

Lessons learned from conflicts & environment

Pekka Haavisto - Hämeenlinna 30.3.2011

Environmental impacts of war

Direct environmental impacts:



Bomb damage



Landmines and UXOs



Sabotage of resources



Depleted uranium



Military waste



Troop movements

Environmental impacts of war

Indirect environmental impacts:



Refugees



Sanctions



Collapse of management



Military exploitation



Corruption



Use of marginal lands

Three ways to look the problem

- Natural resources and environment triggering the conflicts
- How conflicts are influencing to natural resources and environment
- Natural resources and environment as a peace building tool

Natural resources and environment causing the conflicts

- Fight over oil or mineral resources
- Climate change causing environmental refugees
- Natural resources as a financing tool for conflict (forests, diamonds, oil etc.)
- Slowing down the peace processes due to the economic reasons (people benefitting of continued conflict)

Natural resources & conflicts

- Afghanistan
- Angola
- DRC (Congo)
- Indonesia, Aceh
- Liberia
- Sierra Leone
- Somalia
- Sudan, Darfur
- Forests, opium
- Oil, diamonds
- Diamonds, minerals, forests
- Forests, nature gas
- Diamonds, minerals, forests
- Diamonds, coffee, cocoa
- Fishing, charcoal
- Oil, climate change

Conflicts influencing to the natural resources & environment

- Direct influence (destroyed ecosystems, pollution etc.)
- Undirect influence (immigration, refugees, unsustainable use of natural resources etc.)
- Effecting the institutions (collapse of environmental management, increased corruption etc.)

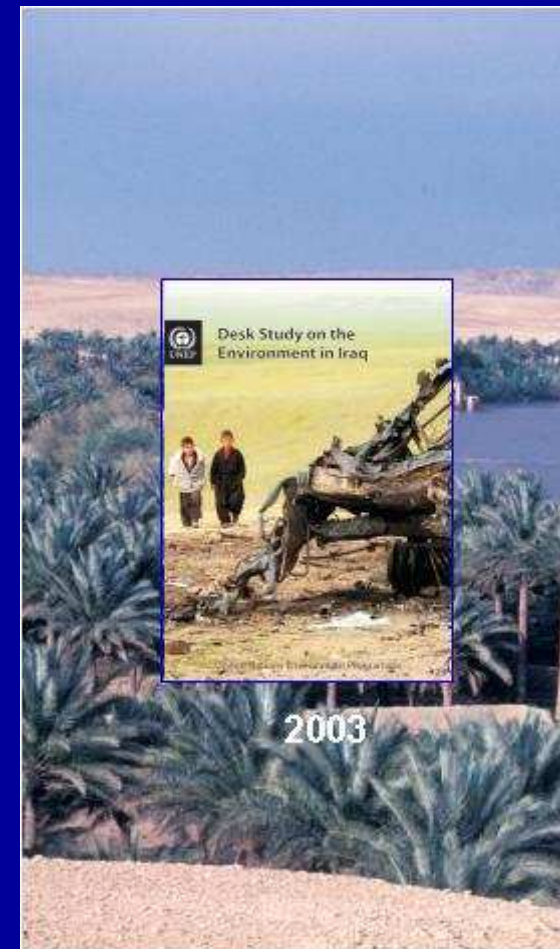
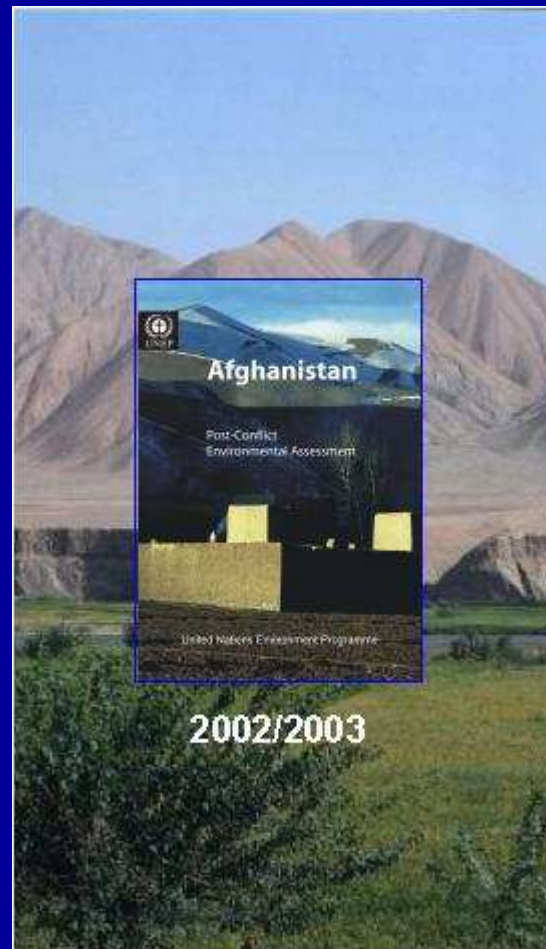
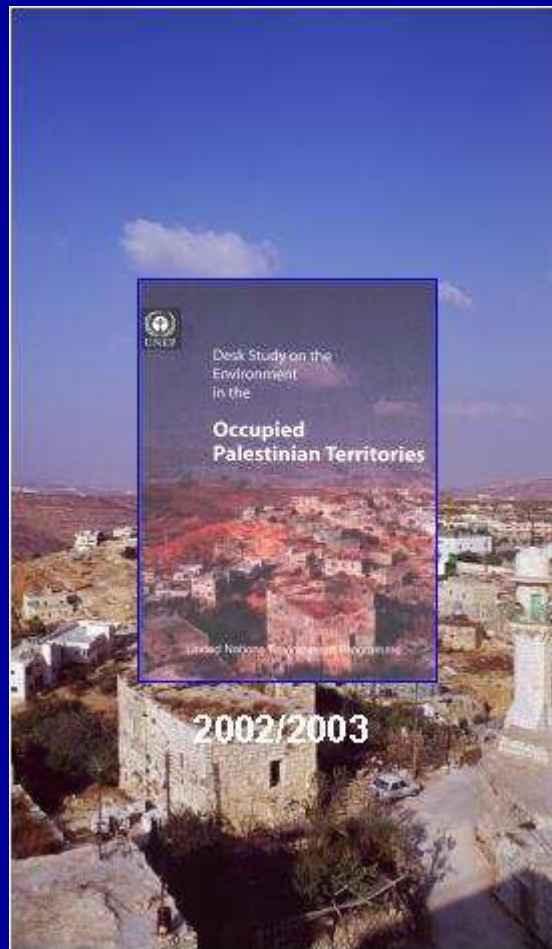
Natural resources & environment in peacebuilding

- Sustainable use of natural resources (e.g. sharing of oil revenues to strengthen peace process)
- Sustainability in reconstruction (environmentally friendly buildings and energy solutions etc.)
- Dialogue and participatory processes (environmental cooperation over borders)

Conclusions

- Conflict prevention: sustainable use of natural resources, climate change adaption, peaceful way of solving conflicts
- During conflict: help also environment, minimize risks
- After conflicts: environment as part of reconstruction, assess the environmental impacts of the conflicts

UNEP post-conflict assessments



Objectives

- Investigate environmental impacts of conflicts
- Collect information on chronic environmental problems
- Demonstrate links between environmental degradation, human health and livelihoods
- Recommend strategic priorities for clean-up and ecosystem rehabilitation
- Provide technical advice and assistance
- Promote regional environmental cooperation and transboundary management
- Strengthen capacity of authorities for environmental management
- Catalyze support for environmental projects
- Integrate environment into recovery and reconstruction process



Key features

- Rapid and strategic
- Build on lessons learned from previous work
- Use of national and international experts
- Integrated within UN humanitarian framework
- Distribution of all information
- Easy-reading reports and web-site
- Translation of final reports into local languages

Audience

- Local communities
- Host government
- International community
- National and international NGOs



Intervention criteria

UNEP is needed if there is:

- Lack of resources or expertise to respond to post-conflict environmental risks
- Potential for conflict-related transboundary environmental impacts
- Need for independent assessment to verify findings of national authorities

Preconditions for UNEP's intervention:

- Invitation / mandate (host government / UN)
- Independence
- Access to information
- Security
- Stakeholder support
- Financial support



Assessment framework

Conflict-related impacts:

- Bombing of military, industrial and civilian sites
- Damage to biodiversity and natural resources
- Weapons of war, including DU, UXOs and landmines
- Refugees and displaced people
- Illegal / uncontrolled use of natural resources
- Sanctions

Chronic environmental problems:

- Surface and groundwater management
- Liquid and solid waste management
- Air quality
- Forests, rangelands and agricultural areas
- Parks and protected areas
- Endangered species

Environmental governance:

- Capacity for environmental management
- Laws, policies, standards, monitoring, enforcement
- Regional and international cooperation



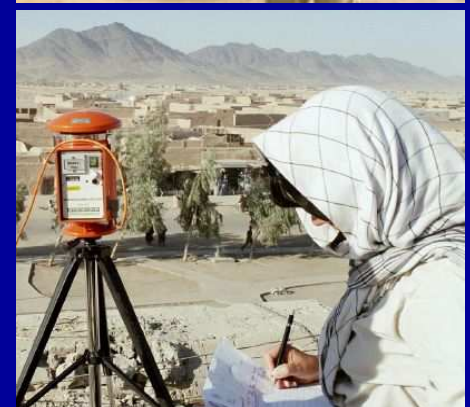
Coordination framework

- Stakeholder roundtables
- UN inter-agency standing committee (IASC in Geneva)
- UN Development Group (UNDG in New York)
- UN Flash Appeal (OCHA in Geneva)
- UNEP-OCHA Environment Unit
- Inter-agency needs assessment
- Country field office
- UN partners include OCHA, UNHCR, WHO, FAO, WFP, UNDP, UNICEF, IAEA, UNMAC...
- Other international partners include IUCN, WWF, GCI, IISD, CI, FFI, Greenpeace...



