Integrating Sustainability into the Institutional Mindset
Experiences from ETH Zurich

Dr. Christine Bratrich & Dr. Dominik Brem
ISCN Annual conference – Lausanne June 11, 2009
content

- welcome to ETH Zurich
- institutional framework of ETHsustainability
- putting theory into practice: implementation strategy and projects of ETHsustainability
- lessons learned
ETH Zurich - people

- > 14’000 students
- > 80 nations
- > 9’000 staff members
- > 370 professorships
- 21 Nobel Laureates
ETH Zurich – research and education

- 16 departments focusing on
  - engineering sciences
  - architecture
  - system-oriented sciences
  - mathematics & natural sciences
  - management & social sciences
ETH Zurich – “little town in the city of Zurich”

- 65.6 GWh for heating year\(^{-1}\)
  = heating for 8200 family homes

- 102 GWh electricity year\(^{-1}\)
  = consumption of about 35,000 persons
ETH Zurich – “1000 times around the globe”

- per year: about 50 million km by airplane = 1150 x around the globe
- per year: 24’000 tonnes CO₂ in total
THERE IS A NEED FOR ACTION TOWARDS SUSTAINABILITY

Part 2: institutional framework of ETHsustainability
Sustainability at ETH Zurich – a historical view

- > 20 years: Dep. Environmental Science
- 1997: AGS funding member
- 2001: [project21]
- 2002: YES courses (now spin-off)
- 2003: Science City
- 2005: Energy Science Centre
- 2008: environmental management system

But: there was always a lack of integration
2008-2011:

New philosophy to integrate sustainability into ETH Zurich’s strategy and development plan
2008-2011: strategy and development plan

10 strategic goals of ETH Zurich

5. "Maintain and improve ETH Zurich’s reputation as an excellent centre for research and education in energy, environment and sustainability"
Oct. 2008: new office of ETH sustainability mandate from ETH board
director reports directly to the president

WHAT?
4 fields of activities: education, research, outreach and campus sustainability

HOW?
coordinating, focusing, and implementing of existing and new initiatives

WITH WHOM?
Within ETH Zurich and in coordination with external partners

source: ETH Strategie- und Entwicklungsplan 2008-2011
responsibilities – steering board

- Prof. P. Edwards ecosystems
- Prof. L. Guzella energy systems
- Prof. V. Hoffmann economy
- Prof. VM Lampugnani architecture
- Prof. S. Springman natural hazards
- Dr. Ch. Bratrich managing director

Ralph Eichler, President ETH Zurich
HOW TO PUT THE STRATEGY INTO PRACTICE?

Part 3: vision and implementation concept of ETHsustainability
Vision of ETH sustainability: „Anticipating solutions for a sustainable future.“

- ETH Zurich is a leading university with an excellent interdisciplinary environment and strong global partnerships producing
  (a) radical technological innovations,
  (b) cutting-edge scientific discoveries
  (c) a new generation of future leaders

to anticipate solutions for a sustainable future and inform decision-makers.
1 - coordinating
2 - focusing
3 - implementing
coordinating

1. regular exchange with the board of ETH Zurich

2. bridging internal information: among departments, competence centres, students and environmental manager

3. cooperation with partners from the ETH domain

4. participation in international alliances
contact and exchange

President of ETH Zurich

ETHsustainability

CC

CCES

WBCSD

IDEA league

AGS

IARU

ISCN

Novatlantis

Eawag

ETH Lausanne

North-South

C2SM

NSL

HazNETH

D-UWIS

D-ERDW

D-AGRL

D-ARCH

D-BAUG

D-MAVT

D-GESS

environemntal manager

students

science city

ETH Zurich

contact and exchange

President of ETH Zurich

ETHsustainability
2. focusing

4 fields of activities + 3 focus themes
4 fields of activities

according to ETH Zurich's strategy and development plan 2008-2011

education  research  outreach  campus sustainability
## 3 focus themes

- **Sustainable energy systems**
  - solutions for mitigating carbon emissions and carbon free technologies
- **Sustainable world food and water systems**
  - transforming agriculture production for feeding 9 billion people
- **Sustainable urban systems**
  - reinventing cities for achieving greater sustainability

Global relevance – interdisciplinary solutions – core competence of ETH Zurich (under discussion)
### Fields of Activities

<table>
<thead>
<tr>
<th>Focus Themes</th>
<th>Education</th>
<th>Research</th>
<th>Outreach</th>
<th>Corporate Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy Systems</strong></td>
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<td><strong>World Food and Water Systems</strong></td>
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<td><strong>Urban Future</strong></td>
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Fields of activities: education, research, outreach, corporate sustainability

