



**Organization for Security and Co-operation in Europe
Secretariat**

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Conference Services

**Fifteenth OSCE Economic and Environmental Forum - Part 1:
“Key challenges to ensure environmental security and sustainable development in the
OSCE area: Land degradation, soil contamination and water management”
Vienna, 22 - 23 January 2007**

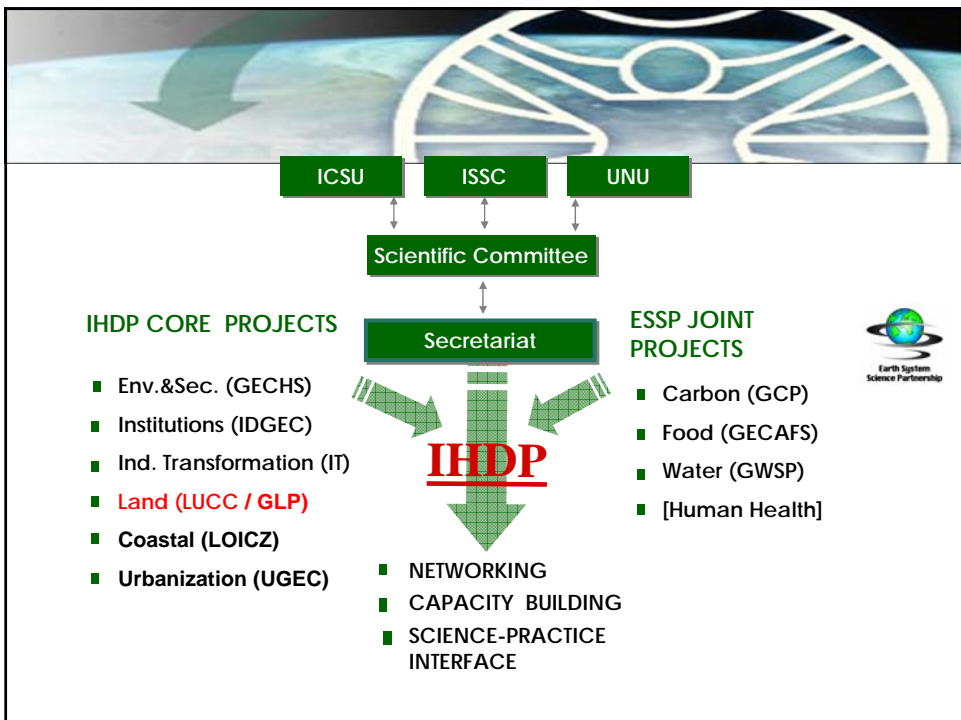
**Session III
Social effects of land degradation and soil contamination**

Please find attached the presentation by the keynote speaker, Dr. Falk Schmidt, Scientific Officer, International Human Dimensions Program on Global Environmental Change, Bonn, Germany: *Human Dimensions of Land Use and Land Cover Change - the LUCC Example*.



International Human Dimensions Programme on Global Environmental Change (IHDP)
Falk Schmidt, Scientific Officer

*„Human Dimensions of Land-Use and Land-Cover Change – the **LUCC** Example“*





The Land-Use and Land-Cover Change Project (LUCC) (1995-2005)

