Sustainability Universities: The case of Leuphana University Lüneburg

Regional/Thematic Symposium on Broadening the Sustainability Science Approach in support of the 2030 Agenda for Sustainable Development
19 -21 December 2016, Berjaya Times Square Hotel Kuala Lumpur, Malaysia

Maik Adomßent
Sustainable development: Co-evolutionary interplay of a multi-level system

- **Macro level**: politics, society
- **Micro level**: individual citizen
- **Meso level**: organizations

Sustainable Development
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Community-of-Practice</th>
<th>Community-of-Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nature of problems</strong></td>
<td>Different tasks in the same domain</td>
<td>Common task across multiple domains</td>
</tr>
<tr>
<td><strong>Members</strong></td>
<td>From the same domain (novices and experts)</td>
<td>From different domains (stakeholders)</td>
</tr>
<tr>
<td><strong>Knowledge development</strong></td>
<td>Exchange of knowledge within the practice; refinement of domain-specific knowledge system</td>
<td>Exchange of knowledge between domains; integration of multiple knowledge systems</td>
</tr>
<tr>
<td><strong>Learning</strong></td>
<td>Growing from novice to expert</td>
<td>Reaching shared understanding</td>
</tr>
<tr>
<td><strong>Major objective</strong></td>
<td>Growth in domain-specific knowledge</td>
<td>Resolving a complex problem</td>
</tr>
<tr>
<td><strong>Threat</strong></td>
<td>group think</td>
<td>No real communication</td>
</tr>
<tr>
<td><strong>Opportunity</strong></td>
<td>Fast progress due to shared background</td>
<td>Creative and robust solutions by making all voices heard</td>
</tr>
</tbody>
</table>
## Staged social and educational responses to sustainability

<table>
<thead>
<tr>
<th>Sustainability transition</th>
<th>Response</th>
<th>State of sustainability</th>
<th>State of education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Very weak</td>
<td>Denial, rejection or minimum</td>
<td>No change (or token)</td>
<td>No change (or token)</td>
</tr>
<tr>
<td>2 Weak</td>
<td>'Bolt-on'</td>
<td>Cosmetic reform</td>
<td>Education <em>about</em> sustainability</td>
</tr>
<tr>
<td>3 Strong</td>
<td>'Build-in'</td>
<td>Serious greening</td>
<td>Education <em>for</em> sustainability</td>
</tr>
<tr>
<td>4 very strong</td>
<td>Rebuild or redesign</td>
<td>Wholly integrative</td>
<td>Sustainable education</td>
</tr>
</tbody>
</table>

*Sterling (2004)*
Leuphana University’s leadership has worked out a clear strategic framework.

1) Policy & planning
   - Foundation for operational & cultural changes
     (history, key principles, master planning, etc.)

2) Institutional arenas
   - Research
   - Education
   - Partnerships/outreach
   - Campus & facilities management/administration

3) Vision / final goal
   - Enduring sustainable university

06 January 2017
Foundation: Basis and objective: Sustainability is one of the key principles for Leuphana University‘s development. Its core activities – research, teaching and transfer – are seen as basic academic action areas for the development of a sustainable society.
**Foundation:** Leuphana’s sustainability orientation is rooted in a long-term tradition. → Decisive steps:

- **1997**
  - “Agenda 21 & University”
  - First 3-year R&D project

- **1999**
  - EMAS Certification
  - Campus Certification

- **2001**
  - Environmental Coordinator
  - Creation of a permanent position

- **2003**
  - Campus-wide full survey
  - Collecting data on sustainability awareness of university members

- **2005**
  - Study Programme Sustainability
  - Interdisciplinary additional study course for all students

- **2007**
  - Leuphana Bachelor
  - Introduction of general studies component in SD for all students

- **2009**
  - Central campus is operating climate-neutral

- **2005**
  - Foundation of Faculty for Sustainability Science

- **2007**
  - UNESCO Chair “Higher Education for Sustainable Development”

