

THE WAY AHEAD

Sustainable Development in Higher Education

Hochschulen fuer Nachhaltige Entwicklung

MARUM-BREMEN
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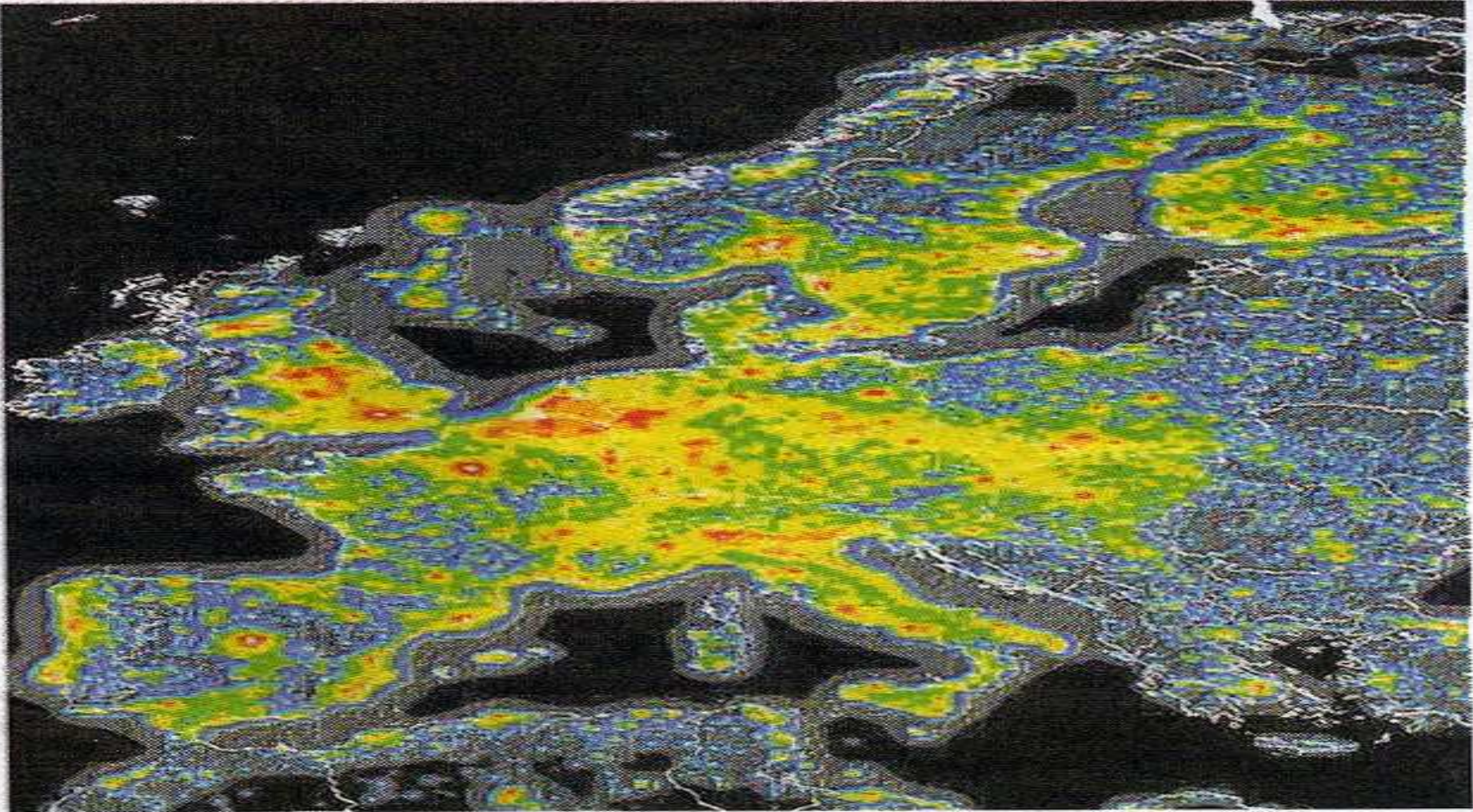


ENERGY- Where it is used and produced



False-color image of Eurasia at night, based on satellite data from the DMSP spacecraft (yellow, city lights; red, flares from oil production areas; purple, burning vegetation).

EUROPE BY NIGHT



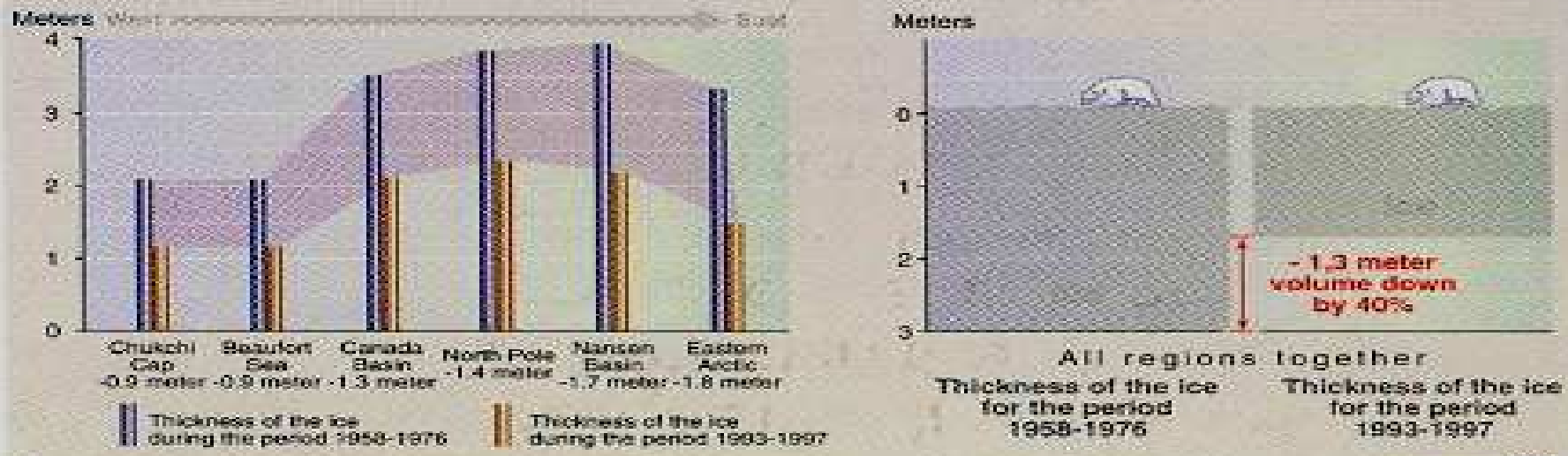
De helderheid van de hemel boven Europa, gezien vanaf het aardoppervlak. De oranje kleur geeft globaal de gebieden aan waar 's nachts vanaf zeeniveau de melkweg niet meer of nauwelijks is te zien. In de rode gebieden ziet men hooguit nog een honderdtal sterren. Als de groei van de hemelwaartse lichtstroom in hetzelfde tempo blijft doorgaan, zal in het jaar 2025 in een land als Italië vrijwel nergens meer de melkweg te zien zijn. (Foto Royal Astronomical Society)

