholders are likely to be:

- community leaders (elected or appointed by traditional customary means);
- landowners (host and receiving communities);
- women (leaders of women's groups);
- young people (leaders of youth groups, senior school students);
- religious leaders;
- NGOs or community-based organizations working in the camps and host and receiving communities; and

- representatives of households which follow the main livelihood strategies, for example subsistence farmers, fishermen, hunters or carpenters.

In some instances, specific groups which have the responsibility of setting and monitoring local or traditional rules governing access to and/or use of natural resources may already exist. Involving such groups in discussions is paramount.

Consultation and participation requires disclosure of information about the intentions of government and agencies. It is best if this information can be provided in advance so that people have time to reflect upon it, discuss it with friends and family or in formal meetings of associations (e.g. with elders) prior to providing a response. Government and other agencies involved must appreciate that consultation and disclosure do require effective forward planning and preparation. In addition, it is essential that the meetings be recorded (in writing) with the following information:

- time, date and place of meeting;

### **Box 9. Risks of not dealing with camp closure and resettlement in an integrated manner**

Following the principles and practices for return and reintegration outlined above may create political pressure on government and support agencies. First, the direct link between camp closure and sustainable rehabilitation becomes clear in terms of application of equity during the entire return process. Host communities of closed camps might well feel aggrieved if they know that receiving communities are benefiting from development assistance while they are left with a deserted camp site, and the attendant legacy of environmental harm, with no developmental benefit being offered. In addition, local government areas not designated for return and, hence, not in receipt of developmental benefits may also question the equity of such actions, particularly if they consider themselves to have suffered more disturbance and environmental damage during a period of conflict than the designated areas.



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Frequent and transparent consultation is an essential part of the return process. This requires effective forward planning and disclosure about the intentions of government, service providers and other stakeholders involved in the process. Information from consultations is vital for sound decision-making.

- material disclosed in advance to whom, when, and by whom;
- identity of stakeholder(s) and those facilitating the consultation; and
- issues discussed and the input of stakeholder(s).

Written records are vital to create an account of meetings that can be referred to later in the decision-making and implementation processes. Once decisions have been made it is important to prepare a decision record showing the extent to which stakeholder comments/suggestions were taken into account and, if not, provide brief justification. Such records create a paper trail showing the consultation process and its role in decision-making that can be used later, should actions or initiatives be evaluated for performance effectiveness.

Consultation is most often used to provide information and input to decisions. Once decisions have been agreed in principle, they need to be designed and implemented. Here, the participation of key stakeholders can play an effective role. Shared decisions on the design of a project or programme, especially if complemented by shared



Liberian workshop participants discuss environmental issues and options for resettlement with stakeholders at Blotoe Town. Maps drawn by community members are useful tools for such discussions as they can help people to visualize their surroundings.

management and control of implementation, can significantly increase the likelihood of effectiveness, because there is a broad agreement on goals and objectives, actions needed and a sense of shared ownership and commitment to achieving success. Such participation has not been used very often in returnee and reintegration situations, but there is considerable scope for its increased use in the future with regard to planning and managing environmental resources, in this specific context.

# 4

## SECTOR-RELATED CONSIDERATIONS

As part of the planning and entire camp management and resettlement processes, particular attention needs to be given to a number of sectoral considerations, which relate either directly or indirectly to the environment and the use of natural resources or ecosystem services. Links with the environment can be traced to many sectors such as education (in terms of environmental education and raising people's awareness for environmental issues), or health (for example, with regard to the control of insect or pest vectors for disease).

More direct links within and between sectors, however, are also obvious and it is these which are examined in more detail in this section, specifically: **domestic energy** (Section 4.1), **water and sanitation** (4.2), the selection and use of **construction materials** (4.3), **agriculture** (4.4), **livestock** (4.5), **waste management** (4.6) and opportunities for environmentally-friendly **income generation** (4.7). For quick reference, a checklist of the main points is provided at the end of each subsection, together with a few key references. Further details about these sectors can be found in the technical references on the compact disc accompanying this *Guide*.

### 4.1 DOMESTIC ENERGY

Wood is the main source of cooking and heating in much of rural Africa. Displaced people need sources of energy to meet their cooking, heating and lighting needs. If no alternative energy sources are provided, they have no other choice than to rely on whatever resources are locally available.

Most often, and especially in developing countries, displaced people rely on fuelwood and charcoal as their main form of domestic energy. Although circumstances differ, an average refugee or IDP family requires 4-5 kg of fuelwood per day for cooking. Where large numbers of people congregate, this has a considerable impact on the environment. In order to reduce or better control the impact of firewood harvesting, a number of measures can be introduced, such as controlled harvesting (only certain amounts of wood are collected from a designated area, perhaps focusing only on dead wood or trees of a certain species), natural forest management to promote regeneration, reforestation and afforestation projects, or the provision of fuel in an organized manner from sources outside the immediate hosting area.

Each of these options is likely to have quite different consequences for the environment and thus needs to be carefully weighed.

## **Box 10. Domestic energy – a heavy reliance on wood**

Wood is generally the preferred cooking fuel for IDPs and refugees. Its availability, however, is limited and demands from displaced populations exacerbate the situation.

A Swedish International NGO in Liberia, PMU, supplied firewood to displaced populations in mass shelters in Monrovia and some camps nearby. The wood was purchased from communities and then transported along the Robert International Airport highway to designated outlets. In general, providing wood for free should be avoided at all costs. IDPs or refugees should be requested to return some service or fee for wood provided to them, as otherwise a wide range of social and economic problems are created.

When refugees in VOA-1 camp were found to be uprooting trees to collect every part of the tree for charcoal production, host communities quickly imposed laws prohibiting this act, in an effort to control deforestation. This move was followed by the establishment of a woodlot close to the immediate host community, Kpallah Town. It was later replicated in five other refugees host communities in Montserrado and Grand Cape Mount counties.

Remedial measures like this one are often essential to prevent conflicts from arising between the two sets of communities.

Even more important in the refugee/IDP context, though, is the need to lower actual fuel consumption by reducing demand. This can be achieved by:

- promoting energy efficiency; and/or
- demonstrating, promoting and supporting energy-saving techniques such as the use of fuel-efficient stoves and the introduction of more efficient cooking practices at the domestic level.

In certain situations, and with the correct approach (such as the assessment of user needs and careful and continued support for users), some forms of alternative energy such as biogas plants, solar cookers, photovoltaic power, wind generators, or micro-hydropower systems could be installed and supported.

Energy-efficient stoves are increasingly being promoted in refugee and IDP situations, but they are also used in many other rural and urban settings. Many types exist, ranging from simple home-made mud stoves to prefabricated tin stoves or solar cookers. In this approach, however, it is important that the type of stove that is promoted is appropriate to that particular community, and that people are shown how to use and maintain the stove correctly. Lack of understanding of these two basic principles is



one of the main reasons why people abandon fuel-efficient stoves and resort to simple three-stone fires

For fuel-efficient stoves to be effective a number of basic conditions must be met. There should, for example, be a local shortage of fuel: if fuel is available in abundance, people will consume it without thought, and probably collect more for sale. In a situation like this, an artificial shortage could be created by placing firm restrictions on free fuelwood collection.

At the same time, stoves should respond to the user's needs. While they are not energy-efficient, three-stone fires provide users with heat, light and a source of energy. They are also often an important part of the social make-up of a family or community. Modern fuel-efficient stoves rarely, if ever, provide all of these functions. Moreover, some stoves require tedious preparation of the fuel materials, e.g. grasses. Finally, stoves should also be cheap or else provided against a certain cost, e.g. a recipient should work in a tree nursery for a given time to "earn" the stove.

While much emphasis has been given to promoting fuel-efficient stoves, the promotion of energy-efficient practices is of at least equal importance. A range of these activities exist, including fire management, fuelwood preparation, the way in which food is prepared and the way in which food is cooked. Many of these practices are low-cost or free apart from some additional labour. They include:

- splitting wood before burning – sticks of 3-5 cm are the best size for most cooking jobs and are easy to handle;
- drying wood before burning – this can provide a fuel saving of up to 25 per cent;
- shielding the fire from wind, which can again save as much as 20 per cent fuel;
- putting out the fire when the cooking is over helps conserve fuel for another time;

### Box 11. Training people in stove production

In six refugee camps – VOA-1, Banjor, Zunnah, Samukai, Sinje-1 and Sinje-2 – efforts were made by the Environmental Foundation for Africa to reduce firewood consumption by reducing demand through the promotion of energy-efficient and energy-saving techniques, mainly fuel-efficient stoves.

Block leaders of the camps each nominated a representative for a training of trainers exercise offered to the camps. The trainees then returned to their respective blocks and organized training sessions to allow individuals to produce stoves for their own use and/or for sale. Stove production tools – hoes, wheelbarrows, cutlasses, shovels, knives and moulds – were provided for the training but the actual raw materials, mainly clay and straw, were collected locally by the producers.



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The use of wood or charcoal as a source of domestic energy is one of the main causes of environmental impact by displaced people. Most rural households in Africa, however, rely heavily on these two fuel sources. It is important therefore that people are aware of a few simple practices and techniques which might help economize the amount of fuel actually used. On the left, specially constructed mud stoves are designed to accommodate pots of a certain size, thus preventing heat loss – although too much charcoal pushes the pots initially off their base. On the right, a simple metal shield helps protect this fire from wind, although the use of the traditional three-stone fire base is very wasteful. Drying wood and cutting it into small pieces also produces more energy (and thus uses less fuel) than the long pieces of wood shown here.

- using freshly grown food and pre-soaking hard foods such as beans and lentils is a major saving: soaking beans and grains for 5-8 hours can reduce the amount of fuel needed for cooking by as much as 40 per cent;
- milling cereals and beans, and cutting large pieces of food into smaller chunks also reduces cooking times;
- using the right cooking utensils: metal pots for example, are best for boiling water and fast cooking, but clay pots are best for foods that require slow simmering, such as beans and maize; and
- allowing a certain amount of soot to accumulate on the outside of metal pots helps absorb radiated heat: excessive cleaning of the outside of pots should be avoided, although soot should not become thickly encrusted either.

## Box 12. Choice of fuels

A wide range of fuels is often available for use in refugee or IDP situations. The choice of which to promote, however, is subject to a number of conditions including:

- people's preferences;
- fuel availability;
- market value of fuels; and
- reliability of fuel and availability of stoves.

In addition to fuelwood, other energy sources include:

- kerosene;
- loose waste and residue (crop waste and residue, animal dung, twigs);
- grass;
- peat;
- fuel briquettes;
- biogas; and
- solar energy.

Where displaced people are settled in areas with nearby forest or woodlands, charcoal production often begins as people try to generate an income. Unless properly built kilns are used, the manufacturing of charcoal is a highly wasteful process; steps should be taken to prevent it from developing in an uncontrolled manner, as this could lead to wide-scale deforestation. A checklist for promoting energy-saving practices appears on page 78.

## 4.2 WATER AND SANITATION

The supply of safe drinking water is an essential component of the response to a situation of human displacement. People need water to fulfil a number of vital functions such as drinking, cooking and personal hygiene, as well as for livestock and agricultural purposes. Human displacement, however, can have serious environmental impacts on water supplies.

Closely associated with the above is the issue of sanitation. Sanitation includes the disposal of human excreta, wastewater (including from drains), solid and liquid camp waste, dust and the control of insects, rodents and other pests. Failure to maintain adequate standards of sanitation can result in health risks caused by contamination

## Promoting energy-saving practices

- ✓ Assess the needs of the community in terms of domestic energy (and preferences for fuel/cooking types).
- ✓ Promote the use of improved cooking stoves.
- ✓ Ensure that people are using and maintaining them correctly.
- ✓ Demonstrate and promote improved cooking practices.
- ✓ If conditions allow, encourage shared cooking – this should also be considered during camp layout.
- ✓ Examine options for promoting alternative fuels.
- ✓ Monitor household needs and fuel consumption rates.
- ✓ If possible, expand technical support to local communities as well.

### FOR ADDITIONAL INFORMATION

UNHCR. 2002. *Handbook of Experiences in Energy Conservation and Alternative Fuels: Cooking Options in Refugee Situations*. UNHCR, Geneva.

UNHCR. 2002. *Handbook of Selected Lessons Learned from the Field: Refugee Operations and Environmental Management*. UNHCR, Geneva.

of the environment, and by pests and vectors such as mosquitoes, flies, cockroaches or rodents. This can in turn lead to disease within the displaced population, as well as in the local communities.

Pit latrines should be equipped with concrete slabs that are properly sized to fit the hole dug. If this is the case, there is no need for an additional secondary wood slab or supporting beams. This can also ensure easy hygienic cleaning. A simple wooden cover should be supplied for each latrine to reduce the presence of insects.

A number of water-related measures should be taken into account to avoid environmental damage. Protecting natural springs is essential to ensure that reliable supplies of water can continue to be available. Indeed, preventing contamination is one of the main challenges throughout the duration of a camp. Contamination of water resources can be caused by a combination of activities, such as:

- human settlements being located too close to open streams or over unconfined aquifers;
- poor siting and construction of latrines;



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Inadequate drainage from bathroom and washing facilities, together with seepage from latrines (left hand side of photograph) can quickly give rise to standing water bodies in camps. Preventing standing water near household shelters is important in order to reduce health risks from, for example, mosquitoes.

- inadequate sanitation facilities leading to poor control of excreta;
- inadequate provision of waste storage near points of use;
- insufficient waste collection and poor disposal;
- general overuse of water resources;
- inadequate drainage at tap stands and livestock watering points;
- environmentally inappropriate agricultural practices, such as the improper use of fertilizers, inappropriate drainage or irrigation systems;
- overcrowded and mismanaged livestock herds; and
- improper measures to control pests through, for example, the use of pesticides.

Water provisioning facilities need to be carefully planned and closely monitored. As a minimum standard, each person should receive at least 15 litres of water per day.

An early assessment of the presence, quality, amount and recharge rate of underground water sources should be carried out as part of the site selection process. If no water is available or if supplies are sporadic or inadequate for the population present, alternative methods such as pumping or tankering in water may be required. In most cases, such water will require treatment before being delivered to the IDPs or refugees.

With regard to sanitation, it is important to recognize that:

- an awareness raising campaign is often needed in a camp situation to ensure that people use the provided facilities and good hygiene practices are actively promoted;
- ensuring personal security is of major importance when it comes to sanitation and washing facilities;
- some systems (e.g. sewers and septic tanks) need sufficient water to function properly;



Erosion gullies can form quickly in crowded camps, if proper sewage and drainage is not ensured from hand pumps or tap stands. Here, at Samukai former refugee camp, run-off water from a hand pump is being efficiently used to grow vegetables in a raised bed located slightly downhill from the pump stand.

- dust carried in the air can be irritating and harmful to the eyes, respiratory system or skin, can contaminate food or damage equipment;
- the community should be sensitized to the dangers of disease-carrying insects and rodent vectors within the camp; and
- the removal of too much vegetation for vector control, for example, can lead to erosion.

