International Sustainable Campus Network: Best Practices – Future Challenges

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Conference Summary
Second Annual Conference, April 23–25, 2008, Zurich, Switzerland

novatlantis
Sustainability at the ETH domain

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TABLE OF CONTENTS

INTRODUCTION AND SUMMARY

Universities, as well as corporations with significant research activities and campus operations, are focused on shaping the world of tomorrow. Sustainability is increasingly recognized as a key issue in this endeavor. Institutions committed to pushing this envelope understand that the way they develop, remodel, and operate their campuses needs to be consistent with their overall goals for a sustainable future. Before this background, the central goal of the International Sustainable Campus Network (ISCN) is to provide a global forum for exchanging information, ideas, and best practices for campus sustainability.

This second annual conference of the ISCN pursued this goal mainly via three mechanisms (see conference program overleaf). First, geographically focused plenary sessions allowed the participants to share experiences from leading institutions around the world, and to hear about an exciting variety of projects. These included: the Harvard Green Campus Initiative's revolving loan fund for conservation and energy efficiency projects; the Green Gown Awards with which the UK's HEEPI program raises awareness on exemplary projects on sustainability in higher education; or the focused initiative at Tongji University that integrates innovations in technology, management, and curriculum to become a model program on campus sustainability within China.

Second, a large part of the conference agenda was devoted to the participants' exploration of topics targeted by the ISCN's four working groups. Input papers prepared by the group members and their co-chairs were the basis for in-depth discussions about the agendas of those groups and their next concrete steps. Results of those discussions include:

- **International Sustainable Campus Awards program:**
  To encourage experience exchange and awareness raising, the ISCN plans to establish an international award program for sustainable campus projects. Key parameters for possible parallel award tracks have been developed, and options to build links to existing national and regional networks will be explored as a next step.

- **ISCN Charter and Sustainable Campus Design Guidelines:**
  Options to develop an ISCN charter and guideline documentation were explored with the purpose of supporting organizations of research and higher education in making a clear commitment to campus sustainability and benefitting from the experiences of ISCN participants. Next steps will include the development of regional versions of a first draft.

- **Survey on Effective Decision and Financial Mechanisms:**
  To better understand factors that promote or hinder sustainable campus development, a number of case studies developed in a common format were discussed. This led to the shared development of a suite of hypotheses, which will be studied via a survey of the ISCN participants and beyond, with the goal of sharing results at next year's meeting.

- **Exploring Sustainable Change Management:**
  The integration of facilities, research, and education for a holistic approach to campus sustainability has been explored in a draft working paper based on a discussion of theory and case studies. Next steps planned include shared graduate thesis projects that build on experiences available at different ISCN member organizations, and a virtual workshop in the fall.

As a third element complementing those experience exchanges and shared explorations, a number of presentations focused on inspirations the ISCN can gain from other organizations, and on possible future partnerships. These included discussions on success factors in establishing international architectural awards, on experiences with corporate campus sustainability, and on options to link the ISCN to other networks to build on synergies. This includes national and regional networks on campus sustainability, like the European COPERNICUS Alliance, and global networks on overall strategies for the future of institutions of research and higher education, like the GULF program affiliated with the WEF.

CONFERENCE OPENING
Wednesday, April 23, 2008

3:30pm   Welcome
Roland Stulz, Director Novatlantis
3:45pm   Opening Keynote
Martha Thorne, Executive Director,
Pritzker Architecture Prize
4:15pm   Parallel Working Group Start Session
WG I: Award Program
Facilitator: Claude Siegenthaler, Hosei, Tokyo
Discussant: Martha Thorne, Executive Director
Pritzker Architecture Prize
WG II: Standards and Best Practice
Facilitator: Joe Mullinix, National University of Singapore
Discussants: Ariane König, University of Luxembourg
Niko Heeren, ETH Zurich
WG III: Financial and Decision Mechanisms
Facilitator: Steve Mital, University of Oregon
Discussant: Martine Bintner, University of Brussels
WG IV: Sustainability Change Management
Facilitator: Per Lundquist, KTH, Stockholm
Discussants: Juan Reiser, PUC, Peru
Clemens Mader, University of Graz
6:00pm   Opening Dinner
Dinner Speech on Sustainability Mainstreaming in University Politics:
Barbara Haering, Member of the ETH Board

BEST PRACTICE AND SHARED EXPLORATION
Thursday, April 24, 2008

8:30am   Plenary Presentations on Best Practice
Plenary Opening
Bernd Kasemir, sustainserv, Boston
8:40am   North American Best Practice
Michael Crowley, Assistant Director, Harvard Green Campus Initiative
Robert Bland, Director, Environmental Compliance and Sustainability Office, Cornell University
Steven Lanou, Deputy Director Sustainability Program, Environmental Programs Office, MIT
9:50am   European Best Practice
Miquel Barcelo, Vice-Rector for Sustainable Development, Technical University of Catalonia
Philippe Vollichard, Coordinator Sustainable Campus, EPF Lausanne
Peter James, HEEPI Network, UK
11:00am Asian Best Practice
Hongwei Tan, Tongji University, China
Keisuke Hanaki, Department of Urban Engineering, The University of Tokyo
Ann Kildahl, Sustainability Manager, The University of Hong Kong

12:15pm Buffet Lunch
Lunch Presentation on Master Planning at Science City:
Kees Christiaanse, ETH Zurich Institute for Urban Design
1:30pm   Main Parallel Working Group Sessions
WG I: Award Program
Facilitator: Bernd Kasemir, sustainserv, Boston
Discussant: Peter James, HEEPI Network, UK
WG II: Standards and Best Practice
Facilitator: Kerstin Hoeger, ETH Zurich
Discussant: Rene Sigg, Intep Zurich
WG III: Financial and Decision Mechanisms
Facilitator: Erika Meins, CCRS University Zurich
Discussants: Ulrik Abild, Danish University & Property
Dieter Genske and Donbing Huang, ETH Zurich
WG IV: Sustainability Change Management
Facilitator: Katja Brundiers, seed sustainability
Discussants: Eddi Omrcen, University of Gothenburg
Catharina Erlich, KTH, Stockholm
4:45pm   Plenary Presentation WG Results
Reports from the Working Groups Co-chairs
5:45pm   Campus Sustainability as a Motivating Factor in Private Sector Recruitment
Randy Knaflic, Staffing Manager Europe, Middle East and Africa, Google
7:00pm   Main Conference Dinner
Dinner Speech on Public-Private Partnerships for Campus Sustainability: Hans-Björn Puttgen, Chair for Energy Systems Management, EPF Lausanne

OUTLOOK AND NEXT STEPS
Friday, April 25, 2008

8:30pm   Parallel Working Group Discussions on
Next Steps
Facilitation: Working Groups Co-chairs
9:30am   Regional Networks and the Internationaln Dimension
Uwe Schneidewind, President University of Oldenburg and Board Copernicus Alliance
10:30am Open Space on Further Network Development
Moderation: Bernd Kasemir, sustainserv, Boston
11:30am Integrating Working Group Results into the ISCN Award Scheme
Presentation: Claude Siegenthaler, Hosei
Moderation: Bernd Kasemir, sustainserv, Boston
12:15pm Conference Closing Remarks
Roland Stulz, Director Novatlantis
12:30am Buffet Lunch and Conference Closing

WELCOME AND OPENING KEYNOTE

Roland Stulz, Director, Novatlantis

The second annual International Sustainable Campus Network conference opened with a welcome from Roland Stulz on behalf of "Novatlantis – sustainability at the ETH Domain," which hosts the ISCN. He thanked all the participants for the time and effort they invested by taking part in the meeting, and for their contributions to the ongoing work of the network's four working groups. He also gave a warm welcome to Martha Thorne from the Pritzker Architecture Prize, and thanked her for inspiring the ISCN and its planned International Sustainable Awards Program with lessons learned from the internationally renowned Pritzker Prize.

Roland Stulz, Director of Novatlantis, delivering the Conference Welcome

Martha Thorne, Executive Director, Pritzker Architecture Prize
Encouraging Public Recognition: Lessons from Architecture Prizes

Martha Thorne's opening keynote for the 2008 ISCN Annual Conference highlighted how awards can be vehicles to communicate messages. The Pritzker Prize and other architecture prizes have strengthened the profession of architecture, and contributed to the role of architectural quality in public debates today. The Pritzker Charta mandates that the prize should go to a living architect that provided "significant contributions to humanity and the built environment through the art of architecture." The Charta maintains a balance between being open to creative interpretation while also being specific enough so that the jury cannot deviate too far from the original vision of the prize. Other elements that contribute to the high visibility of the prize today, which has often been described as "the Nobel of architecture," are its ambitious goals, the substantial purse awarded, the "pomp and circumstance" of its high-level award presentation ceremonies, the stature of the first laureate (Philip Johnson), the timing of the award's launch, and, in particular, its recognized and renowned jury and its thorough process. The jury members are experts that are independent of the prize's executive organization, and the Pritzker family does not sit in the jury or seek to influence its deliberations. Members of

the jury serve for a period of at least three years, which supports in-depth discussions and ensures that decisions are not taken lightly, and the jury travels together for one week per year to visit buildings internationally.

For a complex topic such as sustainability, which impacts everyone but is not necessarily easy to grasp, an international prize might be very valuable for supporting discussions about quality among professionals and raising awareness in the general public. Transparent criteria (including whether aesthetic criteria are considered) would be particularly important for a prize on such a complex issue. In addition, a high-level and in-depth jury process could be essential for the International Sustainable Campus Award, as it has been for the Pritzker Prize. Other prizes that might inspire the ISCN awards program include the awards provided by the Aga Khan Trust (for traditional building techniques, restoration, appropriate technology, and contemporary expression in Islamic architecture), which maintains an easy-to-use online database with extensive documentation on building projects and which is linked to a program on Islamic architecture at Harvard. Also, the concept of the 25-year award of the American Institute of Architects (AIA), which recognizes projects that have stood the test of time for 25 to 35 years, might be interesting for a sustainable campus award as it emphasizes longterm quality. Overall, successful awards programs are characterized by linking the awarding organization to the award winners for mutual benefits in terms of credibility and public awareness raising.