THE ARCTIC SEA ICE, 1958 -1997

Thinning of the Arctic Sea ice



Thinning of the Arctic Sea ice cover



Note: comparison of sea ice draft data acquired on submarine cruises between 1993 and 1997 with data from 1958-1976 indicates that mean ice draft at the end of the melt season has decreased by 1.3 m (from 3.1 m to 1.8 m). Volume is down by 40%.

REALITIES FORCING TO ACT

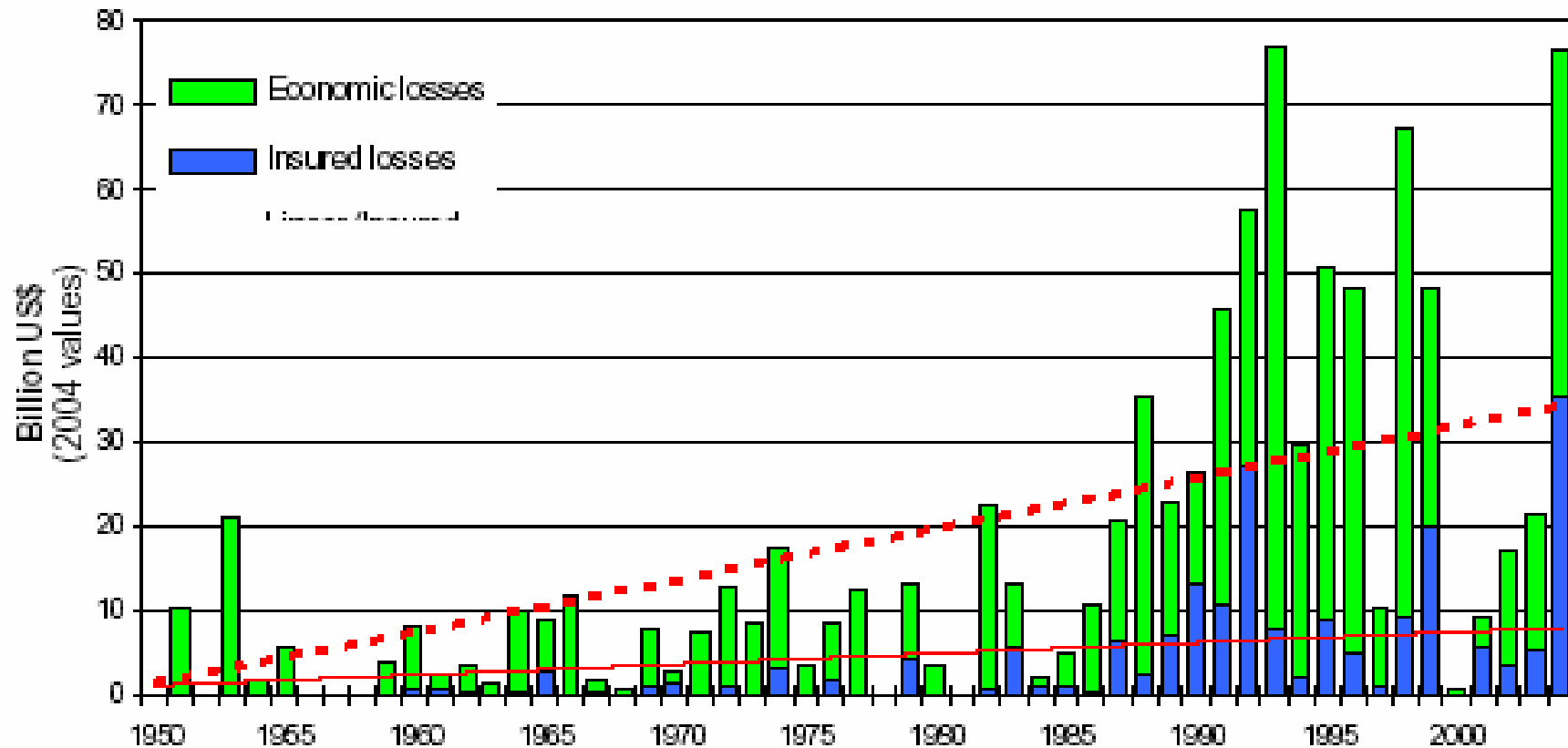
Increasing numbers of crises:

- **Increasing numbers of visible indications of (the impact of) climate change;**
- **Growing energy security concerns;**
- **Intractable armed conflicts;**
- **Increase in number and magnitude of natural and humanitarian disasters;**
- **Increase in short term “here and now”, “us and they”, “black and white” thinking; leading to**
- **Economic and financial crises of a magnitude never seen in more than half a century.**

MORE AND MORE DISASTERS

Great Weather Disasters 1950 – 2004

Economic and insured losses



MORE DISASTERS, BUT EVEN BIGGER LOSSES

Increase of Exposure
(in money terms)

Disasters	1950-1960	1990-2000
Number	20	82
Losses	US\$ 38 billion	US\$ 535 billion