Thus, it is very important to design and put into operation, as early as possible, a basic system for the disposal of human excreta as well as a waste management system. These systems should match the demands and local site conditions. As a general standard, camps should have at least one latrine for every 20 members of the community. Latrines should be dug downstream of wells and should be at least 30 m from any groundwater source and at least 1.5 m above the water table. Latrines should ideally be no more than 50 m from dwellings as this encourages good hygiene. Family latrines are the preferred option.

Drainage systems should be carefully designed to result in slow flowing drainage channels, which help reduce surface erosion. The speed of water flow depends on the slope and the size of the cross-section of the drainage channel; fast-flowing drainage channels can be very effective in evacuating water, but they can also generate significant erosion problems.

Even on relatively flat sites, it may prove useful to construct contour bunds – earth ridges which are aligned along contours. Bunds can serve a range of useful functions, including stopping water from flowing down slopes and thereby preventing erosion, but they can also help improve infiltration by slowing down the flow of water or by directing it in a desired direction. They are not designed to evacuate water off the site but rather to restore the water-holding capacity, enabling and accelerating vegetation growth, while reducing erosion and flooding.

If erosion gullies occur, check-dams – for example made of stones or woven branches firmly pushed into the ground – should immediately be constructed across the gullies. These dams can further be enforced by planting strong grass species, such as elephant or vetiver grass, behind them. Gabion boxes (wire-mesh cages filled with stones) are excellent as check-dams, but are more expensive. Check-dams should be spaced so the top of the lower check-dam matches the bottom of the upper check-dam. Specialized expertise from a water engineer may be required.

The siting of graveyards in a camp requires special attention. To avoid water pollution, graveyards must be located at least 30 m from groundwater sources used for drinking water, with the bottom of any grave 1.5 m above the groundwater table. Surface water from graveyards must not be allowed to enter the settlement (Sphere Project, 2004). Burial sites should be carefully marked and special precautions taken during camp closure to guarantee that these sites are protected.

Camps are often located in remote areas where little waste treatment infrastructure exists. One should be creative and look for opportunities to design and operate appropriately-scaled systems to deal with waste.

## CHECKLIST

### Promoting sound water and sanitation practices

- ✓ Organize surveys to determine the quantity and quality of water resources.
- ✓ Develop appropriate management systems to ensure water availability and quality over time.
- ✓ Properly maintain water sources and storage facilities to avoid contamination.
- ✓ Ensure proper use of chemicals (e.g. chlorine) to disinfect water.
- ✓ Raise awareness of the importance of water conservation and proper hygiene at water points.
- ✓ Design and put into operation a basic system for the disposal of human excreta as soon as possible, taking into account expected needs as well as local conditions and possible cultural taboos.
- ✓ Ensure that latrines are sited and built according to recognized standards.
- ✓ Control wastewater at source and/or install drainage facilities to prevent accumulation of standing water around shelter areas.
- ✓ Install a waste management system (for non-human waste), with special precaution for hazardous wastes, including medical wastes.
- ✓ Use caution when undertaking measures to control pests and rodents (e.g. use of pesticides and insecticides). Consider the use of non-chemical pest-control methods over the long term.
- ✓ Pay particular attention to the siting and marking of burial sites.
- ✓ Ensure that separate watering areas are designated for livestock.
- ✓ Ensure that the design of water points and bathing and washing facilities takes run-off and drainage into account to prevent erosion.

#### FOR ADDITIONAL INFORMATION

Sphere Project. 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*. The Sphere Project, Oxford.

UNHCR. 1992. *Water Manual for Refugee Situations*. UNHCR, Geneva, Switzerland.

UNICEF. 1999. *Towards Better Programming. A Water Handbook*. UNICEF, Water, Environment and Sanitation Technical Guidelines Series – No 2. UNICEF.



### 4.3 CONSTRUCTION MATERIALS

To ensure that site preparation is carried out in an environmentally-friendly way, it is often useful to use labour-intensive methods, such as employing local people and the displaced population to fell trees, clear the site and remove topsoil, instead of using heavy machinery. Heavy earth-moving equipment should only be used in cases of extreme urgency such as the massive arrival of people fleeing conflict or natural disasters.

Refugees and IDPs require materials to support their shelters, construct houses and/or additional structures for keeping small livestock, for example.

Given its availability (rather than its affordability), wood is most often the material of choice. This, again, can have a significant negative impact on the environment. For an emergency shelter built with local materials, the average quantity of wood required is 80 m of straight poles with an average diameter of 5 cm. This is equivalent to 0.2 m<sup>3</sup> of timber per family (average of five members). An influx of refugees or IDPs to an area therefore puts particular pressure on forest resources, especially young trees. Special precautions are required to prevent wide-scale clearance of trees at such stages. One option that has proven effective, but that requires careful planning, coordination and monitoring, is to allow people to harvest a certain number of trees from an area where trees have been selected and marked (with paint, for example). When the quota for cutting has been reached, another site with similarly marked trees is made available. This system, which continues to operate in a similar rotational manner, helps prevent total deforestation and allows forests or woodlands to regenerate.

Wooden poles, however, are not the only materials collected by IDPs or refugees for shelter. Bamboo, palm fronds, branches, grasses and even leaves are also gathered, which can cause additional damage. Heavy collection of palm fronds, for example, can quickly kill off trees, inadvertently leading to conflicts with local communities who value these palms for their nuts, oils and the wine that can be made from the sap of the tree.

Trees felled for construction purposes are typically straight and young. These trees are the fastest-growing and therefore contribute most to the productivity of a given forest. Extracting them is damaging to the environment. If it is not possible to provide appropriate building materials in a sustainable way, alternative building methods should be explored.

One such alternative is mud brick construction, which can reduce the number of poles required for a typical refugee shelter by up to 80 per cent. In addition, brick houses are more durable and provide a healthier living environment for people. However, caution should be exercised before embarking on this approach, as mud brick construction techniques often result in the excavation of large pits, which can, for example, fill with water and be dangerous for young children and livestock, or serve as



Construction of household shelters such as these puts considerable pressure on the local environment as specific types of trees are sought and cut for supports. Alternative means of construction such as mud bricks should be considered as these can be more durable and more environmentally friendly.

insect breeding grounds. Therefore, a plan for how to deal with or use such pits must be developed, with appropriate technical advice. Such a plan typically addresses the issue by proposing either centralized excavation of soil in specifically designated areas in the camp or broader vicinity – where back-filling, landscaping and tree planting is organized by the camp management agency – or decentralized excavation of soil on individual family plots, where awareness-raising must be organized to address the issue of pit excavation. In this case the pit can be back-filled with soil and used as a family refuse or compost pit. Within a short period of time, this site can also be used for planting trees like banana. If the pit is being used for refuse or compost, it must be regularly covered with an 8-10 cm layer of soil to control vermin.

Camp construction also often requires the use of sand and gravel to build agency and other camp infrastructure. This can have harmful effects on the local environment. Sometimes, often due to time constraints, agencies also buy poles or other construction materials by the road-side a few kilometres from a camp. This may provide an opportunity for income-generation for local villagers, but does not ensure that the poles or other construction materials bought are harvested or sourced in a sustainable manner. Agencies should therefore set an example by ensuring that construction

materials used are sourced and applied in an environmentally friendly way. Construction poles should be bought from controlled harvesting sites, possibly managed by the local administration. When extracting sand and gravel, likewise, care must be taken not to create the basis for subsequent erosion.

## CHECKLIST

### Promoting sound construction

- ✓ If construction materials are not provided, consider organizing the cutting of selected trees from designated and controlled harvesting sites.
- ✓ If materials are being brought in from outside the site, they should be sourced from locations where they have been harvested or gathered in an environmentally friendly way.
- ✓ Particular attention needs to be paid to relations with and possible impacts on local communities if IDPs or refugees are allowed to gather their own shelter materials, as conflict can quickly arise.
- ✓ Consideration should be given to mud brick construction, but with the necessary caution applied to the back-filling of excavation pits.

#### FOR ADDITIONAL INFORMATION

Corsellis, T. and Vitale, A. 2005. *Transitional Settlement: Displaced Populations*. University of Cambridge/shelterproject and Oxfam, UK.

Sphere Project. 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*. The Sphere Project, Oxford.

## 4.4 AGRICULTURE

Displaced people often try to establish even the most rudimentary forms of agriculture in an attempt to achieve some degree of food security. Different forms of agriculture can be carried out at different levels: small-scale gardening, for example, is possible on many household plots (if there is space), while larger-scale agriculture may only happen outside the camp. The former is easy to organize and can, with correct approaches and methods, be quite intensive and productive. Outside the camp, arrangements must be made with local landowners. This typically involves some form of agreement between the individuals concerned – often in the form of a portion of the crop grown, payment or an additional service (e.g. labour) provided.

Small-scale gardening is likely to have a limited impact on the environment and it can even be beneficial if fruit or other trees are planted. More intensive agriculture, however, has the potential to damage the environment and can also have social (e.g. conflict) and health (e.g. through excessive or inappropriate use of chemicals) impacts.



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As families start to return to their former homes, space becomes available in the once crowded living conditions in camps such as Salala. People quickly capitalize on such spaces, growing salads and small vegetables either for their own consumption or for resale.

Soil conservation is of utmost importance. In this respect, particular attention should be paid to the following aspects:

- preventing the loss of soil nutrients: continuous harvesting without restoring some nutrients in the form of compost or fertilizer (animal manure or crop residue, for example) leads to a gradual and eventually total decline in crop yields;
- conserving organic matter and soil structure: soil differs widely in its structure and composition, partly as a result of the nutrients and materials it contains. Some soil can be damaged by heavy vehicles, water accumulating on the surface, because it is compacted by livestock, and so forth. Maintaining soil structure is essential for good agricultural practices.
- soil erosion: the removal of the fertile topsoil by wind or rain damages the structure of most soils and reveals harder layers of soil beneath. These are often subject to further weathering by rain, which causes drains and gullies to form;
- soil compaction: in a crowded situation like an IDP camp, soil soon becomes hardened and compacted, rendering it useless for agriculture. In wet seasons,

particularly in tropical countries, repeated heavy rainfall quickly runs off compacted soil, meaning that there is little or no absorption of water into the ground, and that resulting water flows often cause gullies to form; and

- salinization: over-watering crops and allowing water to stand in fields or vegetable plots leads to a build-up of salts which can quickly render soil infertile for agriculture. Careful watering and good drainage are essential.

Particular care should therefore be given to preserving some vegetation cover on the site to promote soil conservation, as mismanagement can easily lead to soil degradation and loss of nutrient content. Agroforestry – a form of agriculture that combines planting trees (often with species that will introduce nitrogen into the soil) with crops such as vegetables – is especially well-suited to this purpose. In a well-planned agroforestry plot, one might expect to find trees and bushes that are deliberately planted to provide nutrients for the soil, others that are grown to provide fodder for livestock and yet others that have medicinal value or produce flowers for beekeeping. A range of vegetables for household use or crops for sale is then planted along with these trees.

### Box 13. Simple agricultural systems that are suitable for camps

Two other forms of sustainable agriculture that might be applied in a refugee or IDP situation are *taungya* and permaculture.

*Taungya* is a form of agroforestry practised in West Africa that allows farmers to plant rows of trees and to cultivate in between them. As the trees grow and develop crowns that block out the light for ground crops, farmers repeat the experience elsewhere. This is a very appropriate form of forestry for rehabilitation purposes. Liberian refugees in Côte d'Ivoire in the early 1990s successfully used this method, planting rows of “*framiré*” (*Terminalia ivorensis*), a local, commercially grown tree used in construction, and interplanting these with rice and maize. The practice also brought recognition for the work of refugees by local farmers and government authorities.

Permaculture (“permanent agriculture”) is an intensive form of agriculture which concentrates on the relationship between the landscape and deliberate spatial design. It deals with the soil, plants, animals, buildings, the direction of wind flow and so forth, focusing on the relationships between these elements as they occur, or can be positioned, in the landscape. Simple forms of permaculture can be practised very effectively, even in crowded camp situations. A range of vegetables can be grown by stacking old tyres filled with compost and earth on top of each other. Old plastic sacks or containers can also be used for salad crops, potatoes, carrots, tomatoes and other crops, by piercing a few drainage holes in the base of the container and filling it with compost, soil and seeds or plants.

## Box 14. Demonstrating good practices

To address the issue of organic agriculture, the Environmental Foundation for Africa set up an environmental demonstration centre at VOA-1 refugee camp. The centre provided practical demonstration training for refugees and host communities in tree nursery establishment, agroforestry and organic gardening. Model plots were created so that families could learn about ideas and enquire how they might start individual gardens in the camp and neighbouring communities. Back-up support provided to households participating in this scheme allowed quality control and corrective measures to be taken where necessary.



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While it has many potential benefits, agriculture can have far-reaching impacts on such critical ecological resources as water catchments, surface water and wetlands. It is therefore critical that water management and conservation measures be implemented to prevent run-off from agricultural plots into wetlands, but also to avoid depleting water reservoirs through excessive pumping in the case of irrigated crop production. For crops like *padi* rice, the use of chemicals should be strictly limited as these can seriously impact water quality and local wildlife. In general, and in order to minimize the use of agricultural chemicals (fertilizers and pesticides), organic production methods should be promoted. These are not only more environmentally friendly, but also largely free. Simple composting practices in the household plot, or mixing biodegradable household waste with animal manure or residue from crops, can provide a constant source of nutrients to be dug back into the garden.

If agriculture is seen as a viable option for IDPs and refugees, it is important that planning for it starts as early in the camp planning and management phases as possible. Unless guidance is provided at these stages, individuals often engage in indiscriminate land clearance and preparation, practices which have considerable negative consequences for the local environment.

Support services to this sector should ideally focus on helping IDPs and refugees determine which crops might grow best in those situations, as they may not be familiar with the conditions of the site they have settled in. Basic assistance is also required for people with no prior experience of agriculture.

## PROMOTING SOUND AGRICULTURAL PRACTICES

- ✓ Promote organic farming techniques and practices, including agroforestry, *taungya* and permaculture.
- ✓ Avoid the use of chemicals and pesticides to the extent possible.
- ✓ Ensure support services are available as early as possible if it is likely that agriculture will be practised.
- ✓ Encourage crop rotation.
- ✓ Encourage composting.
- ✓ Provide high-yielding strains or varieties of crops, after determining the crop preferences of the people concerned.
- ✓ Monitor crop yields and the spread of agriculture.
- ✓ Establish simple demonstration plots to show what environmentally friendly options are available.

### FOR ADDITIONAL INFORMATION

UNHCR and SAFIRE. 2001. *Permaculture in Refugee Situations: A Refugee Handbook for Sustainable Land Management*. UNHCR/SAFIRE (Southern Alliance for Indigenous Resources), UNHCR, Geneva.

UNHCR and CARE International. 2002. *Handbook for Promoting Sound Agricultural Practices: Livelihood Options in Refugee Situations*. UNHCR, Geneva and CARE International, Atlanta.

