



# The Human Dimensions of Global Environmental Change



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Egmond aan Zee, 27 June 2005

- Global change research has a clearly defined niche and produces a particular type of scientific knowledge.
- Global change research developed as a mainly natural science driven research agenda.
- Human dimensions' perspectives play an increasingly stronger role.

## IHDP: Role and Objectives

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- Generate scientific knowledge on integrated socio-environmental systems
  
- Achieve comprehensive understanding of global environmental change processes and their consequences for sustainable development
  
- Make scientific contributions to explore:
  - the anthropogenic drivers of global environmental change
  - the impact of such change on human well-being
  - human responses to global environmental change



# Global Environmental Change and Globalization

**Global environmental change** is the set of biophysical transformations of land, oceans and atmosphere, driven by an interwoven system of human and natural processes.

Global environmental changes are intimately connected with processes of socio-economic, political and cultural **globalization**.



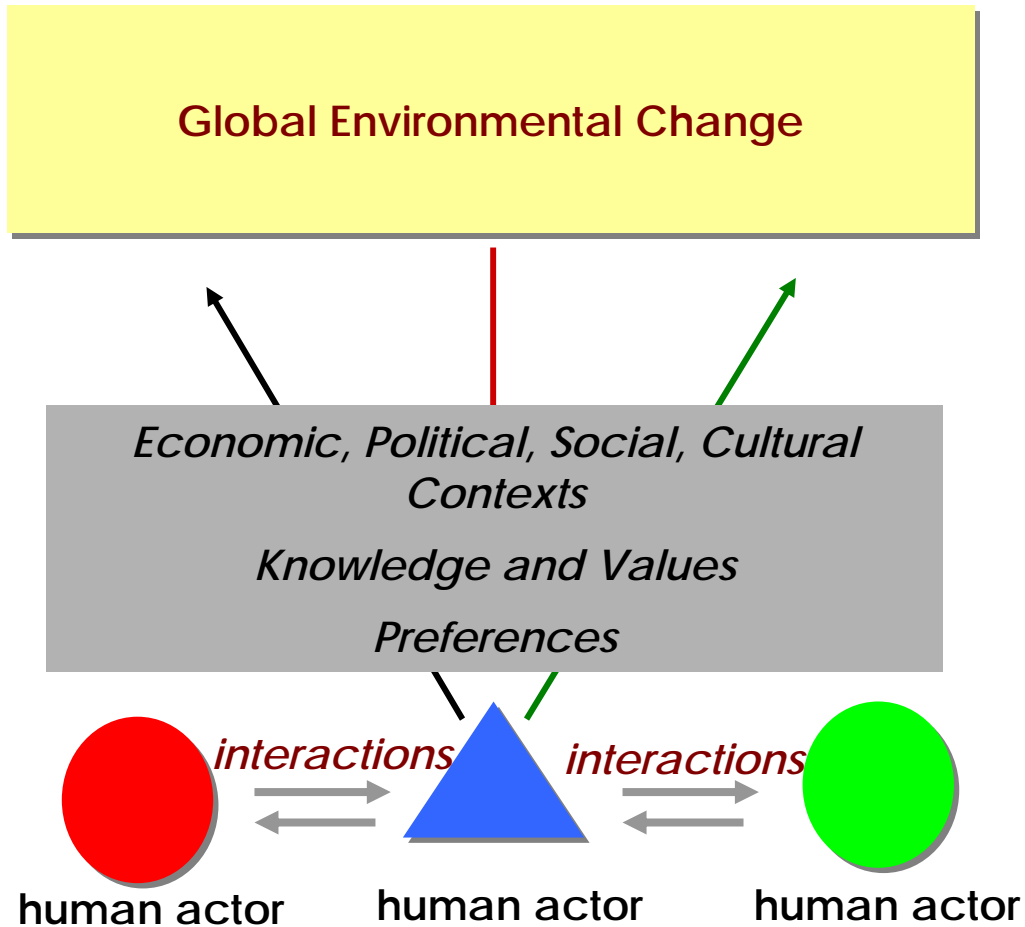
# Global Environmental Change and Globalization (2)

