

*Report of the Walberberg Regional Workshop on Science for Sustainability.
Posted to the Forum on Science and Technology for Sustainability 6 May 2002.*

European Science for Sustainability - Achievements and Challenges

February 27 - March 1, 2002

Walberberg, Germany

Herzlich Willkommen in der

**Tagungsstätte
Walberberg**



Meetings, Seminare, Tagungen...
an einem traditionsreichen Ort
in ruhiger, gepflegter Atmosphäre

A Workshop organised by:

**The International Human Dimensions Programme on Global Environmental Change
(IHDP)**

on behalf of the European Organising Committee of Independent Scholars

**as a contribution to the international Initiative on Science and Technology for
Sustainable Development**

funded by The German Federal Ministry for Education and Research (BMBF)

Introduction

In October 2000 a group of "independent scholars" met in Friibergh Manor in Sweden to discuss **Sustainability Science**. The paper that they wrote was published in Science Magazine (Kates et al., 2001) and outlined core questions faced by the science and technology community as it seeks to enhance its contributions to sustainable development, research strategies that will be needed to address those questions successfully and institutional innovations that will be needed to develop an integrated system of research, assessment and decision support adequate for the task at hand.

The scholars at Friibergh Manor realised that in addition to their "global thinking" there was an important need for exploration at the regional level -- how relevant are the core questions for various regions, have some of those questions already been tackled successfully, what research strategies support Sustainability Science in different regions, what can we learn from previous experience and how should we move forward?

A number of "regional meetings" have been organised to address those questions -- meetings have been held in Africa, South-East Asia and Latin America and North America (www.sustainabilityscience.org). The European meeting¹, funded by the Federal German Ministry for Education and Research and organised by IHDP, provided an opportunity to reflect on past research but, more importantly, to propose exciting paths forward.

As decision-makers, scientists, NGOs, business and industry and many more stakeholders prepare for the World Summit on Sustainable Development to be held in Johannesburg in 2002, the questions raised at these regional meetings are extremely important. The Walberberg meeting raised two particularly important issues -- the need to monitor and provide an empirical basis for the understanding of transitions to sustainability and the need to investigate the links between lifestyle changes and the three pillars of sustainability: economic, social and environmental developments. The meeting also highlighted the policy context within which these developments are taking place and motivated those present to work together within the upcoming 6th Framework Programme of the European Commission.

The Walberberg meeting succeeded in addressing two important challenges -- it brought together European scholars, some of whom had never met each other before and, most importantly, it included young scholars, who enriched the meeting enormously.

European Sustainable Development Policy

As a result of the Göteborg Summit of the European Council in June 2001 (http://europa.eu.int/comm/gothenburg_council/index_en.htm), there is a strong "policy push" within the EU right now on sustainable development. In addition, the development of the 6th Framework Programme offers potential opportunities for sustainability research. It will be important to seriously consider topics that could provide the basis of "Networks of Excellence".²

¹ The participants of the Walberberg meeting are listed in Annex II. Sylvia Karlsson of the IHDP Secretariat took the lead in organising the workshop.

² The workshop made a lot of progress on this front and a letter of interest will be submitted for the June deadline of the European Commission (http://europa.eu.int/comm/research/fp6/index_en.html)

European Sustainability Science

In order to contribute to the broader debate, European scholars might make important contributions on some basic questions. For example:

Is technology contributing more to causes than solutions?

What energy alternatives do we have?

How do we develop a "science" that can talk about "tendencies and surprises"?

A network of excellence of scholars studying sustainability transitions will require historians, engineers, technology innovation experts, policy scientists, economists and many, many more – the working groups at the Walberberg meeting identified core groups that would be required, while recognising the challenges that such multi-disciplinary research will present.

How has Sustainability Science progressed in recent years in Europe?³ Participants at the Walberberg meeting were worried that there has been a pattern of **non-cumulative research**. Although the Friibergh meeting and many others have suggested that Sustainability Science must be **adaptive and learning**, experience suggests that this is harder to do than has been preached. This approach must be supported by funding patterns that are sustained at critical levels, which has not been the case in recent years. Furthermore, there is a need for new societal and research paradigms. Learning will only be supported if we are honest about failures, if we accept failure as a part of the learning experience, even in peer review! Participatory approaches to Sustainability Science have received considerable attention in Europe and research using participatory approaches has been path-breaking and informative⁴. These approaches will be increasingly important for sustainability science in building links to other stakeholder communities.