## 4.5 LIVESTOCK

Livestock is an important form of social security for many displaced populations and some animals have important cultural and social significance. Given the often crowded living conditions in camps, however, keeping and rearing livestock may not always be an option, or be desirable, at least for certain larger species.

Small livestock such as goats, pigs and poultry are best catered for within the boundaries of a camp; some of the implications of this are considered below. Keeping small livestock in camps will most likely mean that they are penned either within the household compound or at some other location. Poultry or rabbits, for example, can easily be kept under such conditions and fed with household scraps and locally available vegetation. The productivity of both species increases significantly if they are contained within a certain area, mainly as a result of increased security. Such animals provide useful sources of food for families, as well as a possible means of generating income.

Keeping large herds of animals such as cattle is not likely to be an option in most camps. Some large animals such as sheep or cattle can, however, be kept under closely controlled conditions, but this invariably means that food resources must be acquired from outside the camp and then fed to the penned animals – “zero grazing”. A few cows kept in this manner, for example, can provide a household with milk and fertilizer for a garden, as well as being a source of savings or potential revenue.

Pigs are often kept in small numbers and fed on household waste or allowed to forage for scraps. In some societies, pigs are subject to religious taboos, so the adoption and promotion of pig-keeping must be considered against the sensitivities of local communities or others in the same community.

Animals that are left to wander and forage for food, especially goats which browse on low-level vegetation, are often a nuisance and can cause additional negative environmental impacts. Animals wandering into open water sources or unprotected springs also cause health problems.

Careful placement is required for all animal pens, in order to prevent contamination of surface and groundwater resources. Manure from penned animals such as rabbits or cattle can be mixed with other organic matter and added to the compost pit.

Likewise, if livestock is allowed to wander indiscriminately around the camp, special measures should be taken to keep them from contaminating water supplies, such as natural springs or tap stands. Separate watering areas with adequate drainage should be established for livestock far from all human dwellings.

## CHECKLIST

### PROMOTING SOUND LIVESTOCK MANAGEMENT

- ✓ Promote limited small livestock-keeping if people have prior experience with it.
- ✓ Assist people in deciding what approaches, techniques and species are best suited to their particular situation.
- ✓ Ensure good hygienic practices and animal husbandry.
- ✓ Provide separate penning and watering areas for livestock.
- ✓ Ensure that the keeping of livestock in camps does not impact on the local community.
- ✓ Prevent transmission of disease and parasites.

#### FOR ADDITIONAL INFORMATION

UNHCR and IUCN. 2005. *Livestock-Keeping and Animal Husbandry in Refugee and Returnee Situations. A Practical Handbook for Improved Management*. UNHCR, Geneva, Switzerland.



One final aspect that must be considered no matter what type of livestock is kept is transmission of disease. Animals brought from one part of the country to another may serve as a vector for disease, transmitting it to other species or possibly to humans. A range of traditional remedies are known to most communities who have experience in dealing with livestock. If this is not an option, professional veterinary services should be sought if a disease is suspected.

## 4.6 WASTE MANAGEMENT

The way in which waste is collected and disposed of in camps can have a major effect on the surrounding environment. Left unattended or uncollected, waste quickly leads to poor hygiene, attracting vermin and subsequently leading to disease and associated health risks.

Livestock such as goats, as well as wildlife may suffer from eating non-organic waste accumulating in the camp or surrounding areas. Plastic bags are particularly damaging as they can kill the domestic animals that eat them. If they accumulate, they can also prevent water from penetrating the surface of the ground, leading to the formation of pools of stagnating water that constitute ideal sites for mosquitoes and other insects.

### Box 15. Types of waste

Organic waste, which comes mainly from plant and animal sources, is biodegradable, being broken down by bacteria, fungi and other small organisms. Climatic conditions allowing, organic waste could be transformed into compost. Alternatively, organic waste could be disposed of in landfills.

Inorganic wastes are chemical substances of mineral origin. They are much more resilient and may take considerable time before they are rendered harmless.

All solid and liquid waste should be managed in a safe and sustainable way: people handling it should be provided with appropriate protective clothing and handling equipment. Separate collection of non-organic waste should always be undertaken.

Sustainable waste management can be achieved through waste collection, appropriate dumping, composting or a combination of the above. Proper waste collection requires that waste collection points made of old oil drums or other recycled containers be regularly emptied. The camp management agency, together with the displaced population, should provide and manage such collection points for every 10-15 families or for every cluster of shelters in the camp (see UNHCR, 2000). The implementation of a programme involving the “3-Rs” (reduce, re-use, recycle) should be a major feature of any waste management plan, as it can provide a source of revenue while reducing the amount of materials that might otherwise have to be dumped.

Collected non-organic waste must be disposed of properly by dumping in landfills. If there is a risk of groundwater contamination from landfills, an impermeable liner must be placed under the landfill. This can be achieved with an impermeable layer of soil, such as clay, or by using a membrane. In both cases, collection systems must divert



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Waste management is important in all the phases of camp management, but special care may be required during and as a result of camp closure, on account of the many different types of waste present. Early preparation of a waste management plan is advisable: among other things, this helps to identify which, if any, materials can be re-used or recycled.

water downstream from the groundwater source. Once the landfill is full it should be covered by an impermeable liner to prevent rainwater from entering it.

Burning should only be considered as a secondary option and should be avoided where possible. Plastic waste should, as a general rule, not be burned, as most types of plastics found in developing countries release hazardous fumes when combusted.

Special precautions should be taken with all hazardous waste, which includes medical waste, empty pesticide containers, used/expired chemicals, etc. It is preferable to return expired medicines and pesticides to their suppliers, if at all possible.

Two types of medical waste must be particularly carefully dealt with: sharps (blades and syringe needles) and pathological wastes. Sharps should be placed in sealed containers. It isn't necessary for a sealed container to be a fancy box; it can be made simply from an old milk powder tin with a hole in the top. As a general rule, sharps and pathological waste should be incinerated in incinerators specifically designed for this purpose. High temperatures are required to destroy pathological waste: burning in a simple fire will not completely destroy the pathogens. After incineration of hospital waste, further special precautions must be taken for its safe dumping. Deep burial is recommended.

**PROMOTING SOUND WASTE MANAGEMENT PRACTICES**

- ✓ Provide ample opportunities for waste collection: all households should have access to a refuse container and/or be no more than 100 m from a communal refuse pit (Sphere Project, 2004).
- ✓ Waste management should be linked with an awareness campaign.
- ✓ Refuse pits and bins should be clearly marked and fenced off.
- ✓ Encourage and enable regular collection of solid and liquid wastes.
- ✓ Ensure that waste disposal is carried out in an environmentally and socially safe manner.
- ✓ If waste is to be buried on-site it should be covered at least weekly with a thin layer of soil to prevent it from attracting vectors of disease (Sphere Project, 2004).
- ✓ Encourage the recycling of as much waste as possible.
- ✓ Pay particular attention when dealing with medical wastes.

**FOR ADDITIONAL INFORMATION**

Sphere Project. 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*. The Sphere Project, Oxford.

**4.7 INCOME-GENERATING ACTIVITIES**

In the absence of alternatives, displaced people's primary sources of income tend to be based on the exploitation of natural resources: the collection and sale of wood, the manufacturing of charcoal, brick burning or hunting wild game, as well as petty trade. As options for generating income become more diversified and common throughout the community, some of these activities become less attractive from a financial standpoint. Some can also lead to conflict with host communities who already use these same resources. The collection of palm fronds for thatching, and tapping palm trees for palm wine, are two examples of conflict over natural resources between displaced populations and hosting communities in Liberia.

Some income-generating activities may have negative environmental impacts. The development and design of environmentally sound (and economically viable) income-generating activities deserves special attention and should be supported.

It may in many instances be counter-productive to ban or prohibit environmentally harmful income-generating activities like the manufacturing of charcoal. It may instead be more effective to examine how such activities can be made more environmentally friendly by, for example, introducing better charcoal manufacturing technology such as improved kiln design.



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One of many positive impacts of refugee and IDP camps is the economic drive they can provide. Markets quickly spring up in camps with traders often coming from considerable distances to buy, sell and exchange a wide range of goods. The benefits of such trade are not only restricted to displaced people – local communities also benefit from such commerce to the level that when a camp actually closes, local communities often experience a loss. Many natural resources trade hands in such camps and camp management must ensure that activities like charcoal production or bush meat hunting are not allowed to develop.

### **Box 16. Income generation without destroying the environment**

Environmentally sound income-generating activities in refugee and IDP camps in Liberia included mat making (from bamboo), soap making, crop production, milling and petty trading. Raw materials for the production of mats were harvested from swamps, and the mats were then sold in the camps to supplement plastic sheets provided by the relief agencies.

Other refugees were trained in soap making and given grants to start the production and sale of soap in the camp. According to CONCERN-Liberia, IDPs who have since returned to their areas of origin in Lofa County are still engaged in soap making as a means of generating income. Others are engaged in carpentry (a skill they learned in the camps) to earn income.

A local NGO, the Sustainable Development Promoters, trained refugee/IDP women in sustainable agriculture practices. The women then used these skills to produce crops for consumption and income generation in the camp. Other refugees and IDPs were involved in petty trading, buying and selling imported goods.

Environmentally sound activities with income-generating potential include:

- community-based milling businesses, where individual families or groups of refugees mill hard grains to reduce cooking times. This is usually carried out against a fee or a proportion of the milled food;
- producing and marketing fuel-efficient stoves to reduce fuel consumption;
- producing tree seedlings; and
- producing and marketing environment-friendly construction materials.

CHECKLIST

**PROMOTING SOUND INCOME-GENERATING PRACTICES**

- ✓ The range of income-generating activities in a camp should be as broad-based as possible.
- ✓ Income-generating activities should also be encouraged and promoted among local communities.
- ✓ Reliance on natural resources as a form of income generation should be reduced as much as possible, while recognizing that to ban them altogether may only prove counter-productive.

FOR ADDITIONAL INFORMATION

ILO and UNHCR. 2002. *Introduction to Microfinance in Conflict-Affected Communities*. ILO, Geneva, Switzerland.



# 5

## TOOLS AND APPROACHES FOR IMPROVED ENVIRONMENTAL PLANNING AND MANAGEMENT

This section illustrates the purpose and use of a number of tools and approaches that can, if applied in a timely and concerted manner, greatly assist with the process of environmental management. Timely and consistent use of these tools can also provide a number of social and economic benefits to refugees, IDPs and local communities. Many of the tools described offer a considerable degree of flexibility, although some prior experience may be required to ensure that they are used to their maximum potential. Attention is drawn to the issue of **environmental vulnerability in the process of contingency planning** (5.1), which is based on a specific exercise in Liberia. This is followed by an explanation on how and when an **Environmental Assessment** (5.2) can be undertaken, which touches on some of the legal requirements of such a process. Section 5.3 (**monitoring**) examines some of the main considerations to be addressed for longer-term management, with the use of suggested tools. Finally, the process of conducting an **evaluation** is also described (5.4).

Using the right tool or approach is of course important, but interpreting the results of an environmental assessment or evaluation, for example, is even more important, as this information contributes to improved planning, decision-making and management. Familiarity with the tools described in this section should help users benefit from these field-tested approaches, but specialist assistance may be required in some circumstances.

### 5.1 CONTINGENCY PLANNING

Environmental considerations should feature as early as possible in the planning and preparatory phases of a humanitarian operation dealing with human displacement. Taking even some of the broadest and most frequently experienced concerns into account at this time can avoid costly mistakes and lead to a better overall situation and better conditions for IDPs or refugees.

The “contingency” phase can be defined as the “time before an emergency which is yet to occur but likely to happen” (Corsellis and Vitale, 2005). Contingency planning is generally undertaken to identify likely opportunities and constraints in responding to the expected situation. It is also an important occasion to engage stakeholders who might be affected in the process.

In January 2006, there were a total of 35 IDP and 4 refugee camps in Liberia. Within five months, two refugee camps and all IDP camps were formally closed, and plans

were underway to assess the future needs of these sites in view of rehabilitation (see Section 2.7, **Environmental Rehabilitation of Former Camps**). At the same time, however, there was a possibility, which remains at the time of writing, that a new influx of refugees might arrive from some of Liberia's neighbouring countries. Contingency plans were hence prepared for a possible influx of refugees from Côte d'Ivoire, and 19 sites were identified as potential entry points and way-stations (see Figure 1).

The geographical separation of existing and former camps, and the sites defined in the contingency plans is clearly visible (Figure 1): existing and former camps are/were located almost entirely in the central zone, while the currently identified contingency sites are generally located in the more forested south-eastern part of the country, adjacent to Côte d'Ivoire.

Liberia's land cover can be divided into three broad geographic zones – a north-western zone, a central zone and a south-eastern zone. The northern and southern zones are generally characterized by natural and semi-natural ecosystems – primary and secondary forests, and a mosaic of forests and agricultural land. In contrast, the central zone is characterized by an environment that has been highly modified from its natural state through conversion to agriculture and agro-industrial plantations, mainly rubber and oil palm.

To analyse the potential environmental impact of future mass human displacement in Liberia, UNEP examined the vulnerability of the environment in terms of a person's access to the surrounding environment from a camp, and in terms of the ecosystem services value of the environment. The rationale behind this approach is that an area of higher ecosystem service value that is easily accessible from a camp or camps, is likely to be more vulnerable to negative impacts than an area of lower ecosystem service value which is inaccessible from the same camp(s) (see Box 1, Case Study 3 and Annex III for additional information).

By highlighting potential environmental risks or problems, this methodology can help assist planners and decision-makers make more valued judgements when selecting potential sites for camps (see Case Study 12). The results can therefore help prioritize potential camp locations with regard to the environment, in cases where a choice does exist.

## **5.2 ENVIRONMENTAL ASSESSMENT**

Environmental Assessments (EAs) are an internationally established tool used to predict the environmental impacts of a proposed action before a decision is made to implement that action. It is a way of identifying, by means of a structured approach, the actual or potential impacts associated with a particular activity. In many countries an EA is a legal requirement for certain types of proposed projects, including for the construction of new refugee camps/settlements or the extension of an existing one.



## Mapping environmental vulnerability of existing and proposed camps

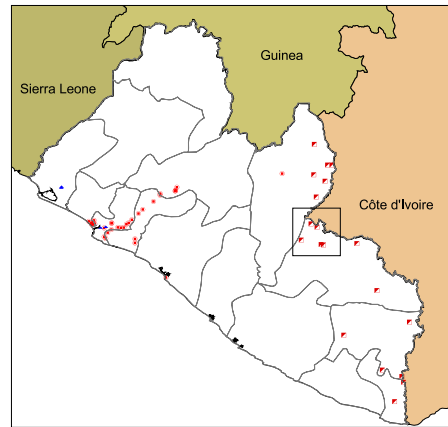
Examining the ecosystem services value (see Box 1) of a particular region in the context of contingency sites for a refugee or IDP camp provides an initial indication of the vulnerability (or lack) of specific ecosystems for that camp site. An example from eastern Liberia illustrates how this tool can be used for planning and decision-making.