- **2009**
  - Focus on Sustainability Research as one of four scientific initiatives

- **2001**
  - Member of Relaunch of Copernicus alliancance

- **2003**
  - New university concept

- **2005**
  - Lüneburg Declaration “Higher Education for Sustainable Development”

- **2003**
  - Working Group “Health”
  - Constitution of an cross-faculty working group

- **2009**
  - 1st sustainability report

- **2009**
  - Member of Working Group “Health”

- **2009**
  - 2nd sustainability report

- **2009**
  - LEUPHANA Foundation of Working Group “Sustainable University” (2004-2007)

- **2009**
  - Creating of a cross-faculty working group

- **2009**
  - Environment Coordinator
  - Creation of a permanent position
**Research:** Leuphana University has developed a clear research focus on the sustainability sciences, and, as part of this process, has been establishing the Faculty of Sustainability Science with 25 professorships by 2014.

- **1996:** Establishment of the interdisciplinary Faculty of Environmental Sciences.
- **2007:** Focus on Sustainability Research as one of four scientific initiatives.
- **2009 - 2011:** Appointment of 9 new research oriented professorships as part of the sustainability initiative.
- **2010:** Establishment of the Faculty of Sustainability Science as one of four faculties at Leuphana University.
- **2013:** Kick-off transformative long-term study “2042” (50 years of sustainability transition)

The sustainability sciences are at the forefront in the acquisition of external funding and the number of publications at Leuphana University, which shows the research staff’s support for the sustainability research focus.
Research approach: In Leuphana’s transdisciplinary research profile “Human and social sustainability sciences” and “Natural & technical sustainability sciences” are given equal weight. Both aim at action-oriented research.
Current projects addressing some ‘hot topics’ at Faculty of Sustainability, Lüneburg

- **Complexity or control? Paradigms for sustainable Development.**
  What are the fundamental conceptual, theoretical, methodological, epistemological and social/cultural dimensions for a science of sustainable development, one that takes all the complexities of the problem into account?

- **Leverage Points for Sustainability Transformation.**
  Understanding how changes in interconnected social-ecological systems facilitate the transformation to sustainability represents one of the key challenges of sustainability science. Drawing on insights from systems thinking and solution-oriented transdisciplinary research, this project will focus on hitherto under-recognized leverage points—system properties where a small shift can lead to fundamental changes in the system as a whole.

- **Challenges of interdisciplinary and transdisciplinary knowledge production: Institutions, Cultures and Communities (ICC).**
  Research objectives: epistemic objectives aiming at a deeper understanding institutions, (epistemic) cultures, communities related to interdisciplinary and transdisciplinary knowledge production, and transformative objectives that aim at contributing to transform cultures of knowledge production and support institutional changes.
Initiative 2042: A transformative longitudinal study

Transformation processes can only be understood by looking at them in a long term perspective. Therefore the initiative 2042 wants to **analyze progress of sustainability transformation** at local, national, and international levels over a period of 50 years (1992-2042).

Furthermore the initiative 2042 wants to **contribute to societal transformation processes** through focused transformative research projects. Therefore a network with cooperation partners from the academic and non-academic fields is being established.

Aims of the 2042 initiative

- Deepen the understanding of sustainability transformations
- Develop, test, and implement a longitudinal study that documents and communicates transformation via a “Transformation Radar”
- Contribute to societal, technological, and other transformation processes through focused transformative research projects and case studies.
- Network building with national and international actors from academic and non-academic fields which like to shape/collaborate within the initiative or like to use the initiative as creative collaboration space.

Education: Education for Sustainable Development is one of Leuphana’s key principles.

- Between 2006 and 2010 the educational reorientation towards sustainability has been the president‘s special concern in order to assign top priority to educational matters.

- Three of the five members of the presidential board are vice-presidents of Leuphana’s three academic schools (College, Graduate School and Professional School).