As a result of the discussions on the first day of the Walberberg Workshop, we decided to concentrate our efforts on:

- A. Developing the empirical basis for Sustainability Science**
- B. Designing a European research project on Sustainability Science**

DEVELOPING THE EMPIRICAL BASIS OF SUSTAINABILITY SCIENCE

Discussions indicated quite clearly that without an empirical basis, it is impossible to carry out a theoretical discussion on sustainable development. This issue has been raised at a number of recent international meetings and it has become clear that not enough is being done to monitor progress towards sustainability and develop an empirical understanding of transitions. That is probably a grave understatement -- while we argue about "simple" indicators, the availability of data is not secured, a structure for collecting data has not yet

³ Unfortunately, despite several invitations, we had no participants from Eastern Europe and the Former Soviet Union. The Sustainability Science discussion has to be extended into these regions.

⁴ Examples of European research include the VALSE project, <http://alba.jrc.it/valse.html>, the EVE Concerted Action, <http://www.landecon.cam.ac.uk/eve/>, and the ULYSSES project, <http://zit1.zit.tu-darmstadt.de/ulysses/>.

been accepted and we are faced with enormous challenges in developing an empirical basis for Sustainability Science. The link to the theoretical discourse has to be developed and the ability to detect "seeds of change" (can we detect where transitions are about to begin?) is an essential part of the research agenda. We do not want to embark on "observation for observation's sake". However, without well-documented observations of transitions, their starting points, the drivers of change, and patterns of change, it will be difficult, if not impossible, to intervene in the further development of transitions to sustainability. Furthermore, the data have to be analysed to provide an empirical basis to complement theoretical approaches to sustainability science.

The working group was charged with developing both a rapid start and a long-term strategy. For the **Rapid Start** it was decided to produce a meta-analysis of patterns of sustainability transitions, using historical examples and published case studies. Particular examples to be used will be **energy systems, water and land use**. Wolfgang Lucht and Helmut Geist agreed to coordinate this activity. The experience of the IHDP/IGBP Land-Use and Land-Cover Change (LUCC) project with comparative analyses of case studies will be valuable here. The meta-analysis will look at patterns of transitions.

For the **long-term strategy** it was decided to focus on

- health
- water
- biodiversity, and
- land use

in a pilot project. This would also allow the leveraging of existing networks in Europe, Africa and South East Asia. It is quite clear that long-term data-sets will be required to monitor transitions and that considerable effort will have to be devoted to combining remote-sensing, ground-based and socio-economic data in developing an empirical basis for sustainability science. Challenges will also have to be confronted in combining qualitative and quantitative information. Pioneers will be needed for this research -- some of them were in Walberberg! Discussion also focussed on the long-term evolution of prices and how prices relate to issues such as adaptive capacity. In the further development of European research initiatives in the Sustainability Science area, the topic of prices should be integrated.

"Learning by Doing" will be a guide to further work on developing the empirical basis for Sustainability Science and in Europe a next step could be taken, after fruitful discussions in Walberberg, within the 6th Framework Programme of the EU.

DESIGNING A EUROPEAN RESEARCH PROJECT ON SUSTAINABILITY SCIENCE

A European Initiative on the Role of Lifestyle Changes in the Transition to Sustainability

1. This ambitious initiative aims at carrying out a set of case studies to explore the complex relations between food consumption/production systems and the transition to sustainability.

2. The design of the Initiative will require an initial series of meetings, to agree on research questions, the development of a set of case studies as described below, annual meetings of investigators and a serious amount of overall project facilitation. In the beginning, the **process** of arriving at a research agenda will be more important than the exact elicitation of the research questions. Furthermore, the final design will have to take existing studies into account.
3. It will be particularly important to deal with “cross-scale” linkages within the socio-economic system (see Appendix I for two figures that originated in the Walberberg discussions on the various relationships and scale levels between the economy, the institutions and the environment). At the macro-level lifestyle changes are driven, for example, by changes in the economic system, in institutions and in governments. At the meso-level, collective action influences lifestyle changes, through changes of *inter alia* norms, values and social networks, but also situational context. But the meso-level is embedded in the macro-level, so consideration will have to be given to the interactions between the levels. At the micro-level the individual choice of action, which determine broader lifestyle patterns, are influenced *inter alia* by capabilities, knowledge, attitudes and beliefs. Changes at this level are also intertwined with changes at other levels.
4. The Initiative will require a different funding infrastructure than available currently for integrated, interdisciplinary research. In particular, it cannot be assumed that the project would be completed in a 2-3 year period. Rather, it will require **longer term, stable support**. A further challenge will be the peer review process, since the Initiative will certainly be very innovative, not only in the questions that it tackles, but also in its policy relevance.
5. It will be important to guarantee that young scholars participate actively in the Initiative. This will, however, require some institutional change, in order to make sure that these scholars do not lose career chances through the length, interdisciplinary nature and selective funding for such activities.
6. For case study regions, lifestyles can be defined using measures of the consumer orientation of groups of individuals. The consumer orientation considers, for example, working, shelter, leisure, food, mobility and aesthetic and other orientations. After identification of patterns of lifestyles, changes over time in these lifestyle patterns and the consequences for sustainability will be investigated.
7. We selected the food sector, since it has clear links to sustainability through production (e.g. the agricultural system) and consumption (health and environmental effects). There are also observed equity effects of changes in food preferences, for example, in southern European countries the agricultural production is mostly based on a cheap work force imported mainly from North Africa. A shift towards a more ecological, less energy-intensive agriculture may easily lead to the need for more labour, unfortunately increasing the exploitation process.
8. Some important links between life-style choices and sustainability in the food sector include intensification of agriculture and its effects on ecosystems, water quality and biodiversity; transportation of food (with environmental and social consequences); and equity issues. For these issues and more there are indications that current paths in Europe are unsustainable.