Much of eastern Liberia – virtually the entire length of its border with Côte d'Ivoire – is covered by natural forest. This region has not experienced the same scale of clearance as the central zone, where oil palm and rubber plantations were established. However, any contingency site for a camp in this region is likely to have a higher ecosystem value than most, if not all, of the former or existing camps in western Liberia. These sites would therefore be more vulnerable to negative impacts, such as those commonly resulting from population displacement. Some of the proposed contingency sites are located in areas surrounded by primary or secondary forests; others are even in close proximity to proposed protected areas.

In Grand Gedeh County, in eastern-central Liberia, five contingency sites – B'hai Niko, Bin Sawmill, Janzon Town, Zleh Town and Pohan – have been identified (Figure 5). None of these sites are currently being used as crossing points or way-stations, but they have been defined as possible camps if the need arises.

All of these sites are located in a forested zone, which has higher ecosystem service values than the region around Monrovia. Agriculture is currently practised around the proposed sites at Zleh, Pohan and B'hai Niko, where some forest degradation is apparent. The two other sites are located in areas of either open or closed dense forest. They are also closer to the border than the other sites in this cluster.

**Figure 5. Contingency sites in Grand Gedeh County**



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The environmental vulnerability map (Figure 6) for this cluster of sites shows a predominance of areas of high environmental vulnerability (cyan, magenta and red) and few areas of low vulnerability (green). This is a direct consequence of the higher ecosystem service values of this generally forested region. Along roads and where the land cover is more open, the vulnerability zones spread out over a wider area, in particular around Pohan and Zleh.

The Bin Sawmill site is located in close proximity – less than 2 km – to the proposed Zwedru protected area. The medium-to-high vulnerability rating for the eastern side of this site rises to high vulnerability along the boundary of the proposed protected area, a stretch of more than 10 km. Moreover, the road network in this same zone further enables access to the proposed protected area from both the north-west and the south, thus increasing the potential impact on this site from encroachment.

Given its location within closed dense forest, the immediate vicinity of the Janzon Town contingency site is also categorized as a high vulnerability zone. In this case, other nearby sites, such as those areas currently being used for agriculture, would be more suitable, from an environmental perspective, for establishment of a camp.

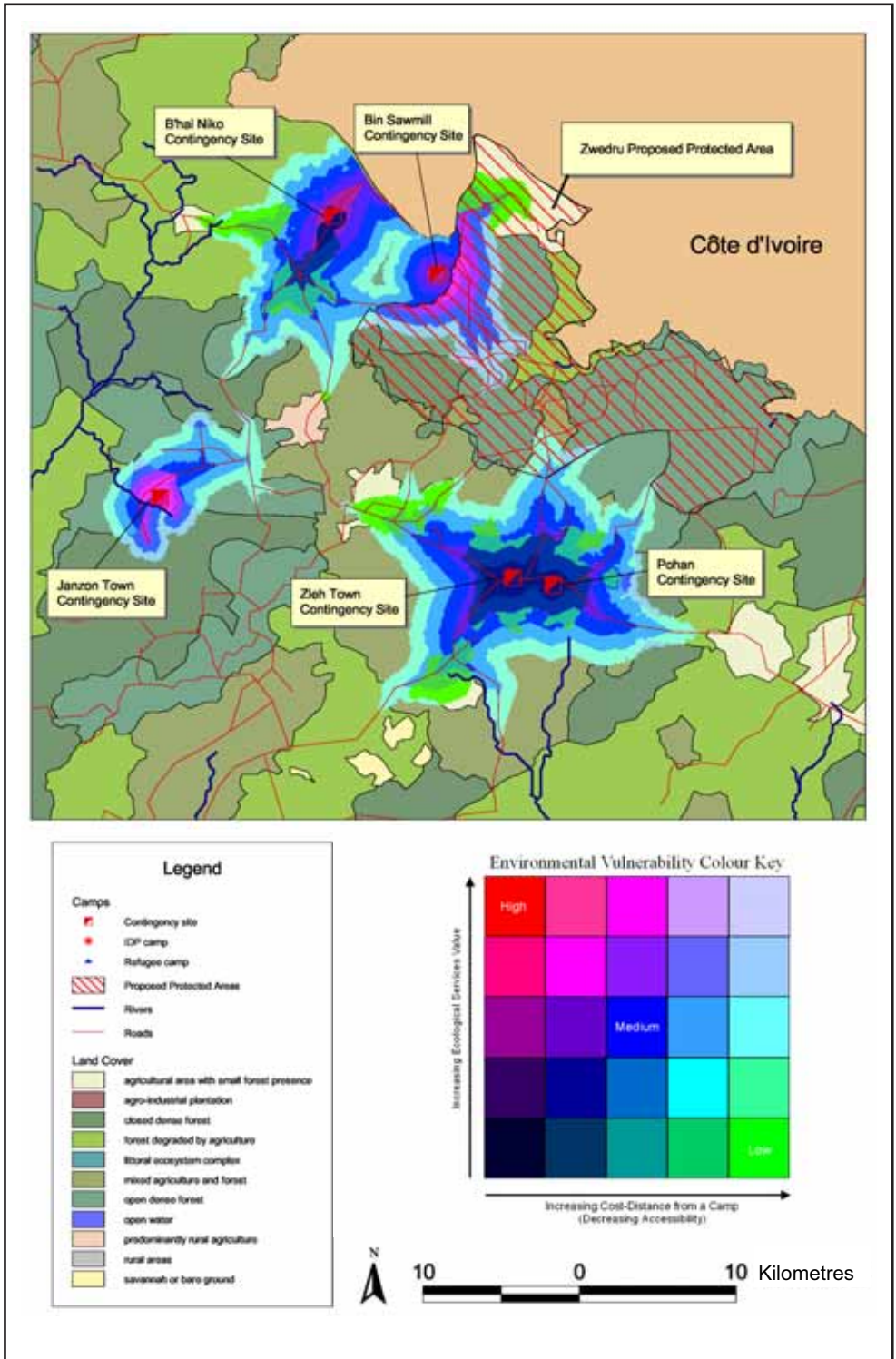
Of the five sites, both Pohan and Zleh Town are located in areas of lower environmental vulnerability – their use should therefore, from an environmental perspective, be prioritized ahead of the other potential sites in case of an influx of refugees from Côte d'Ivoire.

In the case of Liberia, it is worth noting that some projects or activities related to human displacement may fall under Liberia's environmental legislation and thus could require an Environmental Impact Assessment License. The type of activities and projects requiring an EIA are summed up in Annex 1 of the Environment Protection Law and include activities relating to the treatment and disposal of waste, the supply of water, and the construction of camps, although no specific reference is made to these being camps for displaced people (see Box 17).

Many EA tools have been developed for specific activities, but most build on the same principles, which include the identification of impacts and means to prevent or mitigate these impacts, consultation, participation and involvement of the affected communities. It is also part of best practice to monitor the application of these measures both for the duration and the aftermath of the activity.

In recent years, a number of quick assessment tools – Rapid Environmental Assessments (REAs) – have been developed, as it is recognized that time and resources (human and financial) are often limited, especially during an emergency.

Figure 6. Environmental vulnerability of contingency sites, Grand Gedeh County



In emergencies, environmental considerations are often excluded from initial assessments or consideration when planning and making decisions.

The benefit of a REA, however, is that it can be applied as a first step towards a more thorough assessment. Moreover, the data collected during a REA can provide useful baseline data and hence help define the scope and coverage of a more thorough assessment.

Relevant guidance on assessment methodologies for use in IDP or refugee situations can be found in:

- Rapid Environmental Assessment (UNHCR and CARE International, 2005);
- Environmental Assessment (UNHCR and CARE International, 2005);
- Rapid Assessment and Development of an Environmental Action Plan for use in IDP camps (OCHA, 2005); and
- Guidelines for Rapid Environmental Impact Assessment in Disasters (Benfield Hazard Research Centre and CARE International).

The tools are included in full on the compact disc accompanying this *Guide*, and briefly described below.

### **Box 17. Application for an Environmental Impact Assessment license**

- 1) An Environment Impact Assessment license or permit shall be required prior to the commencement of all projects and activities specified in the Annex 1 to this Law;
- 2) The developer or project proponent shall submit an application for an Environmental Impact Assessment license, on a prescribed form addressed to the County Environmental Officer of the Agency in conformity with Section 36 of the Agency Act.

Source: Section 6, Environment Protection Law of the Republic of Liberia

### **Box 18. Some advantages and limitations of Rapid Environmental Assessments**

The advantage of a REA are that it can be applied quickly by a small group of people, it helps identify the most critical elements of the environment affected by the presence of a displaced population, and it can identify and rank issues requiring immediate action and hence provide decision-makers with baseline data that allow them to make informed decisions.

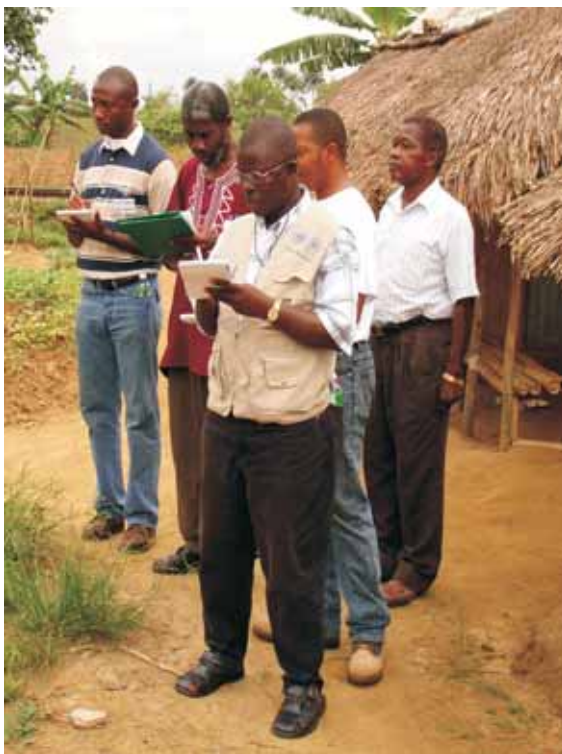
On the other hand, the limitations of an REA are that it is not very participatory and that it may not give possible solutions to the identified issues. Any REA should ideally be followed by a full Environmental Assessment.

The *Rapid Environmental Assessment* developed by UNHCR and CARE International is intended to be used primarily in relief operations and emergency situations – times when information is needed to influence decisions but when resources are scarce and time limited. It is based on five checklists, is designed to be used by a small team of non-specialists, and to be completed within 48-72 hours.

The five checklists cover: a situation analysis, influencing factors, the environmental situation, the environmental impacts of relief activities and a results summary. Use of this tool is very much a first step in assessing risks and needs in an emergency or a situation where time is too restricted for a more elaborate assessment. It can, however, also be used in more protracted situations where sudden changes take place, such as the fast-evolving situations where population displacement occurs, as well as during more stable care and maintenance situations, and during repatriation and reintegration operations.

The companion *Environmental Assessment Handbook*, also developed by UNHCR and CARE International (2005), has been designed for use in the following situations:

- contingency planning that includes the identification of possible sites for new camps;
- identification and selection of camp/settlement sites and their design;
- if significant expansion is being considered for an existing camp/settlement, or if there is a planned change in their management regime;



DAVID STONE

Environmental Assessments can, and should, play an important role in all phases of camp/site management. This, however, is rarely done, most often because of time constraints or a lack of awareness of what benefits might accrue from conducting an assessment. This group of people, representing government agencies, international NGOs and the UN are conducting a rapid assessment of Samukai former refugee camp to gauge some of the environmental impacts of this camp and develop recommendations on what steps might be appropriate for its future rehabilitation.

- if new arrangements or facilities are to be made to accommodate relocated refugees from other camps/settlements;
- prior to repatriation and reintegration plans being agreed and action taken; and
- when rehabilitation of former camp/settlement sites is being considered.

It is a far more rigorous and detailed process than the REA described above. This tool is applicable at all phases of a refugee or returnee operation from emergency, care and maintenance to repatriation, local settlement or resettlement of refugees in a third country. The Handbook also contains particular guidance on the important role of Environmental Assessments in the identification and selection of sites. After a first exercise to define the type of activity or action needing specific attention, the Handbook describes the process to be followed for an Environmental Assessment.

There are eight main tasks to be addressed when undertaking an EA:

- Task 1 – Characteristics of the Proposed Action
- Task 2 – Identify Impacts of Concern (Scoping)
- Task 3 – Describe the Baseline Conditions
- Task 4 – Predict Impacts
- Task 5 – Assign Significance
- Task 6 – Environmental Action Plan
- Task 7 – Reporting
- Task 8 – Decision-making.

OCHA has also developed a quick assessment tool for use in IDP situations in particular. This guideline called “*Rapid Assessment and Development of an Environmental Action Plan*” (RADEAP) brings together REA methodology and participatory-based approaches. The tool is designed to be as flexible as possible, in order to allow its use in different situations, by people who are not necessarily environmental experts.

The RADEAP process is designed around two distinct but inter-related phases. The first phase, the rapid assessment, takes five forms: a situation overview, an identification of environmental problems caused by IDPs, potential environmental threat(s) by IDPs, response of the relief operation and impacts on the environment, as well as a results summary form. The second phase, the development of an action plan, is largely based on structured working group discussions and makes use of a number of participatory tools.

Benfield Hazard Research Centre, University College London and CARE International have developed guidelines for *Rapid Environmental Impact Assessment in Disasters*. The guidelines are designed to provide input on environmental conditions in disaster situations, in a way that is convenient in situations where time is a limiting factor. This REA tool is built around conducting a simple analysis of information in the areas of:

- the general context of the disaster;
- disaster-related factors that may have an immediate impact on the environment;
- possible immediate environmental impacts of disaster agents;
- unmet basic needs of disaster survivors that could lead to adverse impact on the environment; and
- potential negative environmental consequences of relief operations.

This REA tool does not claim to provide answers on how to resolve environmental problems, but its use should provide sufficient information to allow those responding to a disaster to formulate common sense solutions to most of the issues identified.

### 5.3 MONITORING

While Environmental Assessments are recommended at all phases of camp/settlement planning or management, they are usually time-bound exercises, to be used when selecting a site for a camp, for example, or for determining the possible environmental impacts of extending a camp. Active monitoring of the situation is equally important, but it should be a routine and ongoing activity throughout the life cycle of a camp or settlement.

Two types of monitoring can be carried out:

- compliance (or performance) monitoring, to make sure that the planned activities are being implemented as intended – by the appropriate people, in the correct area(s)/theme(s), and in the correct fashion; and
- outcome monitoring, to see if the desired changes are occurring in the environment or within the community. This needs to be carefully planned. What, for example, is to be observed and measured? How are measurements to be made? Who makes the observations or measurements, when, and how often? How is the information stored, processed, and presented to different members of the community?