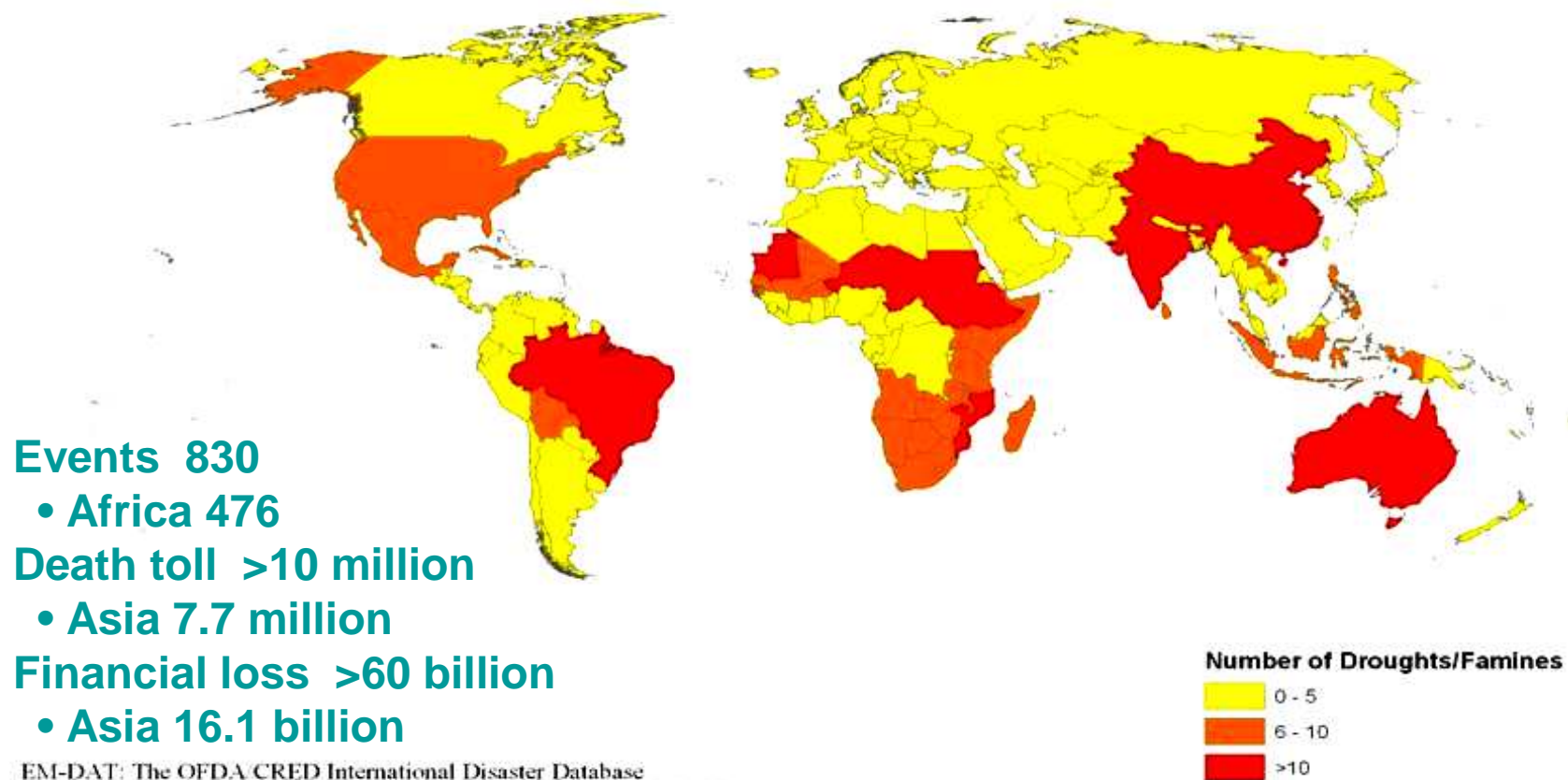
'UN'-NATURAL DISASTER (Kofi Annan)



Aral Sea, with 1957 Shoreline

CLIMATE CHANGE, RISKS AND VULNERABILITY

**Number of Occurrences of Drought/Famine Disasters by Country:
1974-2003**



EM-DAT: The OFDA/CRED International Disaster Database
www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium

INTRODUCTION: THE LONG MARCH

CC Towards the Top of the International Agenda:

Universities as late

ada/●p Stockholm, 1972

- ◆ Club of Rome
- ◆ Bruntlandt Report
- ◆ Earth Summit, Rio
- ◆ Earth Charter
- ◆ Millennium Summit
- ◆ WSSD, Johannesburg
- ◆ Millennium Ecosystem Assessment
- ◆ IPCC Reports
- ◆ “Inconvenient Truth”
- . Magna Charta of the European Universities
- . CRE-Copernicus
- . Talloires Declaration/ULSF
- . IAU Kyoto Declaration
- . EARTH CHARTER etc/etc
- (a.o. Lueneburg, Swansea, Thessaloniki, Halifax)

WHY TOOK IT SO LONG?

Negative tendencies

- Reductionist tendencies (e.g. focus on GHG emission controls, on energy demand but not supply).
- Tendency to over-simplify (focusing on the problem, not the cure).
- Always looking backwards (not asking what kind of world we want to live in).
- Fear to loose rather than to gain by sharing.
- Money too often the only indicator of value/ economic system too dominant.

IVORY TOWER UNIVERSITIES

- ◆ ***Universities have been granted academic freedom and institutional autonomy for a good purpose: to be able to serve society better. However, very often academics forget their share of the deal.***
- ◆ ***Universities are internally organized on the basis of disciplines, which get ever more specialized.***
- ◆ ***In the assessment and accreditation systems peer reviewed research plays a much larger role than teaching/learning , service to society and certainly 'care'.***

MEDIA HYPES

1. Think Global, Act Local –
but the opposite is equally true:
Think Local, Act Global
2. ‘Early Warning Systems’,
just after the Tsunami in the Indian Ocean
3. ‘Small is Beautiful’
4. ‘Donor Coordination’ etc.

SO, WHAT SHOULD WE DO?

CHANGE THE UNCHANGEABLE

Even though this will not be easy (!), e.g.

