

SRSA' Crash Course on Recovery; Revinge, 17/4/08

Natural Resource Management



Dr. U. Bloesch (www.adansonia-consulting.ch)

Outline

- **Brief Introduction**
- **1. Case study: Earthquake Pakistan 8/10/2005**
- **2. Case study: Sudanese Refugee Camps 2004**
- **Comparison of the two case studies**
- **Lessons learnt and discussion**

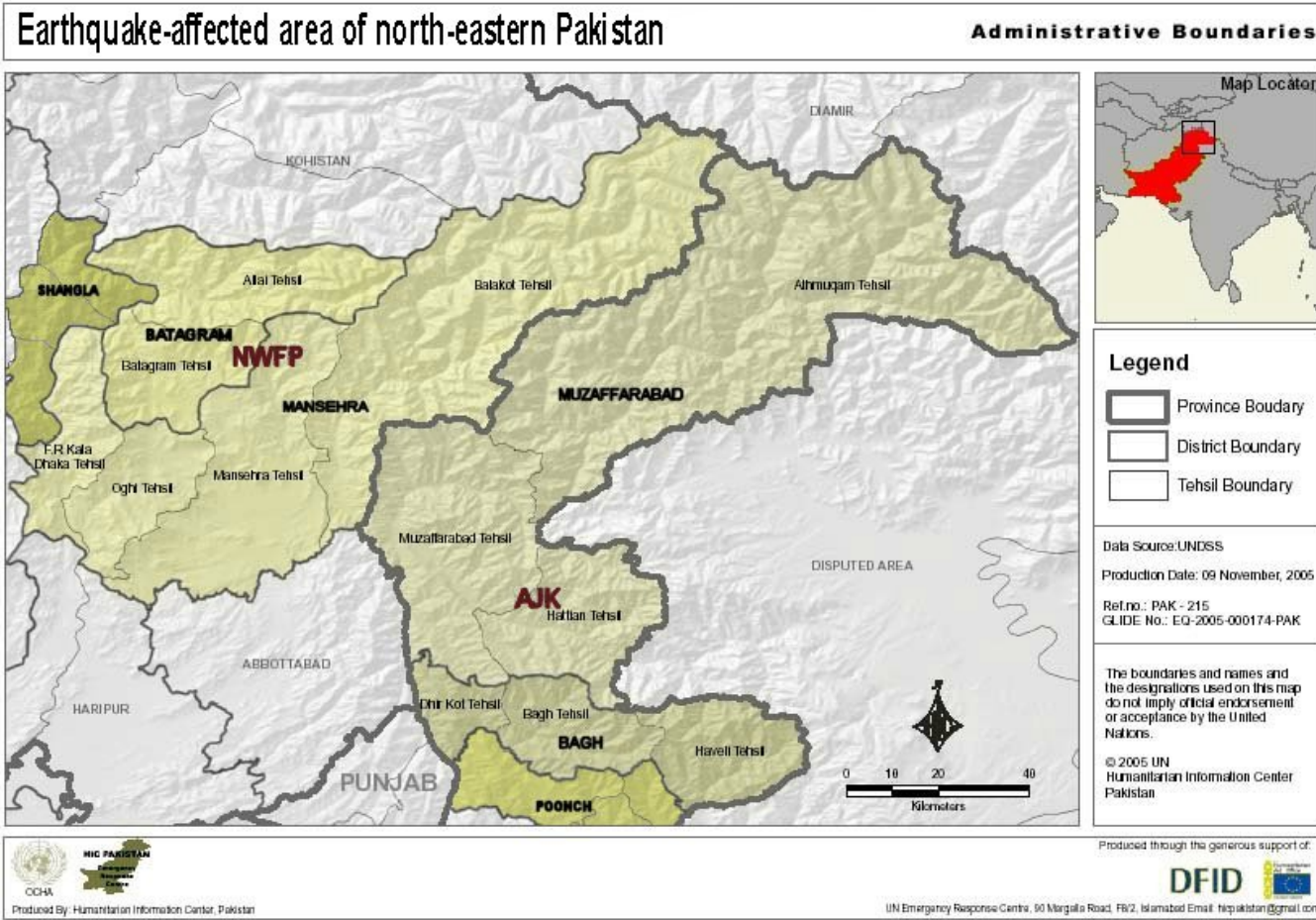
1. Case study: Earthquake Pakistan

8. October 2005, 9:00

7.6 Richter magnitude scale



Size of the affected area



Epicentre 95 km NE from the capital Islamabad; affected area in North West Frontier Province and Azad Jammu Kashmir almost size of Switzerland and very mountainous (Indian part of Kashmir less affected).

Size of damages

Earthquake and its numerous aftershocks caused massive destruction in the area:

- **Casualties: 80'000 people killed and 80'000 people injured**
- **Homestead of about 500'000 families damaged, some of them even completely destroyed; about 500'000 displaced persons without shelter (approaching winter!)**
- **Access roads destroyed**

Total destruction along the fault line



Whole mountains slumped down...



... all buildings destroyed









Massive-built traditional *Kacha* houses collapsed and killed the occupants



Destroyed primary schools and killed the pupils



Buried transport axes



Direct impact on natural resources

Natural resources already under severe stress prior to the earthquake due to rapid population growth and demands for increased standards of living:

- Degraded forests (widespread illegal deforestation);**
- Rangelands (some ranges support livestock at three times their carrying capacity);**
- Decreasing soil fertility (no fallow, high erosion...) for cropping.**

Direct impact on natural resources (2)

Through ground motion, landslides, earth slips:

Hydrology: Alteration of direction of surface and subterraneous water courses, river flow and sediment yields, sources...

Land-use: Loss (burying of) arable land, pastures and forests.