An essential part of the monitoring process is the identification and selection of indicators – measurable signs of change in a process or a project's/programme's

activities – that will help people to know if the intended results are being achieved or not. Indicators are intended to provide information that will be readily understandable and useable by the people who are engaged in the monitoring process. For this to be effective, indicators must be developed with the intended users and not imposed upon them by outside agencies.

Indicators measure various kinds of information, such as:

- the presence of something, such as a fish species, pests or weeds;
- the distribution of impacts – who has gained and lost, in what areas?;
- the level of output/impact – quantitative indicators such as the number of farmers planting tree species (e.g. for animal forage or green manure) along contour bunds, or the area of tree plantations;
- the quality of output/impact – qualitative indicators such as an evaluation of the quality of a training workshop; and
- the cost of certain activities.

As information is gathered through the monitoring process, there comes a time when an evaluation of the situation would normally be required. Questions which might be raised include: Have all the actions been carried out? How successful were they? Are the desired benefits visible yet? Were the actions socially acceptable? Were they practical? This information is then placed in front of the wider community and the lessons and achievements discussed, as the basis for developing the plan for the next period.

Particular emphasis is given to the use of participatory approaches to environmental planning, monitoring and evaluation in refugee-related operations, since it is the affected people (refugees or IDPs) and the local host community who benefit most from the application of these tools. Additional information on this can be found in the *Community Environmental Action Planning Handbook* (UNHCR/CARE International, 2005). This resource book provides guidance on the use of participatory approaches to enhance environmental management in refugee camps and settlements, in returnee operations and within the host communities. The Handbook describes a process to be followed with refugee, returnee and host communities to help them plan, develop, implement and monitor their own community environmental management plans. It explains how participatory methods can be used and identifies some key tools.

Depending on the situation, GIS methodology should, if possible, be used to help describe, analyse and map the natural features and resources of the area under investigation. This is not only useful for monitoring purposes, but can also be helpful throughout the planning and management phases, providing additional, systematic





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Regular monitoring of a wide range of environment-related issues is essential for sound environmental management at the camp, and broader landscape, levels. Unless features like water run-off or gully erosion development are monitored and addressed, serious problems can quickly develop, some of which may be costly and time-consuming to repair.

means of data storage, referral and analysis. Specialist assistance will almost certainly be required if GIS is used and consideration should be given to how the GIS system can be operated and maintained locally to provide best results and to best serve the project or programme.

## 5.4 EVALUATION

Like assessments, evaluations are time-bound exercises that attempt to measure – systematically and objectively – the relevance, performance and success of ongoing or completed projects or programmes. Evaluations are undertaken to answer specific questions, and should help decision-makers, managers and individual actors determine what did and did not work, and why. They should provide information that is credible and useful, thus enabling lessons learned to be incorporated into the decision-making process. In this manner, evaluations also introduce a common language among all agencies and individuals involved in a particular project or programme.

Good preparation is essential for all evaluations. This can be guaranteed by focusing on the following considerations:

- Why is the evaluation being undertaken at this point in time and who is requesting it?
- When should the evaluation be carried out – in what season, for example, or at what stage of a project/programme cycle?
- What is the precise scope (geographical and thematic) and focus of the evaluation?

- Who is responsible for the evaluation's management and implementation?
- How will the evaluation be conducted – what methods are to be applied, what information sources are likely to be consulted?
- What financial, human and logistical resources are needed?
- Next steps: what will become of the findings of the evaluation, how will these be shared with broader audiences and who will be responsible for ensuring that recommendations from the evaluation are duly considered and translated into action?



GRANT WROE-STREET

Periodic evaluations need to be routinely carried out as part of the environmental management process. Good preparation is essential for all evaluations. Actively involving community representatives in the process is also advisable as these people invariably have a better understanding of what the main issues and needs are for a particular situation.

Additional guidance on the various types of evaluations (including participatory evaluations) and how these

can be used in the context of environmental management is given in the UNHCR/ CARE International (2005) FRAME Toolkit (see the separate *Handbook on Evaluation*, in the Toolkit). This Handbook provides:

- a broad overview of some of the most commonly used methods for conducting an evaluation;
- an outline of seven key steps to follow when considering why an evaluation should be undertaken;
- a description of how an evaluation is undertaken; and
- practical considerations to help users start and complete an evaluation.

## 6

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*The following criteria have been extracted from key references on the subject of site selection. They are synthesized here to act as a form of checklist for practitioners and decision-makers and are applicable not only for the siting of refugee or IDP camps but also in determining the best locations for returnee areas.*

### Size and location

- The security of the camp inhabitants as well as the host community should be considered.
- Water should be available on a year-round basis. Hauling of water must not be required over a long period. **(Note: Water availability is a crucial factor.)**
- There should be a minimum distance of 15 km between camps. (Factors such as access, proximity of local populations, water supplies, environmental considerations and land use can affect the decision on distance between camps).
- There should be a minimum distance of 15 km (i.e. one day's walk) between the camp and the boundaries of ecologically sensitive areas such as national parks, World Heritage Sites, wildlife reserves and national historic monuments.
- There should be a minimum distance of 50 km between the camp and national borders (especially the border of the country of origin) or conflict areas.
- Size of camp: ideally 45 m<sup>2</sup> per person (including space for family gardens, roads, services and shelter, but not for livestock grazing). Actual surface area (excluding garden space and space for livestock grazing, but including space for roads, services and shelter) should not be less than 30 m<sup>2</sup>. Allowance should be made for expansion due to population increase, which could be as much as 3-4 per cent per year.
- Camps should be limited to a maximum of 20 000 people (90 hectares).
- Camps should be a "reasonable" distance from military installations.
- Camps should be sized and sited to avoid potential conflict over access to and use of natural resources.

### Topography

- Camp location should be above areas prone to floods.
- Camps should preferably be on a gentle slope (2-4 per cent gradient). Sites with a gradient steeper than 10 per cent are difficult to use and require costly site preparations and post-camp closure remediation. Flat sites present serious drainage problems.

- Avoid areas likely to become marshy or waterlogged during the rainy season.
- Avoid excessively rocky or impermeable sites.
- Subsoil should allow water absorption, yet provide sufficient stability for latrine pits. The water table should be at least 1.5 m below the bottom of a deep latrine pit.
- The site should have good ground cover to provide shade and reduce erosion and dust.
- It is an advantage if the land is suitable for vegetable gardens and small-scale agriculture.

## Access

- Proximity to a main road providing all-weather year-round access. The road should be evaluated for use by heavy equipment for road building and preparation work for the site.
- Proximity to sources of supplies such as food, cooking fuel and shelter material.
- Proximity to health care services, schools, markets, storage and community infrastructure.
- Proximity to a town could be an advantage, depending on the likelihood of friction with host communities. Access to other local settlements and opportunities for developing commercial activities must be considered.
- Land rights: sites are often provided by the government on public land. Any use of private land must be based on formal legal arrangements in accordance with the laws of the country (bearing in mind that UNHCR does not purchase or rent land for refugee settlements). Refugees should have the exclusive use of the site through agreement with the national, local and/or traditional authorities. It is also necessary to define the rights of refugees to collect fuelwood and timber, graze their animals and engage in agriculture or other subsistence activities.

## Climate and health

- The area should be free from major health hazards, such as malaria, river blindness, bilharzia and the tsetse fly.
- Consider whether there are unseen or irregular risks, such as flash flooding, landslides or serious industrial pollution. Consult with locals in this regard and establish a comprehensive history of how the site was previously used. The site should not be located within 1 km of pollution/hazardous sources such as factories, mines or military bases and the site should not be located down-wind of a contamination source. Use an alternate site if the risk to residents is high.
- Avoid dust prone areas with regular dust clouds.

- The site should provide protection from high winds (although a daily breeze is an advantage).
- Consider seasonal variations, e.g. mountainous areas may be suitable in summer but very cold in winter.
- Refugees/IDPs should not be settled in an area where the climate differs greatly from what they are used to.

## Social/community considerations

- Carrying capacity of local community/impact on host community.
- Local community's response to the presence of refugees/IDPs.
- Social and cultural backgrounds of refugees/IDPs vis-à-vis the host community.

## Other

- Involve the national government's environmental department in deciding on a camp site.

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For further information refer to Section 6, **References and Additional Reading**, and the technical references contained on the compact disc accompanying this *Guide*.



### Introduction

Liberia is rich in natural resources and still has large, intact natural ecosystems. These ecosystems are vulnerable, however, to destruction and degradation. Some of this degradation is the consequence of almost 40 refugee and IDP camps having been established to cope with the needs of hundreds of thousands of displaced people during the country's recent civil conflict.

This Annex describes work undertaken using geographical information system (GIS) technology to map the vulnerability of the Liberian environment to the impacts of IDP and refugee camps, and to model possible impacts of future sites selected to host refugees. While a number of examples have been included in the current Annex for illustrative purposes, the full technical report describing the process in detail is included on the compact disc accompanying this *Guide*.

#### Box A1. Key terms

**Threat** – The possibility of a refugee or IDP camp being sited in a given locality.

**Hazard** – Environmental degradation caused directly or indirectly by a camp.

**Vulnerability** – “*The extent to which a community, structure, service or geographic area is likely to be damaged or disrupted by the impact of a particular hazard*” (Tobin and Montz, 1997).

**Accessibility** – The accessibility of a given location from a camp or camps. Accessibility does not necessarily imply proximity as barriers and impediments exist within the landscape.

**Value** – An attribute of a locality; based on a value system that values one environmental attribute above another.

**Cost Surface or Friction Surface** – A cost surface specifies the cost, in arbitrary units, of traversing one unit distance of the landscape.

**Cost Distance** – the accumulated cost, in cost surface units, of moving across a surface from A to B.

**Ecosystem Services** – Ecosystem services are the benefits that an ecosystem provides. Some of the services and functions fulfilled by Liberia's terrestrial environment – its forests, rivers and lakes primarily – include:

- storing and retaining water;
- regulating water flows;
- preventing soil erosion;
- acting as a refuge for biological diversity;
- acting as a source of important genetic resources;
- nutrient recycling; and
- cultural and recreational functions.

## Environmental vulnerability

Tobin and Montz (1997) define vulnerability as “*the extent to which a community, structure, service or geographic area is likely to be damaged or disrupted by the impact of a particular hazard*”. In the context of camps for displaced people in Liberia this definition might be clarified as follows:

- the *extent* refers to the degree to which the area may be damaged. In other words it refers to the potential reduction in value, according to the selected system of valuation (see below for a discussion on valuation), of the impacted land<sup>5</sup>;
- the *geographic area* is the area potentially affected by the impact of the camp, either within the camp boundaries or outside the camp, or, indirectly, downstream;
- the *likelihood* of damage refers to the probability of the camp having a negative impact on an area, which can be equated with the area’s *accessibility* from the camp and its sensitivity to negative impacts;

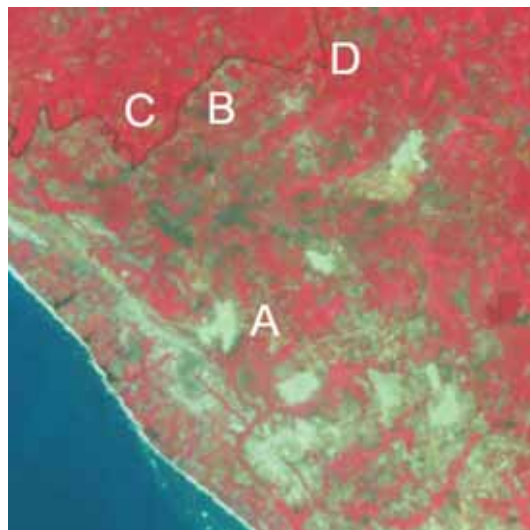
<sup>5</sup> Tobin and Montz (1997) use the word “*extent*” to mean an amount of damage, not the geographical extent of the damage

### Box A2. Accessibility

The likelihood of a geographic area being damaged or disrupted by the impact of a camp is considered here to be proportional to the accessibility to the geographic area from a camp. In principle, an area that is close to a camp is more likely to be impacted than an area far away from a camp. In some cases, however, even a geographic area in close proximity to a camp may not be accessible because of an impediment in the landscape, such as an impassable river. Proximity therefore does not necessarily imply accessibility.

In the example shown in Figure A1, location B is accessible from camp A but location C is not directly accessible because of a river, even though B and C are roughly the same distance from the camp (have the same proximity). To get to C from A, it is necessary to cross the river by a bridge at D, which involves a journey of approximately twice the distance of the journey from camp A to B.

Figure A1. Accessibility impeded by river





- the *impact* refers to the degradation or damaged caused, e.g. through unsustainable use of resources; and
- the *hazard* is the cause of the impact, in this case the siting of a camp and its population.

From the basis of this definition it is possible to construct a conceptual model of environmental vulnerability in relation to camps, and to build a spatial model, using GIS to predict both the location of potential impacts and their likely magnitude.

This vulnerability model is based on two main sources of information: the *value* of the ecosystem services provided by the land at a given geo-

graphic location and the *accessibility* from a camp to that land as a measure of the likelihood of it being impacted. In the GIS analysis these two components (ecosystem services value and accessibility) have been combined into a single map indicating vulnerability of ecosystem services to impact from camps.

## EXAMPLES IN LIBERIA

Much of eastern Liberia – virtually the entire length of its border with Côte d’Ivoire – is covered by natural forest. This region has not experienced the same scale of clearance as the central zone, where oil palm and rubber plantations were established. However, any contingency site for a camp in this region is likely to have a higher ecosystem services value than most, if not all, of the former or existing camps in western Liberia.

These sites would therefore be more vulnerable to negative impacts, such as those commonly resulting from population displacement. Some of the proposed contingency sites are located in areas surrounded by primary or secondary forests; others are even in close proximity to proposed protected areas.

### Box A3. Ecosystem services value

Measuring the extent to which an area may be affected by the impacts of a camp presupposes a value system that attributes worth to the area’s environment, and the ability to measure the degree of loss or degradation compared either to itself or to another area. Valuing the environment is a complex and potentially contentious issue which is difficult to resolve.

To assess the vulnerability and the associated extent or potential degree of loss of value, however, it is necessary to base this analysis on fixed assumptions of ecosystem service value.

Concepts of value, value systems and valuation have a long history, that dates back to Aristotle, and are important to a variety of disciplines (Farber et al., 2005). Conventional economic theory has generally undervalued or even ignored environmental and ecosystem service values (Chichilnisky, 1996).

As the Earth’s natural capital is being expended, however, the issue of ecological valuation has come to the fore and is now an area of active research. In particular, the Millennium Ecosystem Assessment (MEA) has recently made much use of the concepts of ecosystem service valuation in the context of ecosystems and human well-being (MEA, 2005).

## Box A4. How to read the environmental vulnerability legend

The environmental vulnerability map is made up of two sets of information:

- the accessibility to a camp from a geographic area; and
- the value of ecosystem services at that geographic location.