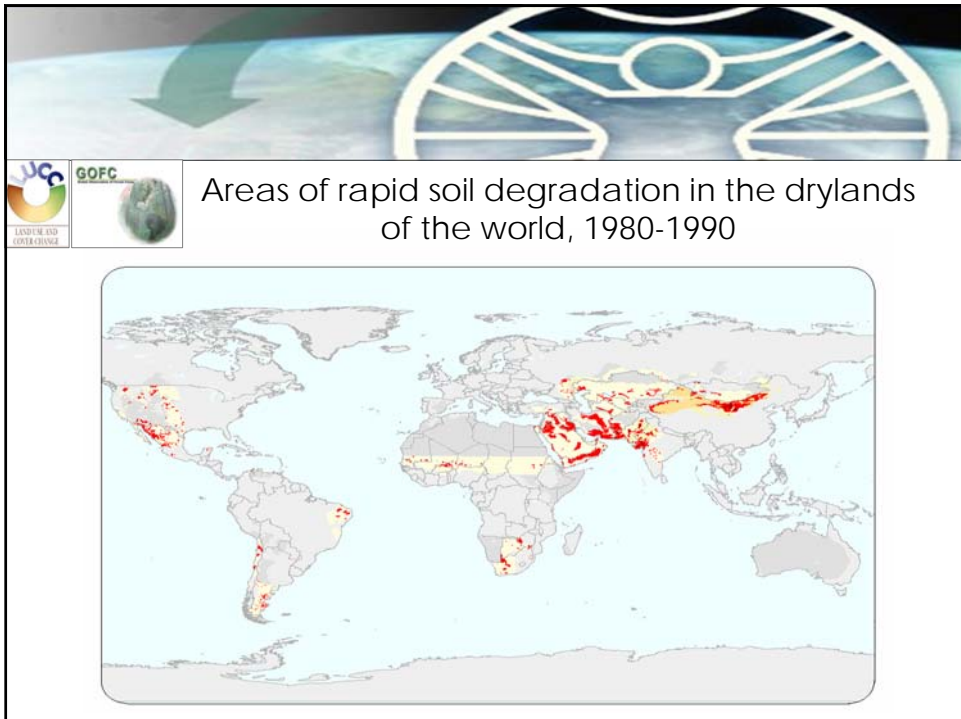
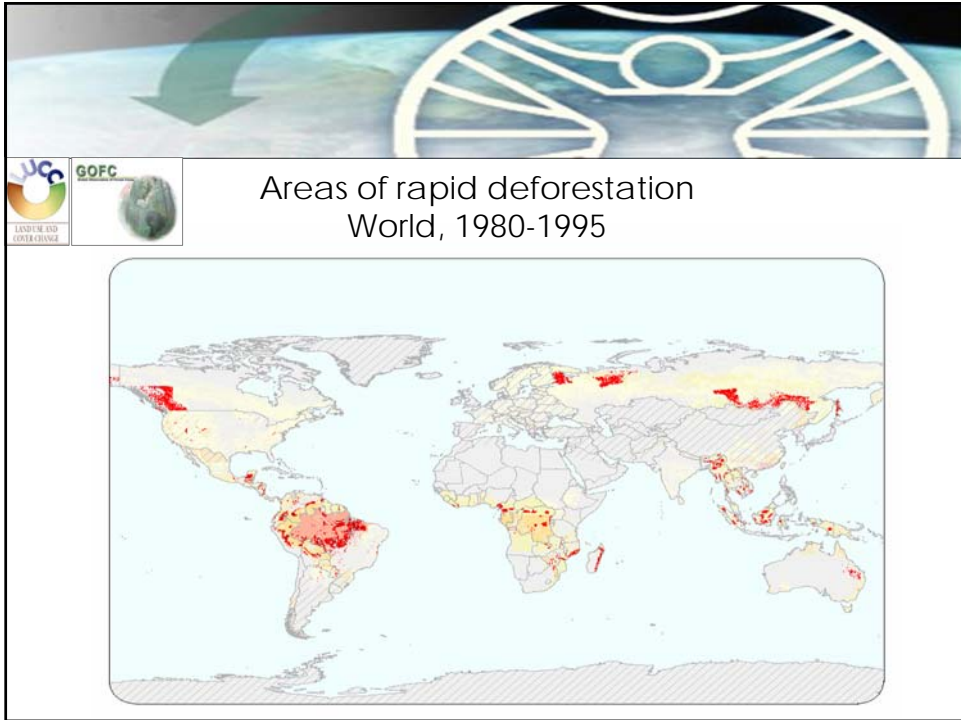
A threefold mission:

1. Development of a **compendium of information** about local to global land-use and land-cover change dynamics
2. Identification of a small number of **robust principles for prediction**
3. Foster the development of **common models/an overarching, integrated land-change theory**



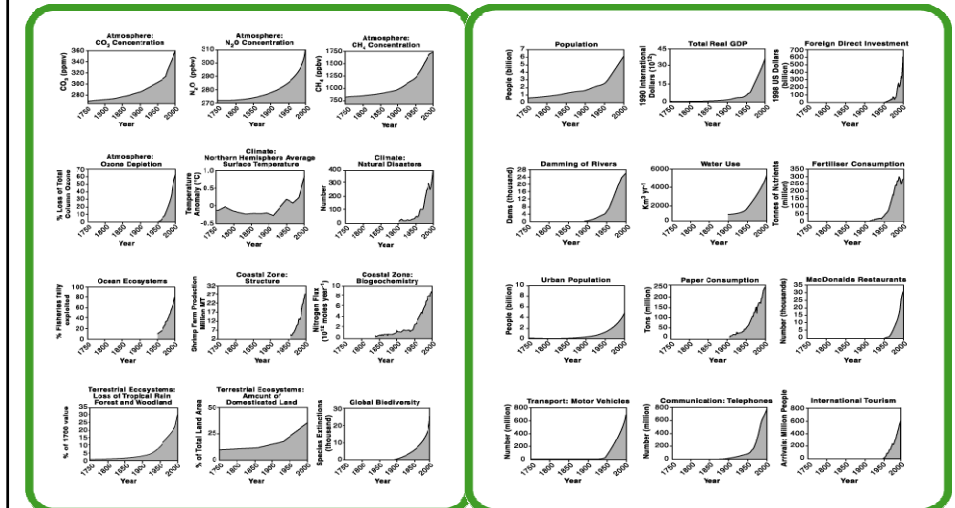
On Land-cover change:

- LUCC developed a standard **land-cover classification system** and built **consensus about main land-change classes** underway globally (e.g. tropical deforestation, cropland expansion and contraction, dryland degradation, and urbanization)
- Offered a **long-term reconstruction** of historical land-cover changes (from 1700 to 2000) and **projections** into the future (until 2100)
- Several **products** have been produced (e.g. for TREES, BIOME, MA)
- Charted **hot-spots** of rapid change
- **Still lacking:** sufficient understanding of (sub-) tropical dry forests, selective logging and fires, wetlands, pastoral lands, and soil/dryland degradation





Rapid changes during the 20th Century



On **Land-use dynamics** – moving towards pathways of change:

- A global **network of (new) case studies** was established (e.g. on institutional, demographic, and biophysical dimensions of forest-ecosystem changes)
- A **meta-analytical framework** was used to understand major human causes and effects on humans; highlighting **multiplicity**
- **Main issue areas:** (sub-) tropical deforestation, desertification, agricultural changes, transition towards sustainability



Three exemplary research findings

1. A frequent „causal chain“ in **desertification** (results from a meta-analysis of 130 case studies (1700 – 2000):

- policies aimed at **modernizing agriculture** apply new technologies
- (huge) **investment in infrastructure** projects – often water-related
- **destruction of** (traditional) **land-use institutions**
- increased **vulnerability** and land **degradation**

→ Similar pathways can be identified for forests or (peri-) urban areas and transition processes



2. Five **major causal clusters** (or „syndroms“) of **land-use changes**:

- pressures stemming from resource scarcities
- changing opportunities/incentives created by markets
- outside policy interventions (e.g. new policies, subsidies)
- loss of adaptive capacity of a community
- institutional changes (e.g. land tenure, decision-making procedures, attitudes)

→ **trade-off** analysis of “positive” and “negative” impacts of land-use changes



3. **General lesson** from the meta-analysis:

Land-use changes are largely driven by **external factors** (particularly deforestation), addressing local land management and managers is insufficient

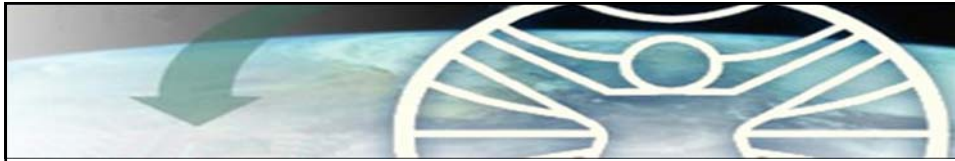
The way ahead

- **Upgrade** predictive power, build **integrated** models and useful scenarios
- **Linking** land, water, and atmosphere
- **Understanding** land-use and land-cover **transitions, regime-shifts, and collapses**
- Getting the **Scales** right, understanding the impacts of **Globalization**



The Way ahead *cont.*

- Conducting **long-term, international** research → **Global Land Project (GLP)**
- Engaging in cross-project, i.e. **cross-sectoral** research (Food, Water, Urbanization, Institutions, Human Security)
- **Reaching out** to the policy community/practitioners
- **OSCE – IHDP partnership:**
 - Using as well as shaping IHDP's **research agenda**, tap into its global **network of excellence**
 - Providing a **platform/forum** for exchange
 - **Building bridges** to Eastern Europe and Central Asia



Thank you for your attention!

E.F. Lambin, H.J. Geist (ed.): Land-Use and Land-Cover Change. Local Processes and Global Impacts, Springer-Verlag, Berlin, Heidelberg 2006

M.A. Janssen, E. Ostrom (ed.): Resilience, Vulnerability, and Adaptation: A Cross-Cutting Theme of the International Human Dimensions Programme on Global Environmental Change, *Global Environmental Change. Human and Policy Dimensions*, Volume 16, Number 3, August 2006, Special Issue

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