Mountain- and landslides destroy forests and rangelands



Water courses and sources altered



**New lake arises due to
huge earth dam
(mountain slide
overwhelmed 7 villages)**



Deployment of relief operation

Context:

- **Still decreased readiness of the international Donor community after the Tsunami event (26/12/04).**
- **Political will to help Pakistan which is the major regional ally in the war against terrorism (mixture of political and humanitarian goals).**
- **First aid by national relief organisations; UNDAC (United Nations Disaster Assessment) conducted first assessment (9 – 30 October 2005).**

Deployment of relief operation (2)

- **Very active role of the Pakistani Army, who is in charge of the overall relief operation.**
- **OCHA (Office for the Coordination of Humanitarian Affairs) coordinates the civil international and national relief organisation (most active relief organisation gained experienced in dealing with natural disasters from the recent Tsunami operation).**

My mandate

- **Joint Unit OCHA / UNEP (United Nations Environmental Programme)**
- **Secondment from Swiss Humanitarian Aid (SHA)**
- **Mission period in Pakistan: 31/10 – 16/11/05.**

My mandate (2)

Task:

- **Rapid environmental assessment of the impact of the earthquake and the subsequent relief operation focussing on the natural resources (especially wood) within the earthquake-affected area.**
- **Elaboration of mitigation measures which will be integrated in the ongoing relief operation:**
 - a) Supply of energy to meet the needs (heating and cooking) of the 500'000 displaced persons.**
 - b) Rehabilitation of natural resources.**

Deployment of the mission

Preparation in Switzerland:

Very short; first information from Joint Unit (UNDAC mission); very helpful were former Pakistan experiences from 2 UNHCR missions (2001/2002).

Briefing and equipment from SHA (Laptop, satellite phone, tent, sleeping bag...); small budget for financing directly costs related with the realisation of the mission.

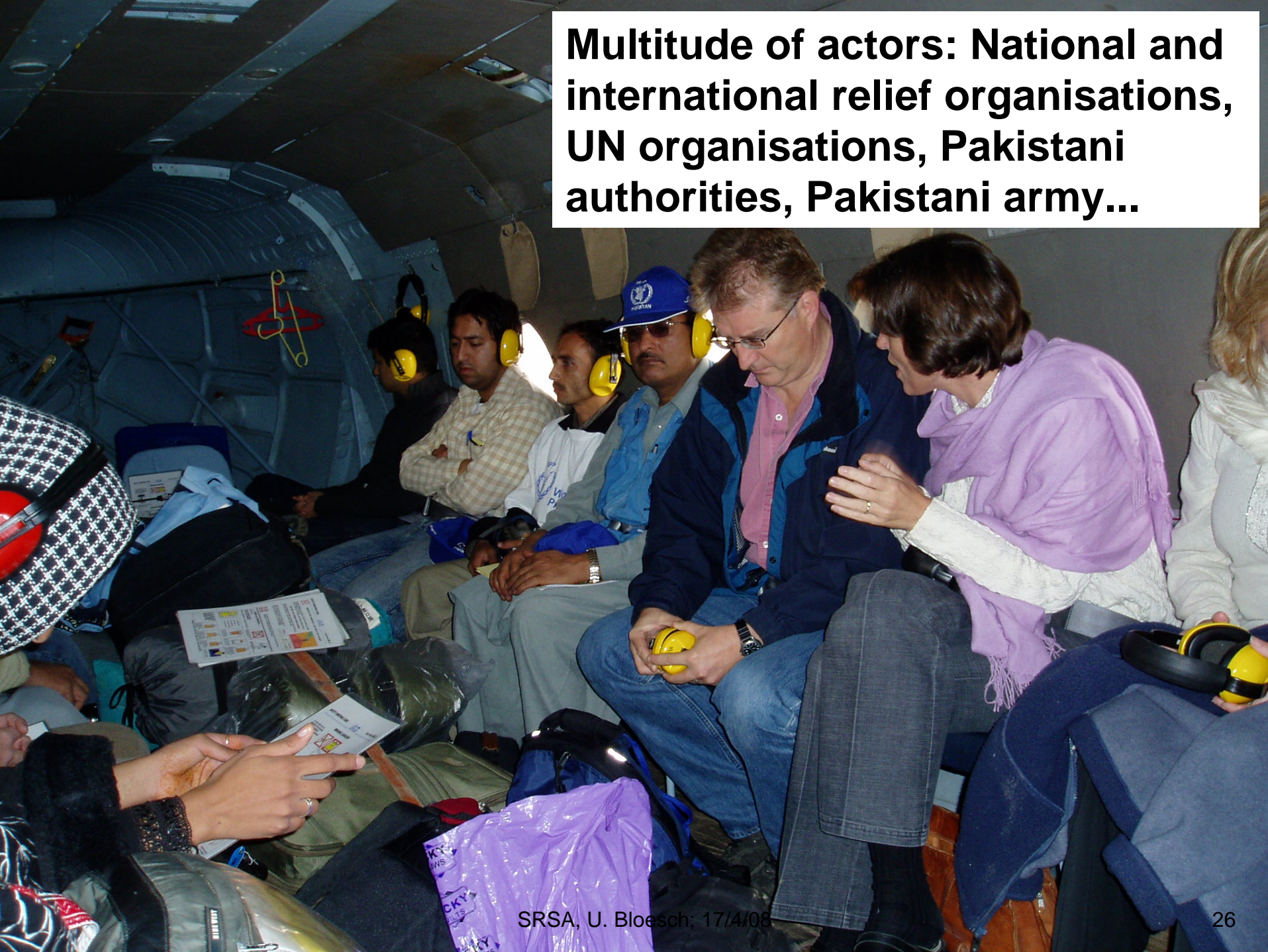
Deployment of the mission (2)

In Pakistan:

Briefing with Chief UN Emergency Response Centre in Islamabad (he was not informed about my arrival!) and the relevant Heads of UN clusters.