It is clear to see that at the four corners of the graph:

- A – has high ecosystem service value and is near a camp
- B – has high ecosystem service value and is far from a camp
- C – has low ecosystem service value and is far from a camp
- D – has low ecosystem service value and is near a camp

The corner that is most vulnerable is A (Figure A2). The corner that is least vulnerable is C. A line drawn from C to A represents an axis of increasing environmental vulnerability.

The vulnerability colour key colours the vulnerability axis from green (C) through cyan, and from blue and magenta to red (A).

At right-angles to the vulnerability axis is an axis of equal vulnerability. For example, a line from D to B represents areas that have medium vulnerability. Areas that have very low ecosystem service value and that are near a camp (D) have a medium level environmental vulnerability, as do areas that have very high ecosystem service value but are very far from a camp (B). In the colour key, all values along this line have the same colour (blue) but the shade of the colour changes from dark blue at D to light blue at B.

The complete colour key is shown here (Figure A3) and covers all possible combinations of the data.

Figure A2. Ecosystem value/accessibility 'space'

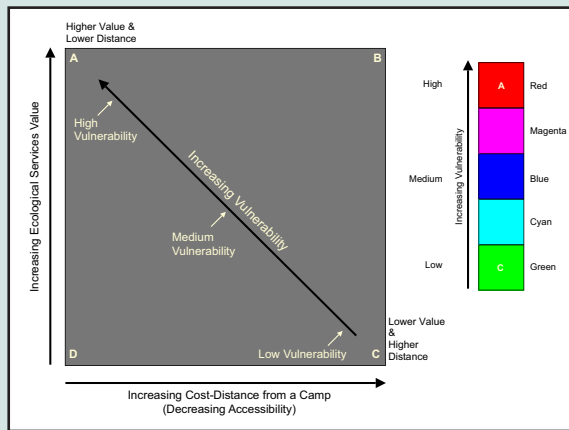
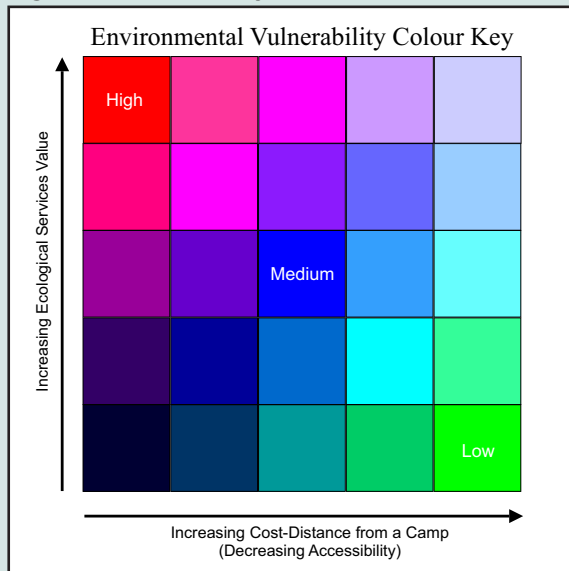


Figure A3. Colour key



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## Examples

Figure A4 shows a camp in an agricultural zone with little forest, which has a relatively low ecosystem services value. Near the camp, the vulnerability map is dark blue, meaning a medium level of vulnerability with ecosystem service values that are generally low. Further away from the camp the vulnerability map is green, indicating low ecosystem service values that are far from the camp and have a low vulnerability rating.

The colour table can be used to directly interpret the vulnerability classes. The greener the colour, the lower the vulnerability, and the redder the colour, the greater the vulnerability.

Figure A5 is an example of a mixed environment of agriculture and forest, and closed dense forest. There are no green areas and the blue, cyan and magenta tones indicate generally higher vulnerability ratings than in the previous example.



Figure A4. Hypothetical example 1

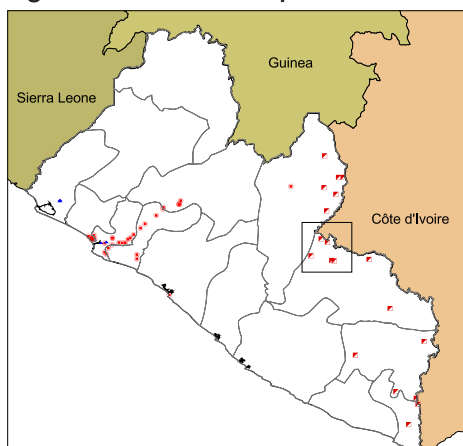


Figure A5. Hypothetical example 2

In Grand Gedeh County, in eastern-central Liberia, five contingency sites – B’hai Niko, Bin Sawmill, Janzon Town, Zleh Town and Pohan – have been identified (Figure A6). None of these sites are currently being used as crossing points or way-stations, but for the purpose of the vulnerability mapping exercise they have been defined as camps.

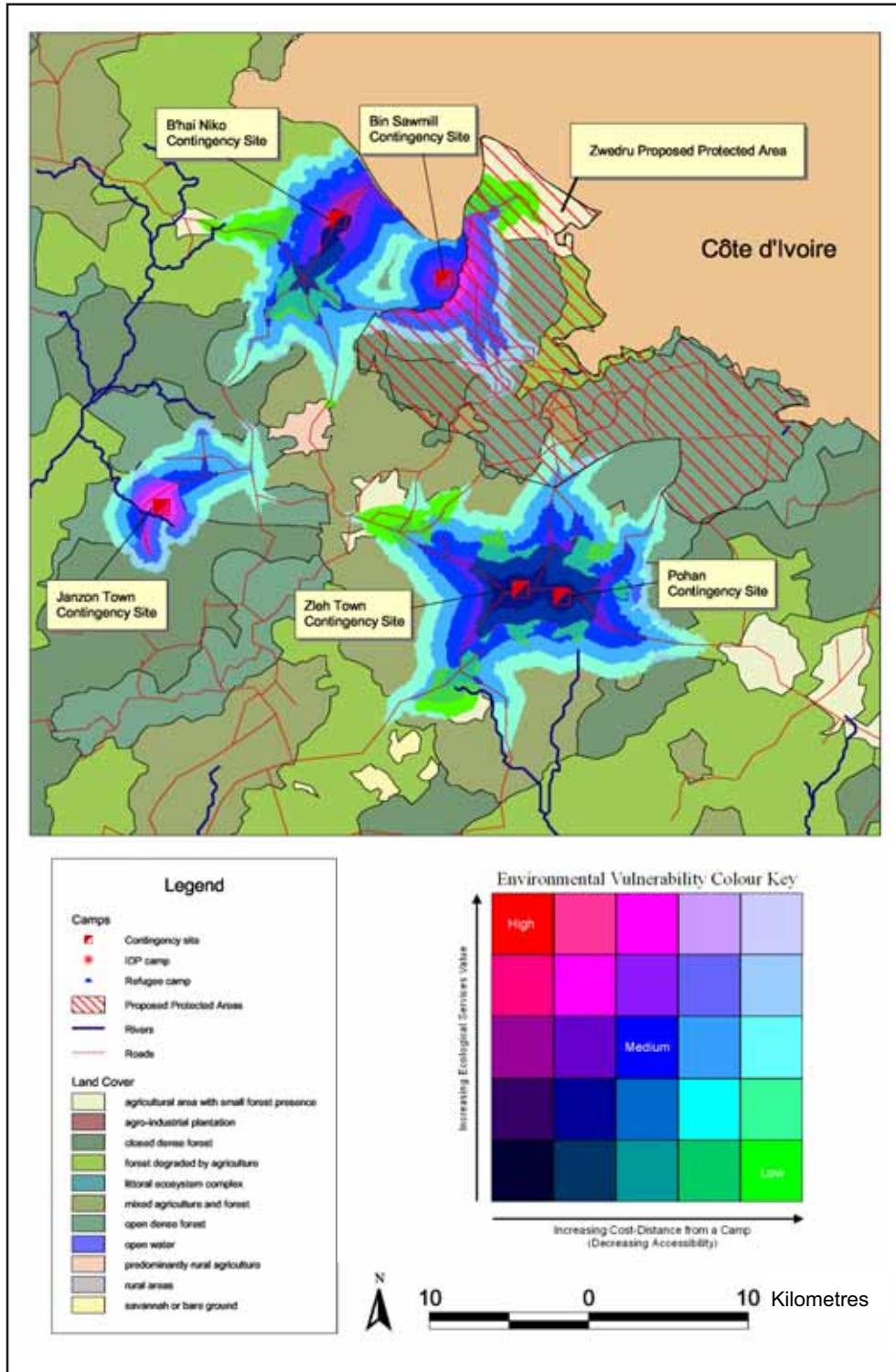
All of these sites are located in a forested zone which has higher ecosystem service values than the region around Monrovia. Agriculture is currently practised around the proposed sites at Zleh, Pohan and B’hai Niko, where some forest degradation is apparent. The two other sites are located in areas of either open or closed dense forest. They are also closer to the border than the other sites in this cluster.

Figure A6. Location map central-east



The environmental vulnerability map (Figure A7) for this cluster of sites shows a predominance of areas of higher environmental vulnerability (cyan, magenta and red) and few areas of lower vulnerability (green). This is a direct consequence of the higher ecosystem service values of this generally forested region. Along roads and where the land cover is more open, the vulnerability zones spread out over a wider area, in particular around Pohan and Zleh.

Figure A7. Environmental vulnerability map for central-east Liberia



The Bin Sawmill site is located in close proximity – less than 2 km – to the proposed Zwedru protected area. The medium-to-higher vulnerability rating for the eastern side of this site rises to higher vulnerability along the boundary of the proposed protected area, a stretch of more than 10 km. Moreover, the road network in this same zone further increases access to the proposed protected area from both the north-west and the south, thus increasing the potential impact on this site from encroachment.

Given its location within closed dense forest, the immediate vicinity of the Janzon Town contingency site is also categorized as a high vulnerability zone. In this case, other nearby sites, such as those areas currently being used for agriculture, would be more suitable, from an environmental perspective, for the establishment of a camp.

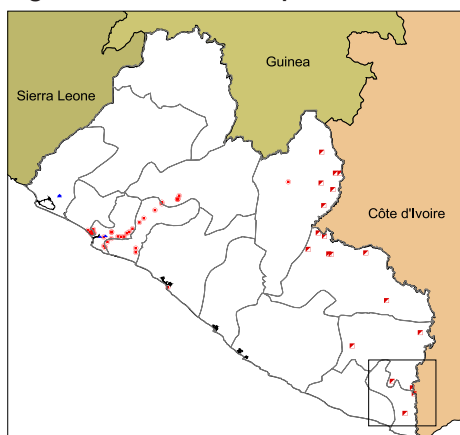
Of the five sites, both Pohan and Zleh Town are located in areas of lower environmental vulnerability – their use should therefore, from an environmental perspective, be prioritized ahead of the other potential sites in case of an influx of refugees from Côte d'Ivoire.

In another example, four contingency sites were identified in the far south-east of Liberia, again adjacent to the border with Côte d'Ivoire (Figure A8). This area is characterized by a complex patchwork of the full spectrum of land cover types, from closed dense forest to a forest-agriculture mosaic, industrial plantations and rural agriculture, with varying degrees of forest cover. There is even a small littoral coastal ecosystem. As a consequence of such a range of ecosystems, the value of ecosystem services in this area is also very variable.

The environmental vulnerability map reflects this variability and accounts for the full range of possibilities, as shown by colours ranging from green (slightly vulnerable) to red (very vulnerable) (Figure A9). Figure A9 shows that the proposed Pedebo site is located directly within an industrial plantation which, in turn, is set within an area of agriculture with low forest cover. The proximity of this site to roads leading to the

north, south, east and west, means that accessibility is good in all directions: this could result in a large vulnerability footprint.

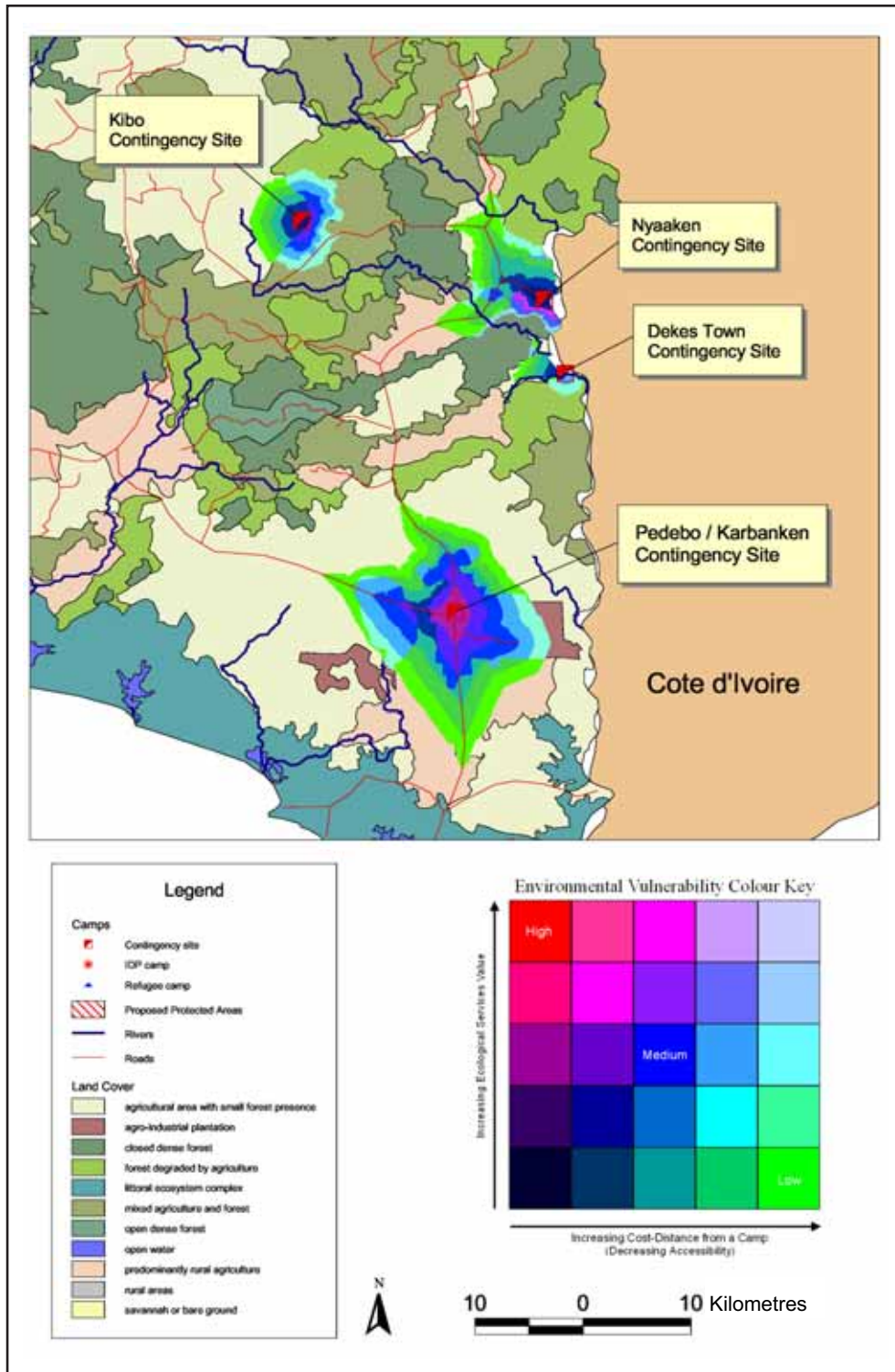
**Figure A8. Location map south-east**



The Dekes Town site is constrained by the border to the east and forests to the north and south. The lack of roads near this proposed site will likely limit its environmental impact on the surrounding area, but the site is within easy access of Côte d'Ivoire.