Tools

- Collection of existing environmental information
- Sharing of information between UN agencies and NGOs
- GIS and remote sensing analyses
- Interviews and meetings
- Site inspections
- Repeat photography
- Air, soil, water and vegetation sampling and analyses
- Review of material received during the missions
- Expert panel analyses of the results



Constraints

- Security
- Landmines / UXOs
- Access to information (current and baseline)
- Site access
- Time period
- Financial resources
- Identification of local expertise
- Logistics and accomodation
- Language and ethnicity
- Sampling equipment limitations
- UN framework
- Policitcal considerations



Methodology

1. Preparatory phase

- Desk studies
- Political and institutional cooperation
- Recruitment of experts
- Stakeholder meetings



2. Field investigation phase

- Fact-finding mission (site visits, sampling, interviews)
- Technical mission (site visits, sampling, interviews)



3. Analytical phase

- Laboratory analysis
- Expert review panel



4. Reporting phase

- Drafting - review
- Finalization - dissemination



5. Follow-up phase

- Fund raising
- Feasibility studies – reviews of implementation
- Capacity building
- Technical / legal advice
- Clean-up

Balkans Task Force

UNEP Balkans Task Force

In May 1999, UNEP established the Balkans Task Force to investigate the environmental risks caused by the Kosovo conflict

A team of 60 international experts was assembled to assess environmental impacts from the bombings



UNEP activities in the Balkans

Field missions in Kosovo and Serbia-Montenegro summer 1999:

- Targeted industrial sites („hotspots“) / Human settlements / Danube river / Biodiversity impacts / Depleted uranium

Field missions in Albania and Macedonia autumn 2000:

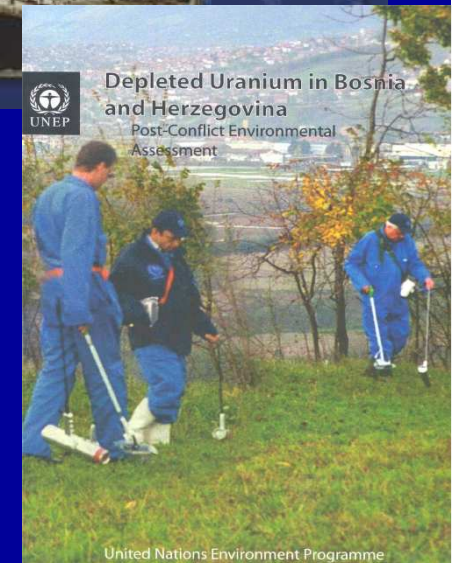
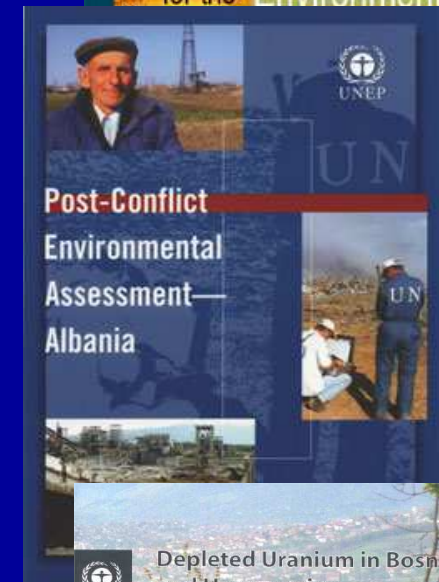
- Refugee impacts / Environmental hotspots / Institutional capacity for environmental management

Depleted uranium missions:

- Kosovo 2000, in Serbia-Montenegro 2001, Bosnia-Herzegovina 2002

Clean-up activities:

- Serbia 1999-2004





**Bomb damage at Pancevo industrial complex,
FR Yugoslavia, May 1999**



**Mobile laboratories providing immediate results
in FR Yugoslavia, June 1999**



**Mercury contamination at Pancevo VCM plant in
FR Yugoslavia, June 1999**



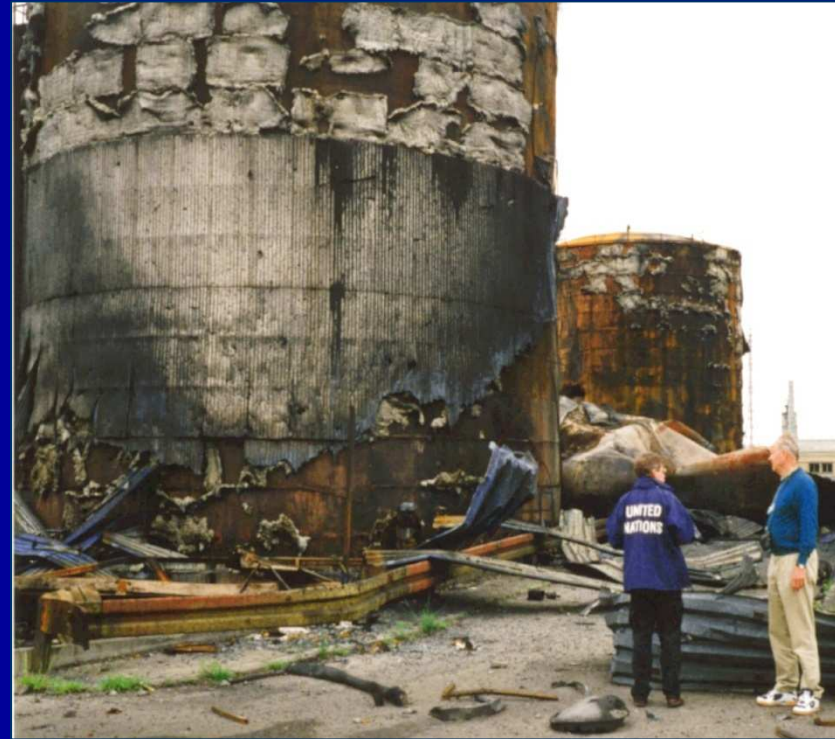
**Soil sampling from Pancevo industrial complex
in FR Yugoslavia, June 1999**



**Sediment sample from Danube River in FR
Yugoslavia, June 1999**



**Bomb damage at Novi Sad refinery,
FR Yugoslavia, May 1999**



**Assessing risks at Novi Sad oil refinery, in FR
Yugoslavia, June 1999**



**Assessing risks at Bor transformer station in
FR Yugoslavia, June 1999**



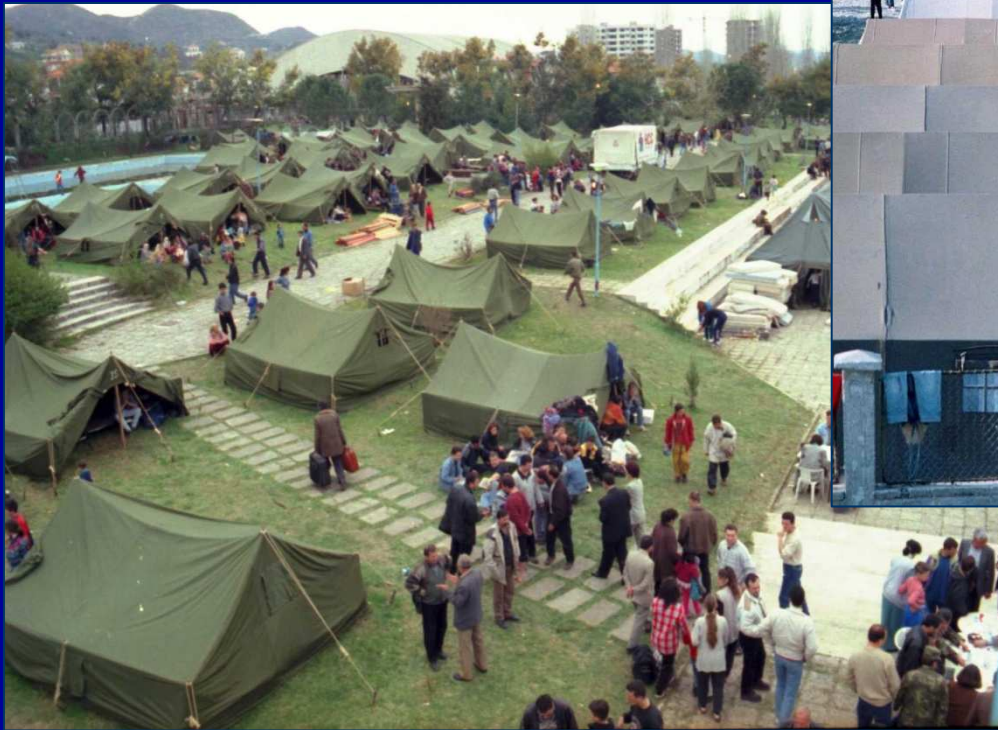
**Assessing risks at Zastava car factory in
Kragujevac, FR Yugoslavia, June 1999**



**Collateral damage in protected areas,
FR Yugoslavia, May 1999**



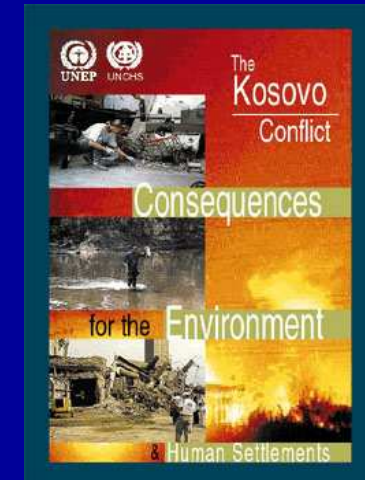
Refugee camps in FYR of Macedonia, May 1999



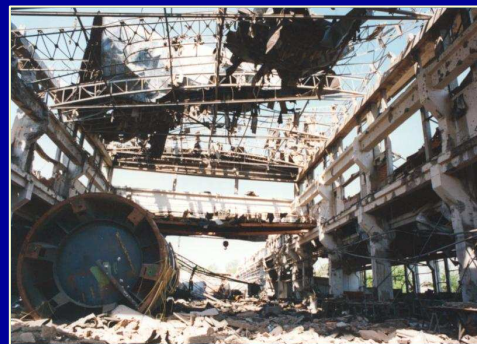
Refugee camps in Albania, May 1999

UNEP findings in Serbia

- No wide-spread environmental impacts
- 4 pollution hotspots posing immediate risks to human health and the environment



**Humanitarian clean-up
required to protect health
and environment**



Clean-up of environmental « hotspots »

With US\$ 12 million raised from the donor community, UNEP was implementing 15 high priority clean-up operations at three sites:

Pancevo Industrial Complex



EDC, mercury and hydrocarbon remediation, repair of wastewater plant, canal remediation, groundwater monitoring

Kragujevac Car Factory



PCB decontamination and treatment/disposal of hazardous wastes

Novi Sad Oil Refinery



Hydraulic barrier construction, hydrocarbon remediation, repair of wastewater pipeline, groundwater monitoring

Depleted Uranium

Depleted uranium in the Balkans

Depleted Uranium Awareness

Depleted uranium (DU) is a dense metal used in munitions for its penetrating ability and as a protective material in armoured vehicles. It is a toxic and radioactive heavy metal. The United Nations Environment Programme (UNEP) has been conducting environmental measurements on targeted DU sites in Kosovo in 2000, Serbia and Montenegro in 2001, and Bosnia and Herzegovina in 2002. In addition, UNEP was involved in the IAEA DU assessment to Kuwait in the spring of 2002. All these studies confirm that DU has environmental impacts. Health risks primarily depend on the awareness of people coming into contact with DU. Radiological and chemical effects of DU are likely to occur only under worst-case scenarios. UNEP DU reports always recommend precautionary action such as measurements, signing, fencing and clean-up of the targeted sites to avoid possible health risks.

What is Depleted Uranium?

Depleted uranium (DU) is a by-product from the process that enriches natural uranium ore for use as fuel in nuclear reactors and nuclear weapons. It is:

- highly dense,
- radioactive,
- a heavy metal with both offensive and defensive military applications.