This opening session was followed by the first part of the extended, three-part working group discussion sessions that formed the core of the conference. A brief summary on the working group discussions and their results, drawing on all three discussion sessions of the groups, is given below. The first meeting day concluded with the conference opening dinner, during which **Barbara Haering,** member of the ETH Board, gave a speech on the importance of campus sustainability and the mainstreaming of this issue over time at leading academic organizations such as ETH Zurich, which hosted the conference on its Science City campus. (See also Barbara Haering's participant comment on page 5).

Martha Thorne, Executive Director, Pritzker Architecture Prize, delivering the Opening Keynote

**Barbara Haering,
Member of the ETH Board (Switzerland)**

"It must be a strategic goal of ETH to remain a center of excellence for sustainability while standing ground as a leader in this field. ETH is in the position to initiate processes of sustainable development globally, especially in developing countries. For ETH, the campus at Hönggerberg is a wonderful opportunity to gain experience in transforming something unsustainable into something sustainable. This entire transformation is going to be a lengthy process with a significant challenge of preserving continuity and momentum throughout the years of work. For this purpose, the International Sustainable Campus Network can provide terrific moral and technical support."

EXCHANGING EXPERIENCES: PLENARY PRESENTATIONS

The plenary presentations on exchanging best-practice experiences were introduced by **Bernd Kasemir,** the ISCN program manager. He thanked the plenary presenters from North America, Europe, and Asia for coming to Zurich to share insights on the current status and latest developments regarding campus sustainability in their organizations. He reminded all presenters and discussion participants that exchanges within the ISCN are conversations between colleagues, and that sharing the unsolved challenges is as important to other network members as highlighting their successes. Such exchanges allow the network to collectively think about what still needs to be achieved and how that could be done.

North American Best Practice

Michael Crowley, Assistant Director, Harvard Green Campus Initiative
The Harvard Green Campus Initiative: An Approach to Campus Ecology

The Harvard Green Campus Initiative (HGCI) is an interfaculty organization of sixteen full-time staff and forty part-time students that provides in-house, fee-for-service sustainability services to Harvard's schools and departments.

The HGCI's service areas are tailored to specific sustainability needs throughout the university.

1) The HGCI Green Building Service works with capital project and operations and maintenance staff to incorporate sustainability into their core business. Some HGCI services include energy performance benchmarking, implementation of green building standards (i.e., the United States Green Building Council's [USGBC] Leadership in Energy and Environmental Design [LEED] standards), and the management of a $12 million revolving loan fund for conservation and renewable energy projects.
2) Students are demanding that sustainability is incorporated into daily life at the university. The HGCI Green Living Programs address this need by hiring students to run environmental awareness and conservation programs in Harvard's houses and dorms. The goal of these programs is to foster a culture of sustainability and resource conservation.
3) Senior management at the University is recognizing the successes of Harvard's many bottom-up sustainability initiatives. The HGCI has helped institutionalize these successes by developing sustainability principles and green building guidelines. Recently the HGCI has been engaged in a Presidential Greenhouse Gas Task Force to review how Harvard might commit to a greenhouse gas reduction target.

Harvard shares and improves its sustainability practices by participating in several regional, national, and now international (i.e., ISCN) campus sustainability networks. The IVY Plus Network, an association of Ivy League and other top-tier schools, has recently begun sharing greenhouse gas reduction commitments and strategies. Harvard is an active participant in this network.

Robert Bland, Director, Environmental Compliance and Sustainability Office, Cornell University
Sustainability at Cornell

Cornell University established complementary academic and operational programs to advance sustainability (www.cornell.edu/sustainability). These programs are the newly formed academic Center for a Sustainable Future (www.sustainablefuture.cornell.edu) and the operations Environmental Compliance and Sustainability Office (eco.cornell.edu). Cornell University has also created an Advancing Sustainability Action Plan (ASAP) to integrate their ongoing operational sustainability programs with new initiatives (www.sustainablecampus.cornell.edu). The ASAP is divided into eight elements that are at the core of campus operations: land use, climate commitment and energy, the built environment, materials, transportation, waste and pollution, food and water, and endowment investments.

Cornell has an aggressive energy conservation program, proven by the fact that the campus has not increased its energy demand since 1990, despite a 20 percent growth (two million gross square feet). With the completion of a gas-fired combined heat and power project in late 2009, the university will have achieved goals consistent with the Kyoto Protocols. Cornell has signed the American College and University Presidents Climate Commitment and will be completing a comprehensive inventory of greenhouse gas emissions in September 2008. The next part of the commitment is to produce a Climate Action Plan by September 2009. Other components of their action plan include a carbon inventory of all the fields and forests managed by their College of Agriculture and Life Sciences, setting energy demand limits for all new buildings, and completing a Transportation Impact Mitigation Strategy for commuters.

Challenges Cornell faces include:

1) institutionalizing a commitment to sustainability within the organization processes and fostering a sense of priority with staff, students, and faculty, and
2) developing decision-making tools and methodologies that recognize the future scarcity of energy and other resources, and account for carbon emissions and other impacts that are currently external costs.

Steven M. Lanou, Deputy Director for Sustainability, Environmental Programs Office, Massa-chusetts Institute of Technology (MIT)
MIT Engaging Students in Campus Greening: Local Action, Leadership, Global Change

The MIT community has embraced with passion and commitment the challenge of improving sustainable energy practices on campus. The Campus Energy Program of the MIT Energy Initiative (MITEI) has been the catalyst for an unprecedented partnership between students, faculty, and staff of the Institute. Research and collaborative projects involving students and faculty from all five schools at MIT and staff from administrative units have resulted in a number of strategies to reduce MIT's energy use.

The MIT Campus Energy Program is working to: reduce MIT's energy consumption and associated greenhouse gas production economically; make the Campus Energy Program a living laboratory for student education; and serve as a model of effective actions to reduce energy consumption and greenhouse gas production. The Campus Energy Program offers a unique sustainability education opportunity for MIT students while aiding the campus energy efforts.

Through project-based independent projects, undergraduate and graduate theses, undergraduate research opportunities, and laboratory subjects that focus specifically on the energy and environmental challenges the MIT campus faces, students experience MIT's motto mens et manus (mind and hand) under real-world conditions. Hands-on experience developing sustainable solutions for the campus

energy systems provides an ideal opportunity for students to grapple with the relevant technologies while also considering the economic and organizational issues that must be addressed whenever new technologies are deployed. Interdisciplinary teamwork on challenging problems can provide experience in formulating, planning, and carrying out an innovative project that can lead to realistic solutions. The implementation of a competitive grant program offered to support innovative student campus energy projects has proved to be an effective catalyst for engaging students in helping MIT reduce its energy footprint and discover best practices that can have impacts well beyond the campus borders.

By opening campus operations up to partnerships with students and faculty as a living laboratory, MIT has created an opportunity where students can "walk the talk" on campus and effect change in their community; create a unique space to apply MIT-honed creative problem-solving skills; develop and test emerging leadership abilities; and build collaborative bridges across academy and administration. In return, the campus sustainability programs are rewarded with more creative solutions, advanced analyses, and deeper impacts across the Institute.

Participant comment

Hongwei Tan
Tongji University (China)

Tongji University holds a leading role among universities in China, and a sustainable campus would be a demonstrative model for the whole country. People will come to Tongji to learn how things are being done there. Therefore, sustainable development will expand to the whole country if it is successful at Tongji. Participating at the International Sustainable Campus Network Conference is a great opportunity for me to share information with other universities worldwide and to integrate the best ideas into the development of our own campus."

European Best Practice

Miquel Barcelo, Vice-Rector for Sustainable Development, Technical University of Catalonia
Let's Be Sustainable 2015

The Technical University of Catalonia (UPC) is very proud of having a mid-term strategy plan, UPC Sustainable 2015 – a plan to drive the university toward meeting the great challenge of sustainability. It has developed a participatory process with students, staff, and other groups, which has helped in designing a collaborative strategy that takes the needs of many of its stakeholders into consideration.
The vision of the university's strategy is that "By the year 2015, the Technical University of Catalonia will be a key reference in technology for sustainable development on a local, regional, European and global level, through our contribution to education as well as research, development and innovation."

The university is focused on 2015 due to the convergence of two relevant strategies at that point: the Millennium Development Goals and the UN Decade of Education for Sustainable Development. In parallel with these strategies, UPC hopes to also encourage society to move toward these same goals.

The university is focusing on five societal challenges:

1) Construction, energy, and climate change
2) Integrated water management
3) Socially responsible technology
4) Land-use planning, mobility, and logistics
5) Material cycles, eco-design, and waste management

With an overarching principle of "engagement and social interaction," internal efforts are divided into three key areas: **research, education, and internal management.** In all aspects of the strategy UPC is keen to involve its internal and external stakeholders, connecting the university to the needs of society. It envisages a university that creates solutions to key social challenges through high-quality **research** and development that embraces sustainability criteria. Today, approximately one-third of the research at UPC is focused on environmental and sustainability issues, but the school is convinced it can even do better. **Education** is the second key pillar of the university. Its vision is that every UPC graduate will apply sustainability criteria in his or her professional activity and also, very importantly, in his or her personal sphere of influence. UPC wants to educate not only professionals, but also world citizens. Last but not least, making the **internal management** sustainable is essential in order to gain credibility and show that concrete changes are possible. Although some may call this "practicing what you preach," UPC expects to go beyond that, believing that internal management is a great laboratory for innovation and the incubation of new ideas.
    In this sense, UPC wants to become an organization that operates in a sustainable way: to significantly reduce its environmental impact, to spread the sustainability culture across the university, and to integrate social and environmental criteria within its internal management processes. For more information or suggestions on collaborations, UPC can be reached at cities@upc.edu.