- 1. Patterns of wealth distribution, consumption and production have remained constant for a long time.**
- 2. Problems of poverty and lack of access to basic needs (clean water, sanitation, medicines) are entrenched:
in particular in times of financial and economic crisis.**
- 3. Ideologies more often divide than unite human kind/
the ideological character of mainstream economics ignored.**
- 4, Universities can be organised differently, e.g. as a matrix-organization and more balanced assessments.**

HOW TO ACHIEVE THIS?

BY COOPERATION AND KNOWLEDGE- SHARING:

THREE LINES OF ACTION ARE POSSIBLE

- **Interlinkages: how are issues and solutions interconnected? (cp. Agenda 21!)**
- **Knowledge sharing: if we know what we need to know, how do we share that knowledge? and apply it properly? (in our own work and in society!)**
- **Multi-lateralism and institutional collaboration: working collectively we can achieve more!**

ROLES OF HIGHER EDUCATION (1)

In general:

- Development, transfer and preservation of knowledge;

In particular:

- Training teachers/developing curricula;
- Training doctors, etc/provision of health care;
- Training experts/support of: the legal system/ the administration. Business, industry, etc.

ROLES OF HIGHER EDUCATION (2)

Most Crucial Roles:

- 1. Sustaining and developing the intellectual and cultural base of society;**
- 2. Promoting human development and helping to preserve and develop cultural identity;**
- 3. Giving inspiration and justified pride to citizens in the achievements over time of their own society;**
- 4. Promoting dialogue to appreciate and respect cultural diversity;**
- 5. Addressing issues of complexity, nuance, diversity, structure, process, synergy, sustainability, etc.**

SUSTAINABLE DEVELOPMENT IN HIGHER EDUCATION

- ◆ Specialised Studyprograms
- ◆ ‚Greening‘ of all Studyprograms
- ◆ Specialised Researchprograms
- ◆ ‚Greening‘ of all Researchprograms
- ◆ ‚Greening‘ of the Campus
- ◆ ‚Greening‘ of all activities (chemical, radio-active, pathogenous waste!)
- ◆ Advocacy in and service to society

Crucial Importance of Universities

“Owing to the scope and pace of change, society has become increasingly knowledge-based, so that higher learning and research now act as essential components of cultural, socio-economic and environmentally sustainable development of individuals, communities and nations.”

(WCHE 1998)

FUTURE PERSPECTIVES

UNIVERSITIES HAVE A KEY ROLE TO PLAY

- **Globally there are 84 million students at 20,000 colleges and universities (~ year 2000)**
- **160 million students by 2025.**
- **US\$215 billion global market for online higher education by 2025.**

Changes in the Role and Place of the University

- 1. The tasks of a University will concentrate heavily on guiding and combining flows of knowledge;**
- 2. In contrast: universities will develop their own (fundamental/basic) research to a lesser extent;**
- 3. A new concept of education is emerging: content in the initial formative stage will be more general and learning will be continued throughout one's entire life.**

The 'Economization' of Knowledge Production

The notion of “**knowledge economy**” does not at root mean the restructuring of the economy on the basis of scientific knowledge. *On the contrary it means that the domain of knowledge production is being “economized.”*

(Chris Lorenz)

Accreditation: Basic Questions

- ◆ Accreditation for **what purpose?**
and for what qualities?
- ◆ Who will be the “**gatekeepers**” of the system? and
what will be their criteria?

∴.N.B. Not all disciplines can be judged
easily on the basis of ‘objective’(?) criteria:
e.g. cultural sciences? theology? social sciences?
history?
even life sciences? (ethical issues)

Accreditation: Basic Questions

“Quality in Higher Education cannot be seen as ‘conformity to a standard’ as higher education is supposed to promote creativity and innovation”

(van Ginkel, 1994 and 1995)

∴.N.B. Compare the problems in the early stages for computer science and environmental/ sustainability science.

A Copernican Change: The Positioning of Universities

- ◆ No longer can universities see themselves as only part of a national system, protected by the State which had set rules – often in the framework of their higher education laws and budgets – on the programmes to be provided and the research to be done.
- ◆ Increasingly, universities must rely on their own, individual, performance in order to secure sufficient funding for higher quality programmes of teaching and research. Increasingly, they will find themselves unprotected in a highly competitive world.
- ◆ Bottom-line is the responsibility of the State for adequate: (1) supply, (2) access and (3) quality of **higher** education.