Organisation of the assessment team and joint planning of the field visit.

Multitude of actors: National and international relief organisations, UN organisations, Pakistani authorities, Pakistani army...



Assessment team

**Dr. Muhammad Khurshid, consultant
Ministry of Environment**



Assessment team



**Naeem Ashraf Raja, Ass. Inspector General
Forest, Ministry of Environment**

Logistics

- **Access to affected area very difficult: many road axes destroyed and many valleys only reachable by air or on foot).**
- **Lodging in tents (below freezing point during the night).**
- **Severe UN security rules for UN members for travelling (only in UN vehicles and in convoy, no driving during night...) are complicating the mission.**

**What are the priorities (activities)
for an environmental action plan
regarding natural resources?**

Environmental action plan

Some of the recommendations to the Ministry of Environment / OCHA-UNEP

Immediate action

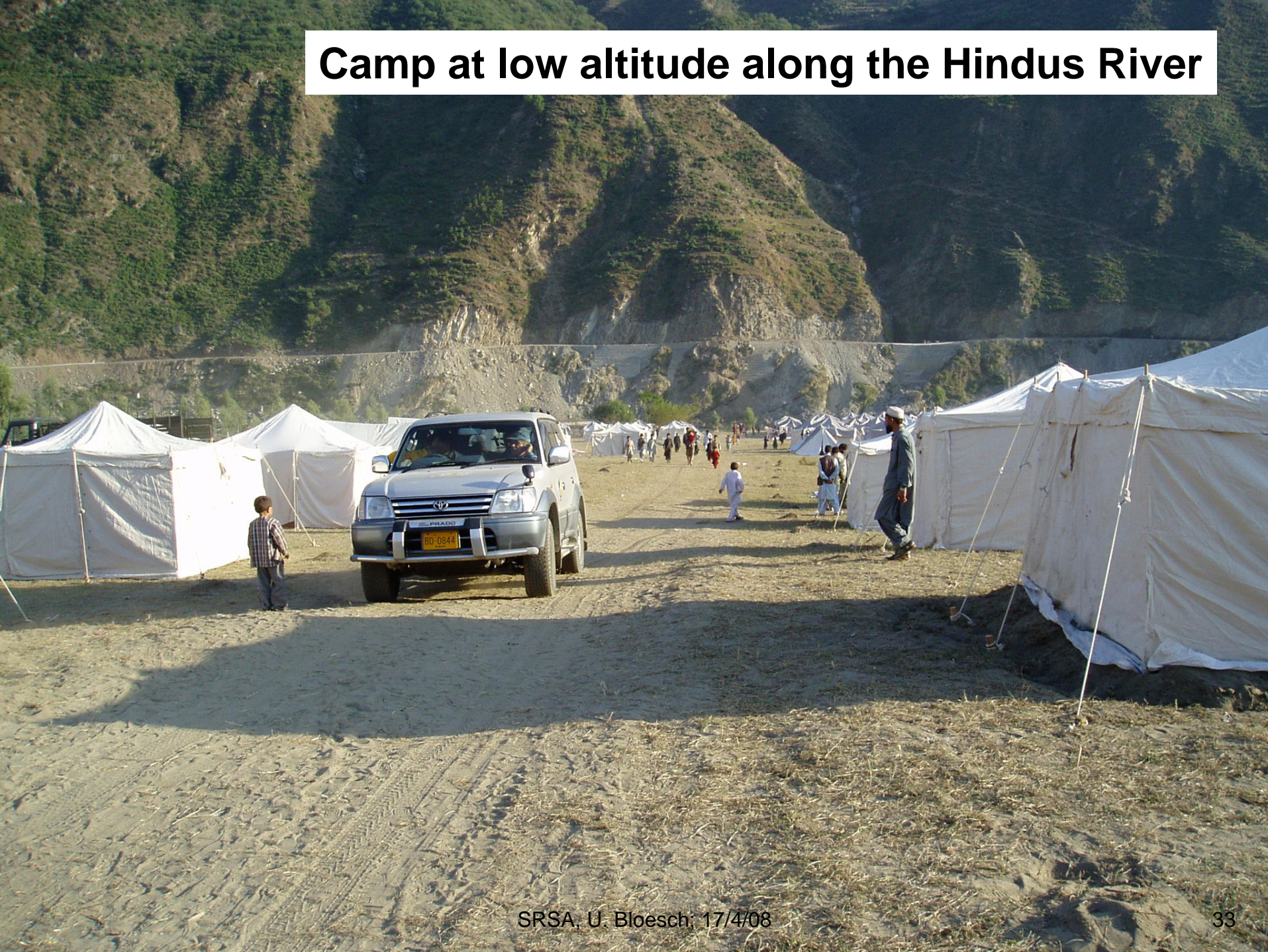
Energy supply and use in camps:

- **Site-specific supply of the appropriate energy source (electricity, LPG, kerosene) and stove for the heating and cooking needs of the displaced persons. The organised supply of energy aims to avoid uncontrolled collection of firewood in order to avoid further deforestation of the scarce wood resources in the vicinity of the camps (lead agency Camp Management cluster UNHCR).**

Immediate action (2)

- **Advising and training the NGOs in charge of the camp management in the proper handling of stoves and fuel (no open fire in tents!) (lead agency UNHCR).**
- **Multi-family cooking in camps and energy-saving practices in general should be promoted wherever possible (lead agency UNHCR).**

Camp at low altitude along the Hindus River



Spontaneous camp, Neelum valley at high altitude



Spontaneous Shelter in town centre (Muzzafarabad)



Immediate action (3)

Promotion of energy saving technologies and practices at homestead level:

- **Improved fuel-efficient stoves should be disseminated and energy-saving practices in the homestead of the affected people for energy-saving purposes (lead agency Emergency Shelter cluster UNHCR).**

Use of improved fuel-efficient stoves at homestead level



Immediate action (4)

Camp selection and management:

➤ The site selection (e.g. avoid risk of flash floods, steep slopes) and the camp management (e.g. establishment of latrines, waste management, protection of vegetation cover) should follow the UNHCR environmental guidelines (lead agency UNHCR).