- Leuphana’s idea is that, apart from specialist knowledge, academic education needs to support competency acquisition and the development of personal capabilities. Thus, the objective is to educate reflective, critical and active societal members (agents of change).
Leuphana College offers a unified model of study for all subjects. The various preceding undergraduate programs are completely replaced by one model.

- **Familiarity with multiple disciplines and an inter-and transdisciplinary perspective; exploring foreign languages as key to culture(s); Participation in practical (social) projects**
- **Exemplary in-depth knowledge and general overview in the sense of an ordering matrix; Autonomous, comprehensive academic work in the chosen field of specialization**
- **Work ethics and methodology for both team-oriented and autonomous settings**
- **Additional subject field or further specialization in a Major-related area of study**
- **Familiarity with multiple disciplines and an inter-and transdisciplinary perspective; exploring foreign languages as key to culture(s); Participation in practical (social) projects**
- **Exemplary in-depth knowledge and general overview in the sense of an ordering matrix; Autonomous, comprehensive academic work in the chosen field of specialization**

**CP = Credit Points**
Education: Higher Education for Sustainable Development has been integrated in the form of a general studies mandatory component for all Bachelor students and different degree programmes.

**General studies** for all Bachelor students:

1. **Leuphana Semester** covers the first semester of all Bachelor study programmes and is mandatory for all first semester Bachelor students, independently from their major studies.

   Module **“Science takes Responsibility“** accounts for 1/3 of the Leuphana Semester and covers sustainability issues and illustrates ethical behaviour.

2. **Complementary Studies** accompany all Bachelor study programmes and cover several sustainability seminars in all scientific areas.

**Specialisation options:**

3. **Bachelor studies:** Major “Environmental & Sustainability Studies”
   Minor “Sustainability Science“

4. **Master studies:** Sustainability Science & Global Sust. Science

5. **MBA:** Sustainability Management

6. **PhD:** Sustainability Science

7. **Extra-occupational:** Certificates “Sustainability and Journalism” & “Exposition Management and Evaluation”
Educating future change agents – Higher education as a motor of the sustainability transformation

- How effective are novel teaching and learning formats in conveying these key competencies?
- Which of such novel teaching and learning formats yield the most profound impact?
- What types of integrating sustainability into curricula are best suited to educate competent and passionate change agents?
- What institutional factors are conducive to adopting such types of sustainability curricula?
- If and how real contributions to the sustainability transformation can get attributed to the acquisition of key competencies during higher education?

Partnerships / Outreach: Leuphana University supports and encourages strategic partnerships.

**Research cooperations**
- UNESCO Chair for „Higher Education for Sustainable Development“
- Cooperations with universities worldwide (e.g. Asia, Latin America, Europe, USA)

**City and regional cooperations**
- Sustainability Council of Lüneburg (e.g. 750 Leuphana students design sustainable "Lüneburg 2030+ in 25 fields of action together with 300 towns people and public figures")
- Education projects together with local and regional actors (business, governmental organisations, NGOs)
- Incubator for innovation (93 mio € EU project for regional development)

**Educational cooperations**
- COPERNICUS-Alliance member
- Awardee of 13 official German projects of the UN World Decade “Education for Sustainable Development”
- Partner universities in Asia, Latin America, Africa, Europe, USA

**Business cooperations**
- Environmental Management Accounting Network (EMAN)
- EMA-SEA – Environmental Management Accounting

An example of an **incentive** to establish partnerships are the “Best Teaching Award“, “Service Learning“ and “Transfer Award“, in which cooperation with regional actors is a critical assessment criterion.
The vision of the **COPERNICUS Alliance** is to

- promote the role of Sustainable Development in European Higher Education
- to improve education and research for sustainability in partnership with society.

Available Online:

- [www.copernicus-alliance.net](http://www.copernicus-alliance.net)
About the Project

The UE4SD Consortium of 52 partners from 33 countries across Europe is seeking to develop. The 3 year-project, will focus on support for teaching colleagues, specialisation, to understand and apply their professional and global responsibilities, develop professional competences and the academic leadership capabilities leading.