UTRECHT UNIVERSITY

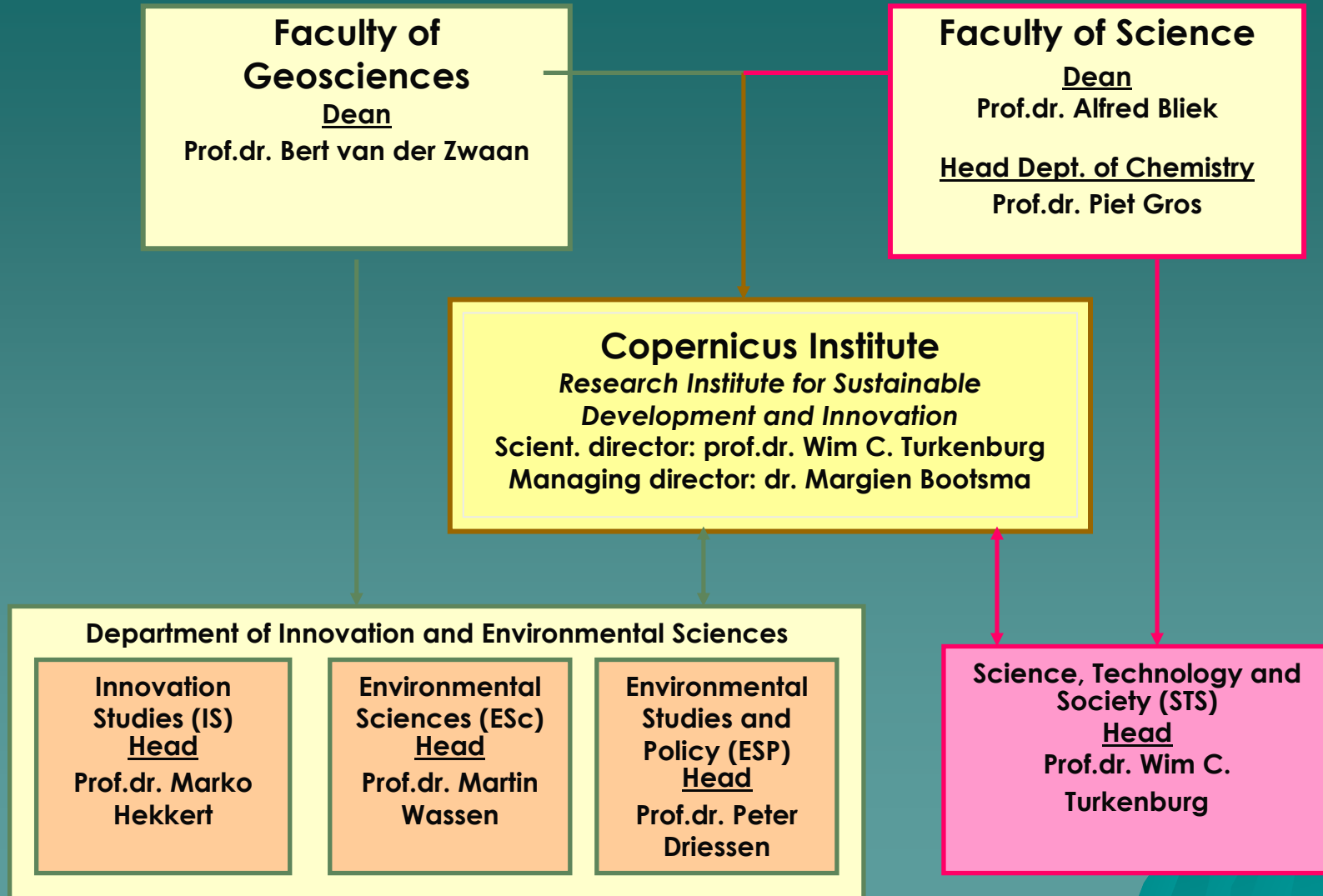
Some Characteristics:

- 1. Established in 1636 = one of the 'first generation';**
- 2. Biggest Research University in the Netherlands with 30,000 students; plus almost 1,000 Ph.D. students;**
- 3. Highest ranked university of the country, eg. in CHE ranking within the first five, in the 'Shanghai' ranking within the first ten of Europe;**
- 4. Strong Focus on Life- and Geo-Sciences;**
- 5. 'Lead-'institution of the 'knowledge region Utrecht' with a.o. KNMI, RIVM, different TNO and KNAW institutes, etc.**

The Copernicus Institute: History and purpose

- ◆ **Copernicus Institute**: created March 2001, stimulated by the Governing Board of Utrecht University (bringing together 4 research groups from 2 faculties).
- ◆ **Background**: COPERNICUS charter of European Universities (to bundle and steer efforts of universities in the area of sustainable development).
- ◆ **Purpose**: to increase the *visibility* of sustainable development research in Utrecht, to facilitate mutual *cooperation* between the research groups and create *synergy*, to enhance the *coherence* of activities, to enlarge the scientific and societal *forum*, to allow better tuning between *research and education*.
- ◆ **Number of employees**: at present about 110 (65 faculty of Geosciences, 45 faculty of Science).

