International Sustainable Campus Network: Best Practices—Future Challenges

Conference Summary

Network Kick-off Meeting, April 25–27, 2007, Zurich, Switzerland

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Introduction and Summary

Decision makers and experts from twenty-five universities on five continents gathered in Zurich to discuss sustainable practices in the design and management of their own campuses, and to lay the foundation for the International Sustainable Campus Network.

A host committed to campus sustainability

The meeting was organized by “Novatlantis – sustainability at the ETH Domain,” and hosted by ETH Zurich on its Hönggerberg Campus. This campus is currently being rebuilt as “Science City” with a focus on integrating sustainability concepts throughout the planning and construction process. Roland Stulz, Director of Novatlantis, emphasized the significance of exemplary projects on university campuses as “landmarks” that are blazing the trail toward a “2000-watt society”—a society in which all global citizens will have equitable access to energy resources. And according to Gerhard Schmitt, Vice President for Planning and Logistics at ETH Zurich, “the significance of sustainability will increase in the near future. Even today, leading universities can no longer afford to disregard the imperative of sustainability when planning and building.”

Taking a broad view of an urgent topic

Experts estimate that more than 500 new university campuses are currently being planned around the world. Many other facilities will have to expand considerably in the next few years in order to be able to accommodate increasing numbers of students and researchers. At other locations, rehabilitation and upgrading will be on the agenda in the near future. With such pressure for growth, optimizing international experiences concerning opportunities and challenges for campus sustainability is a pressing issue. The participants discussed a broad suite of topics that need to be considered in supporting sustainability on campus. This included reducing greenhouse gas emissions, sustainable planning and construction, energy efficiency, renewable energy sources, and environmentally friendly mobility. In addition, awareness-raising, procurement, financing, and synergies between planning, research, and teaching were considered important cross-cutting issues.

Student participation seen as essential

The importance of student involvement in promoting sustainability on campus came up throughout the different topical sessions. “Students at Berkeley are known for their commitment level and already, many years ago, they demanded increased sustainability on campus,” explained Richard Denton, Vice Chancellor of the University of California at Berkeley. Nagai Susumu, Vice President of Hosei University in Tokyo, stressed that today’s students can be the ambassadors for sustainability in overall society and that therefore it is important for them “to experience specific implementations of sustainability first-hand at their university. That is why we offer students the opportunity to work as auditors in our environmental management systems.” Further examples of student participation include part-time jobs at the Harvard Green Campus Initiative and the involvement of students in the participatory process carried out to support overall planning for the Science City Campus of ETH Zurich.

Challenges and opportunities of the international dimension

In addition to best practices at particular university campuses, highlighted in the plenary and panel presentations and discussions summarized in this brief conference report, various participants highlighted, in particular, the need for and the challenges of a global network. “Transfer is necessary to make the findings in developed countries available for use at any given campus in a developing country,” emphasized Roland Brouwer of the Ministry of Education and Culture in Mozambique. “What is possible at a large campus with tens of thousands of users is not necessarily possible at a small campus used by just a few thousand people,” said Paul MacArtain of the Dundalk Institute of Technology in Ireland. Joseph Mullinix, Deputy President of the National University of Singapore, indicated that local climate is an important factor: “In buildings, in particular, there are many technologies that work quite well in temperate climates but that cannot be used at all under tropical or arid conditions.”
The International Sustainable Campus Network

One of the key tasks of the International Sustainable Campus Network will be to determine more closely which goals, technologies, and processes for ensuring campus sustainability can work in a similar manner at different leading academic institutions around the world, and which need more adaptation to local conditions. For this, an iterative process involving conferences, guidelines, and landmarks and awards is foreseen.

The International Sustainable Campus Network will provide its members a platform for reporting on their experiences at regularly scheduled conferences. An Internet-accessible database is also planned, to make the knowledge on hand available to interested parties around the world. Conference participants further agreed to push for the development of guidelines and standards that take different international experiences into account. Competitions and awards will serve as incentives for the realization of “landmark” projects that can inspire efforts at other institutions. In order to establish a solid basis for exchanging best practices, one of the network’s working groups will focus on making indicators of campus sustainability more transparent and comparable on the international level.