Selection of save camp sites (high flood risk in spring!)



Immediate action (5)

Reconstruction of houses:

- **Promotion of a house type which is earthquake-resistant, i.e. having light roofs (e.g. galvanised iron sheet) and light walls (e.g. aerated bricks) which at the same time uses less wood than the traditional *Kacha* house and has a high thermal efficiency (lead agency Early Recovery & Reconstruction cluster).**
- **The supply of timber for the reconstruction should be done in a sustainable way. A possible lift of the ban of cutting green trees only for the affected areas and the respective consequences should be analysed carefully by the Ministry of Environment in order to avoid large uncontrolled cutting.**

Promotion of a light and energy-efficient house type

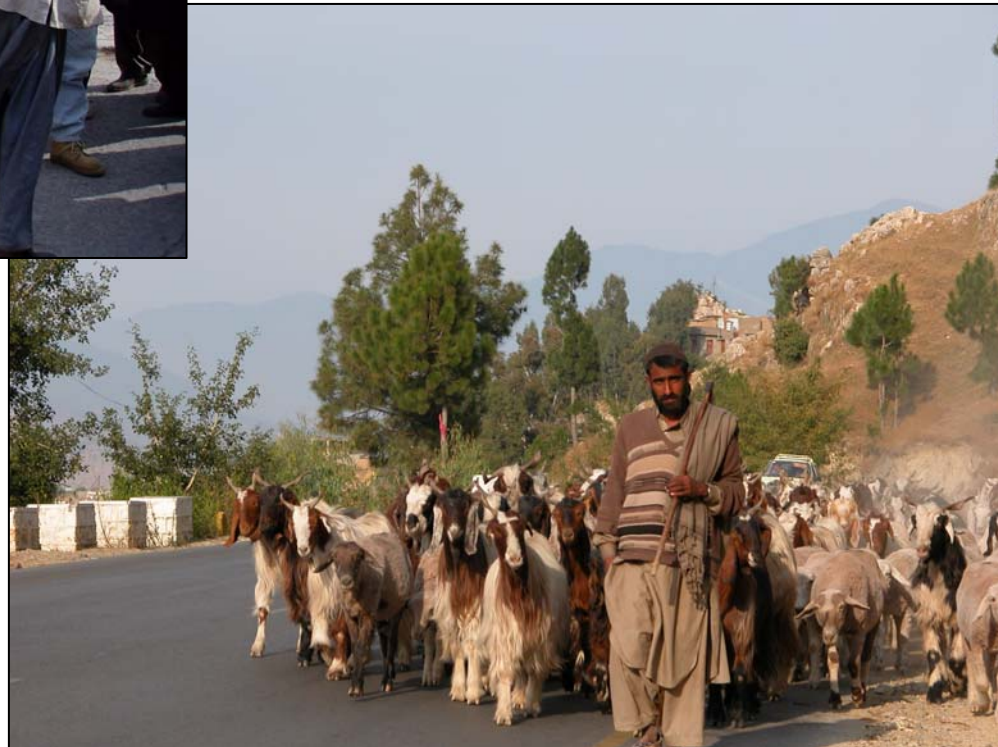


Immediate action (6)

Local stakeholders:

- **The infrastructure of the forest service should be repaired and sufficient staff should be deployed in the affected area and effectively involved in the operation.**
- **The local communities should be involved in the planning and in the implementation of the relief operation.**

Sedentary and semi-nomadic local communities; landowners and tenants



Mid term

➤ **The loose soil of the landslides and earth slips should be further stabilised with different mechanical soil conservation works (drainage channels, check dams, retaining walls, plugging gullies, gabion spurs, etc.) complemented by revegetation of the bare soil. Natural regeneration should be used as far as possible. Plantation and direct sowing of trees, shrubs and pasture herbs and grasses following a community-based approach will further enhance the revegetation process of the bare soil.**

Mid term (2)

➤ Community-based forest projects should be elaborated in order to favour a sustainable use of forest products. Additional income generation activities (e.g. use of Non-Timber-Forest Products, tea plantation) shall be initiated to support the affected people in terms of livelihood opportunities.

Mid term (3)

- **The Ministry of Petroleum and Natural Resources shall be approached for supply of Natural Gas to all the major towns in the Pakhal plain (Shinkiarai, Baffa, Khaki, Ichrian etc.), Balakot Valley and Battal so as to reduce pressure on the surrounding coniferous forests for firewood.**
- **The large impact of the earthquake requires the elaboration of a new land-use policy at the local level (land reform).**