Philippe Vollichard, Sustainability Manager, EPF Lausanne
Aiming Sustainability @ EPFL

Following its recognition at the federal level in 1969, EPFL built a brandnew campus in the west part of Lausanne. Planned during the oil crisis of the 1970s, EPFL focused its design on renewable energy and sustainable solutions. For example, EPFL is heated with thermo pumps using water from Lake Geneva, preventing the release of 150,000 tons of carbon dioxide over the last twenty years in comparison to a fuel-powered plant. In addition, EPFL constructed buildings with high thermal isolation, green roofs, natural ventilation and lighting, modularity for adaptability, durable materials, and natural landscaping. In 2001, the first ecological footprint assessment based on the three pillars of nonrenewable energy, carbon dioxide release, and cost revealed a very positive balance sheet.
    An environmental management program was introduced at EPFL in 1999, and then, in 2008, a sustainability manager was hired in order to expand its approach beyond just environmental considerations to also encompass social and economic dimensions. A project called "Living Campus" will be carried out from 2008 to 2011. The goal of this project is to increase the quality of life on the campus with new infrastructure such as student housing, a Learning Center, or a Conference Center. This project, which is estimated to cost CHF 400 million, also aims to mix public-private partnership with sustainability initiatives, for example by planning the biggest solar power plant in Switzerland.

Peter James, Co-director, HEEPI Network, UK
Supporting Sustainability in UK Higher Education: HEEPI and Green Gowns

HEEPI – the UK's "Higher Education Environmental Performance Improvement" Program – runs the annual Green Gown Awards, and also organizes events, benchmarking, and good practice cases and guides. Among other insights, this experience suggests that:

1) Issues such as costs, reputation, and risk often have higher profile with higher education management than sustainability per se, so linking to them is crucial.
2) A high-level champion is also crucial, as is continuity and capacity (which can be shared between institutions). Many initiatives founder because they are dependent on a single individual, or small group, and/or because internal expertise is not available.
3) Actions must also be tailored to different constituencies, whose interests vary widely. Often these constituencies are fragmented, so simply bringing them together to discuss shared experience – any practice rather than just best practice – can be valuable.

Asian Best Practice

Hongwei Tan, Tongji University, China
Sustainable Campus in Tongji University

Since 2003, Tongji University has taken the nationwide lead in building a sustainable campus, and in gaining consensus on sustainable development through the participation of faculty, students, and staff. Their solution utilized the three approaches of technology, management, and education, and included broad participation in every stage. The results of these efforts included energy cost savings totaling $1.7 million in 2006.

Tongji University serves as a nationwide demonstration model of a sustainable campus. Various projects have been set up and are running, including a solar thermal system, wastewater reuse, heat recovery, energy-efficient building techniques, a ground source heat pump system, energy-efficient lighting, and a facility energy monitoring and management system. Furthermore, a series of curricula regarding sustainable development has been implemented in undergraduate and graduate courses, and the students have participated in the sustainable campus initiative. This initiative holds the potential to provide valuable contributions to the sustainable development of both the campus and society beyond.

Keisuke Hanaki, Department of Urban Engineering, The University of Tokyo
Sustainable Campus Activities at The University of Tokyo: Todai Sustainable Campus Project (TSCP)

The University of Tokyo (Todai) recognizes the importance of enhancing existing facility management, research, and education activities with student involvement and outreach to society. Todai officially began sustainable campus activity in May 2007 with the formation of a sustainable campus working group (within its campus planning office for facility planning and implementation) and by promoting sustainability activities of faculty, students, and staff. Todai provides financial support for research on: analysis of campus sustainability; evaluation and enhancement of forest sink; social aspects of campus sustainability actions; waste recycling on campus; and management of laboratory chemicals. The following practices – mainly undertaken by students – are also supported: student network formation at the Kashiwa environmental campus; promotion of renewable energy implementation; networking with other universities; a deposit/refund program for plastic bags in university coop stores; and public relations on sustainable campus activities.

Todai has recently set up the Todai Sustainable Campus Project (TSCP), which includes monitoring and management of demand and supply, carbon reductions by energy savings and renewable energy production, and outreach to society. Todai's current carbon footprint is: 136,000 tons CO_2/year (0.10 ton CO_2/m^2 * year), with electricity as the major CO_2 source (79 %). Emissions from travel, mainly trips to North America and Europe, are 25,000 tons CO_2/year. Electricity consumption was analyzed based on data regarding seasonal and diurnal variation, electricity consumption for the HVAC system, and the number of various pieces of equipment and appliances. The estimated breakdown of electricity use includes: 30 percent for experiment equipment, 18 percent for lighting, and 30–35 percent for heating and cooling. The short-term target is to reduce carbon emissions due to non-experiment electricity use by 15 percent (based on 2006 levels) by 2012, via monitoring and giving feedback to users, encouraging replacement of facilities and equipment with energy- and cost-saving alternatives, and promoting large-scale purchases for cost reduction. A plan for a 50 percent reduction by 2030 focuses on high CO_2 reductions compared to investment costs and low payback time compared to life time as decision criteria. Chosen measures are: replacing boilers (from oil to gas) and heat supply units, changing lamps to energy-saving types, purchasing more energy-efficient heat-pump air conditioners, and replacing refrigerators. Longterm actions include improving building energy performance and implementing renewable energy sources. Todai is also involved in the collaborative planning of Kashiwa town in which their new campus is located, with outreach to the local government, private sector, and other universities.

Ann Kildahl, Sustainability Manager, The University of Hong Kong
Sustainability @ HKU

The University of Hong Kong (HKU) is the oldest and largest university in Hong Kong. An original signatory to the Talloires Declaration, HKU began to focus on energy management in 1991, published its first Sustainability Report in 2002, and published a Sustainability Goals and Policy document in 2005. Through conservation efforts, the university's electricity consumption has decreased 7 percent since 2002, despite significant increases in student numbers, staff numbers, and research output over this period. A carbon footprint analysis included in HKU's most recent Sustainability Report, comprised of electricity and gas consumption and ground transportation, showed a decrease in the years 2002–2007.

Despite these successes, the university faces major challenges in its efforts to operate a sustainable campus, further improve environmental performance, and reduce greenhouse gas emissions. The efforts to improve conservation and resource use at the university's main campus continues with a focus on energy management, waste management, and water conservation, complemented by a range of student activities and community-focused efforts. The major challenges include the need for large-scale retrofitting of the university's existing stock of approximately 100 buildings, a major campus expansion and severe regional pollution.

HKU has embarked on a major facilities expansion, the Centennial Campus – a multi-building complex designed to accommodate an expected increase of approximately 40 percent in the student body and 200 new faculty appointments by 2011–2012, when the university system in Hong Kong completes a transition from a three-year to a four-year tertiary curriculum. Although there are few planners, engineers, and architects in Hong Kong trained in environmentally sensitive design, sustainability has been a core principle of the Centennial Campus planning process from the project's conceptual phase to the architectural competition, design development, and construction tendering. The campus air conditioning systems and façade designs will contribute to better energy efficiency; renewable energy technologies such as micro wind turbines, PV cells, a waste food digester for generating bio-gas, and systems to harness energy from the free-fall motion of elevators and water will decrease resource use, while providing better comfort and indoor air quality. Wherever possible, designs developed at HKU will be utilized. Monitors throughout the Centennial Campus will provide real-time displays of energy use, emissions, and so forth, enhancing the facilities' demonstration and teaching value.

As the university works to improve its sustainability efforts across a range of areas, the challenges posed by the physical expansion are compounded by severe environmental degradation in the city and surrounding region. Air and water pollution in Hong Kong, which borders China's Guangdong Province, have increased dramatically with the region's rapid growth, and greenhouse gas emissions continue to increase, as the city and neighboring localities rely almost entirely on fossil fuels for their energy needs.

Participant comment

Philippe Vollichard
Sustainability Manager, EPF Lausanne (Switzerland)

"In the past few years we have calculated the environmental footprint of our university and formulated the goals we want to obtain within ten to twenty years. These are not yet quantitative, but we know where we will be going: electricity, travelling, and building efficiency are the major challenges we face on our campus. Our heating is already very efficient thanks to an innovative heating system developed thirty years ago using the warmth of the nearby Lac Leman. So this problem is already solved. I have observed that the students are one of the most important driving forces and able to speed up the sustainable development of our institution. I therefore think that we must increase student participation in the efforts for 'greening' our campus. Related to this topic, the International Sustainable Campus Network offers me a great opportunity to learn from my colleagues and take back some innovative ideas which I would like to adapt and implement at EPF Lausanne."

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SHARED EXPLORATION: WORKING GROUP SESSIONS

A key feature of the conference was the strong focus on interactive work, enabling in-depth discussions and shared exploration between all participants. At its first conference in 2007, the ISCN had formed four working groups that covered key aspects of knowledge exchange on campus sustainability. All participants of the 2008 conference were invited to participate in extensive discussions facilitated by those working group teams. Over the three conference days, each working group convened for a total of more than five hours of group work: considering inputs drafted by the group members and co-chairs before the meeting or presented in the group sessions; discussing current plans for shared research and dissemination; and planning next steps for each group. Furthermore, each group presented key findings from its deliberations in a shared plenary discussion.

The following summaries from the four ISCN working groups condense the results of this in-depth process for each working group. In addition, presentations made during this process can be found on the ISCN website (www.international-sustainable-campus-network.org) under Conferences/Zurich, April 2008/Working Group Workshop Presentations.

Working Group I: International Sustainable Campus Award Program

WG I conference discussion facilitators:
    Claude Siegenthaler (Hosei University)
    Bernd Kasemir (sustainserv)

Discussant presentations:
    Martha Thorne (Pritzker Architecture Prize)
    Peter James (HEEPI Network)

Background

The Award Program Working Group was established to develop and implement a prize or a series of prizes that would strengthen the international sustainable campus movement in general, while specifically adding momentum to the work carried out across all working groups of the ISCN. During its first year, the working group prepared several documents that served as a starting point for the discussions in Zurich, namely a report mapping the landscape of networks and awards that could fertilize our work and an input paper drafting key elements of an ISCN award.

The goal of the meeting in Zurich was to review the current outline of aims, scope, structures, and procedures and to set the strategic directions within which a schedule and plan for implementation shall be adopted following the conference.

Discussions and Findings

The discussions first focused on the general outline of the Award Program, and its aims and intended impacts. It was confirmed that the program should strengthen the visibility of initiatives and their leaders, support a spirit of competitiveness among universities, and trigger emulation of good practice. As an addition to the draft input documents, it was agreed to explicitly include corporate campuses in the scheme.