Participant comment

Leith Sharp, Director of the Harvard Green Campus Initiative, Harvard University (USA)

“In the future, the sustainable campus will be the rule and no longer an exception. When traveling the road toward that objective, it is important to professionally design the processes of change and innovation. Then those affected will not perceive changes as threatening. Instead they are thrilling, challenging, and rewarding for the people involved. The International Sustainable Campus Network can contribute to this by offering a discussion platform to exchange experiences. I hope that we will succeed in bringing together, from all around the world, leaders of similar tiers: experts in financing, building services, mobility, planning, etc. In so doing we can get a hold on the crucial challenges we encounter along the path toward a sustainable campus.”
Goals of the Network

> Enable a global dialogue between pioneers of campus sustainability
> Initiate a global experience exchange on sustainable campus initiatives
> Develop a knowledge management system that leverages the experiences gained by the network partners
Welcome and Opening Addresses

A guided tour of the Science City area by Gerhard Schmitt, Vice President for Planning and Logistics of ETH Zurich, and the conference opening dinner the previous night gave the participants a chance to meet or reconnect. The following day the main conference started with welcome addresses from the City of Zurich, Zurich University, and Novatlantis.

Kathrin Martelli, City Councilor, City of Zurich
Welcome Address

Kathrin Martelli welcomed the participants warmly in the name of the whole city council. The city of Zurich has repeatedly received the top ranking in international ratings of quality of life, and a program of the city council focused on sustainable urban development is geared toward making sure that this quality is protected in the long term. A partnership between the city of Zurich and Novatlantis is a key component of this program. The city council thanks the participants for coming to Zurich. As Science City is an important project for Zurich, a successful International Sustainable Campus Network is very much in the interest of the city with regard to sustainable development.

Hans Weder, President of University of Zurich
Plenary Opening

Almost twenty years after the Brundtland report, we are still trying to come to terms with the limits that sustainability demands. However, these limits are not absolute, but depend on the present state of technology and social organization. In its striving toward sustainability, the University of Zurich wants to focus on the sustainable development of its “city campus,” and beyond that on developing long-term strategies, providing the basis for practical decisions, and equipping young people with the tools to make a contribution to sustainable development. The University of Zurich is very interested in an international exchange on these issues, and welcomes development of the planned network.

Roland Stulz, Director of Novatlantis – Sustainability at the ETH domain
Sustainable Campus Network: Sharing Best Practice

Universities have to fulfill a leadership role. Their task is to develop the knowledge, technologies, and tools needed to make a sustainable future possible. The goal of the International Sustainable Campus Network is to pool knowledge and best practice on this at a global level. Novatlantis is very grateful to all participants of this kick-off meeting for contributing to this endeavor. To make sure that we “practice what we preach” as a network, all greenhouse gas emissions triggered by this conference, including participants’ travel, are offset with a contribution to the “myclimate” organization, supporting climate protection projects with corresponding emission reductions.

Participant comment

Bart Meehan, Associate Director, Facilities and Services, Australian National University, Canberra (Australia)

“Growth is the biggest challenge for our campus. More buildings, more students, and more research entail greater demands for energy, resources, and water—and generate more waste, as well. For years now we have been working on optimizing our operations. Now we must instigate a culture change that goes hand in hand with a change in individual behavior. To give you one example: In one of our research centers we encouraged people to switch off all unnecessary lighting and to shut down equipment instead of leaving it in stand-by mode. Without spending a single cent, we reduced electricity consumption by eight percent. The Sustainable Campus Network has a good chance to be successful since the differences between institutions are not so great. Consequently, we can all learn a lot from each other.”
Plenary Presentations

Experiences and best practices on campus sustainability at ETH Zurich, Harvard, and Stanford were presented in the first part of the plenary session. This was complemented by brief, strategic remarks on regional networks, sustainable university management, financing campus sustainability, and international knowledge exchange by presenters from the U.K., Japan, the U.S.A., and Mozambique. Short summaries of these presentations follow. The full presentations are available at the International Sustainable Campus Network website.