9. Through trade and globalisation there are links between the food consumption/production systems in Europe and the rest of the world. Indeed, changes in the developing countries of population numbers and food preferences, perhaps also with regard to use of GMOs, could well have the dominating impacts on European food systems.

10. Some possible case studies:

Country/Region	Issue(s)
Southern Spain	Immigration, informal sector
France	Production and consumption patterns
Southern Italy	Underdeveloped region has some benefits
Sweden	High dependence on imports
Austria	Organic agriculture (20 – 25%)
Netherlands	Pig-farming exported to Catalonia
Poland	EU accession, transformation since 1990
Germany	Highest meat consumption in Europe
Turkey	Salinization, cultural influences
Hungary	EU accession, transformation since 1990

11. After determining changes in lifestyles and the resultant effects on sustainability elements, it will be important to develop “what if” scenarios of future developments and include policy options. Internal dislocations (with strong economic and social impacts), impacts on water quality and availability and immigration are areas which will influence the policy community.
12. The Initiative will have to include a wide range of scholarship (economists, ecologists, environmental psychologists, sociologists etc). In addition, stakeholders (farmers, transportation sector, government representatives) as well as the consumers will have to be involved from the start.
13. A wide range of data at the relevant temporal and spatial scales will be required to trace the changes in food consumption and production patterns and their interactions with elements of sustainability. Information on consumption patterns and underlying values could be generated through focus group activities. Large scale surveys and the development of proxy indicators will be necessary to trace trends and transitions.
14. Next steps: Get some seed money to expand and deepen what was developed here and begin the process of developing the Initiative.

MOVING FORWARD FROM WALBERBERG

(1) Linking knowledge and action

There is an important need to enhance knowledge-action linkages between stakeholders (civil society, business, government, scientists, indigenous people etc) and between levels (global - regional - national - local). We need to do more to involve the education specialists and the media in the efforts to link knowledge and action. And how do we see ourselves, as scholars, in the evolving agenda interacting with all societal partners?

The Sustainability Science agenda certainly requires more activity from the scientists and more interaction with other stakeholder communities. Walberberg participants emphasised the importance of policy-relevant Sustainability Science, while resisting policy-determined initiatives.

Complexity is an inherent property of the scientific and policy processes trying to address sustainability. As a consequence sustainability problems are difficult to understand and impossible to analyse by means of simple frameworks. The multiplicity of scenarios and presence of ignorance, uncertainty and conflicting interests are all an essential part of this kind of problem.

Communication is a central element of developing linkages between the scientific and policy realms. It was suggested that more attention should be given to communication techniques in academic curricula. **Dialogues** between the science and policy realms are necessary and Europe could take the initiative in developing such a strategy. This is, however, not an easy task, since it will require innovations within science systems and serious engagement in bridging between the science and policy realms.

In particular, it will be important that European "Sustainability Scientists" move away from current pessimism, stop blaming others for a lack of progress in linking knowledge and action and **think beyond WSSD**. At the same time, European "Sustainability Scientists" will have to confront the challenges of funding multi-national projects.