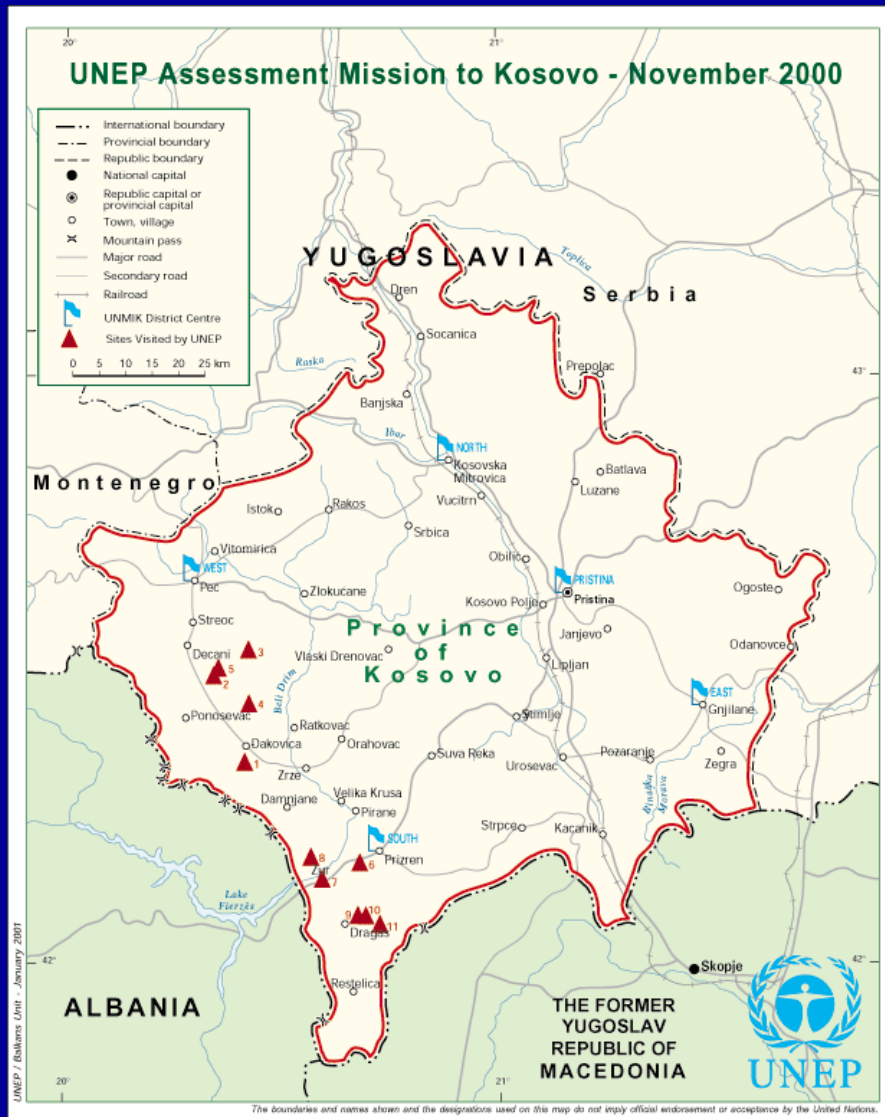
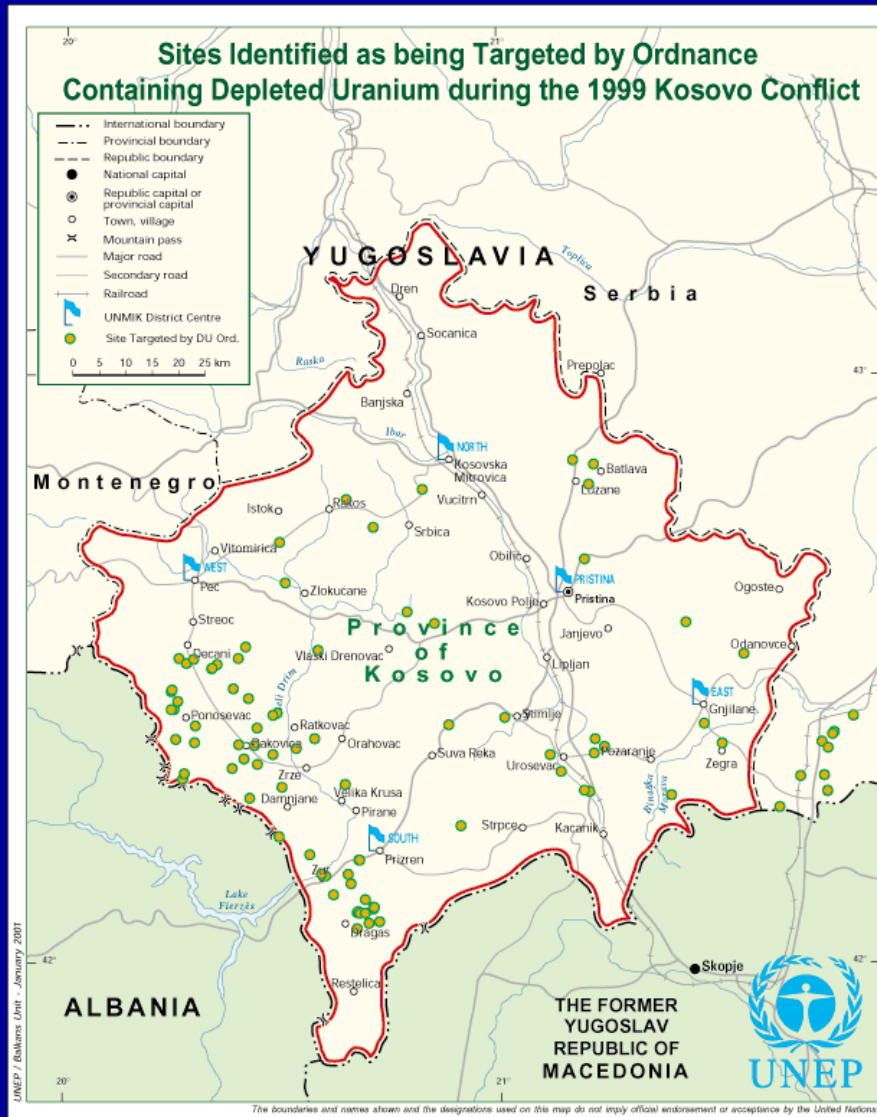
Black DU munition jacket and penetrator



DU Penetrator in its original size

- One year delay of having information from NATO
- Kosovo DU mission autumn 2000:
 - 10 tons of DU fired
 - 100 DU attacks in Kosovo
 - 11 in Serbia
 - 1 in Montenegro
 - 11 sites visited, 300 field samples
- Serbia-Montenegro DU mission 2001:
6 sites visited, 160 field samples
- Bosnia-Herzegovina DU mission 2002:
14 sites visited, 132 field samples

NATO depleted uranium maps received summer 2000





Securing sample sites from mines and unexploded ordinance (UXOs) in Kosovo, November 2000



**Measuring beta and gamma radiation in
Kosovo, November 2000**



DU penetrators from Kosovo, November 2000

**Penetrator of depleted uranium (DU)
found at Ceja Mountain, Kosovo,
November 14, 2000**



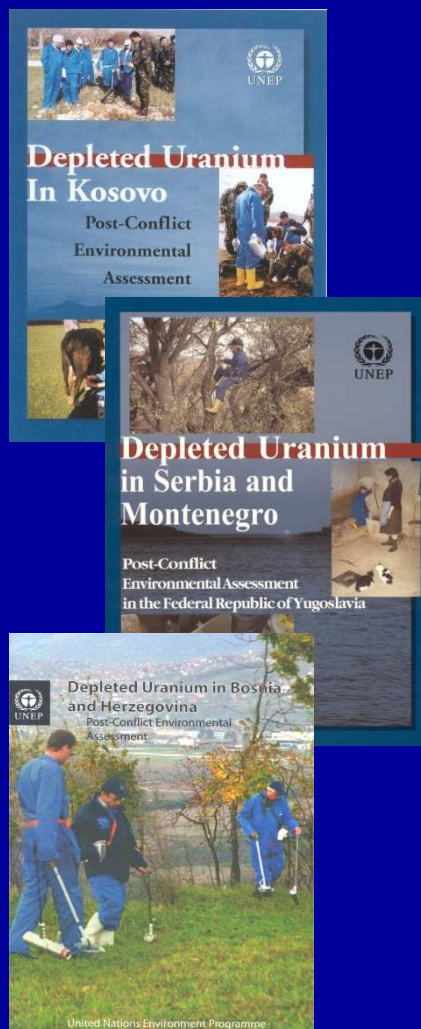


**Inspection of an APC at Vranje Garrison, Serbia.
In the Kosovo war few armored vehicles were hit by DU.**



UNEP sampling team with Italian KFOR troops in Kosovo

UNEP depleted uranium findings:

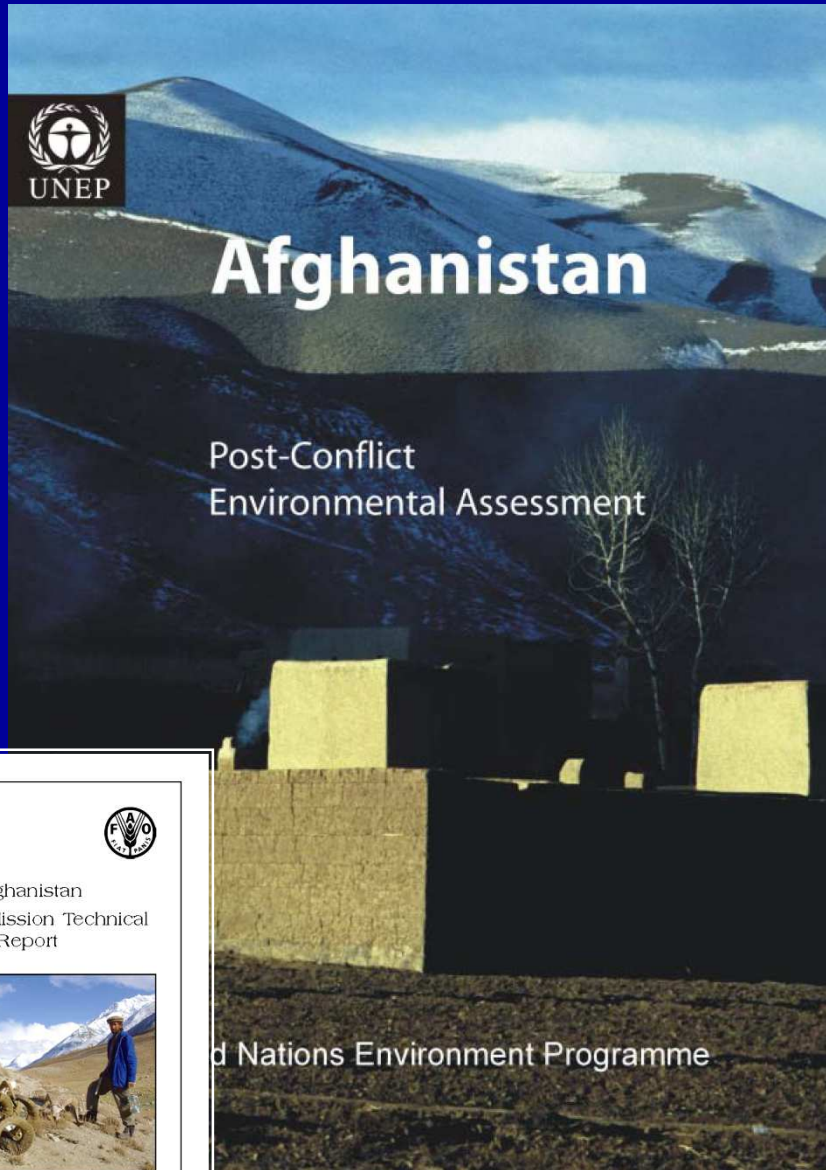


- **Ground surface:** No significant, widespread contamination detected
- **Soil:** Laboratory analyses revealed low-levels of contamination
- **Vegetation and milk:** No significant contamination detected
- **Groundwater:** DU detected at low-levels at some sites
- **Air:** DU detected at low-levels
- **Transuranic elements:** Low-levels found
- **Future risks:** Groundwater contamination from penetrator corrosion