The proposed Nyaaken site, 7 km north of Dekes Town, is set in a more open

Figure A9. Environmental vulnerability map for south-east Liberia



agricultural landscape close to a road, thus providing the possibility of greater access into the landscape. Of particular note for Nyaaken is the area of closed dense forest less than 1 km to the south of the site. The edge of this forest area is particularly vulnerable to potential impacts, as shown by the ribbon of magenta to the south of the site.

Finally, the proposed Kibo site is also at the interface of a predominantly agricultural landscape and a forest/agriculture mix to the south and east. The site itself is currently not adjacent to any roads. As might be expected in this case, impact of the site to the west (agricultural lands) would likely mean lower levels of vulnerability than that shown by the magenta and cyan colours to the east of the site, closer to the forested domain.

For more details on this methodology, please see the technical report on the compact disc accompanying this *Guide*: “Environmental vulnerability mapping in Liberia in the context of human displacement”. The above methodology was applied on a national level for all known refugee and IDP camps and contingency sites (as at January 2006). Environmental vulnerability maps for the entire country are also presented on the following pages (Figure A10).

## References and further reading

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- Farber, S., Costanza, R., and Wilson A. 2005. *Economic and Ecological Concepts for Valuing Ecosystem Services*. In: Environmental Values, Kalof, L., Satterfield, T. (Eds) Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-being: A Framework for Assessment*. Natural History Museum, Measuring Biodiversity Value, [www.nhm.ac.uk](http://www.nhm.ac.uk)
- Tobin, G.A. and Montz, B.E. 1997. *Natural Hazards, Explanation and Integration*. The Guildford Press, New York, London

Figure A10(a). Environmental vulnerability in Liberia in the context of human displacement

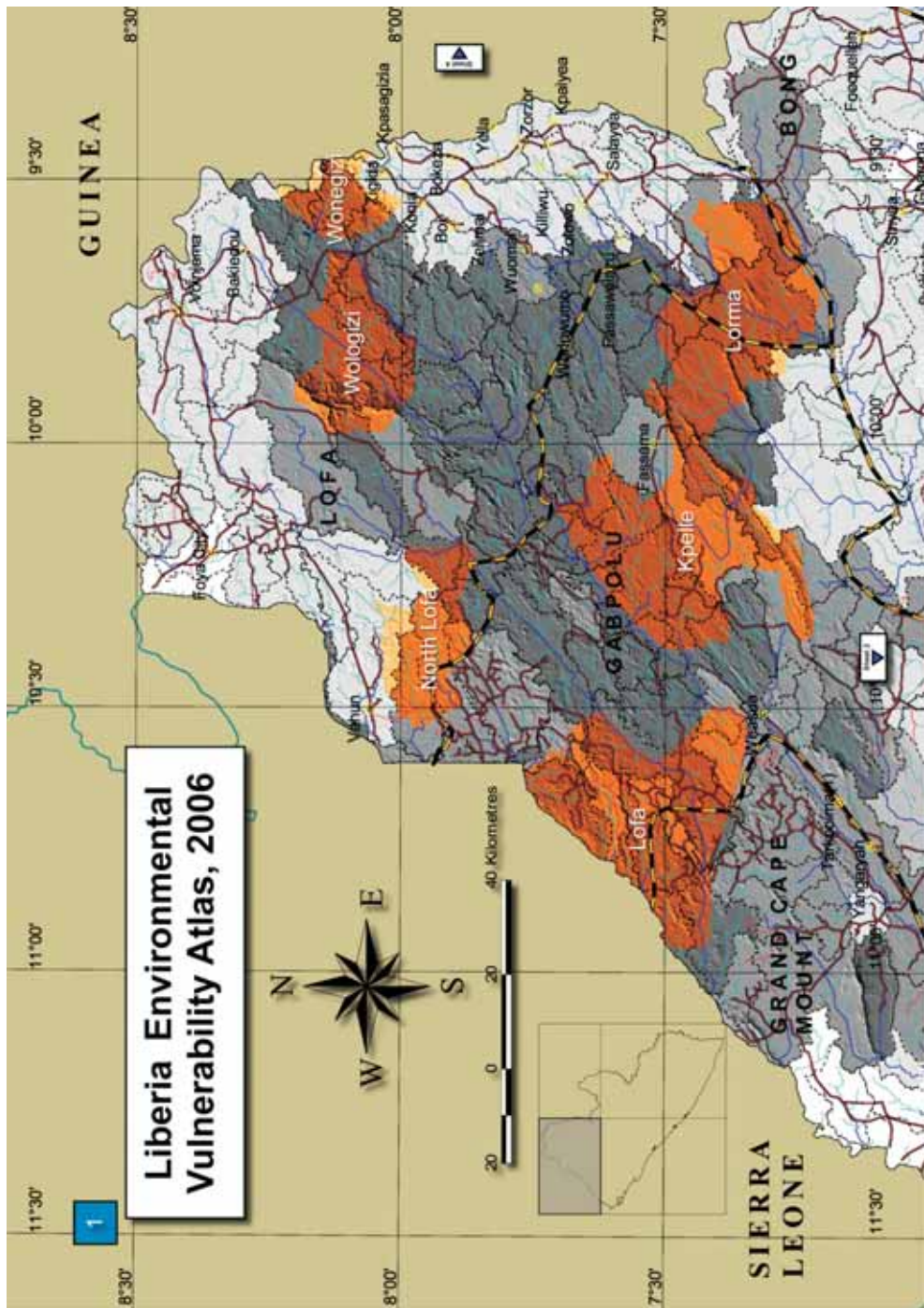




Figure A10(b). Environmental vulnerability in Liberia in the context of human displacement

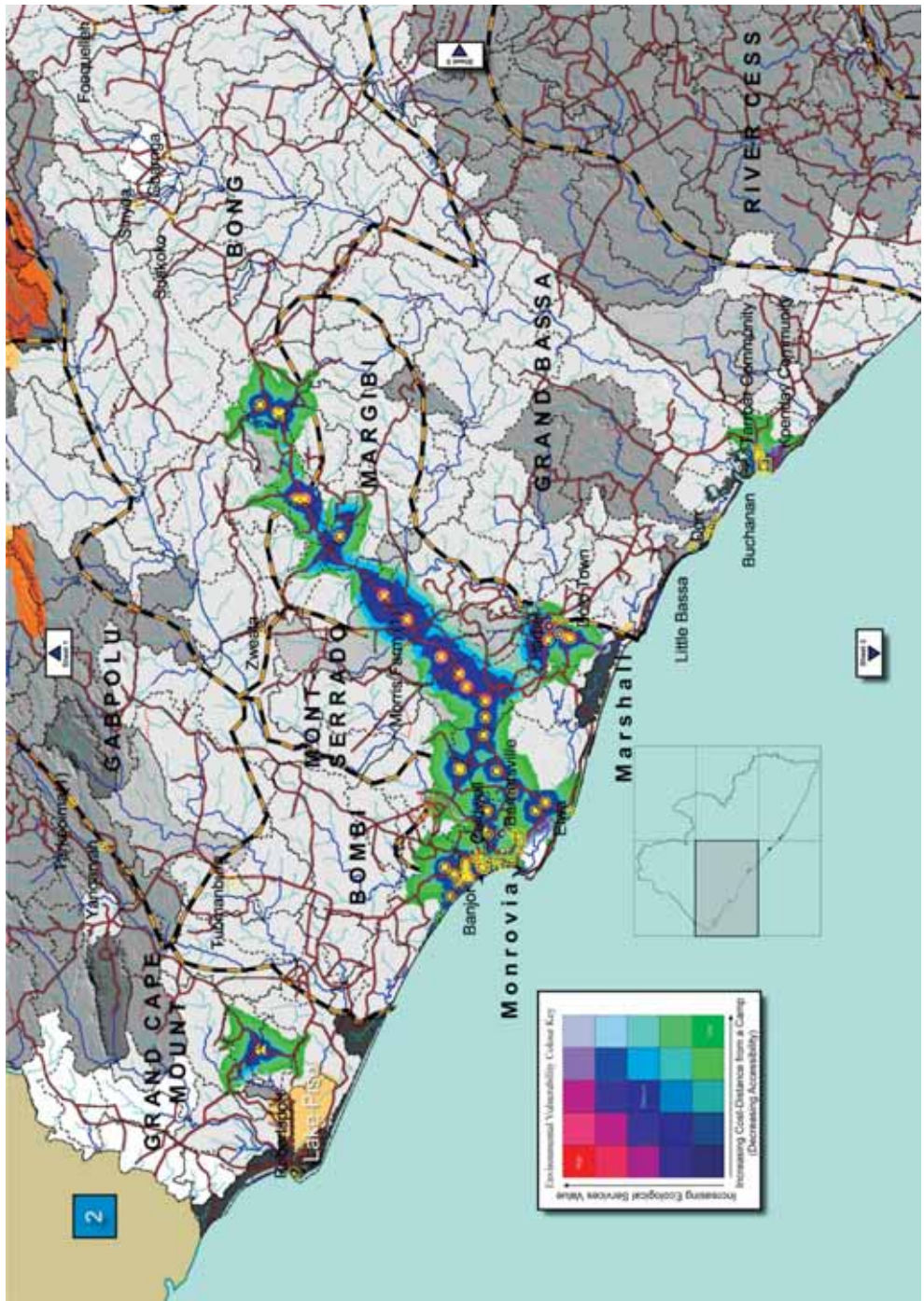


Figure A10(c). Environmental vulnerability in Liberia in the context of human displacement

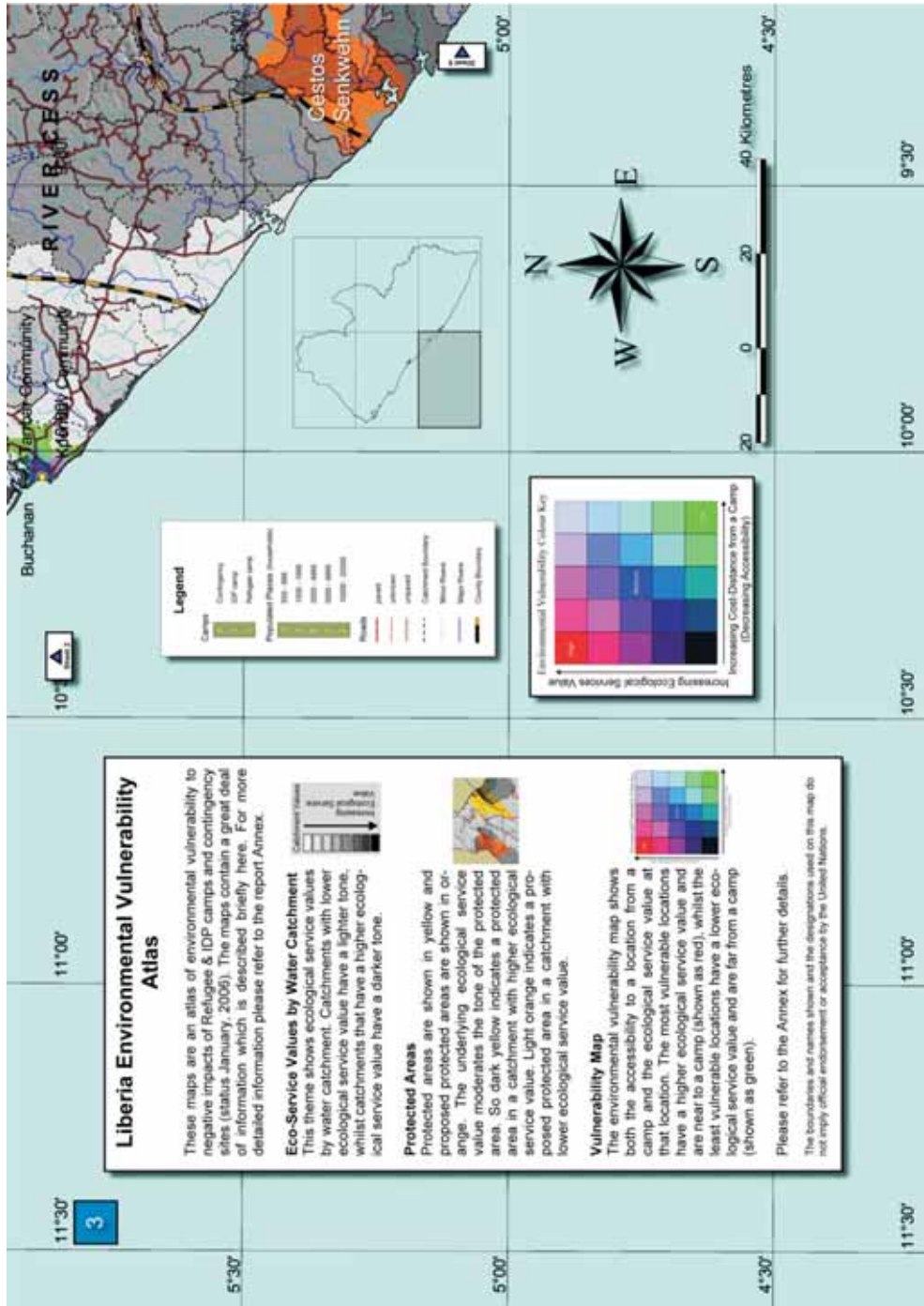


Figure A10(d). Environmental vulnerability in Liberia in the context of human displacement