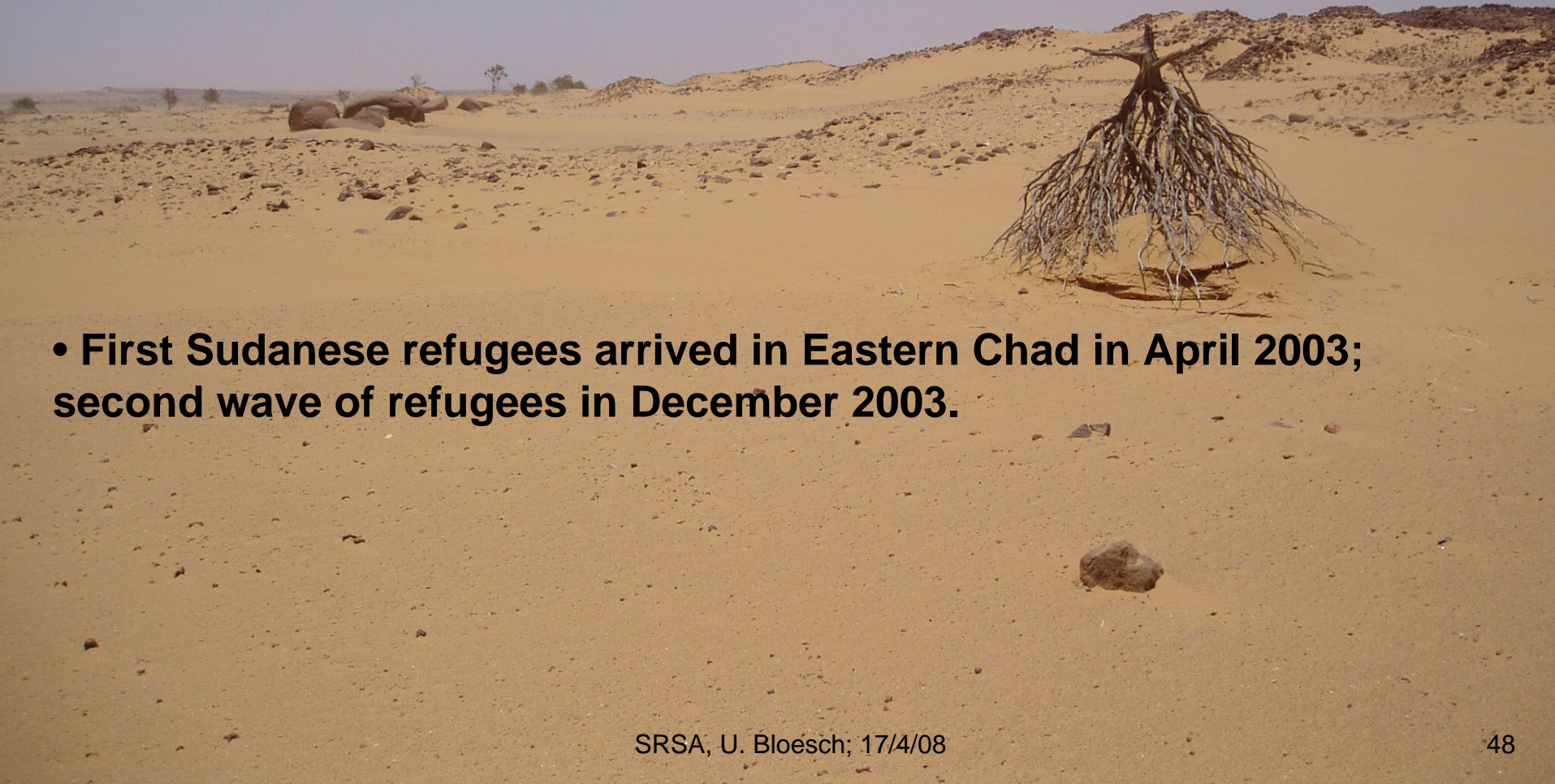
2. Case study: Environmental assessment in the Sudanese refugee hosting area in Eastern Chad

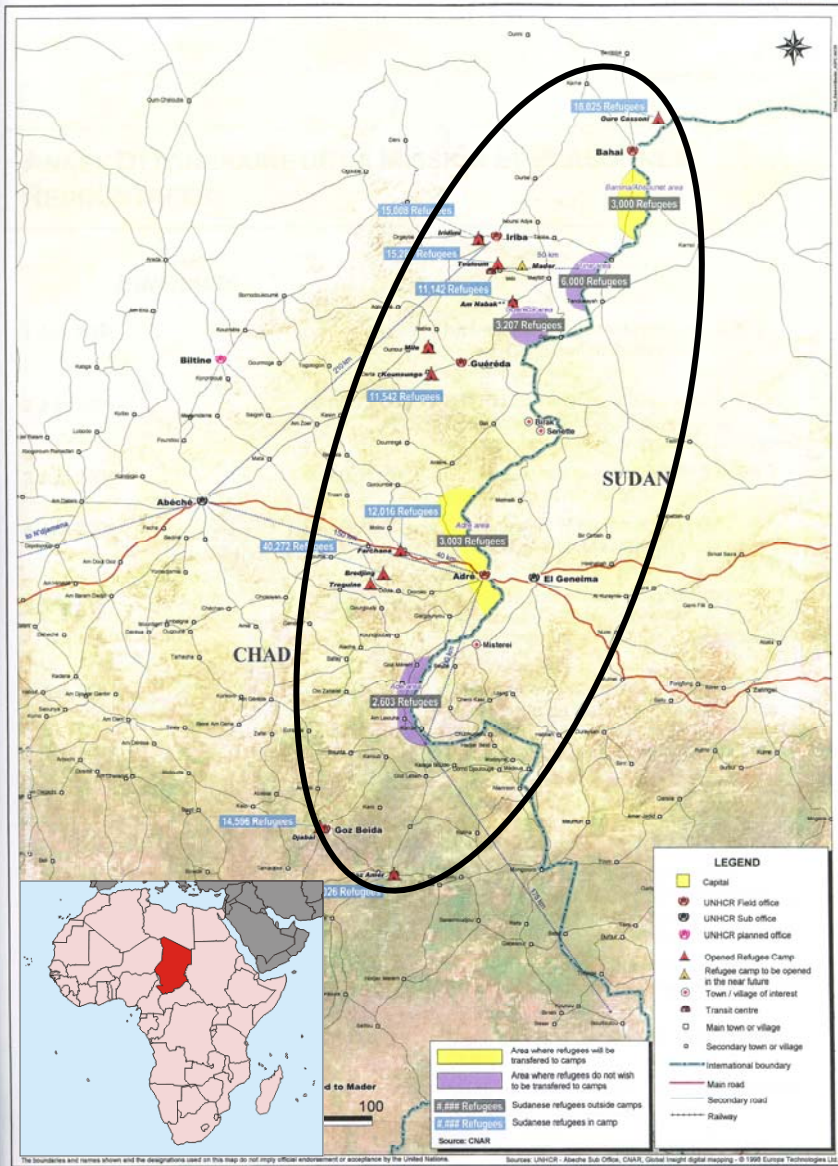


Darfur crisis

- Ancient conflict between African and Arab tribes for increasingly scarce water and pasture resources in West Darfur.
- Following the attacks of the Arab militia (Janjaweed) supported by governmental forces, the local population is forced to leave the area.