UNEP recommendations

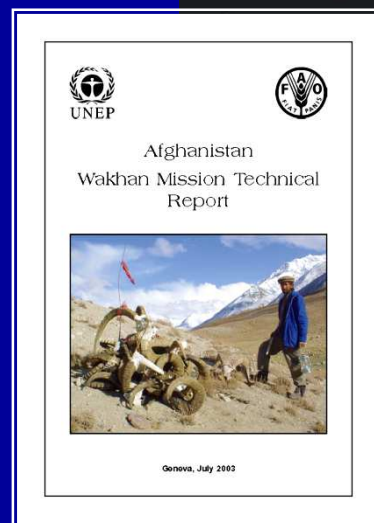
- 1. Measure contamination and detect possible DU.
- 2. Decontaminate contamination points.
- 3. Handle and dispose DU material properly.
- 4. Keep records on the DU sites.
- 5. Planning before any soil disturbance.
- 6. Clean contaminated buildings.
- 7. In attacked sites, if a well, test water yearly for uranium.
- 8. Inform civilians and mine/clearing personnel.
- 9. Train experts for DU decontamination.
- 10. People exposed to DU during attacks should have a medical examination.

Afghanistan

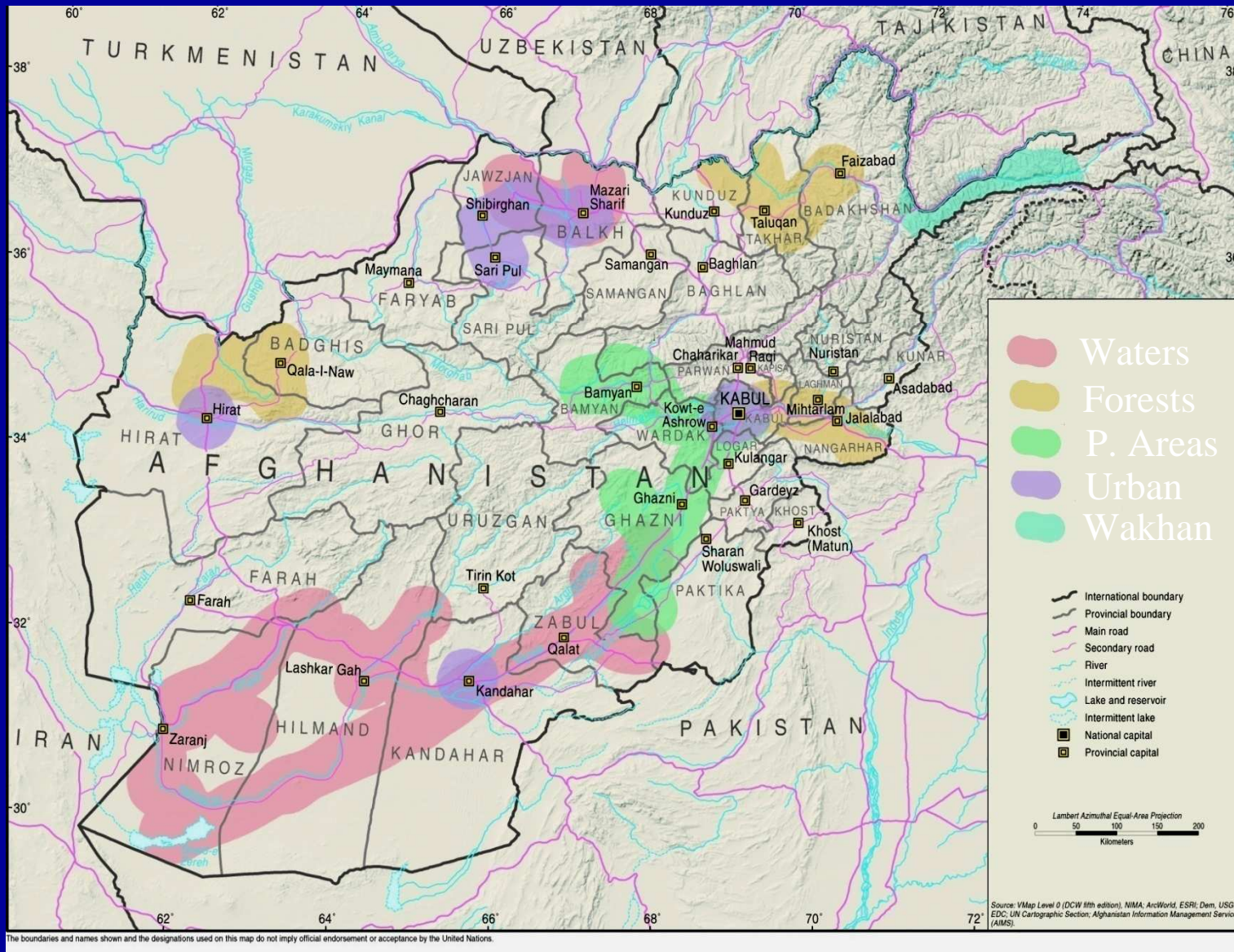


Key sectors in the assessment

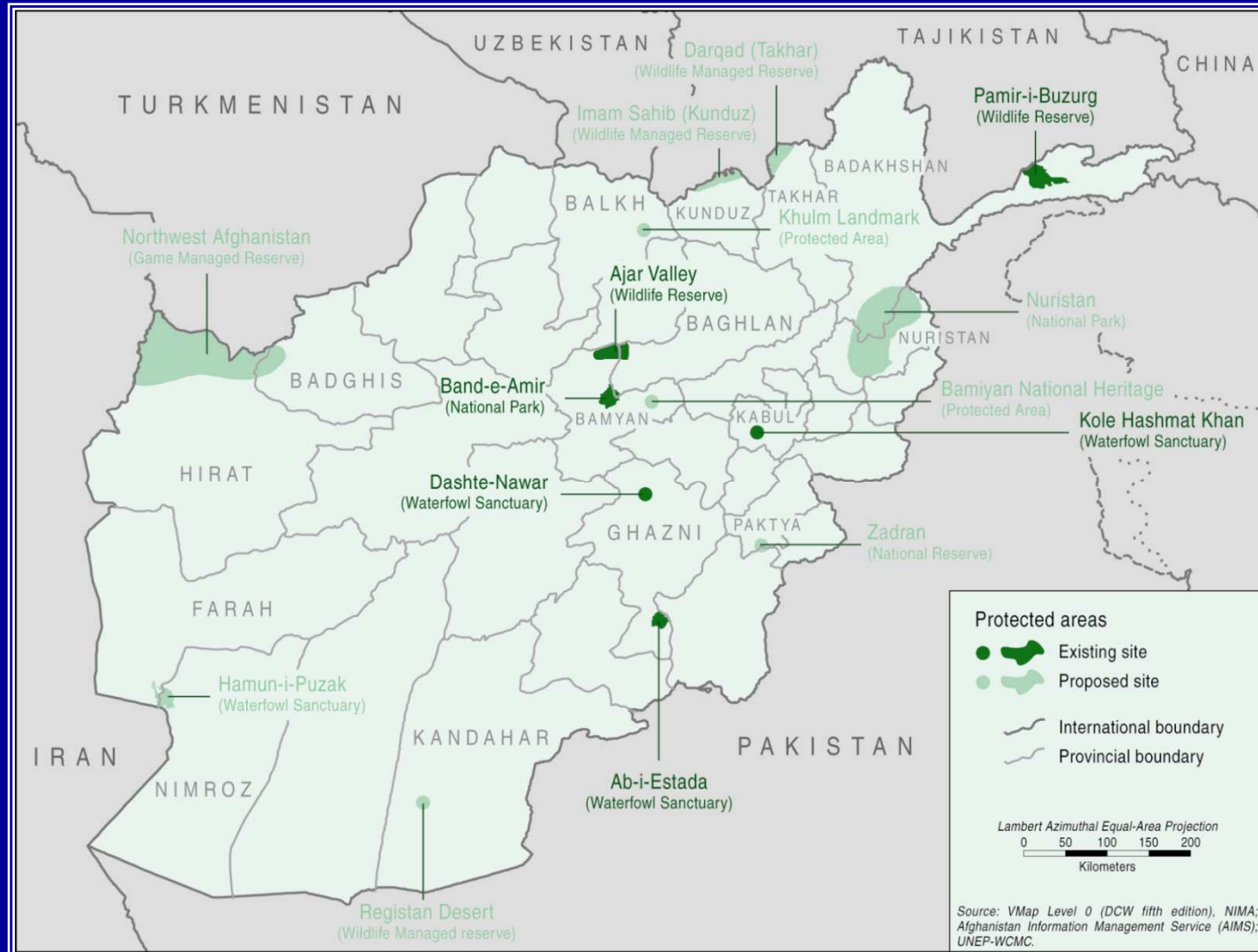
- Urban environment
- Biodiversity
- Protected areas
- Forests and woodlands
- Water and wetlands
- Wakhan Corridor