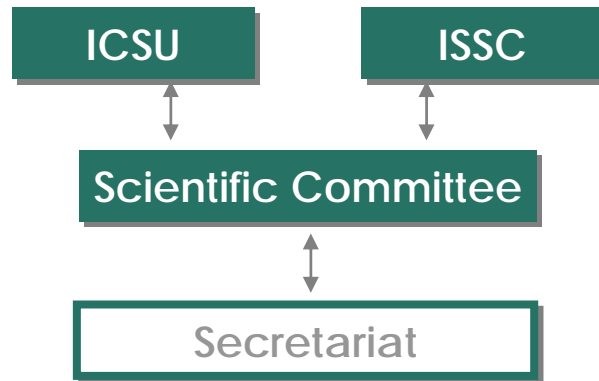
**Globalization** is the growing and accelerated interconnectedness of the world.

Due to almost unrestrained flows of goods, capital, information, and people, the world is becoming more and more a single place, in which distant peoples share knowledge and lifestyles and different institutions function as parts of one complex system.

As a consequence local situations and events are increasingly perceived as being influenced by (unpredictable) external factors.

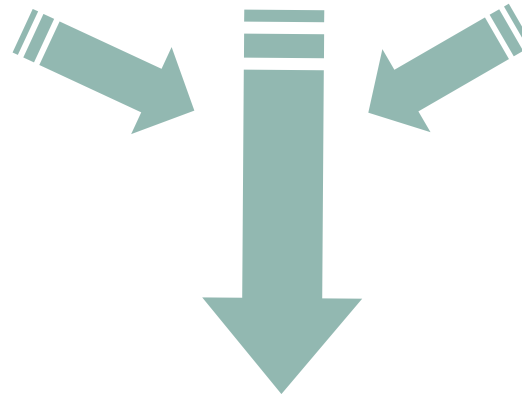
# People are in the center of the analysis





## CORE PROJECTS

- GECHS
- IDGEC
- IT
- LUCC
- LOICZ
- Urbanization
- GLP



- NETWORKING
- CAPACITY BUILDING
- POLICY MAKING INTERFACE

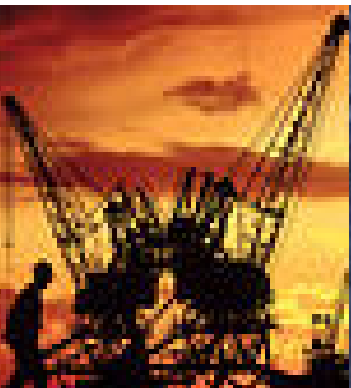
## JOINT PROJECTS

- Carbon (GCP)
- Food (GECAFS)
- Water (GWSP)
- Human Health

## ***ESTABLISHED CORE RESEARCH PROJECTS***

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- **Global Environmental Change and Human Security (GECHS)**
- **Institutional Dimensions of Global Environmental Change (IDGEC)**
- **Industrial Transformation (IT)**
- **Land Use and Land-Cover Change (LUCC)**





# GEC and Human Security: Research Foci

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- Vulnerability and human security
- Resources, conflict & co-operation
- Modelling regions of environmental stress and human vulnerability
- Institutions & policy development in environmental security



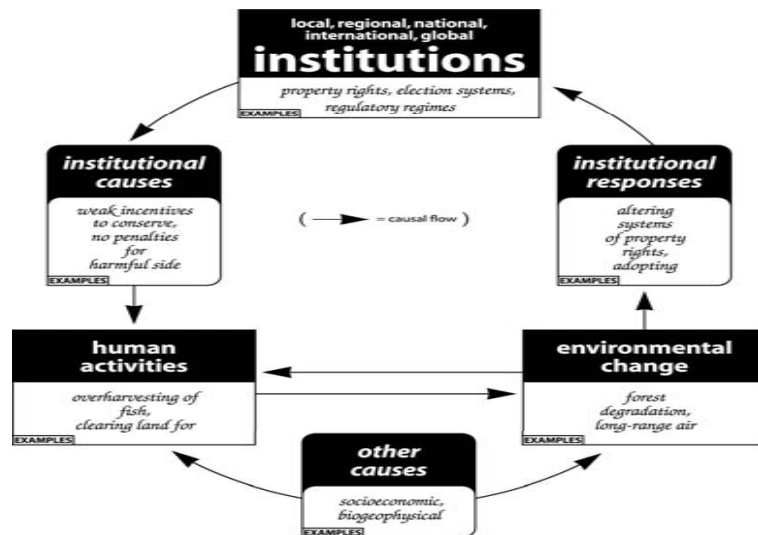
## Flagship Activities

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- Mekong Delta Region
- Russia
- Southern Africa
- Index of Human Insecurity