UE4SD seeks to establish a leading expert group in Education for Sustainable Development, to combine and share the expertise of network partners so that they can inform policy decisions. The COPERNICUS Alliance – the European Network of Higher Education for Sustainable Development – is contributing to this project.

Why Education for Sustainable Development?

Sustainable development has been identified as one of the greatest challenges facing the world today. Economic and environmental inequalities, worsening the impact of environmental degradation, and the need to address these issues are critical to achieving sustainable development goals. The UE4SD project aims to equip learners with the knowledge, skills, and competences necessary to contribute to sustainability through their professional and personal lives.
# CONSUS

The aim of the project is to establish a regional science-society network for sustainability innovations in Albania and Kosovo in order to strengthen the connection and collaboration of institutions in the field of higher education, research and practice.

## Learning Material

Learning material is the combination of a tool (text, book, picture, video, computer game, real game, experiment, experimental equipment, measurement device, computer program)

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<table>
<thead>
<tr>
<th>University</th>
<th>Author</th>
<th>Search resources...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Tools &amp; Methods</td>
<td>Time required</td>
<td>Group Size</td>
</tr>
</tbody>
</table>

131 learning materials found

- A Series of Lectures on the Basic Concepts of Sustainability, Regional challenges and Solu...
- Acting local, thinking global: An Albanian perspective
- Active learning in Macroeconomics: Growth forecasting and growth models.
The Global Level: UNITWIN/UNESCO Chairs Program …

… advances research, training and curriculum development by building university networks and encouraging inter-university cooperation through the transfer of knowledge across borders.

To date 730 UNESCO Chairs and 50 UNITWIN Networks in 128 countries among them 20 Chairs in the field of ESD in

- Armenia
- Canada
- China
- Costa Rica
- France
- Germany
- Greece (2)
- Israel
- Japan
- Liberia
- Mexico
- The Netherlands (2)
- Republic of Korea
- Sweden (3)
- United States of America
- Uzbekistan
UNESCO-Chair "Higher Education for Sustainable Development"

11:44 May 31 2016  21335 Luneburg, Germany

Transforming learning/training environments

Description

The work of the UNESCO Chair on "Higher Education for Sustainable Development" focuses on the question in what way sustainable development may represent a guideline for higher education and how this principle may be implemented into sustainability-related research activities. Dealing with questions of education and studies in the context of sustainability is on top of the agenda, since academia has long neglected this domain for the benefit of research and transfer activities, and thus at the expense of a necessary and sound general education.

Being confronted with problems arising from non-sustainable development, we understand that those individual (key) competencies are in great demand that lead to sustainable problem solutions and future organization. Against this background, the UNESCO Chair deals intensively with questions of academic teaching and scientific learning.

The purpose is to create a network of dedicated UNESCO Chairs, UNITWIN Networks and other UNESCO entities (ideally a global network, or at least a network comprising more than one continent/region). This Network is meant to play a decisive role in bringing the Global Action Programme on ESD in higher education institutions forward, e.g. by:

- connecting of inter- and transdisciplinary sustainability science and higher education for sustainable development;
- extracting and utilizing empirical findings to sustainability-oriented higher education;
- capacity building of multipliers in the field of education for sustainable development (professors, teacher education, training of trainers);
- scientific qualification of sustainability researchers
- regularly monitoring and review progress.
The What: Campus & facilities management activities.
Leuphana’s mission is to serve as ‘living laboratory‘ for staff and students to foster organisational and individual sustainability learning processes.