Areas visited by UNEP missions



Existing and proposed protected areas in Afghanistan





Wakhan valley area

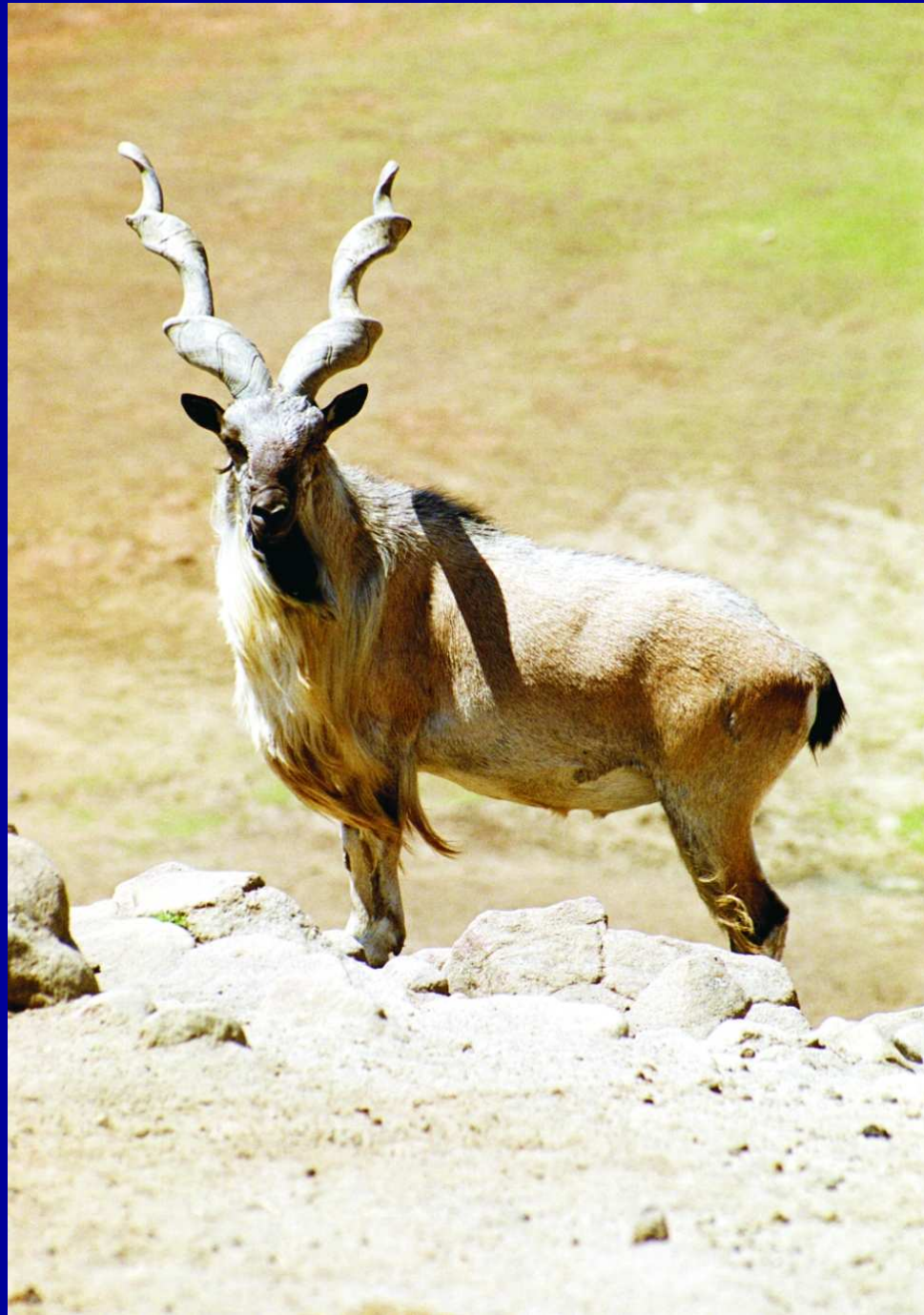


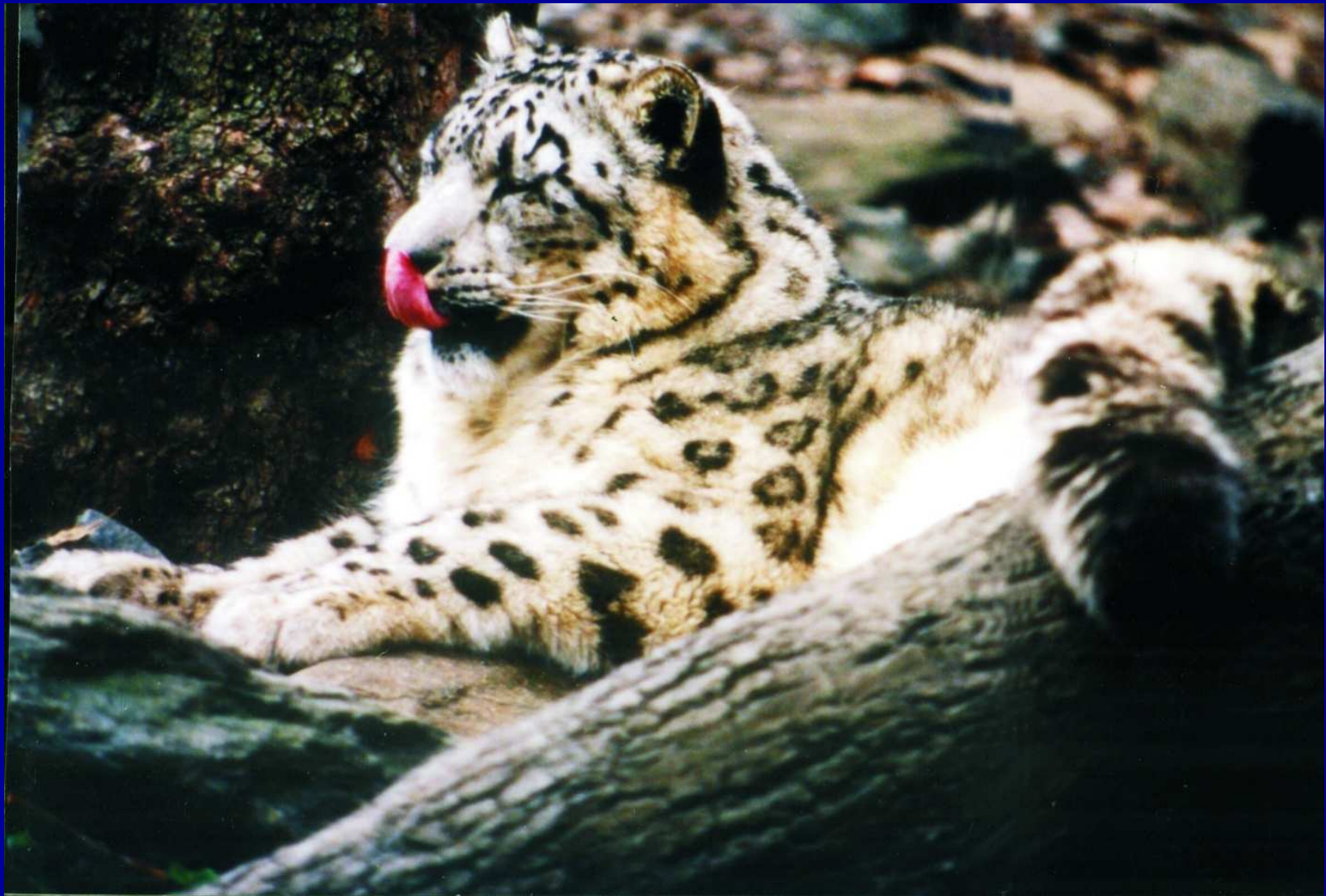
Bande Amir - view of Bande Zulfiqar from near road



Bande Amir - on trail along Bande Zulfiqar

**The globally
threatened
markhor
(*Capra
falconeri*)
is among
Afghanistan's
large
mammals**



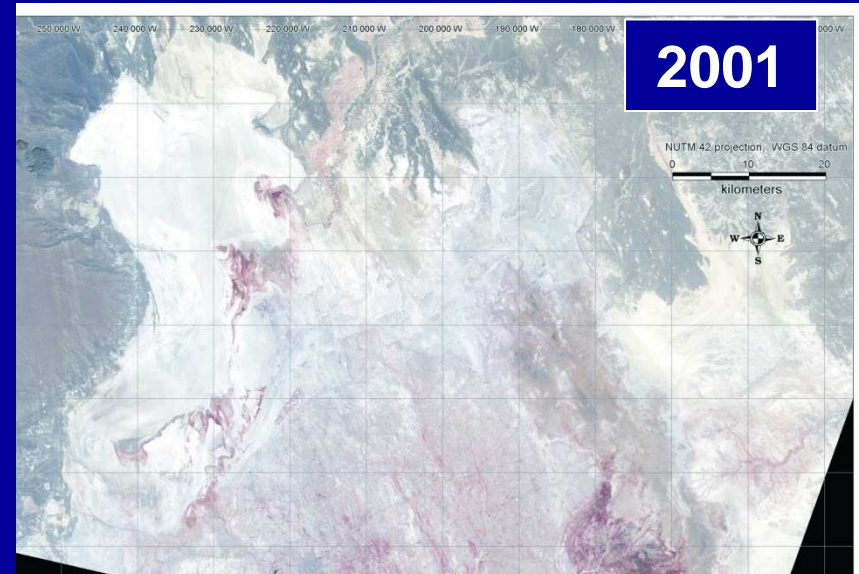
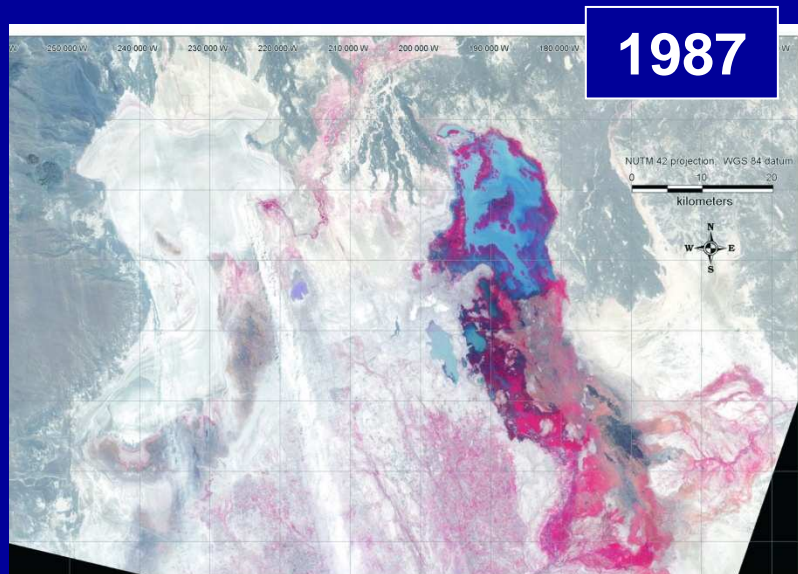
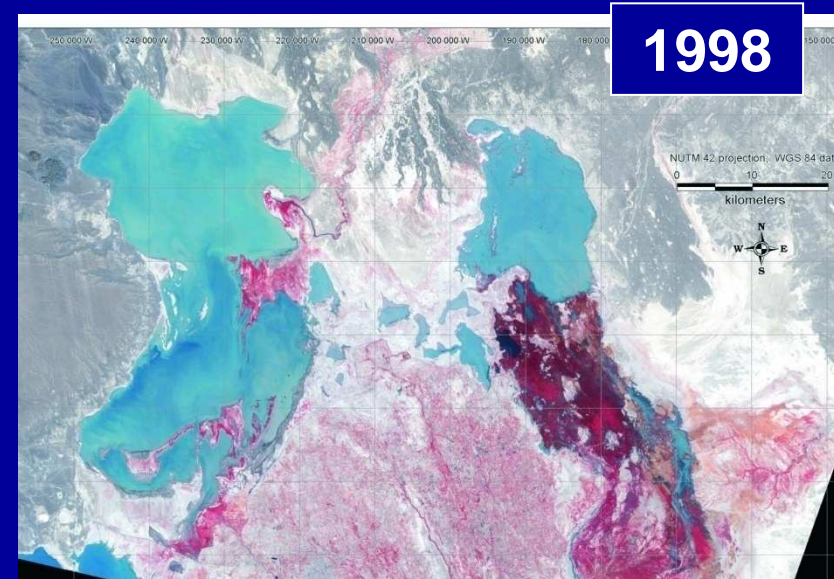
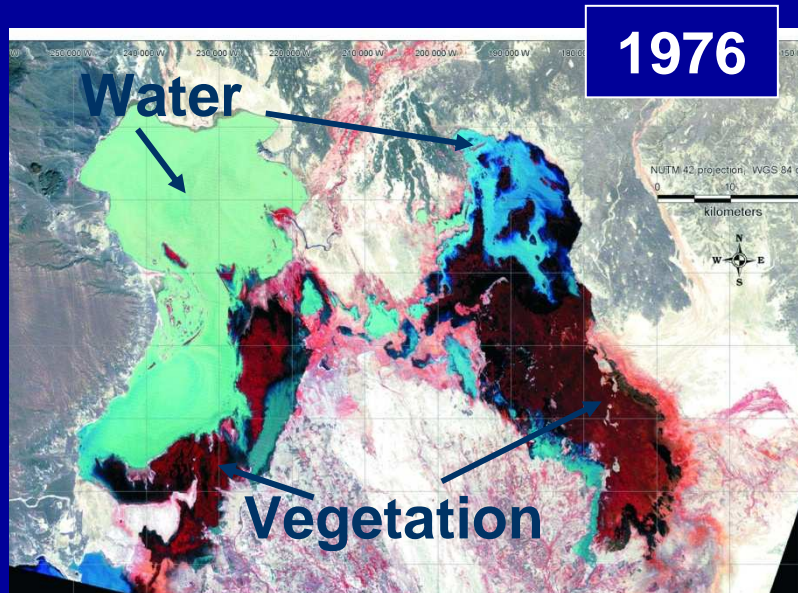