# Institutional Dimensions of GEC: Research Foci

- Roles of institutions in causing and responding to GEC
- Effectiveness of institutional innovations in responding to GEC
- Prospects of (re)designing institutions to confront environmental challenges



## Flagship Activities

- Carbon management
- Fisheries
- Forestry

# Industrial Transformation: Research Foci

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- Decoupling of economic growth from environmental degradation
- Transformation of systems: thresholds and transitions



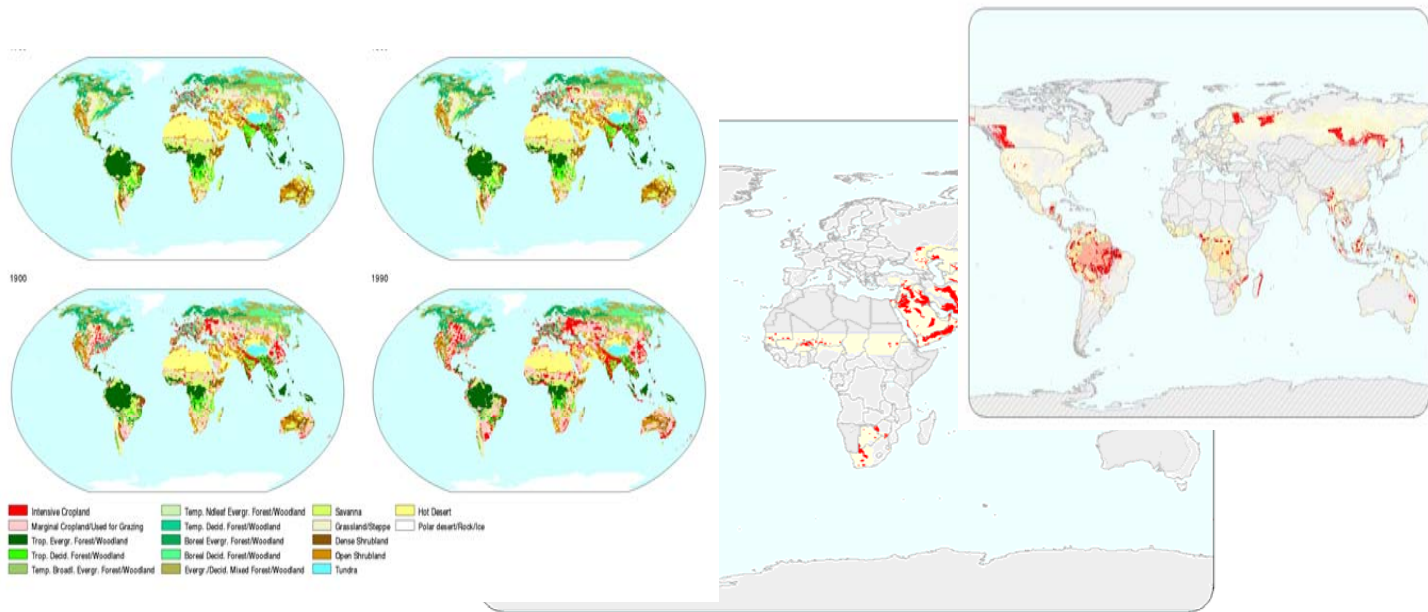
## Flagship Activities

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- Energy and Material Flows
  - Food (Production and Consumption)
  - Water and Transport in Urban Contexts
  - Information and Communication
  - Governance and Transformation Processes
- (Future development trajectories; technological and institutional innovation)

# Land Use and Land Cover Change: Research Foci

- Land-Use Dynamics (Comparative Case Study Analysis)
- Land-Cover Dynamics (Empirical Observations & Diagnostic Models)
- Regional and Global Integrated Models



## ***NEW CORE RESEARCH PROJECTS***

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- **LOICZ: Land and Ocean Interactions in the Coastal Zone**  
*(co-sponsored IHDP/IGBP since March 2004)*
- **Urbanization and Global Environmental Change** *(since April 2005)*
- **Global Land Project** *(co-sponsored IHDP/IGBP, since April 2005)*