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<thead>
<tr>
<th>Action areas</th>
<th>Activities</th>
<th>Concrete examples</th>
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<tbody>
<tr>
<td>Campus development</td>
<td>Campus design, renewables, sustainable facility design</td>
<td>1) <strong>Sustainable campus design</strong> (central building by D. Libeskind, Campus concentration)</td>
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<tr>
<td></td>
<td></td>
<td>2) <strong>Climate neutral campus</strong> (goal setting 2007 for 2012, achieved in 2014)</td>
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<td></td>
<td></td>
<td>3) <strong>Cafeterias</strong> for organic food</td>
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<tr>
<td>Enviromental</td>
<td>Coordination of environmental activities by special team</td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td>1) <strong>EMAS</strong> certification</td>
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<td></td>
<td></td>
<td>2) <strong>Sustainability report</strong> creation (4th report: 2016, with ESD focus)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) <strong>Coordination</strong> of energy, infrastructure &amp; recycling activities</td>
</tr>
<tr>
<td>Energy</td>
<td>Reduction of energy consumption, efficiency</td>
<td>1) <strong>Organization</strong> al measures (e.g. flexible cleaning time)</td>
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<tr>
<td></td>
<td></td>
<td>2) <strong>Technical measures</strong> (e.g. efficient equipment)</td>
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<td>3) <strong>Behavioural measures</strong> (e.g. awards, campaigns, CO₂ sig. light)</td>
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<tr>
<td>Infrastructure</td>
<td>Transport &amp; waste management</td>
<td>1) <strong>Direct bus-service to railway station</strong></td>
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<td></td>
<td></td>
<td>2) <strong>Car sharing and free bike station</strong> for staff &amp; students</td>
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<td></td>
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<td>3) <strong>Waste separation system</strong></td>
</tr>
<tr>
<td>Awareness raising</td>
<td>Consumption of resources, health aspects</td>
<td>1) <strong>CO₂ signal lights</strong> in seminar rooms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) <strong>Posters</strong> about resource consumption &amp; health aspects (e.g. in lifts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) <strong>Guideline</strong> “studying sustainably”</td>
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Sustainable University: A strategic reorientation of the university‘s activities towards sustainability can only be ensured by a continuous process of institutionalisation.

Leuphana‘s critical landmarks for the institutionalisation of an academic sustainability culture can be seen in:

- Strong internal promoters;
- Integration of sustainability into the university‘s principles;
- A “strategic development unit“ for the consideration of sustainability principles;
- A substantial number of scientific staff that supports the idea of becoming a sustainable university;
- Academic dialogue and active participation of the academic community;
- Support by university‘s management board;
- Sustainability centres and initiatives for research;
- Creation of national and international networks that stabilise the external visibility of the university profile and support in its turn the internal commitment to sustainability;
- Internal competitions as incentives.
Thank you for your kind attention!

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www.leuphana.de/en/institute/infu.html
www.leuphana.de/en/maik-adomssent.html
Lüneburg Approach

**Economic dimension**
caring economy; recycling economy;
material flow management;
environmental management system;
environmentally friendly, innovative
technologies; eco-design (operating life,
disposability, aesthetics);
prices reflecting ecological and social costs;
polluter pays principle;
regional and local marketing networks;
fair trade

**Ecological dimension**
efficient use of resources;
nature’s rhythms (regeneration, “proper time”);
biodiversity;
ecological lifecycle systems; regenerative
energy;
precautionary principle;
avoiding ecosystem degradation
(reducing pollutants, emissions, waste)

**Social dimension**
promoting human health;
equal rights to the use of natural resources
and to development; intrasocial justice;
accounting for the
interests of future generations;
democratization; participation of
all population groups in all areas of life,
networks, livelihood
through work

**Cultural dimension**
ethical verification; sustainable lifestyle;
holistic perception of nature; aesthetic
perception of sustainable development;
local cultural diversity of paths to
sustainable development; traditional
knowledge; experience of time; material
culture; consumer awareness; local
community; international exchange; global
responsibility; cosmopolitan culture

Sustainable Development
Sustainable University: Leuphana University has been given several awards for its various sustainability activities.