The first day's discussant, Martha Thorne, Executive Director of the Pritzker Architecture Prize, inspired the group with her references to several world-renowned architectural awards from which the International Sustainable Campus Award could take inspiration. She suggested the idea that the case studies resulting from the award submissions could not only be shared through a clearinghouse but also be actively used for supporting educational activities (the concept of an "ISCN Award Academy" came up in the discussion on this idea). She also sensitized the group to the challenges of an international award, namely the resource intensity of the evaluation process.

At the end of the first meeting, the discussion confirmed three tracks of awards that will be developed as viable approaches since they are both attractive for all stakeholders and in line with the overall goals of the ISCN. Those three tracks are:
- a **Leadership Award** (taking an organizational focus to honour outstanding sustainable campus programs and their leaders),
- a **Construction Excellence Award** (taking a technical focus to honour outstanding planning and engineering achievements against a global technical benchmark), and
- a Participative Campus Sustainability Award or **"Campus as Living Laboratory Award"** (focusing on best practices in connecting education and research with sustainable

campus operations); this would target initiatives involving administrations, faculty, students, and campus stakeholders).

The group members agreed that the framework for the award will be developed along those three tracks, keeping in mind that each track will have to be reviewed in discussions with prospective partners and sponsors. In other words: the program may have to focus on the implementation of one or two of those.

A controversial but insightful issue that was raised was the possible impacts of giving an award to an individual versus an organization, and whether giving the award to an organization might honour the collective spirit of sustainability work more effectively. It was also found that the award framework should be carefully designed to fuel further activities by the awarded institutions rather than providing reasons for passivity. Whereas these issues apply to all three tracks, there were also some important issues identified relating to specific award tracks: for example, the Leadership and Campus as Living Laboratory awards must be careful to not overlook initiatives that are operating under constrained organizational and financial conditions. In other words, the impact of an initiative should be judged in light of its available resources. On the other hand, such an approach could be difficult to carry out for cases where there are some absolute technical benchmarks, such as for the Construction Excellence award, that would need to be considered in setting criteria for a recipient. In this case, it could be wise to differentiate by award subcategories – for example, awards differentiated by scope of the project or special mentions for specific technical aspects of a project, such as lighting.

The second day's discussant, Peter James from HEEPI and the Green Gowns Award, gave a very insightful presentation about the evolution of this longstanding and effective UK-based sustainability award, and the ensuing discussions unfolded against this excellent and practical reference point. By addressing the idea of regionalization and the concept of the ISCN developing into a network of networks, Peter sparked a lively discussion. This conversation led to a consensus among the group that, in its final stage, the awards should be connected to pre-existing or to-be-founded regional networks, and linked with key players on the international level, such as the U.S. Green Building Council, and governmental bodies, such as the EU Commission shaping the legal frameworks for Sustainable Campus issues. More controversial was the question of how to get started with such a network of networks award program as there might be political sensitivities to be aware of when approaching regional networks or pre-existing regional award programs. A short and practical mapping of existing networks, including particular persons at those networks we already have contact with or want to contact in the future, would be a helpful next step.

Summary and Next Steps

Throughout the working group's discussions over the three days, the group members shared their needs as change agents for the Sustainable Campus movement within their academic and corporate contexts. Most members have been personally involved in different award programs, resulting in a discussion rich with technical expertise relevant to the further development of the ISCN awards. Continuing this exchange will allow the working group to gain inspiration and learn from other campus based sustainability awards – particularly the Green Gowns Award – but also to address more general questions of running successful awards programs, like the Pritzker Prize or the Philips Innovation Award.

Members agreed that this expertise should be made available through an updated version of the Overview of Awards, which was originally prepared by sustainserv, and then be opened up to the other ISCN members and beyond. Concerning the Overview of Relevant Networks, contained in the same draft report, it was agreed that this should be developed further into a strategic network map for planned ISCN regional outreach. To gain a better understanding of this landscape and to develop a practical approach, the group agreed to look into potential collaborations with regional networks in a more systematic way with a SWOT analysis, developing criteria to evaluate the pros and cons of different strategies for regionalization.

The main next steps to get the awards program launched are continuing to explore sponsorship opportunities and further developing the draft awards blueprint (particularly the judging criteria and awards process) in collaboration with potential sponsors and potential members of the first year's jury. Although strongly hinged on the success of the ongoing search for sponsorship, the group hopes to have a first award cycle completed by the next ISCN annual conference in April 2009.

Summary prepared by Claude Siegenthaler and Bernd Kasemir
WG I discussion participants at Zurich meeting: Job Daams, Peter James, Kolja Jeuthe, Bernd Kasemir, Ann Kildahl, Andrea Prokova, Melanie Ann Bech-Pedersen, Klaus Rick, Claude Siegenthaler, Thomas Streiff, Martha Thorne, Philippe Vollichard

Participant comment

**Martha Thorne, Executive Director
Pritzker Architecture Prize**

"The creation of an award for sustainable campuses can be a wonderful opportunity to present the topic to a broad public. It is however important that both experts and the general public can understand and respect the intention of the prize. It must be clear what the prize is for. Is it, for example, for buildings that have zero energy consumption, is it for buildings that use recycled materials, or is it for the social aspects of building? The criteria must be something that resonates with the everyday lives of the people, so that they will anticipate the next prize and ask what the benchmark is and what the prize says. This will be a challenge, because sustainability itself is a much more complex issue than architecture."

Working Group II: Standards and Best Practice – ISCN Charter and Sustainable Campus Design Guidelines

WG II conference discussion facilitators:
    Kerstin Hoeger (ETH Zurich)
    Joseph P. Mullinix (National University of Singapore)

Discussant presentations:
    Niko Heeren (ETH Zurich)
    Ariane König (University of Luxembourg)
    René Sigg (Intep)
    Markus Kunz (Zurich University of Applied Sciences)

Objectives

The objectives of the two-part workshop by Working Group II was to discuss examples of efforts to develop standards and best practice for sustainability on campus, as well as to review a proposal for an ISCN Charter and Sustainable Campus Design Guidelines. At the first part of the workshop, four participants gave presentations with background information on their relevant activities to set the stage for the subsequent discussions on the charter and guidelines during the second part of the workshop.

Part I: Presentations on Standards and Best Practice

The first workshop started with a presentation by Ariane König from the University of Luxembourg on the development of a university position statement on energy and water efficiency in buildings in the new "Cité des Sciences." This "Cité" is to be constructed on a sixty-five hectare industrial wasteland in the South of Luxembourg by 2014. The statement serves to define evaluation criteria for all future architectural competitions for the site. It provides a definition for natural comfort regarding the integrated environmental design of buildings, sets limits for energy consumption, recommends measures for water management, and prescribes eco-evaluation of building materials. The statement also improves the procedures for project selection, planning, construction, and building operation, through the targeted involvement of university experts[1].

Niko Heeren, representing the Chair of Sustainable Construction at ETH Zurich, compared three different assessment tools for sustainable construction projects: SNARC ("Systematik zur Beurteilung der Nachhaltigkeit von Architekturprojekten für den Bereich Umwelt") developed by the Zurich University of Applied Sciences, SIA 112/1 (Swiss recommendations for sustainable building construction), and the SB Tool developed by contributors from more than twenty different countries (iiSBE)[2]. The SNARC was designed as a tool for the early planning phase or architectural competitions. The SIA 112/1 is more widely applicable, but doesn't intend to provide concrete indicators and benchmarks to evaluate or compare projects. The SB Tool was designed in a collaborative research project to build on and improve existing national assessment tools. Its advantages include high flexibility of application, options for number- and text-based benchmarks, custom weightings, early insertion of local criteria and/or language, modularity in scope, as well as relative and absolute result outputs.

Markus Kunz, from the Institute of Sustainable Development at the Zurich University of Applied Sciences, presented indicators for sustainable campus life from a social science perspective based on the ETH Science City project. The indicator system includes indices for campus happiness, cohabitation, knowledge generation, campus mobility, campus ecological behavior, and an ecological campus footprint[3].

René Sigg from Intep in Zurich presented the proposal for the ISCN Charter and Sustainable Campus Design Guidelines, which had been prepared for the conference by Roland Stulz (Novatlantis), René Sigg and Birgit Hattenkofer (Intep), Kerstin Hoeger (ETHZ), and Wilhelm Natrup (Ernst Basler + Partner). This document served as the basis for the discussion on further elaborating the charter and guidelines in Part II of the workshop.

[1] http://www.international-sustainable-campus-network.org/fileadmin/downloads/WG_II_Ariane_Koenig_ISCN-UL-Position.pdf

[2] http://www.international-sustainable-campus-network.org/fileadmin/downloads/WG_II_Niko_Heeren_SBTool.pdf

[3] http://www.international-sustainable-campus-network.org/fileadmin/downloads/WG_II_Markus_Kunz_ISCN.pdf

Part II: Proposal for an ISCN Charter and Sustainable Campus Design Guidelines

The proposed charter aims to commit institutions of higher education to implementing sustainable campus design guidelines within their campus developments. It is structured in three parts: (1) the charter directed toward the president of the respective university; (2) guidelines to be used by the sustainable management board; and (3) diverse criteria to be adapted and agreed upon by the campus project management group. The charter is conceived as a general commitment for universities to follow sustainability principles regarding the development of their campuses. The nine proposed principles address topics of scale, (urban) design quality, participation, education, handling of resources, life cycle costs, process, change management, and monitoring and controlling. This combination of sustainability principles is unique and promises to be effective as it extends prevailing standards, which mainly focus on environmental and technical aspects at a building scale, to include factors influencing community development, spatial organization, social behavior, and governance also at an urban and planning scale. The proposed outline for guidelines comprises a more detailed description of the principles and recommendations for implementation. A supporting document for the guidelines suggests elaborating themes, standards, and criteria for target setting and monitoring in accordance with existing sustainability tools and standards such as LEED, MINERGIE, and CASBEE. The charter and guidelines are intended to complement and draw together all measures toward related goals that universities may already have adopted before signing.

Discussion points of WG II can be grouped under four headings:

1) **General purpose and motivation for signatories:** Why should the ISCN put forward such a charter? What are the drivers that would make universities adopt it, and what aspects of the current proposal might cause apprehension?

2) **Structure:** Is the proposed three-tiered structure with charter, guidelines, and criteria for target setting useful?

3) **Content of each of the three proposed elements:** Is it possible to formulate documents of global validity? Should the guidelines be designed as a template document for adaptation by each university to its individual context?