# Urbanization and GEC: Research Foci

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- Interactions between global environmental change and urban processes
- Rate, intensity and scale of urban and environmental change and mutual impacts
- Pathways of transformations of urban systems
- Challenges for sustainability of urban areas



## Activities

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- Cross temporal and spatial approaches and regional comparative analyses
- Emerging foci: carbon, water, health, vulnerability studies, peri-urban landscapes
- Contribution to regional and global integrated models
- Scientific basis for urban planning and management

# Global Land Project: Research Foci

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- Measure, model, and understand the coupled human-environmental terrestrial system ("*Land System*") and the socio-natural dynamics underlying land cover, land use and land use change
- Complex, simultaneous interactions between societal, natural and mixed processes at different spatio-temporal scales
- Combining the detailed regional with a global, comparative perspective



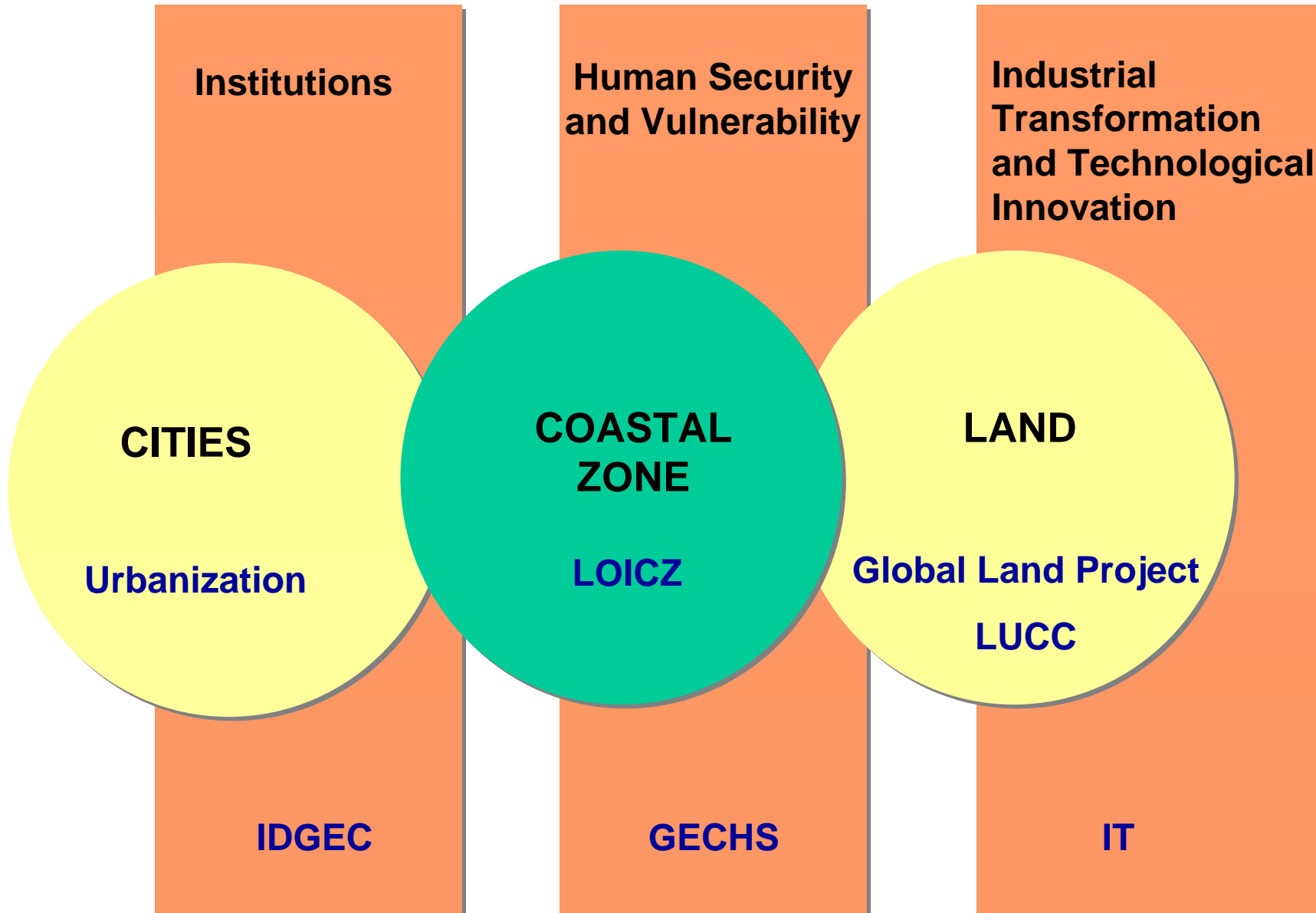
## Themes

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- Causes and nature of Land System change
- Consequences of Land System change
- Integrating analysis and modelling for Land sustainability



# IHDP Core Research Projects



**Institutions**

**Human Security  
and Vulnerability**

**Industrial  
Transformation  
and Technological  
Innovation**

**CITIES**

**Urbanization**

**COASTAL  
ZONE**