Organization structure

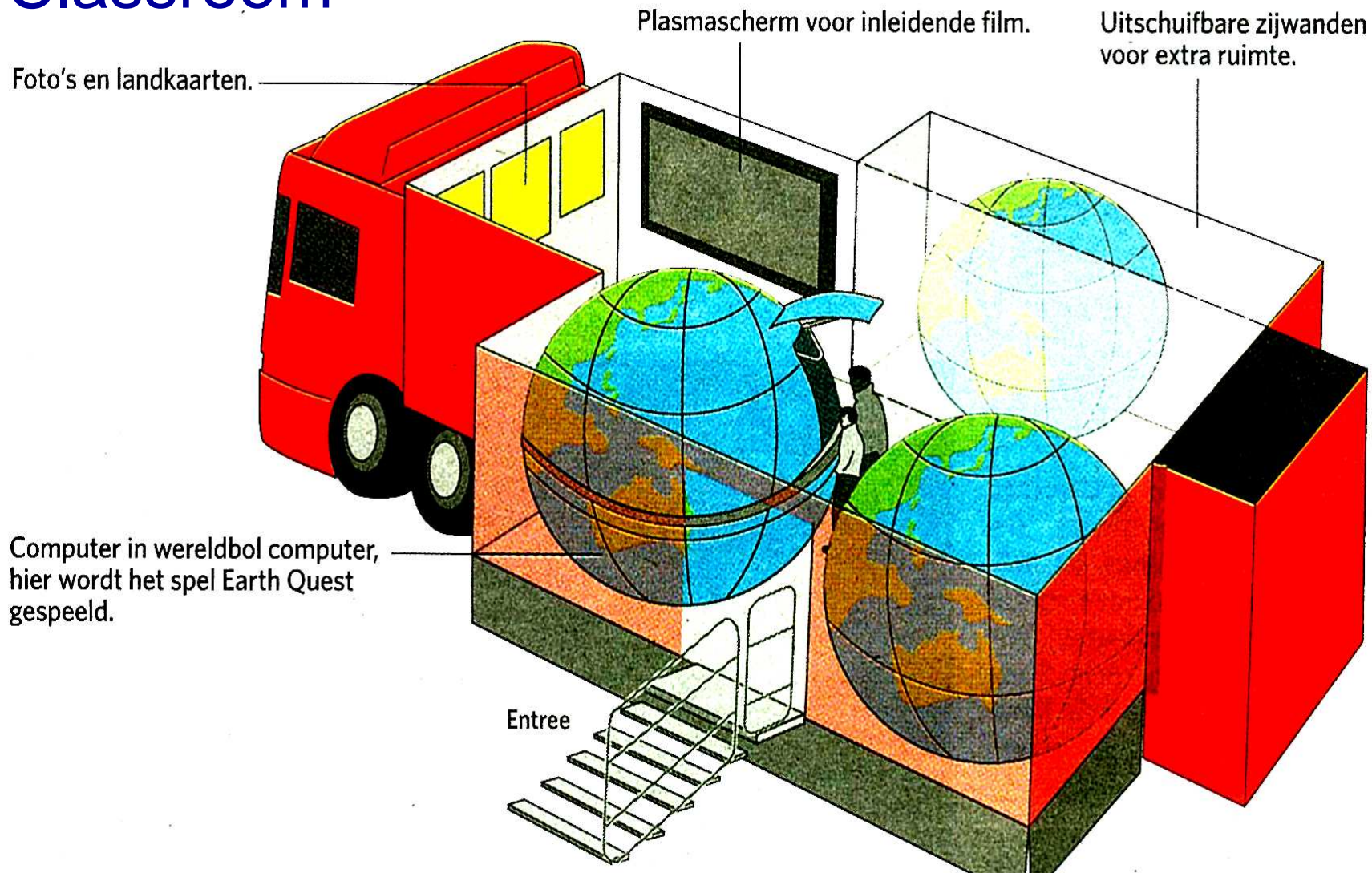


Some characteristics of the Copernicus research

- ◆ **Research is fundamental and strategic mainly.**
- ◆ **Strongly connected to ‘Focus & Massa’ research theme “*Earth and Sustainability*” of Utrecht University.**
- ◆ **Copernicus is dealing with issues that have a multi-disciplinary character.**
- ◆ **Copernicus houses a wide range of disciplines.**
- ◆ **T-approach: multidisciplinary beta-gamma (‘broad’) research as well as disciplinary (‘in depth’) research.**
- ◆ **Many joint projects & cooperation in cross cutting themes (within Copernicus, within UU, and in numerous national and international programmes).**

Mobile Classroom

In deze Geotruck leren leerlingen uit de bovenbouw van het vwo door middel van een spel over de aarde, klimaat en milieu.



What Universities Should Do

Crucial Initiatives to Improve Education:

- ◆ *Multi-disciplinarity* to become reality;
- ◆ *Problematization* of issues;
- ◆ *Contextualization* of issues;

Internationalization/Exchange Programmes:

to participate and get involved.

What Universities Should Do

Promote a 'Culture of Understanding' with
a Focus on What is Really New/Different

Understanding of:

- Complexity;
- Nuance;
- Diversity;
- Process/continuity;
- Synergy

This needs understanding of
the individuality of historical processes.

Creating a Capacity for Understanding

Pre-requisites for Understanding

- ◆ **Knowledge;**
- ◆ **Respect;**
- ◆ **Knowing one's own cultural norms;**
- ◆ **Search for unity in diversity;**
- ◆ **Inclusiveness; and**
- ◆ **Readiness to transform**

What Universities Should Do: Educate for Better Understanding

Debate **versus**

1. Argument over
 Argument
2. To win
3. To speak

Dialogue

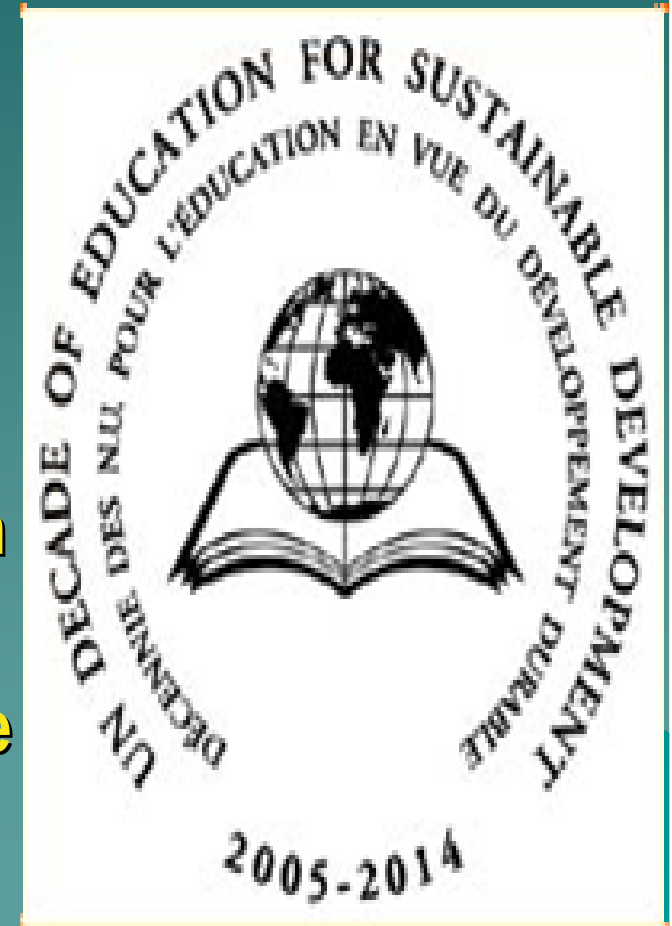
1. Discourse
 (to explain)
2. To understand
3. To listen

∴ Only dialogue leads to understanding,
e.g. on the balance between 'public' and
'private' or cultural differences.

A BREAKTHROUGH

The Decade of Education for Sustainable Development (DESD), 2005-2014

- ◆ **Proposed in Johannesburg Plan of Implementation in 2002**
- ◆ **Adopted by UN General Assembly in December 2002**
- ◆ **The International Implementation Scheme (IIS) for DESD was approved in September 2005.**
- ◆ **Governments are invited to consider the measures to implement DESD in their educational strategies and action plans.**



WHAT ARE WE AIMING AT?

What is EfSD, really?

- ◆ Sustainable Development is a *political compromise*: its relevance however can easily be argued when we look at both extremes: sustainability without development or development that is not sustainable. Both are impossible, both in developed *and* in developing countries.
- ◆ Therefore, education for sustainable development is a broader concept than environmental education.
- ◆ EfSD is thus also more than sustainable development education: it is education for sustainable development - education to enable all people to better contribute to sustainable development.