4) **Next steps:** Action points and timelines.

1. Purpose

The group agreed that such a charter requires careful wording and positioning to be perceived as legitimate and to bring added value to universities across the globe. It also agreed that the main purpose of the charter is to serve as an institutional anchor for a lasting commitment of a university to be a leader in promoting principles and measures for sustainable development in society through research, teaching, and on-campus demonstration. A network of mutual accountability will be created by those organizations that support the charter. Support of the charter (by signature or through an official statement) could be linked to ISCN membership. Another alternative would be to draft a generic charter in the form of a template document that can be adapted by each ISCN member to its local context.

Moreover, the group put forth that the charter should build on the unique strengths of the ISCN in order to enhance its legitimacy and benefits. First, the global reach and strong regional representation within the ISCN constitute a cross-national platform to identify and learn from commonalities and differences in implementing principles of sustainable development in universities. It thus provides a unique platform for exchange of methods for success and failure. Second, once there is more clarity on the role industry will play in the ISCN, this could be reflected in the charter and in benefits universities may gain from signature. Third, current and future efforts to improve the institutional frame of the ISCN through links to GULF or other international organizations promise to enhance the legitimacy of the charter. Possible links to be explored include related activities of the OECD, the Global Reporting Initiative (GRI), and the Shanghai Declaration (which is to emerge from the World Expo in 2010). The group agreed that these distinctive features of the ISCN will allow the development of a charter that adds value to a university's individual efforts to contribute to sustainable development.

The group also agreed that the guidelines serve to elaborate the principles of sustainable campus development described in the charter, and to provide helpful tools for their implementation within a university's administration and faculties. In order to go beyond mere guidelines, the separate document on targets allows for setting concrete and technically detailed goals.

2. Structure

The three-tiered structure of having a general charter, more detailed guidelines, and an additional supporting document on specific criteria for target setting or regional documents with actual targets was deemed very helpful, in particular as it leaves open the possibility of preparing regional guidelines and/or targets that are adapted to diverse climatic and cultural circumstances of different global regions. The charter, guidelines, and criteria for target setting should also build on the work of the other ISCN Working Groups.

3. Content

One question raised was whether the documents can have global validity or whether the guidelines and criteria for targets should be adapted to local or regional contexts. This question contributes to shaping our next steps as set out in point 4 below.

The proposed sustainability principles require modification, in particular if they should be signed by university presidents. More general principles, such as respect of re-

sources, economic efficiency, process management, and organizational learning, may be more suitable. Additionally, governance was deemed an important aspect of the charter and the guidelines could place more emphasis on process-related aspects such as designing, learning, transforming, and allocation of responsibilities. The guidelines could also be tied to the establishment of a web-based information repository with links to all participating universities, including an open platform for the exchange of experiences made by the awards program applicants. The content of this web-based tool and the guidelines could be structured similarly to facilitate cross-reference.

4. Next Steps

The results from the working group discussions will be considered in the future elaboration of the charter and guidelines. The group agreed to split into two teams to draft two regional versions: an Asian and a European one. Joseph P. Mullinix (National University of Singapore) will lead the Asian and Ariane König (University of Luxembourg) the European team. Both teams will refine the charter proposed by Stulz et al. (2008) and adapt it to their regional context. Besides the original authors of the charter, the following participants expressed interest in contributing: Fredrik Gröndahl (Royal Institute of Technology KTH), Keisuke Hanaki (University of Tokyo), Hongwei Tan (Tongji University, Shanghai), Markus Kunz (ZHAW), Pavel Obrdlik (Brno University of Technology), and Michael Salzmann (ETHZ). Based on the two regional versions, the group will analyze similarities and differences as well integrate materials from other ISCN working groups that were developed in the meantime. This analysis will be the basis for a first draft of a global version, and recommendations on which aspects, if any, may best be treated in regionally distinct documents. The two regional drafts, the comparative analysis of both drafts, and the global version is planned to be a basis for the next WG II workshop at the third ISCN conference in spring/summer of 2009. Decisions on the exact number, nature, and function of our products (regional, global, template) will be taken based on joint discussion at the next ISCN conference. The long-term goal is to have final versions of the charter, guidelines, and criteria for target setting and perhaps even a first working version of the repository by March 2010, in time for an ISCN event at the Shanghai Expo.

References

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Höger, Kerstin, Kees Christiaanse, Campus and the City: Urban Design for the Knowledge Society. Zurich: gta Verlag, 2007.

Summary prepared by Kerstin Hoeger, Ariane König, and Andrea Meier

WG II discussion participants at Zurich meeting:

Maik Adomssent, Robert Bland, Dominik Brem, Fredrik Gröndahl, Keisuke Hanaki, Niko Heeren, Kerstin Hoeger, Ariane König, Markus Kunz, Sandy Lynam, Andrea Meier, Joseph P. Mullinix, Pavel Obrdlík, Poulsen Tomas Refslund, Michael Salzmann, René Sigg, Roland Stulz, Hongwei Tan

Participant comment

Ariane König
University of Luxembourg

"As a university we must act forward-looking, because we are in charge of educating the next generation of citizens including their leaders. This is why following the idea of sustainability is so attractive and important at the same time. It makes us consider the needs of the next generation in terms of natural resources but also in terms of social structures such as processes of participation. Developing a sustainable campus offers a wonderful opportunity to meet our responsibilities toward the next generations. Besides that, it is an opportunity to bridge the gaps between fragmented scientific disciplines by integrating knowledge from technical, natural, and social sciences into a practical project. If you can make sustainability concrete enough, so that it is more than a buzz-word, it is enormously stimulating and I think it is one of the most powerful tools to get the light back into people's eyes. Because we all share the responsibilities you can get students, staff, and faculty all together engaged and you can get enthusiastic projects going that can change the university campus and the country. I think that the International Sustainable Campus Network can be a powerful tool for saving resources along this way. I would like to see, for example, template guidelines develop out of the work of ISCN, which then can be adapted to the local context, rather than every university developing their own guidelines. This would save so much time and money for everybody."

Working Group III: Financial and Decision Mechanisms for Sustainable Campus Development

WG III conference discussion facilitators:
   Erika Meins (CCRS University Zurich)
   Steve Mital (University of Oregon)

Discussant presentations:
   Martine Bintner (University of Brussels)
   Ulrik Abild (Danish University and Property)
   Dongbin Huang and Dieter Genske (ETH Zurich)

Goal of the Working Group

Sustainable campus development and operation is still often hampered by inflexible budgeting processes and/or unfavorable organizational constellations during the decision-making process. This working group aims to identify financial and decision-making mechanisms that contribute to and, inversely, hinder sustainable campus development. As a starting point, our work focuses on construction/renovation and operation of buildings. The focus may be widened to other aspects of sustainable campus at a later stage. The specific aim is to identify financial and decision making mechanisms that systematically facilitate or hinder construction and operation of sustainable buildings on campuses.

Preliminary Results

Due to the complexity of the issue, the first task of the working group is related to framing our research question. In addition to focusing on the specific issue of building as a starting point for the more general topic of campus sustainability, we also resolved to consider particularly environmental and social impacts of buildings – two parts of the "triple bottom line," as we refer to it – while not including economic impacts at this point.

Potentially relevant financial and decision-making mechanisms were identified and summarized in an input working paper for our sessions. For the working paper we conducted six small case studies. The case studies each seek to describe how a particular decision to build came about and to explore which financial and decision-making mechanisms are relevant for explaining the degree of sustainability of the outcome. The results suggest that the design of financial mechanisms and the decision process can impact the sustainability of a construction or renovation project in a variety of ways. Based on the insights from the case studies we derived ten working hypotheses that attempt to pinpoint financial and decision mechanisms that facilitate sustainability of campus buildings in a more generic way. Members of the working group presented several further cases during the sessions. Ulrik Abdil presented the case of the University of Southern Denmark's planned Kolding Campus. The focus of Martine Bintener's presentation was on explaining the financial and decision mechanisms for building projects at the Université Libre of Brussels and analyzing how sustainability criteria are integrated. Dieter Genske presented a project for financing renewable energies, and Dongbin Huang presented a proposal for a theoretical framework. Based on these inputs and the discussions of the participants' experiences, we derived a revised set of fifteen working hypotheses.

Facilitating factors within the decision-making process:

1) Clear institutional commitment to sustainability with explicit sustainability goals (laws, university internal requirements, requirements of donor) leads to clear decisions.
2) Key players within the decision process are personally committed to sustainability.
3) (Future) occupants are involved in the decision and construction process and expect benefits to flow from sustainable design.

4) A basic awareness of life-cycle costing and social benfits of sustainable building exists among all involved actors.
5) A strategic environmental assessment is conducted at each stage of the decision process.
6) The decision process is short, transparent, and clearly defined and its results are widely perceived to be stable.
7) The decision process is not a political process (i.e., politicians are not involved in the process and there is no public vote).
8) Cultural awareness and concern over climate change translates to some perceived pressure to satisfy public opinion.

Facilitating financial mechanisms:

9) Organizations covering operational and maintenance costs are strongly involved in the decision process to ensure that life-cycle costing and other concerns are addressed.
10) Organizations covering operational and maintenance costs are strongly involved in the construction process (sometimes "small" decisions during construction can have significant impact).
11) Investment and operational costs are linked such that the organization that made the investment decisions is rewarded/punished with the associated operational costs.
12) Explicit financial incentives for energy saving are in place (as long as the organization benefiting from the incentive is involved in the decision-making process).
13) A fund to pay the premium on green features (including plug loads) and to absorb unexpected risks exists.
14) The operational budget includes funds to train building managers in the operation of new equipment.
15) There is freedom to seek funding from external institutions for high return on investment projects.

Further insights from the sessions relate to the notion of sustainability. As to be expected, the "degree of sustainability" is still a fairly vague concept and difficult to measure, though standards such as LEED or MINERGIE make rough comparisons possible.

Next Steps

The case studies and discussions within the group have given us an overview of possible financial and decision mechanisms that influence the sustainability of buildings on university campuses. Based on the new insights from the working group sessions we will revise the working paper. Additional case studies and an overview of facilitating financial mechanisms in the UK will be added and the original working hypotheses will be revised.