**LOICZ**

**LAND**

**Global Land Project**

**Lucc**

**IDGEC**

**GECHS**

**IT**



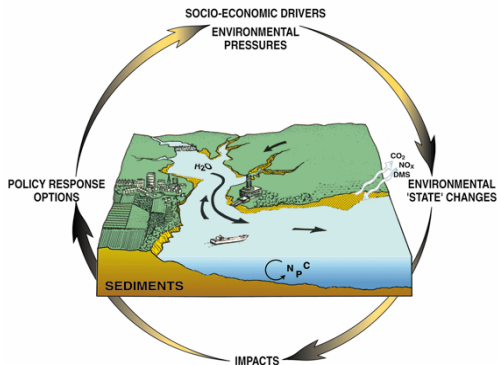


IHDP

# "New" LOICZ



- Vulnerability of coastal systems and hazards to society
- Implications of global change for coastal ecosystems and sustainable development
- Human influences on river basin – coastal zone interactions
- Biogeochemical cycles of coastal and shelf waters
- Towards coastal system sustainability by managing land-ocean interactions





**Value added of IHDP**



**Makes research more effective and relevant**



# Value added of IHDP

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## ■ Advantage of scope:

Develops in a bottom-up approach common scientific frameworks to integrate interdisciplinary research on global environmental change on a worldwide basis.

Organizes scientific diversity, by overcoming its fragmentation but still keeping its creative tension.

## ■ Information advantage:

Synthesizes knowledge on Earth System dynamics

- Constitutes an archive of knowledge and research networks
- Creates synergies and complementarities
- Identifies knowledge gaps and future topics of research
- Fosters research on new questions and in new regions
- Prevents unnecessary duplication of research



# Value added of IHDP

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- *Comparative advantage:*

Enables interregional comparisons on a worldwide base.

- *Theoretical and methodological advantage:*

Develops new theoretical approaches and methodological instruments for interdisciplinary research on integrated human-environment systems