Michael Salzmann, Project Director Science City, ETH Zurich
ETH Zurich, Science City: Sustainable Process for Enhancing Quality of Life on Campus

The ETH Zurich campus “Hönggerberg,” which hosted this conference, is currently being reconceptualized and remodeled under the programmatic name “Science City.” A central goal is to achieve a tighter integration of the university campus with the surrounding neighborhoods of the city of Zurich. In Science City, research, culture, and leisure activities will interact. For this, a transparent planning process involving more than 500 participants—from community groups to student representatives—has elucidated the needs of the different user and stakeholder groups. This has been complemented by an international competition for sustainability at Science City. The collaboration within the International Sustainable Campus Network launched at this meeting will be another important element in the interactive planning activities for Science City. Sustainability at the Science City campus, to be used by approximately 10,000 people, will include improved access to public transit, increasing the rate of users that travel to and from Science City by public transportation, even above the current 92%; will cut total CO₂ emissions at Science City in half, despite strong growth of floor space, by using a dynamic ground energy storage system; and will determine the framework for this US$400 million remodeling and expansion in a way that integrated sustainability tightly, including a master plan for the Sustainable Development of Science City, to be developed by the end of 2007.

Leith Sharp, Director of the Harvard Green Campus Initiative, Harvard University
The Harvard Green Campus Initiative: Business Development and Organizational Transformation for Campus Sustainability

A team of nineteen full-time staff and forty part-time students runs the Harvard Green Campus Initiative. In addition to the Director, a co-Chair from faculty (Harvard School of Public Health) and one from administration (Facilities and Environmental Services) set strategy in a way that makes the Initiative effective within the highly decentralized system of Harvard University. An example of a key element found to be effective for organizational change is the targeted leverage of different leadership contributions: grassroots engagement builds confidence and capacity, top-level leadership contributes the needed authority, while upper-middle management engagement (2nd level deans, associate VPs, chief financial officers, chief operation officers) is essential to make change “sustainable” by achieving system integration. Three case studies illustrated the work of the Harvard Green Campus Initiative: green buildings, finance and accounting, and master planning. Concerning green buildings at Harvard, registered LEED projects have grown steadily from three in 2002 to twenty-one foreseen for 2007. Green building services provided by the Initiative range from establishing team commitments to LEED certification project management and a systematic web-based documentation of best practices and lessons learned. Topics addressed range from energy and water-use reductions to daylight access and view enhancement. Continuous improvement with LEED submittals as a primary resource is a priority at the current stage of the program. In addition to green buildings, case studies have looked at finance and accounting for sustainability, where systematic integration of lifecycle costing in the decision-making process is seen as the next step, and master planning for sustainability, where the planning process for the new major campus in Allston will integrate the campus-wide sustainability principles systematically. This integration will range from establishing goals all the way through setting targets, developing strategies, selecting technologies, and monitoring progress based on benchmarks.
Therese Brekke, Sustainability Program Manager, Stanford University
Sustainability at Stanford: Meeting the Challenges of Growth

At Stanford, sustainability on campus is targeted despite the expected growth in population and in the share of energy-intensive buildings. Momentum for sustainability at Stanford comes from the quest for competitive advantage, a strong culture of innovation, the goal of cost savings, and legal mandates. Fundamental sustainable building principles are to not build unless you have to, to build well, and to conserve what you have. Rigorous capital planning processes include space planning guidelines that ensure equity, consistency, efficiency, and flexibility by matching, for example, office layouts and intended functions in an optimal fashion. Stanford’s guidelines for sustainable buildings cover site design and planning, energy use, water management, materials, resources and waste, and indoor air quality. One examples is the Environment and Energy Building, which features focused measures on natural light and ventilation, heat recovery, and photovoltaic solar energy use. Expected benefits include 44% lower energy costs. “Cash for kilowatt hours” has been developed to set the right incentives. A reduction in budgeted electricity use is rewarded by increased funds for program activities. Currently, a Greenhouse Gas Inventory is underway at Stanford. Next steps will include developing corresponding targets and strategies. Open questions include whether to produce renewable energy on campus or to engage in carbon offset projects, and how to move solutions still in the lab or classroom into practical application.

Peter Hopkinson, UK Higher Education Environmental Performance Improvement (HEEPI)
Strategic Perspectives from a Regional Network

HEEPI is a UK-wide program conducted in partnership with key higher education bodies from estates, environmental managers, finance directors, university leaders, and academics. HEEPI identifies, disseminates, and promotes best sustainability practices throughout the UK in a number of key areas, from construction to energy and water management to curriculum development and leadership. The national “Green Gowns” award has recognized and publicized outstanding examples over the last four years, also resulting in 200 available case studies. Energy performance benchmarks for buildings and travel data for higher education institutions have been developed. Lessons learned include that institutions and individuals are hungry for good practice and information, that award schemes are very powerful tools for shared learning, and that intra-country institutional rivalry needs careful management in building up constructive collaborations.