The next step will consist of testing the hypotheses by applying them to more universities. Specifically, we propose to gather data among the ISCN universities with the means of an **online survey.** The analyses of the survey should enable us to validate our selection of facilitating mechanisms and to differentiate them. We also hope that the survey will contribute to a more precise concept of campus building sustainability. We propose the following structure for the questionnaire:

1) Provide general description of the university (country, private/public ownership, etc.)
2) Provide brief description of the decision process generally followed for building (involved actors, responsibilities, etc.), and of related funding (fixed vs. flexible building budget, etc.)
3) Select the most recently completed building and validate the hypotheses.
4) Prioritize the hypotheses.
5) Subjectively evaluate the building's sustainability.
6) Evaluate the building's sustainability based on selected criteria.

We hope to finish the analysis of the survey data by Winter 2008/2009 and have a report for the next ISCN conference in spring/summer of 2009. Steps in the further future may include collecting examples of actual tools, such as the revolving loan fund, and making them available to others (a kind of "tool box"), broadening our focus to other aspects of campus sustainability (not just building), or looking at the extent to which sustainable construction on campus contributes to sustainable construction elsewhere in the region.

Summary prepared by Erika Meins and Steve Mital
WG III discussion participants at Zurich meeting:
Ulrik Abild, Christian Ballhausen, Miquel Barcelo, Martine Bintner, Rod Bishop, Ajay Burlingham-Böhr, Dieter Genske, Hanaki Keisuke, Dongbin Huang, Erika Meins, Steve Mital, Michael Salzmann, Stephan Tanner

Participant comment

Keisuke Hanaki
Department of Urban Engineering, The University of Tokyo (Japan)

"The International Sustainable Campus Network gives me the opportunity to learn from the good practice around the world and to utilize the existing know-how in my country. At home we have still a lot of obstacles to overcome. One thing is, that not all of the faculty members know about the importance of developing the campus toward sustainability. We would like to get as many people as possible together to create activity for the sustainable campus. Participating in the International Sustainable Campus Network helps us show our colleagues in Japan that sustainability is an international issue. It is an issue which has gained high importance worldwide."

Working Group IV: Sustainability Change Management

WG IV conference discussion facilitators:
   Per Lundquist (KTH Stockholm)
   Katja Brundiers (seed sustainability)

Discussant presentations:
   Juan Reiser (Pontificia Universidad Catòlica del Péru)
   Clemens Mader (University of Graz)
   Catharina Erlich (KTH Stockholm)
   Eddi Omrcen (University of Gothenburg)
   Niels Roth (oikos, University St. Gallen)
   **Marc Vogt and Martin Räber (EarthEffect, ETH Zurich)**

Goal of the Workshop

Working Group IV explored the role of pilot projects that target sustainability on campus, and examined how adequate they are as tools to facilitate overall sustainability change management (SCM). The pilot projects could be characterized as follows:

• They focus on real-world sustainability issues, aiming to make the campus a more sustainable place.
• They combine research on and education for sustainability as issues are investigated by multidisciplinary teams (e.g., including students, faculty, and staff).
• They implement and realize solutions directly on campus.

The workshop featured four good-practice examples that functioned as cornerstones. The experience of these four different universities in advancing SCM served as a basis for discussing to which extent this kind of pilot project could be harnessed as a catalyst for SCM in general. Two analytical tools ("lenses") were provided to structure the analysis:

a) Basic layout for system analysis:
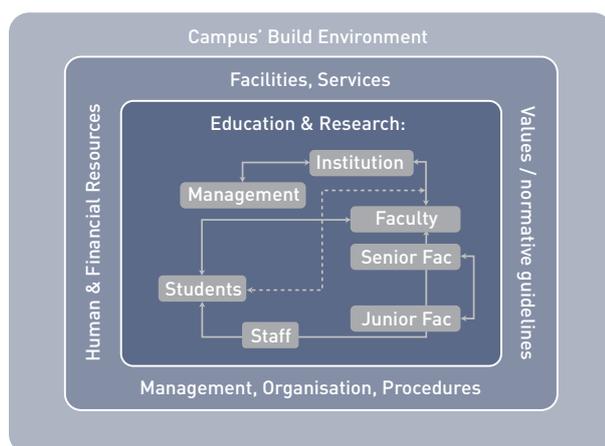
b) Key aspects for SCM

The overall objective was to learn from these international experiences and to develop a more general strategy for utilizing the catalytic potential of this kind of pilot project to induce SCM at any university.

Case Studies Presented

Professor Juan Reiser from Pontificia Universidad Catòlica del Péru presented his project "Measuring the Footprint of a Campus: Multidisciplinary Approach for University Social Responsibility." His presentation was from his **perspective of a manager** (Departamento Académico de Responsabilidad Social) and at the same time his **role of a professor,** who carries out the project as a student research project while also involving other stakeholders (namely the Global Footprint Network). Thus, by measuring the **footprint of a campus** using a multidisciplinary approach, his experience offers a specific perspective on the notion of "University Social Responsibility." In addition, the research results should subsequently be compared to the declared mission statement objectives regarding sustainable development of the university.

Clemens Mader, a researcher at the Regional Centre of Expertise on Education for Sustainable Development Graz-Styria, based at University of Graz, Austria, reflected on the sustainability process that the University of Graz has been conducting for almost two decades ("The Sustainability Process at the University of Graz: Students' Actions and Influence in Integrating Sustainability"). The sustainability process was originally launched by students, who worked jointly with the university's management and have successfully integrated sustainability into various areas of the university's agenda.

Catharina Erlich from the Royal Institute of Technology (KTH), Sweden, is a **teacher and researcher.** Her presentation on "Sustainable Education in Sustainable Energy Systems" featured an innovative pedagogical approach that successfully implements core aspects of the concept of education for sustainable development. Her story was motivated by an **external institutional change:** the introduction of the Bologna agreement on education in 2003 opened the avenue for changing the shape of education in engineering and for introducing new courses that implement functional and systemic knowledge, teamwork, and project management.

Eddi Omrcen served as **environmental manager** for the Environmental Unit of the University of Gothenburg. Thus, his story about "Developing a Certified Environmental Management System as a Driving Force for the Sustainable University" introduced the **perspective of management.** The Environmental Unit successfully developed a certified environmental management system and realized its potential as a driving force to advance the transition toward university sustainability. What started as an environmental management system is today a comprehensive sustainability management concept that integrates a broad spectrum of aspects, including research, teaching, and curricula as core elements, promotes cooperation with society, and supports daily campus operations.

Finally, the workshop featured the achievements of our future leaders – the students. **oikos** International is a **student organization** championing campus sustainability and education for sustainable development for the past two decades. **EarthEffect,** a new spin-off created by two former ETH Zurich students, implements **EcoWorks,** a repository

and matching platform for environmental projects. Eco-Works provides students, professors, and other staff an opportunity to develop their own project ideas regarding reduction of climate gas emissions at ETH Zurich. EcoWorks is also a sociotechnical process that facilitates knowledge creation and yields creative and sustainable solutions for the campus and the private sector.

Discussions

The aim of the first part of the discussion was to develop elements of a generic strategy based on the case study experiences. The working group was split into four smaller groups, each taking a real or fictitious example of a pilot project at one of the participant's respective universities and working through the following analytical elements: (1) **Content** (How to identify, prioritize, and measure important issues?); (2) **Organization** (How to involve the relevant stakeholders?); (3) **Process management** (How to manage such a project?); and (4) **Implementation** (What is needed for preparation and implementation?). The main outcomes are available on the Zurich conference section of the ISCN website.

Building on these findings regarding the richness and diversity of sustainability change processes, the group discussed how these insights could be further utilized and shared with others. Discussion focused on: (1) **How do methods and measurements lead to implementation, the institutionalization of processes, or even standards (at one university)?** To answer this question it would be helpful to share stories that shed light on mistakes and misleading practices as well as inform in more detail what happened after a successful inventory and Material Flow Analysis (MFA). (2) **How can we learn from the different methods applied?** To allow for more substantial exchange, comparison, and further (joint) development of methods, each method should be specified by its owner. Adding to this, it would be helpful to establish a database (matrix) with essential themes of SCM and the experience of universities in dealing with these themes. This could be an extension of an existing database (e.g., www.greencampus.harvard.edu/theresource).

Finally, the group identified insights valuable for the ISCN. First, as we learn the most from our mistakes, sharing not only the good experiences, but also our failures, challenges, and unmet difficulties is critical. Second, a sus-

tainable campus is not limited to green buildings – it positively impacts mindsets. Thus, going beyond discussions of eco-efficiency toward a more comprehensive notion of a sustainable campus is required. Therefore, keeping in mind that sustainability is about limits, interdependence, fundamentals, and equity, we should also question our notions of growth. To support this quest, it might be enriching to involve nonscientific experts from outside the university. Finally, we must liberate the power of positive thinking and stop reiterating that sustainability is difficult, expensive, and fuzzy. Lacking valid alternatives to sustainable development, it just has to be done. Let's go for it and be passionate about it.

Next Steps planned to tackle open challenges

The group will continue the discussion by means of organizing virtual meetings and a guest lecture series on SCM hosted by the Royal Institute of Technology (KTH). These guest lectures include speakers from outside the campus and even the academic realm. Topics cover a wide range including lectures on the role of Education for Sustainable Development or pedagogical formats.

In order to move from incremental (eco-efficiency-based) to real systemic change management for sustainability, the group needs to foster its understanding of a campus as a system. Therefore the group expects to draft proposals for graduate students to conduct their master theses on topics such as actor-analysis, cross-perception-analysis, or system-analysis, shedding light on framing conditions of decision-making processes regarding sustainability. Students conducting such research projects could visit the universities of the ISCN and conduct interviews with relevant experts on site. Finally, the group intends to draft a research paper on the insights and outcomes of the workshop.

Summary prepared by Katja Brundiers and Per Lundquist (KTH Stockholm)

WG IV discussion participants at Zurich meeting: Katja Brundiers, Michael Crowley, Catharina Erlich, Didac Ferrer Balas, Styger Guido, Hartmann, Steven Lanou, Per Lundqvist, Clemens Mader, Eddi Omrcen, Martin Räber, Claus Ravn, Juan Reiser, Niels Rot, Michèle Häusler, Katharina Meyer, Evelyn Underwood, Marc Vogt, Ajay Burlingham-Böhr, Laura Machackova Henderson, Robert Bland.