- *Epistemological advantage:*

Frames diversity of scientific paradigms and worldviews



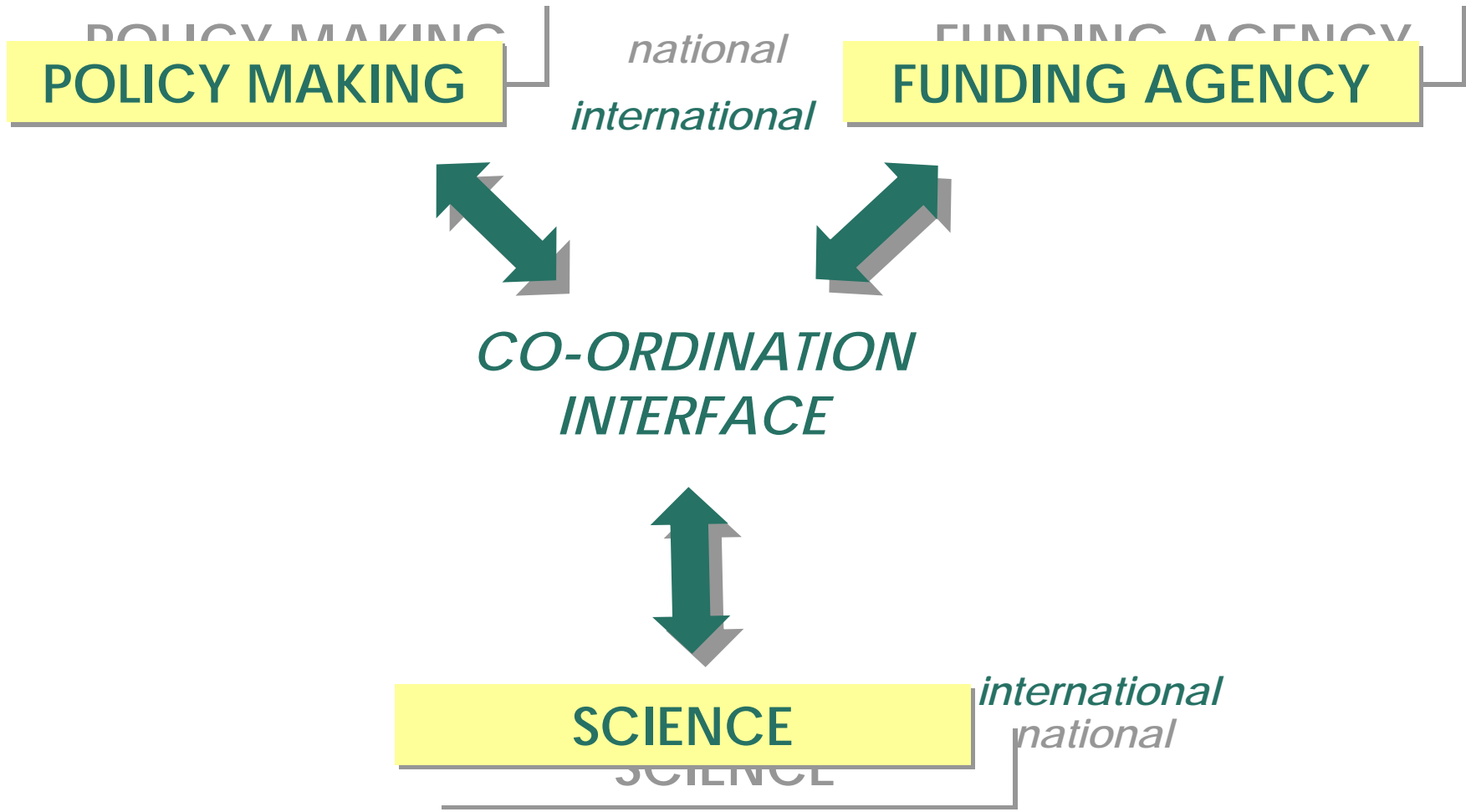
# Value added of IHDP

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## ■ Organizational advantage:

An international platform allowing to:

- link natural science and social science research
- connect national and regional research agendas with international research agendas in a bi-directional way
- link science to policy-making and practice
- develop strategic institutional partnerships at a broad range of levels (inter-governmental and non-governmental, etc.)



# Challenges for Human Dimensions Research

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How do we **analyze** Global Environmental Change ?



How do we **communicate** Global Environmental Change?



How do we **handle** Global Environmental Change ?



## How do we analyze Global Environmental Change ?

- **Putting people in the center**

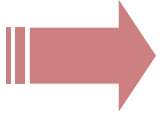
(E.g. agency and structure; decision making; power relations and social processes)

- **Embedding global environmental changes into broader processes of globalization.**

- **Linking global environmental change to development questions (e.g. MDG)**

(GEC causes risks for global development and jeopardizes an already unlikely MDG fulfilment. Sustainable Development is constrained by GEC.)





## How do we communicate Global Environmental Change ?

### Difficulties in communicating “Global Environmental Change”

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- highly complex
- multidimensional
  - spatial: global – regional - Local
  - temporal: past – present – future
- very abstract
- high degree of uncertainty



## How do we handle Global Environmental Change ?

- Developing mitigation and adaptation strategies which are feasible from an economic, political, social and cultural point of view
- Involving stakeholders (e.g. in the design of projects)
- Translating scientific knowledge into other arenas of knowledge and into action  
(e.g. knowledge broker, mediation platforms)



## How do we handle Global Environmental Change ?

- Build bi-directional processes between the construction of scientific knowledge (including the design and coordination of research) and the dynamics of practice.