Snow leopard (*Uncia uncia*)

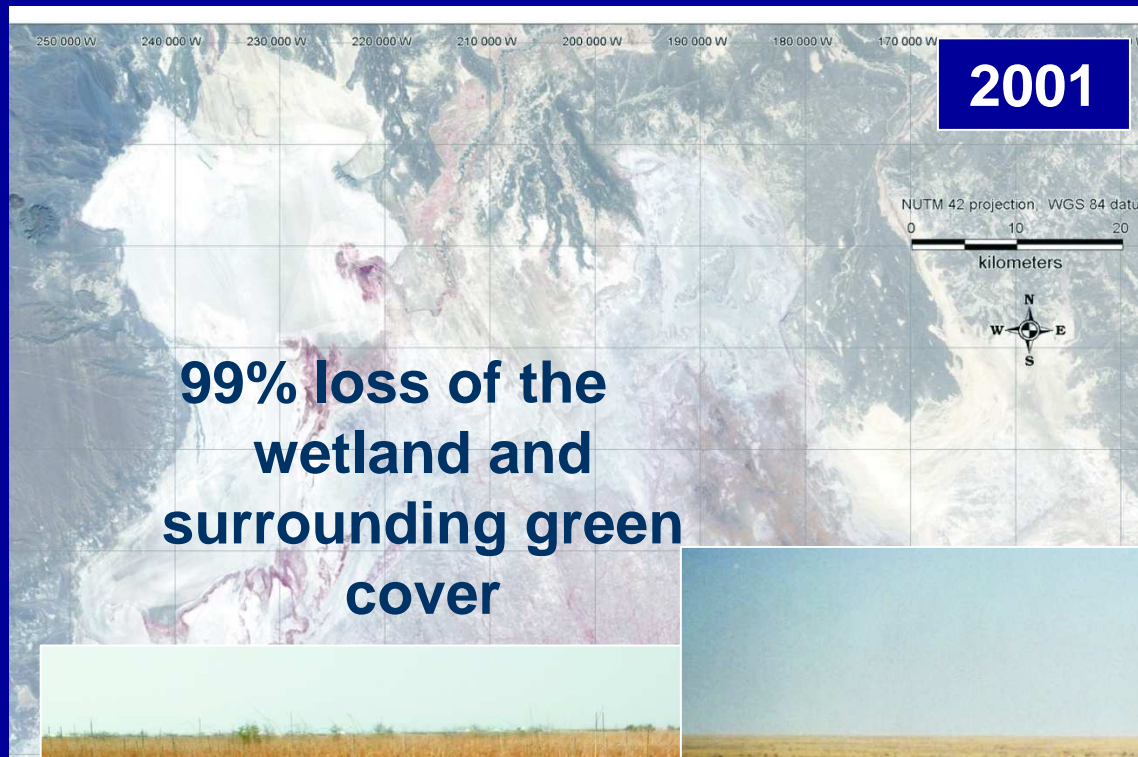


Kabul - fur trader's shop at Chicken Street

Sistan Basin Wetland

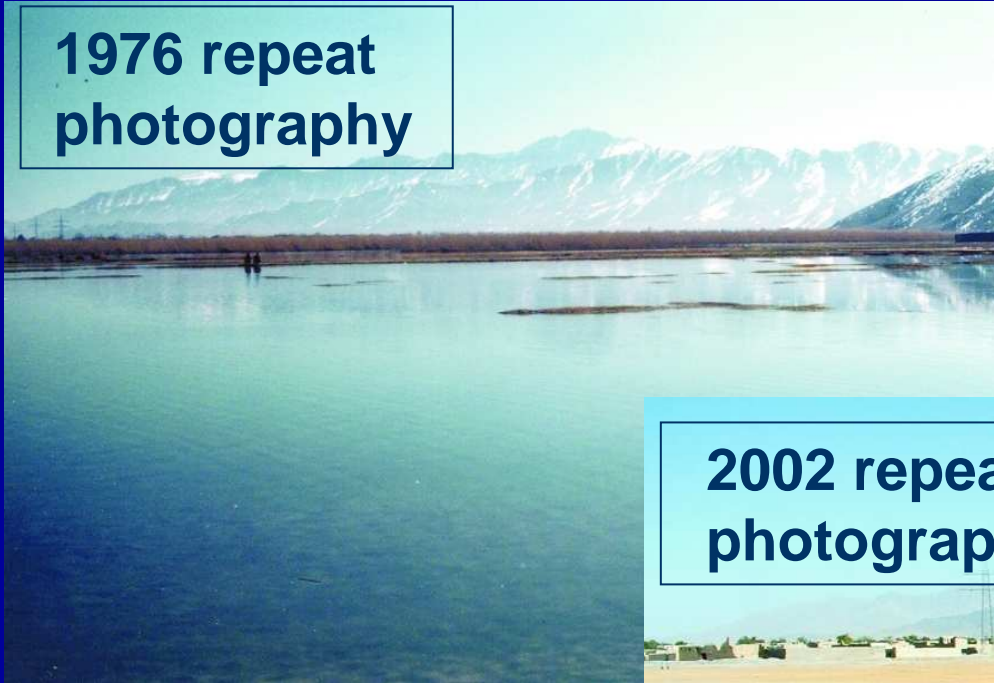


Sistan Basin Wetland



Kole Hashmat Khan Wetland

1976 repeat
photography



2002 repeat
photography



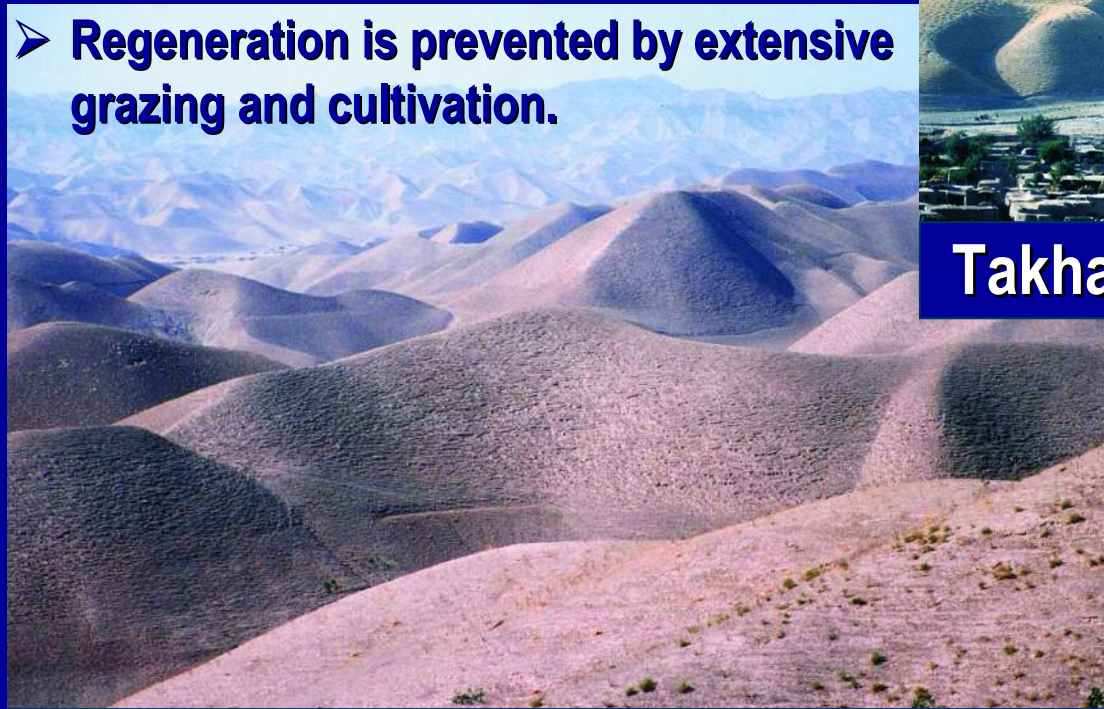
- Urban and agricultural encroachment
- Uncontrolled water extraction
- Drainage ditch

Woodlands deforestation

- Extreme deforestation observed across the country
- Soil erosion/floods are increasing
- **Regeneration is prevented by extensive grazing and cultivation.**