Focus themes: energy systems, world food and water systems, urban future

"Focus of the year": energy systems
### Implementing – Examples

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<tr>
<td>Energy Systems</td>
<td>Climate KIC</td>
<td></td>
<td></td>
<td>ecoworks</td>
</tr>
<tr>
<td>World Food and Water Systems</td>
<td></td>
<td></td>
<td>Mainau Exhibition</td>
<td></td>
</tr>
<tr>
<td>Urban Future</td>
<td>AGS Conference</td>
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**Focus Themes**
- Energy Systems
- World Food and Water Systems
- Urban Future
focus of the year:
crossmedia work and events in preparation for KOP15

- coordination: ETHsustainability
- climate: C2SM
- adaptation: CCES
- mitigation: ESC
- communication: CC
education: Knowledge and Innovation Community (KIC)

KIC cooperation:
- ETH Zurich
- Imperial College London
- IPSL ParisTech
- Potsdam Institute for Climate Impact Research (PIK)
- Utrecht-Delft-Wageningen

ETHsustainability:
responsible to coordinate ETH Zurich’s input to education
research: workshops and conference on urban future

Allaince for Global Sustainability
- ETH Zurich
- MIT
- Tokyo Univiersity
- Chalmers University of Technology

ETHsustainability:
- supporting ETH team and CCES
- exhibition and video
outreach: exhibition of Lindau Nobel Laureate Meetings “water and discoveries”

• coordination & funding: ETHsustainability
• concept & design: D-ARCH
• partner: Eawag, Science City
campus sustainability: ecoworks - ETH platform to reduce CO₂ emissions

• coordination & funding: environmental manager & ETHsustainability
• steering board: coordinators, ETH vice president, VSETH, [project21], AGS
• partner: Eartheffect
SUMMARY

part 4: What are our lessons learned so far?
summary - education

- pick opportunities – climate KIC
- unique position – creative pool of talented students
- joint action depends on volunteer initiatives – bottom up rather than top down
summary - research

- local (e.g. CCES) and international partnerships are essential
- combining fundraising and agenda development mobilises faculty
- lack of evaluation criteria for research in interdisciplinary teams
- cross-cutting projects are still stumbling blocks for a scientific career
summary - outreach

- “focus of the year” and cross-media work allows effective bundling of activities
- outreach activities are valuable tools to build networks among disciplines
- professional communication expertise is crucial – not every scientist is a naturally born communicator
new initiatives need time for dissemination

- campus sustainability is more than infrastructure
- fascinating potential to demonstrate initiative
summary – institutional framework

- trust
- real buy in from the Board – not lip services
- clear mandate, strategy, and TORs

people make a difference!
thank you

http://www.sustainability.ethz.ch/
http://www.umwelt.ethz.ch/
## Ecological footprint ETH Zurich (2008 usage)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>Tendency (next 10 years)</th>
</tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>102 GWh</td>
<td>↑↑</td>
</tr>
<tr>
<td>Fossil fuels</td>
<td>42 GWh</td>
<td>↓↓</td>
</tr>
<tr>
<td>Gas/petrol</td>
<td>100 m³</td>
<td>↓</td>
</tr>
<tr>
<td>CO₂-Emissions (total)</td>
<td>24,000 to (incl. flight-km)</td>
<td>↓↓</td>
</tr>
<tr>
<td>Air miles</td>
<td>50 mio km</td>
<td>↑</td>
</tr>
<tr>
<td>Drinking water</td>
<td>280,000 m³</td>
<td>↓</td>
</tr>
<tr>
<td>Paper</td>
<td>64 Mio Pages A4</td>
<td>↓↓</td>
</tr>
<tr>
<td>Wastes</td>
<td>2,000 to</td>
<td>↓</td>
</tr>
<tr>
<td>Hazardous wastes</td>
<td>86 to</td>
<td>↑</td>
</tr>
</tbody>
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Science City

Buildings and nature: In spite of density, retain free space

The building strategy is coordinated with the long-term space utilization planning of the ETH Office for Properties. The objective is to adjust new or already planned buildings closely to the urban planning and utilization strategy. In concrete terms, this means that the master plan rules and the use requirements are discussed within the Science City team during the planning of new buildings and that the area program for new architecture competitions is developed jointly.

Four construction projects are current: the Information Science Laboratory, the Sport Center, the Life Science Platform and the Academic Guest House.