- First Sudanese refugees arrived in Eastern Chad in April 2003; second wave of refugees in December 2003.





- About 110,000 Sudanese refugees are located in Eastern Chad along the Sudanese border in March 2004 and more refugees are still arriving all over the year.

- Humanitarian aid is slowly starting to operate at the beginning of 2004.

The Sudanese Refugees



- **Semi-nomads or Agro-Pastoralists from West Darfur (mainly Zaghawa, Massalit, Tama).**
- **Many households without men (in the rebellion in Sudan, killed or as herdsmen with the herds)**

Livestock



Most refugees bring along their livestock into Chad:

- **Cattle and dromedary following the seasonal pastures (migratory routes) with a herdsman.**
- **Donkeys, sheep and goats stay with the refugees.**

... stay with their Chadian relatives



... scattered in the bush



... spontaneous camp along the Sudanese border



Dislocation of refugees in formal UNHCR camps



New refugee camp at Farchana



Temporary camp at Touloum



Iridimi camp



Kounoungou camp



Characteristics of the refugee hosting area in the Sahel



Arid climate with remarkably irregular rainfall in time and space and therefore highly unreliable.



**Scarce vegetation cover with
limited natural resources (water,
firewood, pastures, arable land)**



Environmental impact assessment

Mandate:

- **UNHCR, secondment from Swiss Humanitarian Aid Unit**
- **Field mission: 29/2 – 24/3/2004 (UNHCR Emergency Team started to operate end of 2003; environmental issues not considered as first priority)**
- **Task (TOR elaborated by UNHCR Geneva):**

Assessment of the major environmental impact related to the Sudanese refugees in Eastern Chad and elaboration of an environmental action plan in view of minimizing the environmental damages.

Participative assessment



Assessment Team:

- U. Bloesch, Teamleader
- B. Ouologuem, Environmental Officer UNHCR and UNHCR Field Officers
- H. Narusawa, Action for Greening the Sahel
- Regional staff from the Chadian agricultural, forest and environmental services

Woman-representative of the Ministry of Environment



Facilitates access to women (mostly Muslims) and translation from Arabic.

Logistical difficulties



- UNHCR Headquarters about 1000 km south-west of the refugee hosting area.
- N-S extension of the refugee hosting area more than 600 km (Wadi Fira und Ouaddaï) along the Chadian-Sudanese border.
- Very bad road condition, many areas are not accessible during the rainy season.

Assessment of environmentally relevant parameters

Demographic refugee data: location of the settlements, number of refugees and livestock, provenance from Darfur, ethnicity, occupation...

Condition of the ecosystems in the refugee hosting area and in particular around the existing and planned refugee camps (baseline data, vulnerability, current use by the local population...).

Expected additional environmental impact brought by the refugees to satisfy their needs (Water for people and livestock, firewood, building material for shelter, fodder...).

Active aid and developing organisations in the area.

Source of information



**Refugees and locals
(group discussions,
interviews)**

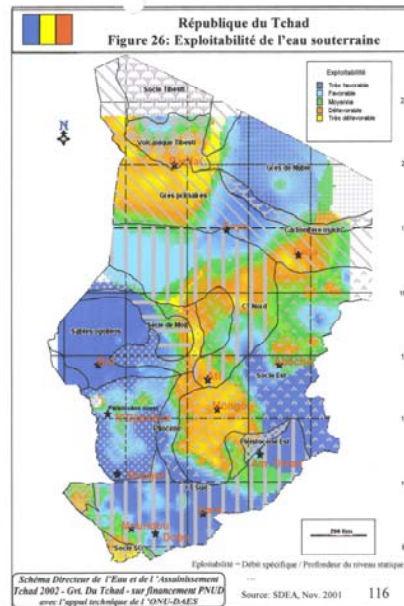
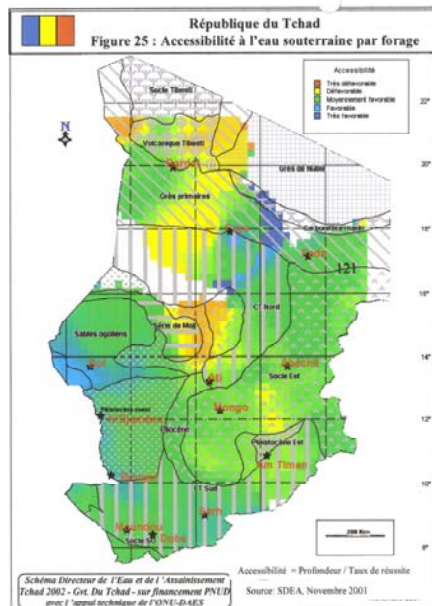
Source of information

National and regional technical services, local authorities, UNHCR, SDC (priority country), Aid and Developing agencies, national (e.g. DREM) und international research institutes (e.g. CILSS).

Internet (very few baseline information).