(2) Sustainability Science in Europe

The Walberberg Workshop was small and incredibly effective. We realised very early on in the meeting that we should talk about **Transitions** and not just Transition, recognising that we are dealing with patterns of co-evolution leading to different development paths.. We recognized that Vulnerability and Risk Assessments provide a strong basis for Sustainability Science. At the same time, research must also focus on barriers to change and to recognising "seeds of change", especially through understanding **patterns** of change. It also became clear that there is an urgent need to develop an **empirical basis** for Sustainability Science that can complement the **theoretical underpinnings**. For the European "Sustainability Scientists" the EU 6th Framework Programme offers opportunities for larger collaborative projects and the possible cores of those projects became clearer in Walberberg.

Sustainability Science is a "Science of Design"⁵. Moving forward will require:

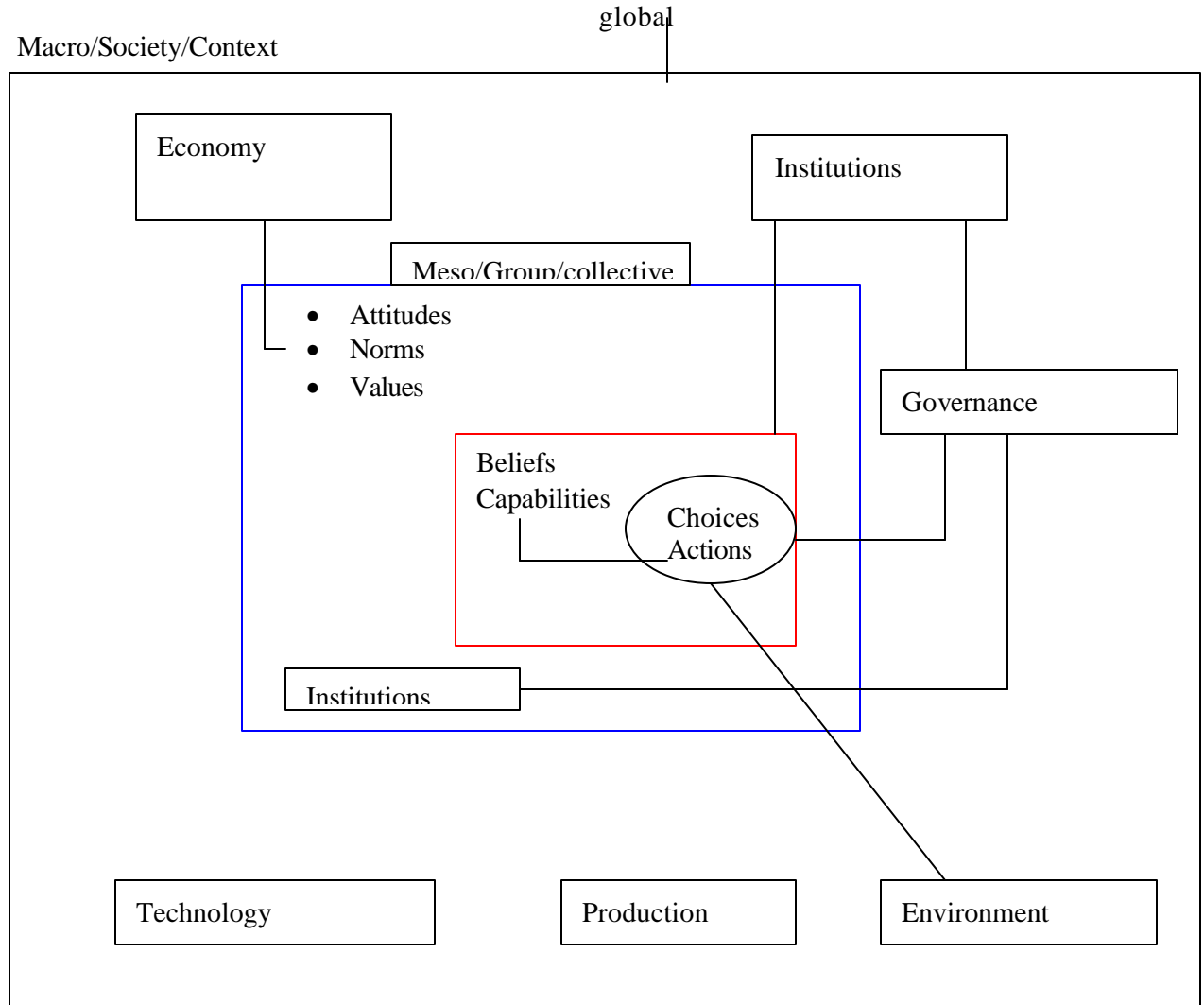
⁵ This was discussed in detail in a background note written by Carlo Jaeger for the Walberberg Meeting.