Takhar Province, Farkhar

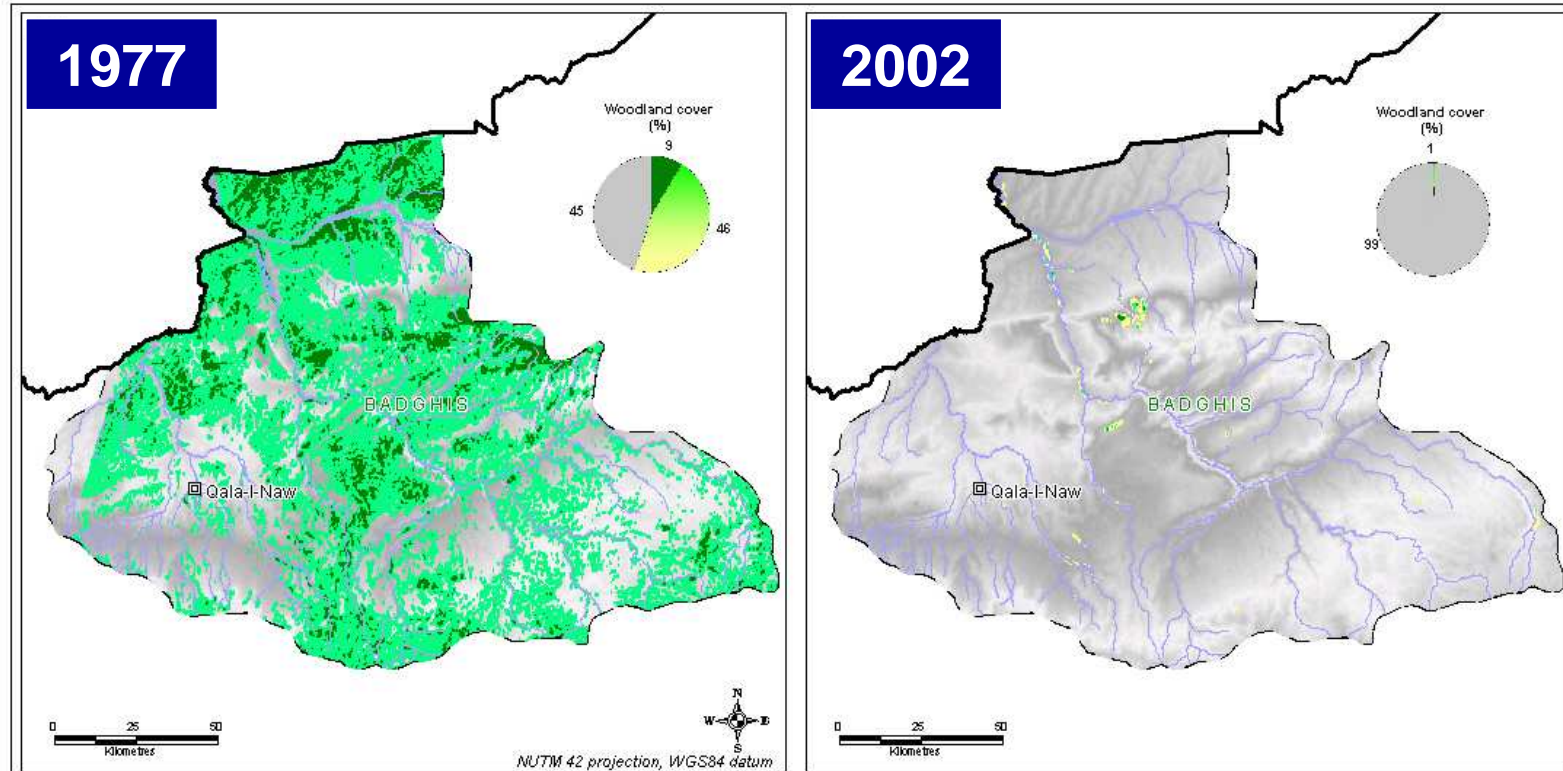


Badghis Province, Qala-i-Nau



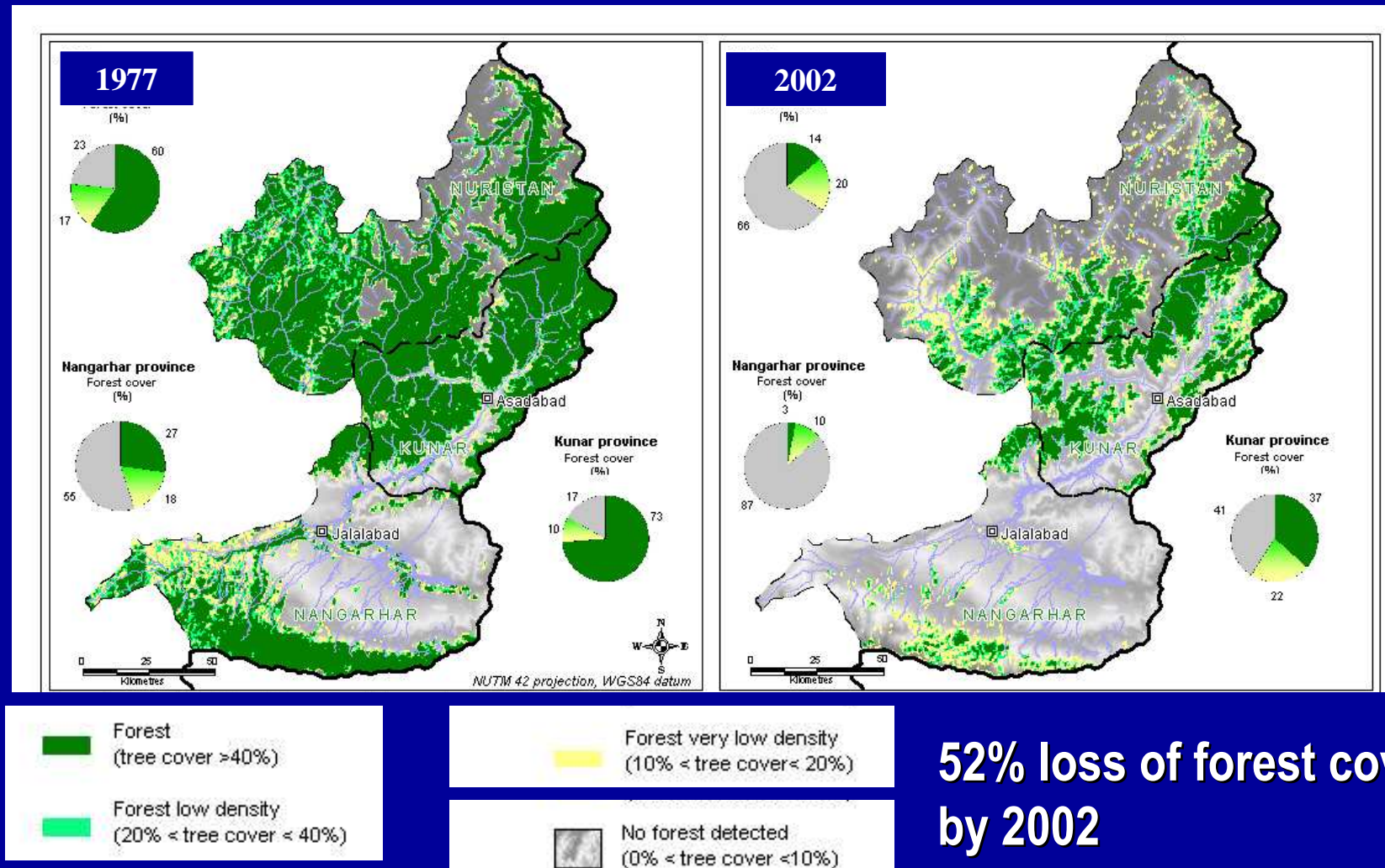
Woodlands deforestation

Satellite analyses in Badghis province



Conifer deforestation

Satellite analyses in Nuristan, Kunar and Nangarhar





Kabul: Asbestos dumpsite in the middle of the city



Hospital waste in Kandahar



**Children working in a plastic recycling factory
in Mazar-e-Sharif**



Recycling of used car batteries in Herat

Occupied Palestinian Territories



Gaza City has urban environmental problems



Wadi Gaza outlet channel – untreated waste water is polluting Mediterranean



Groundwater in Gaza is polluted by agrochemicals and leakages from dumpsites



Open burning of wastes at a temporary landfill in the West Bank



Burning of waste in Hebron



Dump site in the middle of habitation in Jenin



The separation wall has also negative environmental consequences



New settlements are often built on ecologically vulnerable hilltops

OPT Desk Study recommendations

136 recommendations on

- Transboundary and international cooperation
- Palestinian National Environment Action Plan (NEAP)
- Assisting the Palestinian Environmental Quality Authority
- Land-use planning
- Non-governmental organizations (NGOs)
- Private sector
- Freshwater management
- Wastewater management
- Solid waste
- Hazardous waste
- Conservation and biodiversity

Iraq

UNEP post-conflict assessments

Post-conflict assessments from 1991 Gulf War:



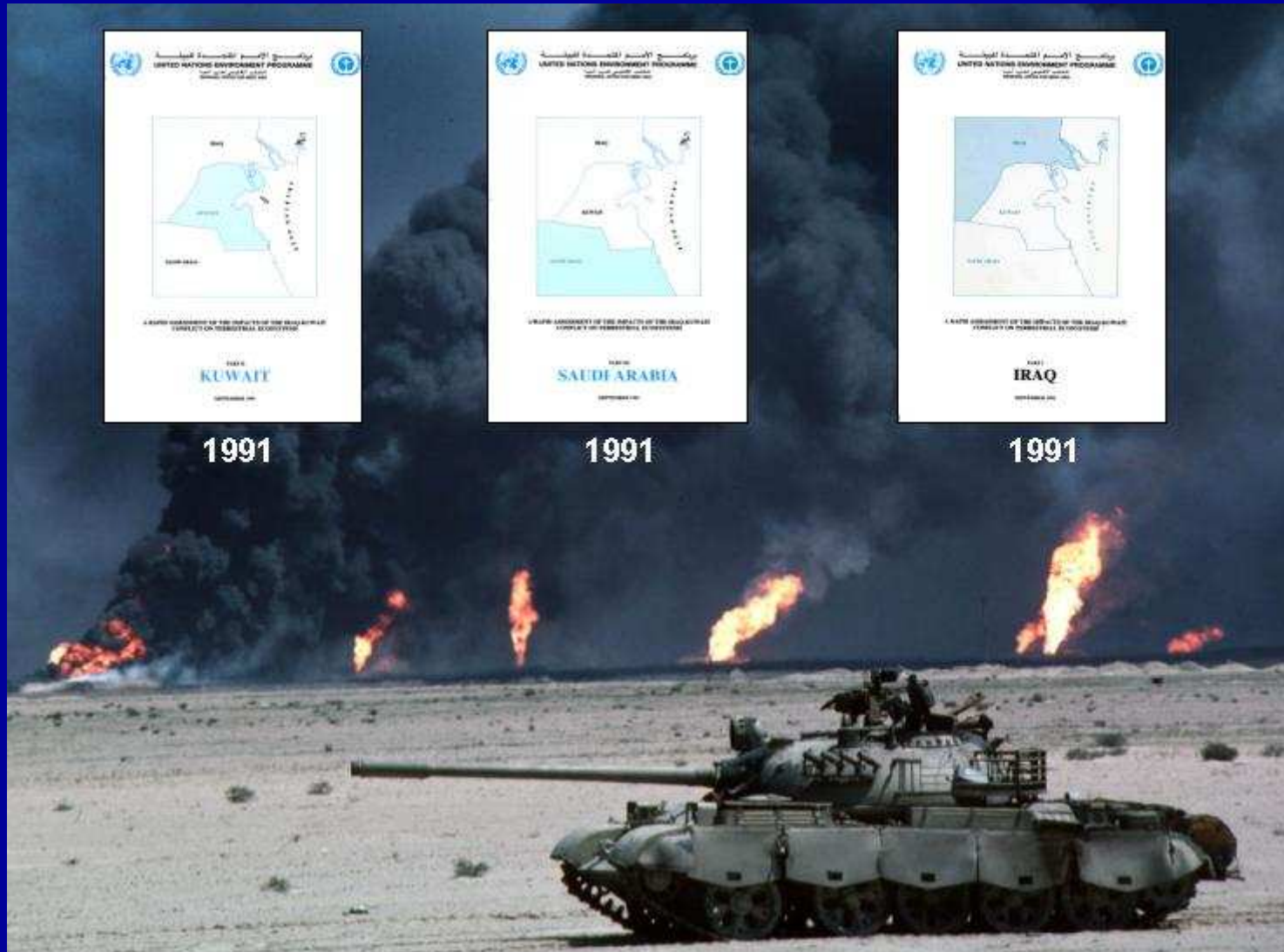
1991



1991



1991



Chronic environmental problems

- Water resources plagued by contamination, poor distribution and mismanagement
- Unmanaged hazardous, clinical, municipal and military wastes causing threats to human health
- Potential air, water and soil pollution from industrial sites and oil refineries
- Ecosystem degradation including Mesopotamian Marshlands, desertification and deforestation threatening human livelihoods