**Selection of International & National Awards**

- International Sustainable Campus Award (Category Leadership) in 2010
- The energy efficient and sustainable concept for the new central building, planned by Daniel Libeskind has been selected as one of the German exhibits for the Shanghai World Exhibition 2010.
- UNESCO Chair “Higher Education for Sustainable Development” in 2005 to Prof. Michelsen, Institute for Environmental and Sustainability Communication.
- Award of 13 projects for the UN Decade of Education for Sustainable Development. (Leuphana University is the most successful German university)
- Leuphana University was winner of the German‘s former federal president‘s (Horst Köhler) initiative “365 Landmarks in the Land of Ideas“ six times in a row from 2008-2016 in a row.
- Award of the Institute for Environmental and Sustainability Communication by the Altner Combecher Foundation for Ecology and Peace.
- Award-winner in the category KNOWLEDGE of The science magazine ZEIT WISSEN and the initiative „Mut zur Nachhaltigkeit“ (Encouraging Sustainability) as „best-practice“ project that contribute in a significant way to sustainable development (2013)
**TRANSDISCIPLINARY RESEARCH AT THE SCIENCE / SOCIETY INTERFACE**

Each year since 2012, Leuphana University Lüneburg has offered the Td Summer School – Transdisciplinary Research at the Science / Society Interface. Designed for both scientists and practitioners (such as companies, NGOs, and governments), the Td Summer School focuses on the work at the interface between scientific and non-scientific (societal) realms.

Leuphana offers a 5-day Intensive Training and a 2-3 day Special Training in transdisciplinary research. The Td Summer School prepares researchers and practitioners for joint research on societal challenges at the science / society interface. The courses provide both theoretical and methodological foundations, as well as experience in designing and implementing transdisciplinary research processes.

A special focus of the Td summer school is on broadening the participants’ disciplinary and interdisciplinary research towards a transdisciplinary approach, and on enabling practitioners to expand their role in contributing to transdisciplinary research. Bringing together scientists, practitioners and policy makers, the Td Summer School allows participants to experience multiple perspectives and a joint elaboration of roles, tasks and responsibilities in cooperative research and the transformation of societal challenges.

**OBJECTIVES**

- Understanding the emergence of transdisciplinary research in the context of societal changes
- Getting familiar with different transdisciplinary research methodologies and process designs
- Gaining skills in inter- and transdisciplinary research methods: mutual learning
- Further information »

In March 2017, the Td_Esucela de Verano will be implemented in Valparaiso, Chile from March 5 - 10, 2017. In cooperation with the Universidad de Valparaiso » and the Espacio Interdisciplinario de Udelar », where the Td_Esucela de Verano was implemented in 2016, we will further explore and foster transdisciplinary research in Latin America. Further information will be provided soon.
October 2012 a longitudinal study was initiated by the UNESCO Chair in higher education for sustainable development at Leuphana University of Lüneburg. The study is using a mixed method approach to examine the impacts of the study model on students ‘affective attributes, e.g. attitudes, values and interests. A revised methodological set was applied to the new cohort in October 2013 – now two cohorts are in the longitudinal study.

Data is and will be collected every second semester. Whereas the quantitative evaluation archived a response rate of more than 50% of all students, in detail learning processes of the module “science bears responsibility” were investigated by group interviews.

Main interest is at first to benchmark these two cohorts and then monitor changes over time in affective attributes.

Expected Outcomes

Results: climate change, poverty and justice are top priority topics for the first semester students.

A majority of the students has heard about sustainability and relates this concept especially with the conservation of natural resources, responsible behaviour and thinking in future generations. Already at the beginning of the
A hierarchy of learning as a starting point?

- **Awareness** of sustainable development, as well as the range of views of interpretations of sustainable development and the implications for these differences
- **Process** - encourages to begin to question (and analyse) how the principles of sustainable development can be made to work;
- **Integration** - beginning to use the principles of sustainable development extensively in assignments and other class-work linking to real world issues in the community
- **Transformative** – without direction, students operate as critically reflective practitioners of sustainable development.

„At this level, the curriculum becomes an expression of the cultural change that is sought.“

Sterling/Thomas (2007)