THE AIMS OF DESD

***The DESD aims at changing the approach to education;
to break down traditional educational schemes and promotes:***

- 1. interdisciplinary and holistic learning;**
- 2. values-based learning;**
- 3. critical thinking rather than memorizing;**
- 4. multi-method approaches, incl. art, drama,
debate, etc.**
- 5. participatory decision-making;**
- 6. locally relevant material rather than national;**
- 7. transformative approaches in teaching and learning.**

MAIN CHALLENGES

- 1. Transforming all education is a huge, complex task.**
- 2. Governments are in general not prepared to put up the money needed to revamp all education; and to invest in the training and re-training of teaching staff needed.**
- 3. It is not easy to create the atmosphere of cooperation and knowledge-sharing needed to improve the coherence and longitudinal planning of curricula.**
- 4. Scientific views on many issues related to sustainable development are still very much in a state of flux and the 'filtering down' of the newest knowledge and views in the curricula goes very slow (e.g. global warming versus global dimming).**
- 5. There is a strong tendency to expect too much, too soon, for too little; with too much focus on assessment rather than innovative activities.**

MAIN OPPORTUNITIES

- 1. There exists, increasingly, a strong support in the population in both developed and developing countries; see e.g. the Gallup poll for the UN-SG's Millennium Report.**
- 2. There is, increasingly, much and good information on SD-issues and good learning material available.**
- 3. Modern Information- and Communication Technology opens up many new opportunities for innovative learning strategies.**
- 4. There is a strong general trend to bring the school closer to society and society closer to the school.**
- 5. The growing knowledge intensiveness of societies and the growing integration of the global and the local creates many more opportunities for developing exciting learning material, which can be shared across the globe.**

DECISIONS NEEDED

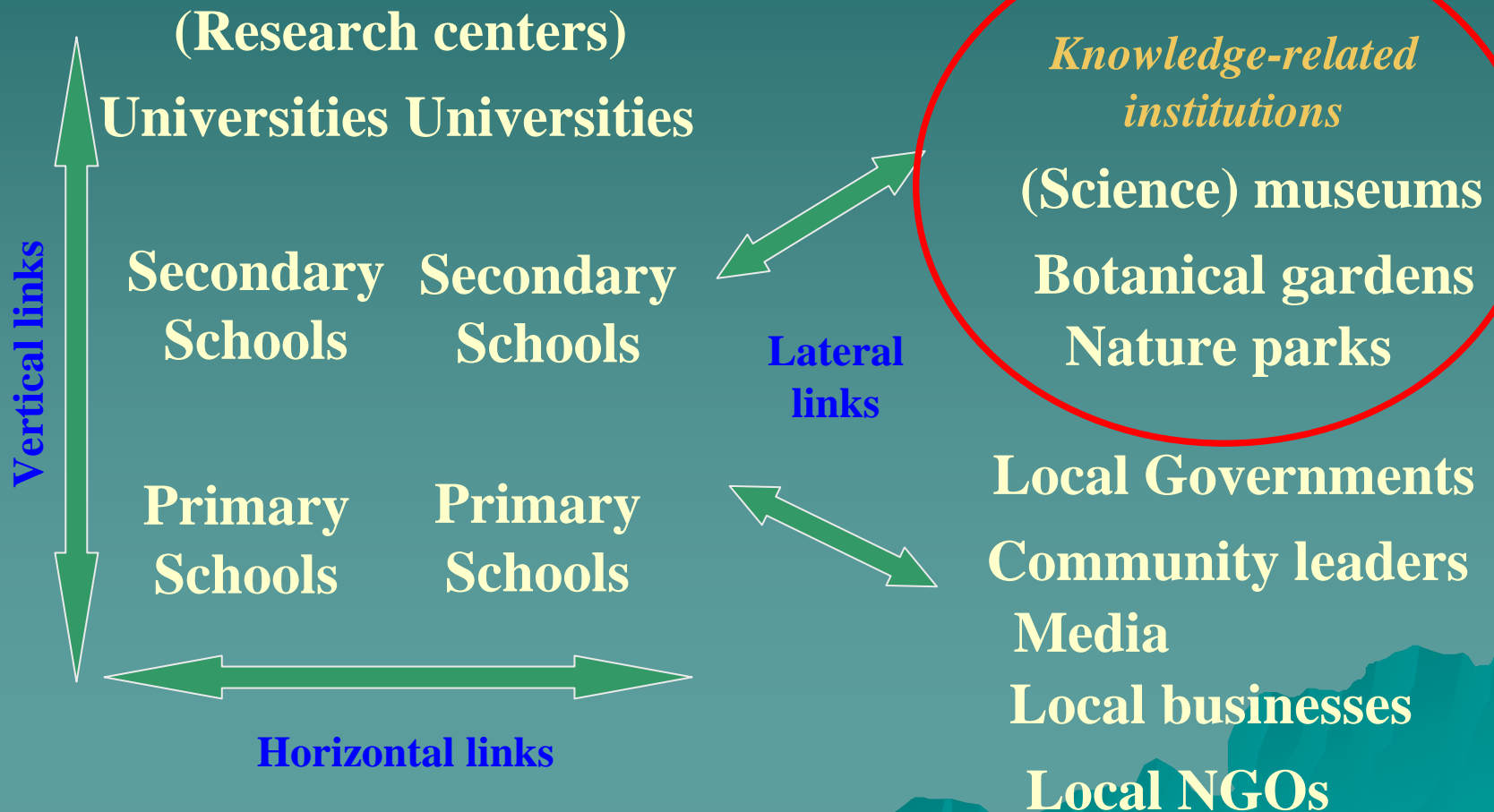
TWO IMPORTANT STRATEGIC DECISIONS WOULD BE:

- 1. For governments to agree that in all their countries in all curricula from primary to higher education elements of EfSD must be included in a thoughtful, systematic way, as was already done e.g. in Sweden.**
- 2. Another important strategic decision would be that all governments agree to systematically support the formation of RCE's in all countries, as has already been decided by Japan in its EfSD policy framework.**

REGIONAL CENTRES OF EXPERTISE (RCE's)

Formal education

Non-formal education



DESD VISION

The Ultimate Goal of the DESD is:

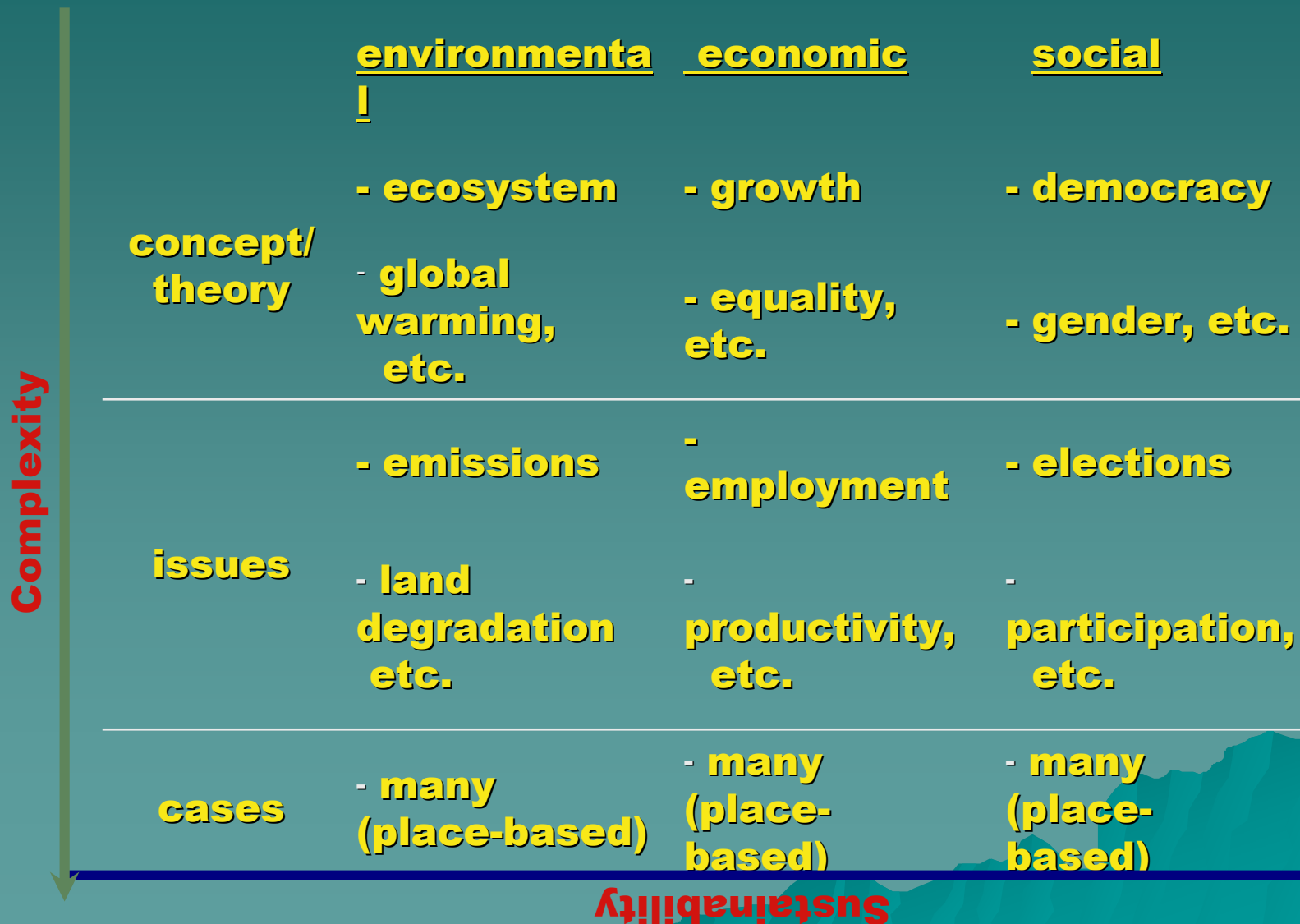
The Creation of a Global Learning Space for EfSD, based on RCEs, in order

- ◆ To create a world where everyone has the opportunity to benefit from quality education and learn the values, behavior and lifestyles required for a sustainable future and for positive societal transition.

Starting Points for Discussion about Research to Support EfSD

1. Sustainable Development rests on 3 pillars:
 - a) the environmental/ecological
 - b) The economic
 - c) The social
2. The aim is not to teach sustainable development but to prepare the next generation to better contribute to sustainable development
3. The aim is not to replace all existing education, but to improve the programmes and ways of teaching, so as to achieve better 2
4. All concepts, theories, knowledge, etc. can be taught to children/students at all levels, though in appropriately adapted forms
5. EfSD should include: 3 pillars, WEHAB, MDGs; important topics would be 'Energy for SD' and 'Sustainable Urban Futures'; or 'A Healthy Baltic Sea'.

Development Scheme for EfSD



61 RCEs as Formally Acknowledged by November 2008 (Now there are 80)



The Asia-Pacific Initiative

United Nations University

Governance
Water Resource Manag'm't
Sustainable Agriculture



Keio University

Curriculum Introduction
Kyoto Protocol: Negotiations & Impacts



University of Ryukyus

Coral Reef Management
Landscape Diversity and Ecosystem Functions of Coral Reefs
Coastal Zone Planning



University of Hawaii

Earth Observing Technologies
Climate Change
Integrated Coastal Zone Management
Sustainable Development Planning
Island Land Use Planning
Sustainable Agriculture



Asian Institute of Technology

Integrated Water Resource Management
Poverty Alleviation in the Greater Mekong



Asian Development Bank

Economic Development in the Greater Mekong and Pacific Islands
Water Resource Management



University of the South Pacific

Terrestrial, Freshwater and Marine Biogeography
Sustainable Fisheries
Community Based Marine Conservation



National University of Samoa

Land and Marine based
Chemical Pollution
Waste Water and Solid Waste Management
Sustainable Agriculture

Additional Lectures

FASID
JICA
East-West Center
Research Institute for the Sub-Tropics
Pacific Is. Global Ocean Observing System
Int'l Society for Mangrove Ecosystems1

NO RISK? or 'KNOWING RISK'?