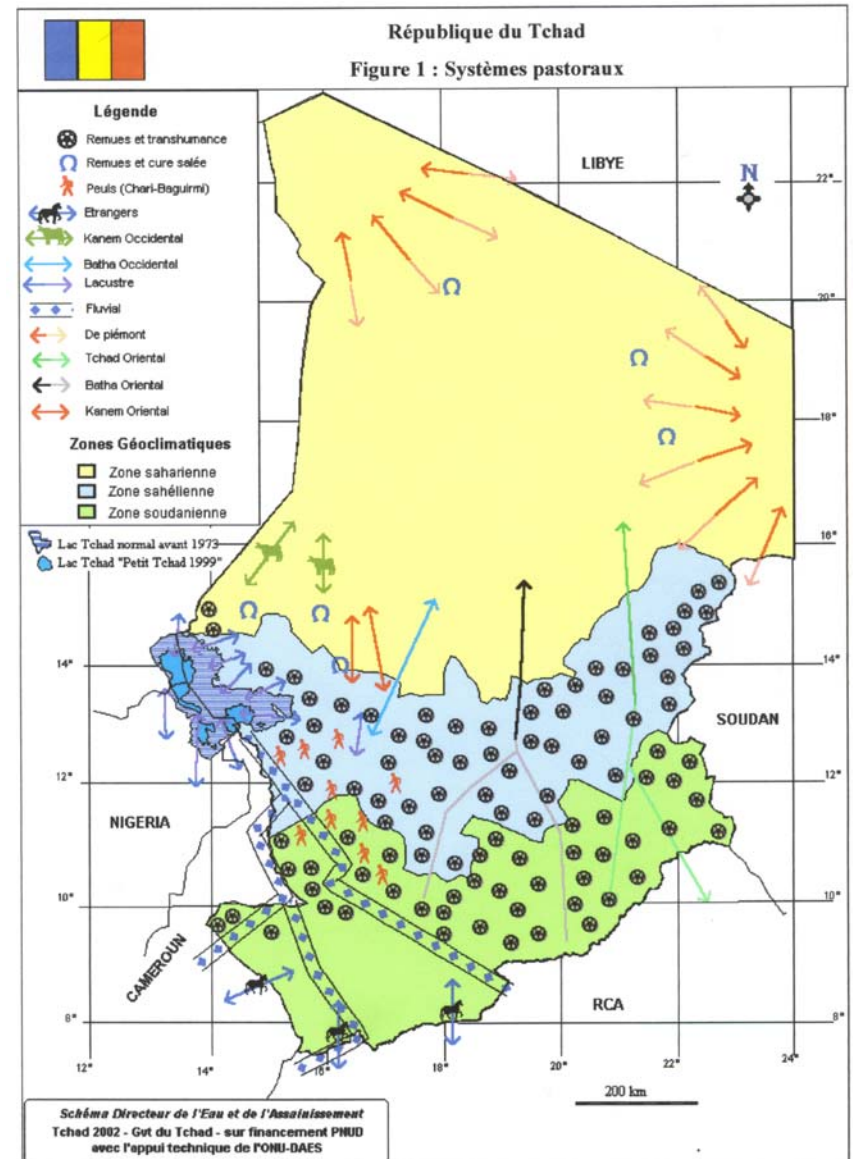
Very few information about the current situation:

- Topographic maps from the 50es and 60es
- Last livestock census in 1967
- Last geographical data from 1972



Subterrestrial water resources

Pasture map: transhumance migration routes



Some major findings



Different vegetation types and highly variable vulnerability towards disturbances



Towards the north, decreasing rainfall and increasing vulnerability of the ecosystem

Vulnerable ecosystems already put under stress to satisfy the increasing needs of the local communities prior to the refugee arrival

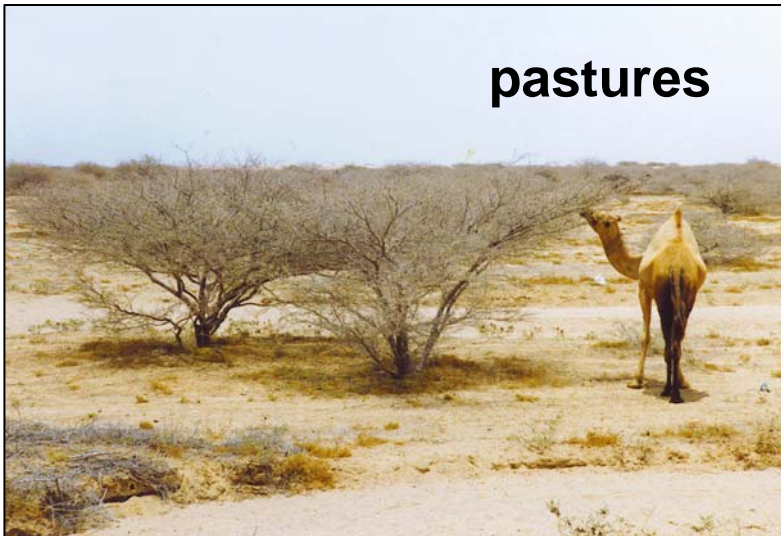
water



arable land



pastures



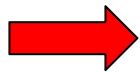
firewood



Additional stress for the ecosystems



**Needs for water of
refugees and their
livestock**



Conflict potential with local communities



**Refugee needs for
firewood and
building material**



**Deforestation leads to increased erosion
and tensions with the local communities**



**Refugee needs
for fodder**



**Overgrazing leads to tensions about
pasture rights with the local communities**

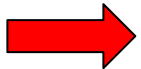
Risk of water contamination by livestock carcasses



Severe additional environmental impact by the Sudanese refugees

Locals and refugees use the same ecosystems: many ecosystems were already put under stress prior to the arrival of refugees (soil degradation, overgrazing); additional use of the natural resources by the refugees is likely to lead to an overuse and degradation of ecosystems thereby provoking tensions with the local communities.