Participant comment

Steve Lanou
Deputy Director for Sustainability, Environmental Programs Office, MIT (USA)

"The manifestation of climate change has really galvanized the MIT community. Reducing our energy footprint has emerged as the environmental priority of our time. This is a terrific opportunity for students, staff, and faculty to engage. Together we can find solutions for how to face the challenge at our own campus and then roll up the sleeves and do something in our community to make a difference. But also for educational purposes, a sustainable campus offers a lot of opportunities: For instance we found out that the energy technology emerging from the research at MIT is mainly related to energy supply. On the other hand, the sustainable development of the campus is an excellent opportunity to learn about demand-side management. For making all the knowledge concentrated at our institution accessible to the broad public, MIT is developing a program called "Open Course Ware." We are designing courses related to the sustainable campus, which will also be published in this program. In my eyes, with a tool like this, the International Sustainable Campus Network can play a significant role in disseminating the experiences which its members have made worldwide.

FURTHER PERSPECTIVES AND OUTLOOK

Inputs on Master Planning, Private Sector Campus Sustainability, and Long-Term Campus Development

Throughout the second conference day, a number of special presentations highlighted issues that complemented the working group discussions. **Kees Christiaanse,** who created the master plan for the Science City campus, gave a lunch presentation during the participants' visit to the newest sustainable construction project at that campus, ETH Zurich's e-Science Lab. He spoke about the interfaces between master planning with particular sustainable construction projects and with sustainability aspects of daily life on campus.

Following that day's working group sessions, **Randy Knaflic** from Google gave a plenary presentation on the importance Google places on campus sustainability as part of its focus on workplace quality. He highlighted the role of sustainable campus programs as a motivating factor in private sector recruitment, and discussed numerous examples of Google initiatives. These initiatives contribute to social aspects of workplace sustainability, including user participation in design deliberations, as well as environmental aspects of Google's sites around the world, including the company's recently relocated and enlarged offices in Zurich.

Hans B. Püttgen from EPF Lausanne gave the main conference dinner speech. During this talk, he painted a longterm view of the role of campuses in society, and, in that context, discussed campus sustainability and the further development of the ISCN. Püttgen reminded the participants that higher education in its earliest years made do without distinct campuses; instead, getting a higher education required the student to travel and visit famous teachers one by one. When campus developments sprung up as more formal colleges were founded, the campus became not only a functional space for education and intellectual exploration, but also a visible statement of the early universities' visions for a community of open exchange of ideas and shared responsibility for enlightening society. The current initiatives toward campus sustainability fit well into this tradition. As universities and knowledge-intensive companies take on sustainable development as a key societal goal, their own campuses will become both an important test-bed for new ideas and technologies and a powerful instrument in inspiring users of the campus and society at large in the common quest for a sustainable future.

The ISCN has an important role to play in facilitating a truly global knowledge exchange regarding the successes and unsolved challenges of sustainable campus initiatives. To make sure that this knowledge exchange is not limited to "full-time sustainable campus professionals" – that is,

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Participant comment

Kees Christiaanse
Institute for Urban Design, ETH Zurich (Switzerland)

"If one is able to influence the behavior of the people on campus, potential for great impact exists. In this context, efficient master planning is in the midst of sustainable technology and urban design. But sustainability is more than just technology. It is about efficiency, effortlessness, self-evidence and it is just simply in the nature of things. When you do it right, you do not necessarily need to show what you have done. Sustainability is always there and it appears in the everyday life of the people on campus. But because sustainability is still something new and many people will want to come and learn from the example, we have developed a special sign system for the campus at ETH Hönggerberg, which will guide you around and indicate the most important sites which make it a sustainable campus."
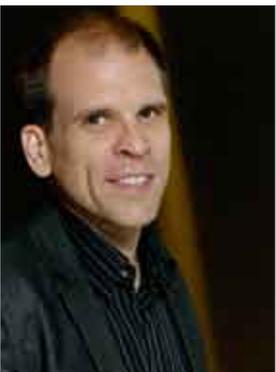
Participant comment

Randy Knaflic
Staffing Manager Europe, Middle East, and Africa, Google

"It is part of the philosophy of Google to treat the green aspects with great attention. For instance, last year we offered all our employees in Europe a bike for free and in the United States we offer significant rebates for Hybrid Cars. When we built our campus in Zurich, which hosts presently about 400 employees, we used state-of-the-art technology for heating and cooling, sun shutters and ventilation which help us save a lot of energy. And we constantly try to increase the efficiency of our data centers. Following the idea of sustainability is part of being a responsible company. Of course a sustainable campus helps you control the costs for energy. But we do a lot of initiatives which have no direct effect on the costs. Thereby we can show that we are acting responsibly toward both the environment and our employees."

those who have a key responsibility on these issues but need to work with others who are responsible for the more general strategic development of the organization – the ISCN should develop robust links to other networks that encompass such a broader scope. One key forum in this spirit is GULF, the Global University Leaders Forum, a subprogram of the World Economic Forum (WEF), at which presidents and leaders of universities and other organizations of research and higher education in both developed and developing countries discuss the future role of universities. Based on its role with GULF, EPF Lausanne is willing to explore how the ISCN and GULF could be linked in a way that would create optimal synergies. This would clearly respect continued access of all interested organizations to the ISCN, regardless of whether they are GULF members themselves.

Regional Networks and the International Dimension

Uwe Schneidewind, President, University of Oldenburg
Clemens Mader, University of Graz
Maik Adomßent, Leuphana University of Lüneburg

The European COPERNICUS Alliance could become a key European element in the development of the ISCN as a "network of networks." The different phases of COPERNICUS' evolution could also provide valuable lessons about what may or may not work in building a multinational network on campus sustainability.

The aims of the initiative's early phase, termed COPERNICUS as an abbreviation for "CO-operation Programme in Europe for Research on Nature and Industry through Coordinated University Studies," included exchanging and enhancing knowledge regarding education for sustainable development between European higher education and student organizations. COPERNICUS soon became one of the most influential programs on campus sustainability in Europe. The CRE-COPERNICUS Charta was developed in 1993, and by 2006, there were 326 signatories. The network has influenced many European strategy discussions including, for example, helping to shape the Bologna Reform on higher education in Europe.

Despite its early successes, COPERNICUS has been through a difficult period in the past few years. The large number of Charta signatories was not matched by the number of universities that remained actively engaged in the program's work, dwindling to not much more than ten active members at one point. One factor contributing to these problems was a rather narrow approach focused mostly on action and policy questions; a more integrated approach combining those elements with teaching and research issues would probably have generated more sustained momentum. Another lesson that led to the current effort to relaunch the initiative as the "COPERNICUS Alliance" was the need for an active "hub" or headquarters to support the network's activities, but one that would encourage ongoing participation from many members and not just the hub team alone. In effect, the program learned that a successful network in this field needs to avoid becoming either just a "message board" for members to post notes or a centrally managed project that stifles network members' own initiatives. A successful network, particularly one focused on a complex issue such as sustainability integration in higher

Hans B. Püttgen, Director of EPF Lausanne's Energy Center, delivering the main dinner speech

education, needs a host team that keeps the network exchange going and that supports engaged network partners in developing their own contributions to the group's agenda and activities.

The ongoing relaunch of the COPERNICUS Alliance as a European Network on Higher Education for Sustainable Development involved a consultation meeting held in January 2008 in Prague, and will include a sequence of communication events culminating in the launch conference scheduled for autumn 2009. A link between the COPERNICUS Alliance and UN programs will be secured by the participation of key COPERNICUS Alliance actors in the RCE structure (the Regional Centres of Expertise on Education for Sustainable Development, networks of regional institutions supporting the goals of the UN Decade of Education for Sustainable Development). In addition, a tie between the COPERNICUS Alliance and the international community on campus sustainability can be built by the ISCN's development as a network of networks, with the COPERNICUS Alliance becoming a key regional partner in Europe for the ISCN and its activities.

Outlook

While key elements of what the ISCN members will try to accomplish throughout the coming year are captured in the working groups' discussion summaries above, additional ideas on deepening future collaborations were discussed on the final day. These discussions were moderated by **Bernd Kasemir,** ISCN program manager, and **Claude Siegenthaler** from Hosei University, co-chair of Working Group I. Those discussions were structured as a brainstorming session loosely connected to the topics of the preceding working group discussions.

Regarding the idea of an ISCN Charter and Guidelines discussed in Working Group II, it was suggested that we proceed carefully, building on existing charters and regional guidelines and staying at a level strategic enough to be relevant for university presidents rather than getting lost in the details. With this perspective, Charter and Guidelines should be high-level principles and should also be sensitive to concerns of different regions. The ISCN should clearly not replace regional networks, but add value as a global umbrella or warehouse for knowledge exchange. It was seen as one of ISCN's strengths that not only the best but also the "worst" practices can be shared, allowing all of us to benefit from knowing about problems our colleagues have run into.

It could further help all members if a small set of slides (e.g., around ten) were developed that we all could use in introducing the topic of campus sustainability and the ISCN's mission to audiences within our own organizations, as well as in external presentations. The ISCN could also provide a hub that allows members to access the policies and procedures regarding campus sustainability of different universities in a region, and that offers contact links for information requests between universities. In addition, corporate involvement could be a positive and powerful addition to the network composition, allowing different types of partners to learn from each other and also broadening the group of sponsors contributing financial resources to the network. Such an inclusion of corporate partners should be accompanied by the development of conflict-of-interest guidelines, as has often been helpful in setting up private-academic partnerships with mutual benefit.

The shared exploration of decision and financial mechanisms in Working Group III will continue with an update of the working paper produced for the conference, and the finalization of a questionnaire that is focused on identifying the four to five tools for implementing campus sustainability that have been found to be most effective across a large number of organizations. All ISCN participants are warmly invited to participate in the survey, which is planned for this fall, and to invite other colleagues to take part as well. And the common exploration on change management within Working Group IV will add an interface for enhanced data and case study exchange, including a virtual space meeting organized by KTH Stockholm on education for sustainable development that will feature corporate guest speakers. Shared projects will include master's theses hosted by network member universities, benefiting from access to knowledge available at multiple ISCN member organizations.