Conflict-related problems

IRAN-IRAQ WAR 1980-1988:

- Contamination at chemical weapons attack sites
- Destruction of oil infrastructure

GULF WAR 1991:

- Bombing of industrial, nuclear and military sites
- Use of depleted uranium
- Oil well fires and military infrastructure

IRAQ WAR 2003:

- Oil well fires and oil contamination
- Targeting of industrial and military sites
- Wide-scale looting and dumping of chemicals
- Use of depleted uranium

Contaminated sites in Iraq

- Industries are concentrated along the great rivers
- Iraq's industry has similar environmental problems than countries in Central and Eastern Europe





The unique lifestyle of Marsh Arabs

Land cover

Marsh
Vegetation
~ 1,006 km²

Open Water
~1,922 km²



Marsh Vegetation



Open Water



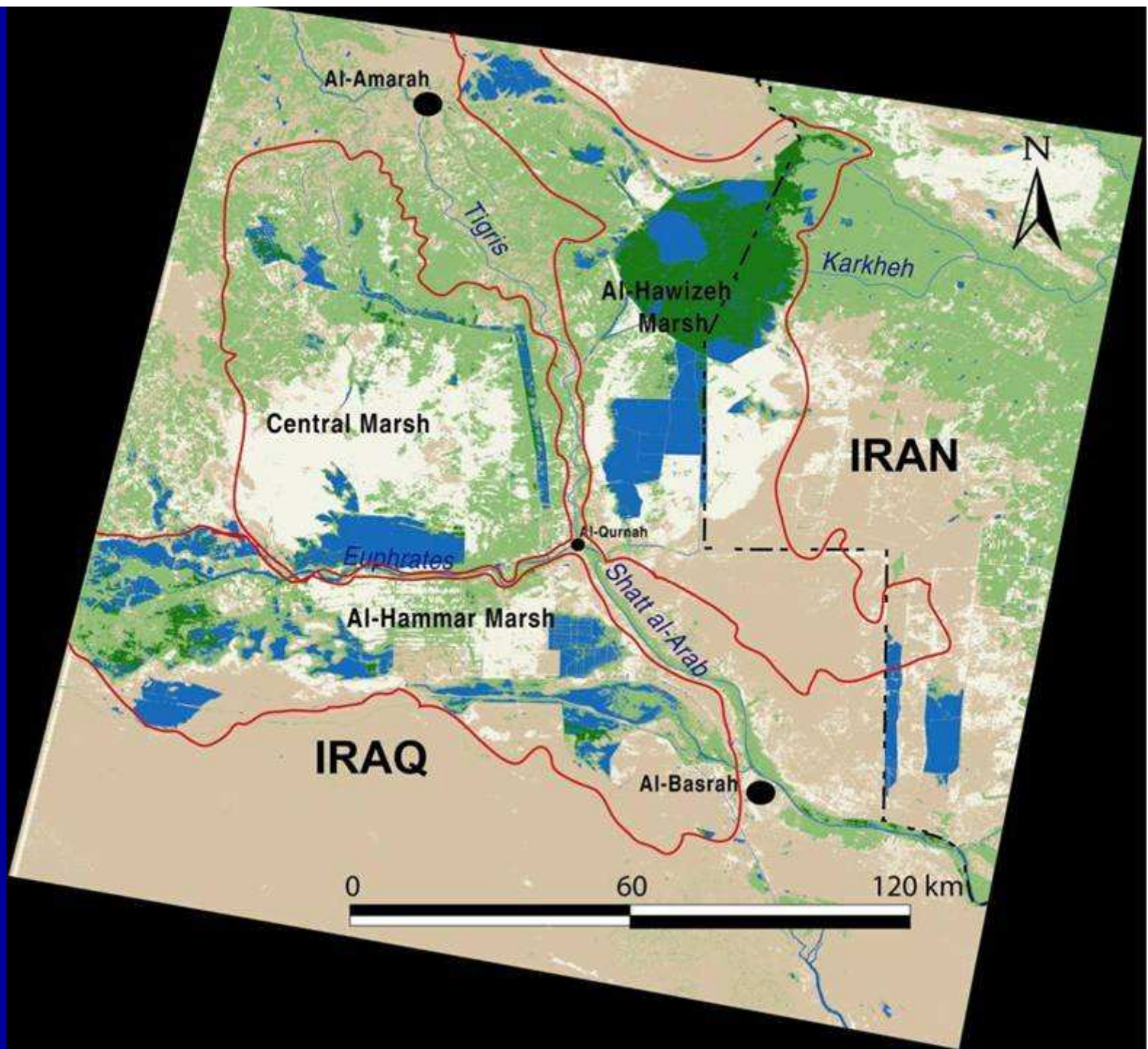
Desiccated Marshland



Dry Land



Former Marsh Extent





Dangerous Areas by Hazard Type

IRAQ
MINE
ACTION

Un-surveyed Mine Fields
South of Green Line

Un-surveyed Barrier
Mine Fields Along Border

Hazard Type

- Bombs
- ▲ Clusters and Dispensers
- Other
- ↑ Missiles and Rockets
- ☆ Landmines
- Multiple Device Types
- Projectiles
- ◇ UXO
- Unknown

25 0 25 Kilometers

Information displayed on this map is current as of 30 August 2003



Border Dyke

21 March 2004

IRAQ

IRAN

2.5 Km

0 2 4 Kilometers

First time in 29 years....

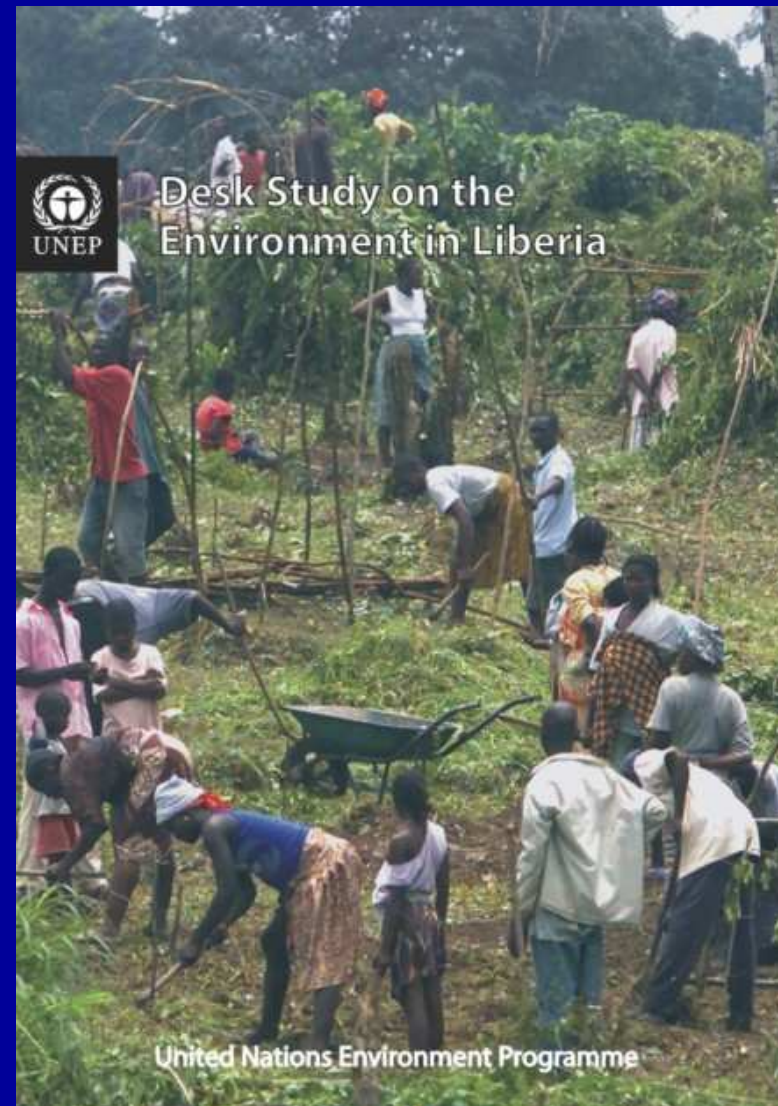


Iranian and Iraqi delegations in Geneva May 18, 2004

Liberia

UNEP in Liberia

- **UNEP participated to the UNDG needs assessment process**
- **Donor meeting in New York February 2004**
- **Two UNEP missions to Monrovia**



Natural resources have fuelled the conflict



- Liberia is a country with an area of 111 370 km²
- Population of 3,3 million
- Rich forest resources, minerals include diamonds, gold, and iron ore
- 14 years of civil war have lead to the ruin of the country
- Country's rich natural resources have created and fuelled the conflict
- United Nations sanctions on diamonds and timber



Liberia has a lot of child soldiers

Some IDP's have moved 7 times



- 275 000 people in IDP camps
- Problems in providing freshwater, sanitation and waste management
- Areas around the IDP camps are subject to a higher environmental impact – such as deforestation as a result of the collection of fuel wood



Monrovia currently has 800 000 inhabitants - its sewage treatment system was designed for a population of 130 000



Lack of electricity is increasing reliance on charcoal and fuel wood



**Liberia has the largest remaining portion of the Upper
Guinean Forest**



**Shifting cultivation (slash and burn) is threatening
Liberian forests**



New logging roads are part of the illegal timber trade, but are also used by bushmeat hunters



**Alluvial diamond mining
poses threats to riparian
habitat and increases the
environmental risks for
downstream**

8. Conclusions and lesson learned

Post-conflict environmental assessments

- **UNEP assessments since summer 1999**
- **Uphill battle to convince stakeholders and donors**
- **Environment recognized as a humanitarian issue**
- **Environment included in the humanitarian appeals (Kosovo, Afghanistan, Iraq)**

Arguments

- It is important to minimize environmental and health risks to the population
- Environmental risks can cause long-term problems
- Environmental diplomacy can be used for confidence / peace building
- Paying attention to environmental damage can in the future prevent conflicts or make them less harmful to the environment

More information

All reports can be downloaded from

<http://postconflict.unep.ch>



THANK YOU