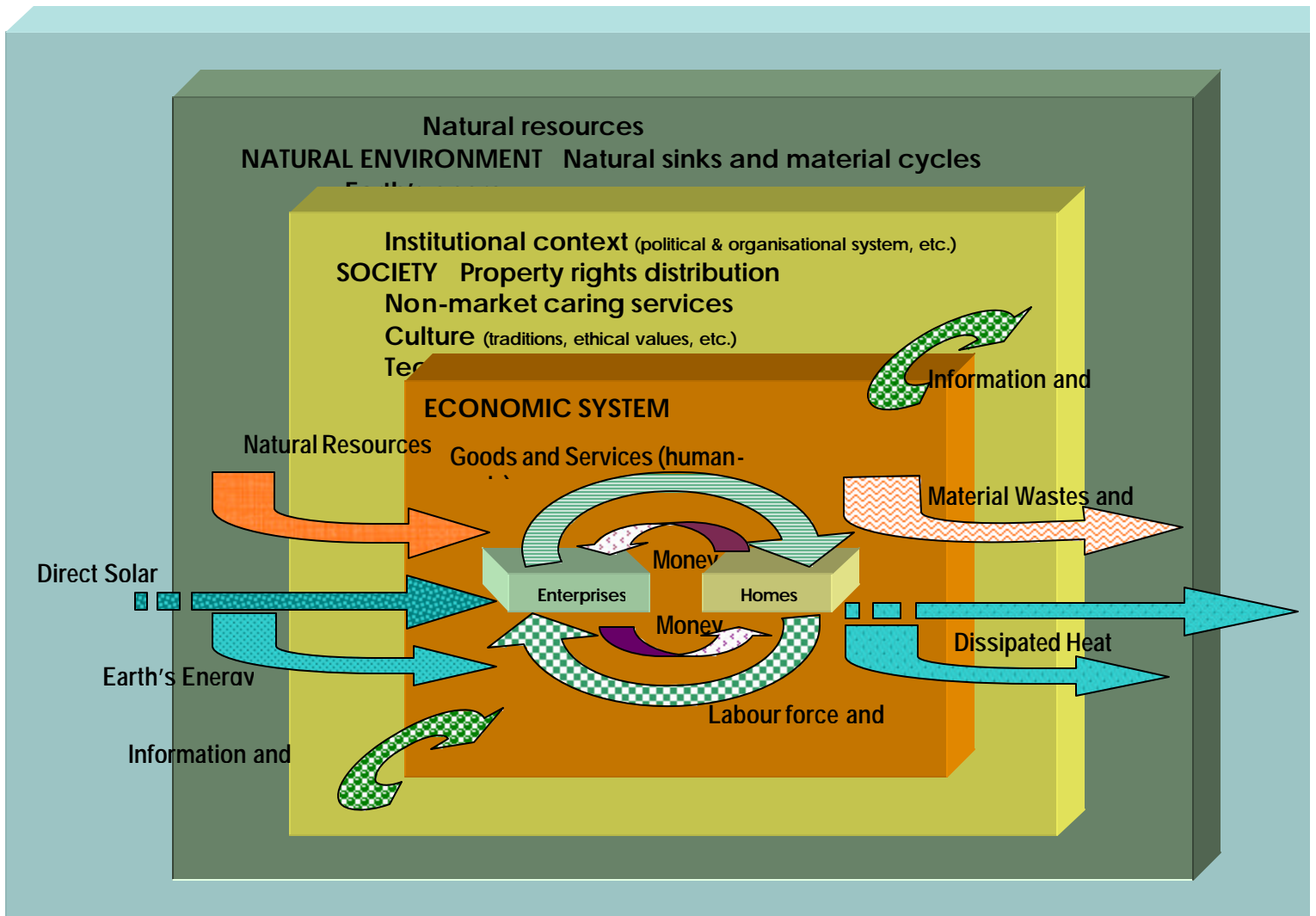
- The clear admittance that policy solutions will depend on the relevant space-time scales and viewpoints chosen. As a consequence, transparency about these assumptions is essential.
- The further development of a rough understanding of the issues at hand through the development of an empirical basis, for example by designing projects trying to understand the links between lifestyles and technological developments.
- Strengthening knowledge-action linkages through dialogues that look at both the understanding of the issues and the policy options available.
- Regional "test-runs".
- A conscious "learning-by doing" approach to allow improvement during implementation.

Reference

Robert Kates et al. 2001. "Sustainability Science" *Science* 292: 641-642.

Annex I





Annex II

EUROPEAN SCIENCE FOR SUSTAINABILITY

Walberberg, Bonn/Köln

27 February - 1 March 2002

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