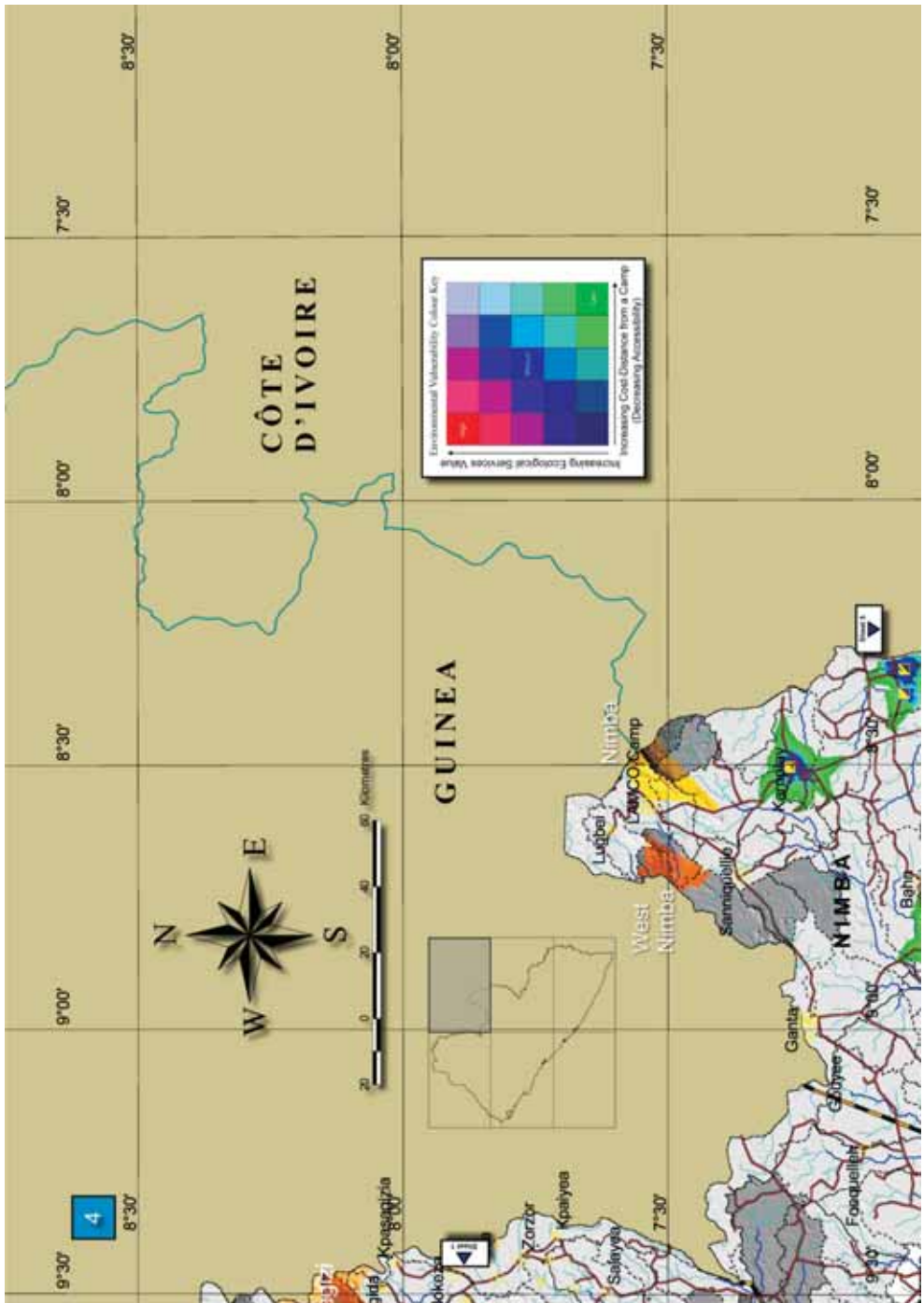


Figure A10(e). Environmental vulnerability in Liberia in the context of human displacement

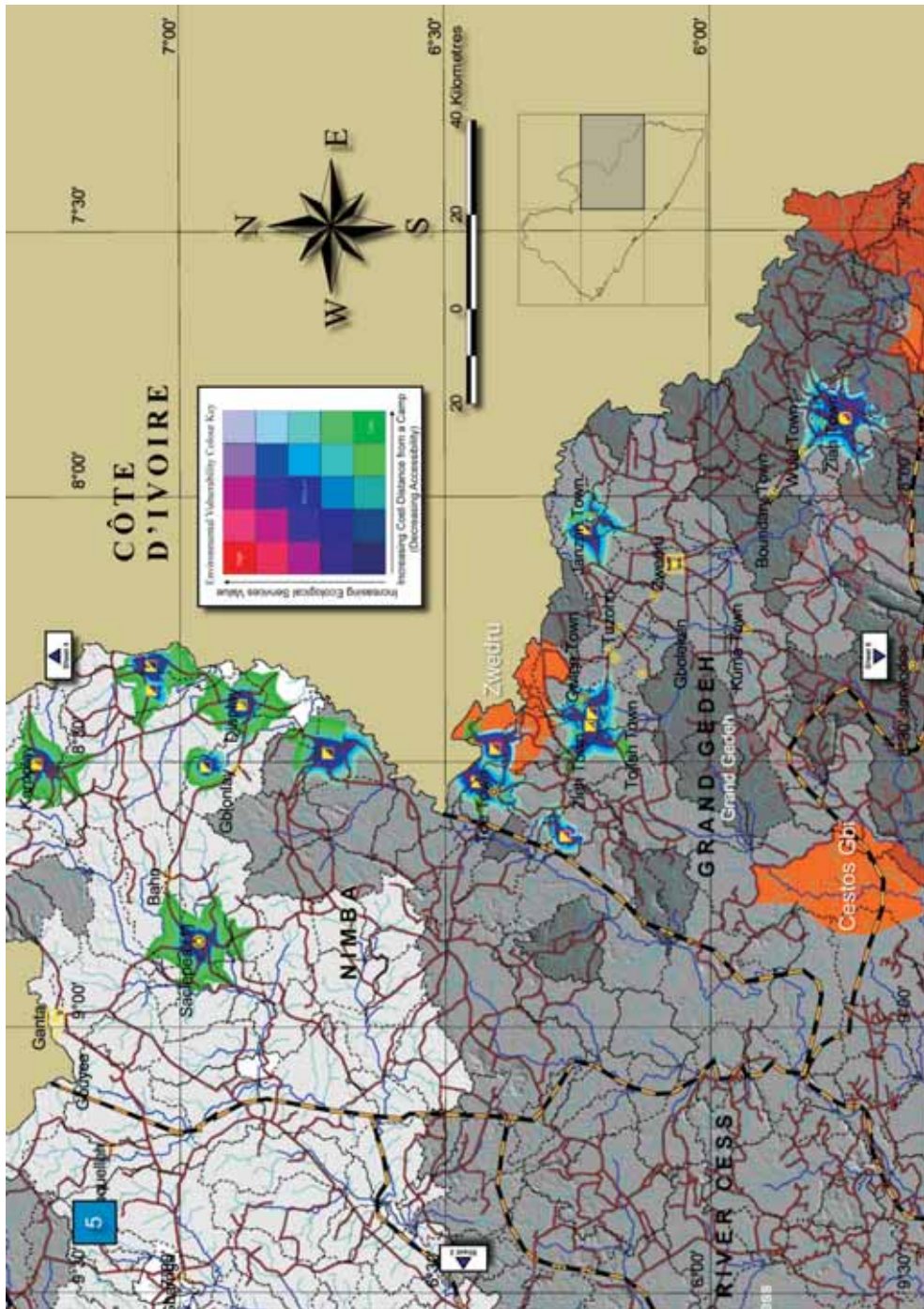
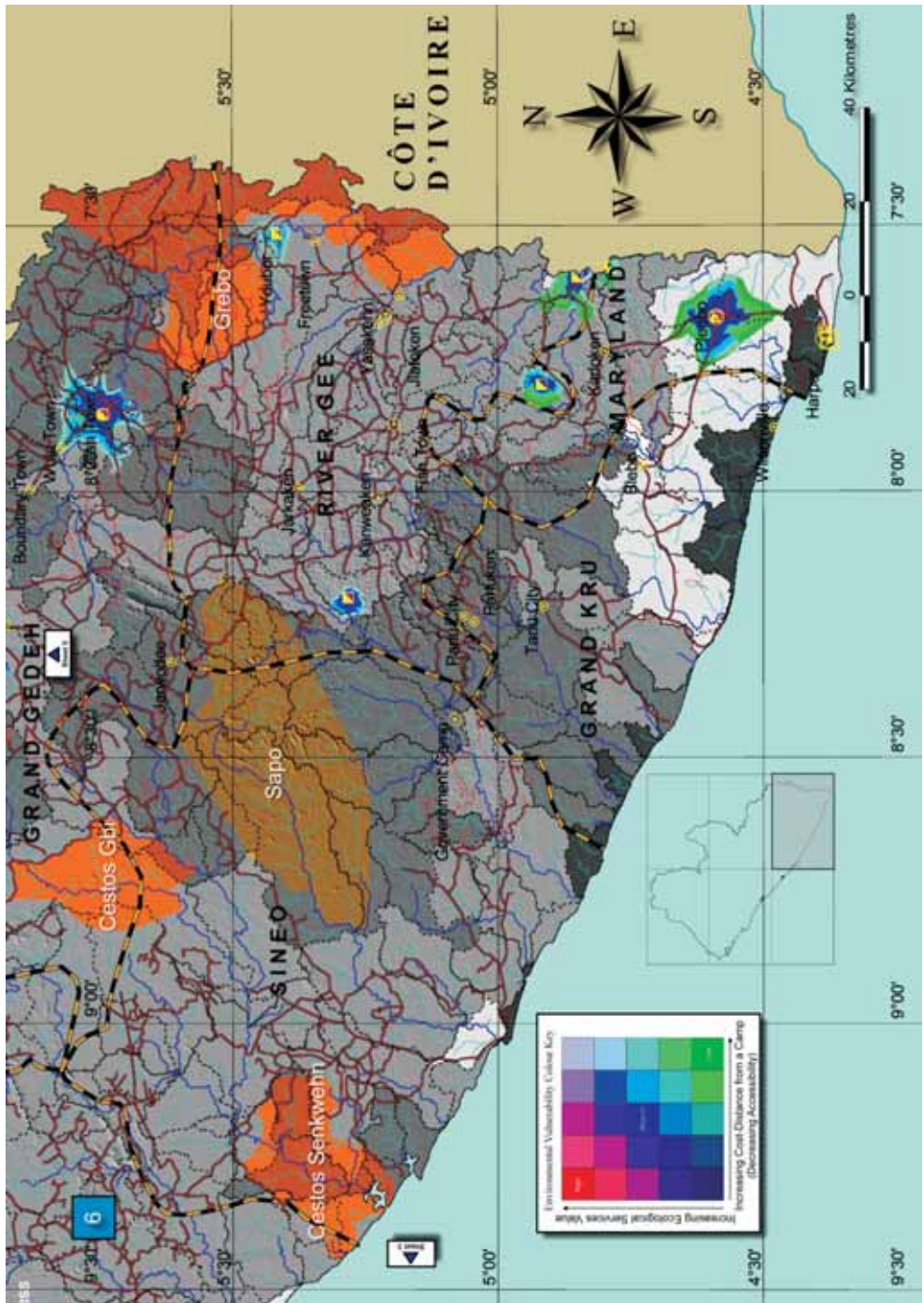


Figure A10(f). Environmental vulnerability in Liberia in the context of human displacement





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*Wells* 33, 34, 40, 41, 43, 44, 81



# ADDITIONAL RESOURCE MATERIALS

The following technical documents are on the CD accompanying this *Guide*.

- BHRC and CARE International. 2005. *Guidelines for Rapid Environmental Impact Assessment in Disasters*
- Corselis, T. and Vitale, A. 2005. *Transitional Settlement: Displaced Populations*
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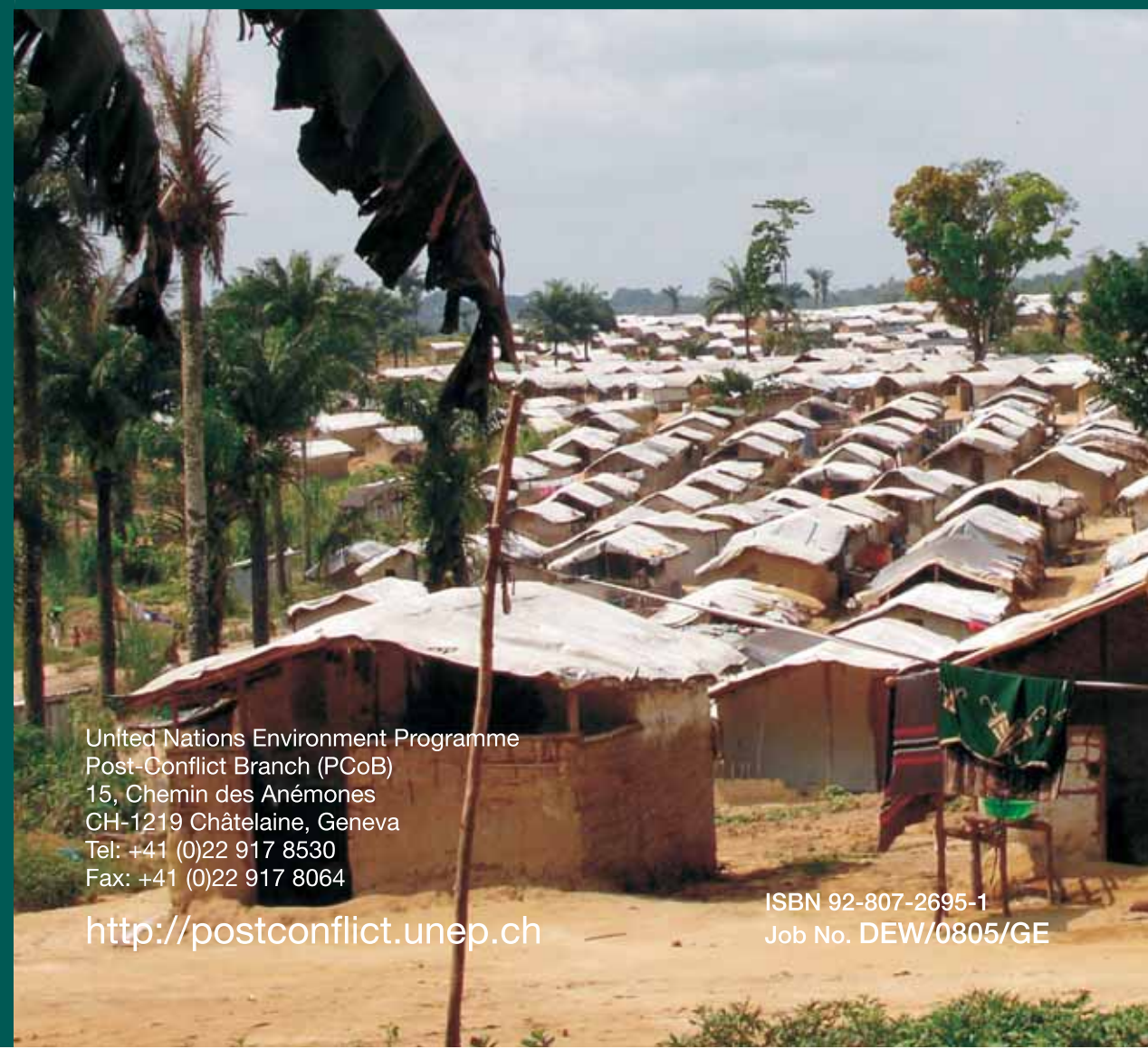


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