Dislocation of refugees towards the south would greatly reduce the environmental impact (higher availability of water, pasture, wood and arable land and higher resilience of the ecosystems) but politically not acceptable (seemingly for ethnical reasons)



Environmental damages cannot be avoided completely around the refugee camps and social tensions between refugees and locals are likely to increase.

Acting aid and developing agencies in the area

(Potential actors for the implementation of the environmental action plan)

Aid organisations: very few during the emergency phase, motivated but little experienced.

Developing organisations: Rural development projects from GTZ, Coopération Française and Swiss Agency for Development and Cooperation.

National and regional technical services: lack of staff and partially inadequately trained.

**What are the priorities (activities)
for an environmental action plan
regarding natural resources?**

Environmental action plan

Aim:

Minimise the negative environmental impact of the Sudanese refugees thereby contributing to a peaceful cohabitation between refugees and locals.

Environmental Action plan 2nd Semester 2004

| Activités | J | J | A | S | O | N | D |
|--|------------------------------|---|--------------|---------------------------------|------------------------------|---|-------------------------------|
| | Elaboration du premier draft | | Consultation | Finalisation et Présentat. plan | Mise en œuvre du plan entier | | Evaluation / Planification 05 |
| Utilisation rationnelle des ressources | | | | | | | |
| 1 Promotion des foyers améliorés | | | | | | | |
| 2 Programme de sensibilisation en méthodes d'économie d'énergie | | | | | | | |
| 3 Identification avec les autorités /techniciens locaux les lieux de récoltes de bois (démarcation des zones) | | | | | | | |
| 4 Programme de formation sur la collecte de bois | | | | | | | |
| 5 Identification avec les autorités /techniciens locaux des pâturages pour le bétail des réfugiés | | | | | | | |
| 6 Installer des parcs à bétail dans la périphérie des camps | | | | | | | |
| Sources d'énergie | | | | | | | |
| 7 Prospection des zones à bois mort | | | | | | | |
| 8 Transport de bois mort (Oure-Cassoni et Iridimi éventuellement) | | | | | | | |
| 9 Enquête sur la consommation du bois de chauffe | | | | | | | |
| 10 Enquête sur l'attitude des réfugiés envers d'autres sources d'énergie | | | | | | | |
| 11 Mener le teste avec les tourteaux de coton (éventuellement autres résidus agricoles) | | | | | | | |
| 12 Tester le four solaire à réflecteur incurvé | | | | | | | |
| Mesures de protection et de réhabilitation | | | | | | | |
| 13 Identification des sites pour des travaux de conservation de sols (travaux de haute intensité de main d'œuvres en concertation avec le PAM) | | | | | | | |
| 14 Identification des sites pour le reboisement et besoin en plants | | | | | | | |
| 15 Préparation des pépinières | | | | | | | |
| 16 Production des plants | | | | | | | |
| Assainissement | | | | | | | |
| 17 Incinération des cadavres | | | | | | | |
| 18 Programme de formation en éducation (eau, aliment et déchet) | | | | | | | |

Example of first Action plan

Principles of the approach:

- Integrated part of the overall humanitarian operation
- Beneficiaries: refugees and locals
- Involve representatives of the refugee and local communities in the identification and implementation of the activities
- Site-specific approach
- To start immediately with first mitigation measures while simultaneously planning mid- and long-term activities
- Ensure flexibility in the implementation of the action plan
- Recruitment of UNHCR Environmental Coordinator (secondment from SHA)

Environment is a crosscutting issue (interdisciplinary approach):

- Site planning (site selection, number of refugees per site...)
- Water & sanitation (soil conservation measures...)
- Health (latrines...)
- Food (WFP selection of food items...)
- Logistics (Supply of energy and appropriate stove types...)
- Camp management (protection of vegetation cover...)
- Community services (awareness programme e.g. energy saving practices)

Complete incineration of cadavers by technicians from the livestock department



Organised collection of dry wood



Milling of maize



Dissemination of improved clay stoves and promotion of energy-saving practices



Further options: multi-family cooking



Evaluation of other energy sources (substitutes for firewood)

Cotton husks as pellets (16MJ/kg)

Animal dung (10MJ/kg)

Kerosene (44MJ/kg) and appropriate stove (thermal efficiency 35%)

Solar cooker



Establishment of tree nurseries



**Where do you see the similarities
respectively differences between
the two cases studies?**

Comparison of the two case studies

- **Natural resources already put under stress by the locals in both cases prior to the disaster.**
- **Different ecological zones with different ecosystem resilience.**
- **Multitude of international and national actors in Pakistan.**
- **Weak national authorities and absence of national organisations.**

Comparison of the two case studies (2)

- **Energy needs for heating major concern only in Pakistan**
- **Single event (earthquake) in Pakistan what facilitates planning of the operation - Unstable situation in Chad: conflict persists in Darfur what may cause new refugee influx in Chad thereby rendering planning more difficult.**

Lessons learnt and discussion

- 1) If possible participative assessment together with national experts
- 2) Effective involvement of all relevant stakeholders at local, national and international level what may greatly facilitate the subsequent implementation of the recommendations of the mission (action plan).
- 3) Debriefing: Discuss findings & recommendations of the mission with ALL actors.
- 4) Humanitarian crisis with nomads: people and livestock belongs together; the needs of the livestock are equal important than the care for humans.

- 5) Take own initiatives (representatives of the contracting organisation often not available in emergency situations).**
- 6) Set priorities; avoid to resolve all problems at the same time.**
- 7) Be flexible and ready for improvisation (often chaotic conditions during emergency phase).**
- 8) Carry out an EIA as soon as possible (EIA often carried out when important management decisions for the relief operation already made).**
- 9) Preparedness: Elaborate strategies for a humanitarian operation in regions with a high disaster potential (e.g. mapping of highly vulnerable ecosystems which should be excluded for the settlement of displaced persons/refugees such as very arid or protected areas).**

Thank you for your attention!