This session closed with sharing ideas on how the knowledge compiled and generated in Working Groups II to IV might best be linked to the International Sustainable Campus Awards program developed by Working Group I. It was confirmed that the general directions of the awards program are well aligned with the overall values and targets of the ISCN. On the level of criteria and process, the questions and suggestions coming up during the plenary mirrored similar discussions of the WG I members, demonstrating that also on a technical level the awards program work is on track. Concretely, the following suggestions were made:

- Amend the award motivations so that they include aspects similar to the high school sports model, where not only the best players but also the most improved players are recognized. For the sustainable campus projects considered, not only the "best" overall performance might warrant an award, but also the "most improved," considering initial and framework conditions.
- On the question of recognizing individual leaders or recognizing groups, it was felt that awarding a prize to a "community" or organization might achieve more than giving it to an individual. This was based on the argument that effective leadership, particularly regarding sustainability, intrinsically involves community. Procedural best practice should be part of the considerations, and it could be considered how the leaders participate in and contribute to regional networks.
- On the possible award streams, whose realization depends on funding opportunities, it was confirmed that the "Building Excellence" award should be grounded in the guidelines developed by Working Group II, and that documentation of successful entries should include photographs like the ones in the honors list of the Pritzker Prize, to support public awareness raising; that the "Leadership" award should integrate the findings of Working Group III on effective decision and financial mechanisms; and that the "Campus as Living Laboratory Award" should build upon insights from Working Group IV on change management processes that integrate research, education, and the physical campus.

The plenary members supported the idea to envision a first award ceremony for the next ISCN Conference in 2009 in order to keep the momentum, add weight to the technical expertise, and create visibility for excellence and the ISCN itself.

Closing Remarks
Roland Stulz, Director, Novatlantis

At the end of this second annual conference of the International Sustainable Campus Network, Roland Stulz thanked all participants for contributing to an in-depth knowledge exchange and also for a pleasant time spent with colleagues during the previous three days. Both are relevant, as one aim of the network is for us, as sustainable campus professionals from around the world, to get to know each other better, and to gain insights into each others' daily successes and challenges, as well as our long-term visions. Concerning knowledge exchange and shared exploration, this second conference was able to build on the substantive groundwork laid by the ISCN's four working groups, whose in-depth discussions occupied a large part of the conference agenda. Stulz thanked the working group's co-chairs that led the network's first-year efforts, the co-chairs that have committed to taking the working group's agendas forward in the coming year, the group discussion facilitators, and the conference participants. The success of the ISCN as an international network of knowledge exchange and shared exploration on campus sustainability rests on the active participation of network members from around the world. The intense discussions at this second ISCN annual meeting confirm that our common network is off to a promising start.

For the coming year, the consolidation of our explorations in the working groups is important, as is the effort to extend our network in two dimensions. The first dimension is to invite corporations to join the network. Particularly corporations that operate research campuses, or have expertise pertinent to campus sustainability, could gain valuable insights from academic ISCN members just as these can learn valuable lessons from such corporate partners. In addition, corporate sponsorship of the ISCN's activities would be very welcome and an important contribution to the longterm financial basis of the ISCN, which needs to be strengthened. **All ISCN members are encouraged to let the Novatlantis team know about potential sponsors for the ISCN.** The second dimension of extending the ISCN's links is to consolidate our role in existing networks, in a manner that allows us to add value rather than duplicate ongoing activities. This applies to national or regional networks focused on sustainable campus issues, on whose experiences we should build and for whom we can provide a global knowledge exchange by becoming a "network of networks." It also applies to global networks that are devoted to strategic discussions between organizations of research and higher education, which the ISCN can support by providing access to in-depth knowledge on the global state-of-the-art concerning campus sustainability. These include, for example, the Global University Leaders Forum (GULF), which has been developed in the context of the World Economic Forum (WEF). Such links providing synergies and mutual benefits will be explored, while open access to the ISCN for all interested organizations will be safeguarded.

Roland Stulz concluded with wishing all participants a safe trip home, and expressing his eagerness to meet again soon in virtual discussions and in person at the **2009 ISCN Annual Conference,** which EPFL has offered to host next year in Lausanne, Switzerland.

Participants of the Second Annual ISCN Conference , April 23–25, 2008

Appendix: Conference Participants

Last Name	First Name	Organization	Title and/or organizational unit
Abild	Ulrik	Ministry of Science, Technology and Innovation	Danish University & Property Agency
Adomßent	Maik	University of Lüneburg	Institute for Sustainability and Environmental Communication
Ballhausen	Christian	Copenhagen University	Project Manager
Barcelo	Miquel	Polytechnic University of Catalonia	Vice-Rector for Sustainable Development
Bech-Pedersen	Melanie Ann	Copenhagen University	Project Manager, Sustainability
Bintner	Martine	Université libre de Bruxelles	Environmental Coordinator
Bishop	Rod	International Institute of Tropical Agriculture (IITA)	Site Services Officer
Bland	Robert	Cornell University	Director Environmental Compliance and Sustainability
Brem	Dominik	ETH Zurich	Environmental Protection Officer
Brundiers	Katja	Seed Sustainability	Consultant
Burlingham-Böhr	Ajay	Anglia Ruskin University	Director of IT Strategy and Systems
Carabias-Hütter	Vincente	ZHAW	Institute for Sustainable Development
Christiaanse	Kees	ETH Zurich	Professor at Institute for Urban Design
Crowley	Michael	Harvard University	Assistant Director Harvard Green Campus Initiative
Daams	Job	Philips AG Lighting	Business Excellence Manager
Erlich	Catharina	Royal Institute of Technology (KTH), Stockholm	Department of Energy Technology
Ferrer Balas	Didac	Polytechnic University of Catalonia	Technical Director
Genske	Dieter D.	ETH Zurich	Institute of Environmental Decisions
Gröndahl	Fredrik	Royal Institute of Technology (KTH), Stockholm	Professor, Industrial Ecology
Styger	Guido	Geneva University of Art and Design	Designer HES
Haering	Barbara	ETH Board	Board Member
Hanaki	Keisuke	University of Tokyo	Prof at the Department of Urban Engineering
Hartmann		International Institute of Tropical Agriculture (IITA)	Director General
Heeren	Niko	ETH Zurich	Sustainable Construction Group
Henderson	Laura	Charles University, Prague	Environment centre
Höger	Kerstin	ETH Zurich	Institute for Urban Design
Tan	Hongwei	Tongji University, Shanghai	Professor at the HVAC Research Institute
Huang	Dong-Bin	ETH Zurich	Institute of Environmental Decisions
Inderbitzin	Roger	Amstein + Walthert AG	Service group banks and insurances
Iritani	Kazunori	University of Tokyo	Department of Urban Engineering
Isler	Ulrich	ETH Zurich	Head of Construction Division
James	Peter	HEEPI Network	Co-Director
Jeuthe	Kolja	BHP - Brugger and Partners Ltd.	Consultant
Kasemir *	Bernd	sustainserv, Inc.	Director
Kildahl	Ann	University of Hong Kong	Sustainability Manager
Knaflic	Randy	Google	Staffing Manager Europe, Middle East and Africa
König	Ariane	University of Luxembourg	Conseillère du Recteur
Kunz	Markus	ZHAW	Professor at the Institute for Sustainable Development
Lanou	Steven	Massachusetts Institute of Technology (MIT)	Deputy Director Sustainability, Environmental Programs Office
Lütolf	Tanja	Novatlantis	Project Manager
Lundqvist	Per	Royal Institute of Technology (KTH), Stockholm	Vice Dean Education, Industrial Engineering and Management
Lynam	Sandy	Anglia Ruskin University	Director of Estates and Facilities
Mader	Clemens	University of Graz	RCE Graz-Styria
Martinaglia *	Marco	Novatlantis	Project Coordinator Communications
Meier	Andrea	Ernst Basler + Partner AG	Geographer
Meins	Erika	University of Zurich	Center for Corporate Responsibility and Sustainability (CCRS)
Mital	Steve	University of Oregon	Sustainability Director
Mullinix	Joseph P.	National University of Singapore	Deputy President, Administration
Obrdlík	Pavel	Brno University of Technology	Green University Project Manager
Omrcen	Eddi	University of Gothenburg	Environmental Manager
Poulsen	Tomas R.	Copenhagen University	Project Manager Sustainable Campus
Prokova	Andrea	Charles University, Prague	Student
Püttgen	Hans-Björn	EPF Lausanne	Professor, Director of the Energy Center
Räber	Martin	EarthEffect	Partner
Ravn	Claus	University of Copenhagen	Team Leader Sustainable Campus
Reiser	Juan	Pontificia Universidad Catolica del Peru	Professor, Department of Social Responsibility
Rick	Klaus	FH Trier	Professor, Business Economics
Roth	Niels	University of St. Gallen & oikos St. Gallen	Student
Salzmann	Michael	ETH Zurich	Project Director Science City

* Conference Organization Team

Last Name	First Name	Organization	Title and/or organizational unit
Schneidewind	Uwe	University of Oldenburg	President; Board Copernicus Alliance
Siegenthaler	Claude	Hosei University, Tokyo	Director European Research Center
Sigg	René	Intep	Managing Director
Streiff	Thomas	BHP – Brugger and Partners Ltd.	Partner
Stulz	Roland	Novatlantis	Director
Tanner	Stephan	Intep ATA	Principal
Thorne	Martha	The Pritzker Architecture Prize	Executive Director
Underwood	Evelyn	ETH Zurich	Alliance for Global Sustainability
Vogt	Marc	EarthEffect	Partner
Vollichard	Phillippe	EPF Lausanne	Sustainability Manager

* Conference Organization Team

Contacts

For organizational questions:
Novatlantis – sustainability at the ETH Domain
c/o EAWAG, Ueberlandstrasse 133
8600 Duebendorf, Switzerland
info@novatlantis.ch
T. +41-44-3059455
F. +41-44-3059214
www.novatlantis.ch

For content and programmatic questions:
Bernd Kasemir
ISCN program manager
c/o sustainserv, Inc.
Ten Post Office Square, 8th floor
Boston, MA 02109, USA
bernd.kasemir@sustainserv.com
T. +1-617-692 2945
F. +1-617-692 2901

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