Participant comment

Joseph Mullinix, Deputy President (Administration), National University of Singapore

"We are in a phase of substantial expansion, and this will continue through the next few years. We will be building a lot more student housing and research and teaching buildings. Those structures are going to be around for decades. We hope, by participating in the International Sustainable Campus Network, to be able to identify the ‘best practices’ in sustainability. And then we have to find out whether they will work well in a tropical climate. As regards my day-to-day work, I hope that cooperation with the Network will help me find architects, engineers, and planners who can assist me. And I hope that I can profit from the experience of other universities."
Susumu Nagai, Vice President, Hosei University Tokyo
Strategic Aspects of Integrating Sustainability in University Management

Sustainability is relevant both for the academic and the facilities side of universities. Ideally, a sustainable campus program integrates all aspects into a coherent initiative. For example, at Hosei the Green University Initiative targets research and education, as well as environmental management systems. For the former component, faculty members, students, and alumni are the main audiences; for the latter, administrative staff and communities. Together, both components support Hosei’s vision of “Open University 21,” striving “to act as a responsible member of society, addressing the social and environmental challenges of this century by disseminating the knowledge and methods we have accumulated as an academic organization.” This integrative approach to campus sustainability has led to major energy, CO2, and cost reductions, and to educational advances, including the opportunity for students to participate as auditors in the environmental management systems.

Rocky Young, Chancellor, Los Angeles Community College District
Strategic Aspects of Financing Campus Sustainability

Costs can be minimized if sustainability goals are integrated into building designs from day one, rather than as a later add-on. But beyond this, the financial aspects of sustainability must also be looked at in terms of their total impact on the institution. First, for many institutions there is a strict boundary between capital and operating funds. This can hinder sustainable design, but can also promote it. For example, the California Community Colleges have abundant capital funds but scarce operating funds. Green building tends to increase initial capital expenditure but decrease later operating costs. This “washes capital money into operating funds,” and frees up resources for education. Second, campus sustainability should be appreciated for its public relations value, which can be furthered by awards. This supports student enrollment and donations, increasing overall financial resources. And third, advanced facilities should be used in education on sustainability and green technologies. This allows the institution to capture benefits from the expenditures also in the form of additional “instructional equipment.”

Roland Brouwer, Ministry of Science and Technology of Mozambique
Strategic Aspects of International Knowledge Exchange on Campus Sustainability

Sustainable campus design and operation shows some challenges and opportunities that are similar in very different cultural and economic contexts, and others that are specific to the particular situation. For countries like Mozambique, particular factors that shape campus sustainability are environmental (e.g., high temperatures, intense rains, erodible soils, high evaporation, and intense light), and socioeconomic (e.g., cultural attitudes, incidents of theft, availability of skills, material, and equipment, and use-intensity of facilities). A number of design options have been developed and used in the country’s campuses, including utilization of lighter and better insulating hollow bricks or specially adapted systems of natural light use and ventilation. Sustainability education also includes awareness-raising on environmental and health topics, including HIV/AIDS. Higher education institutions in Mozambique have a specific development mission. For this they need to form partnerships with national and international partners, and also with the private sector concerning internships, fundraising, business incubation, and technological innovation.

These plenary presentations served as a starting point for the more interactive discussions in the afternoon’s panel sessions. The morning program was finalized with a visit to the exhibition “Science City” with a lunch presentation by Kes Christiaanse, the architect of the Science City Master Plan.
Panel Presentations and Discussions

Before the background of the plenary presentations, four panel sessions allowed more in-depth discussions on topics of particular relevance to campus sustainability. Each session started with brief presentations on the topic, followed by an open discussion moderated by the panel leader. After the panels, all participants joined a shared discussion in the plenary moderated by Thomas Streiff, BHP. Here, they focused on best cases as well as challenges, priority issues, and solutions, tools, and services that had emerged in the panel discussions.


The following panel presentations started the panel session discussions. They are available at the International Sustainable Campus Network website.

Julie Newman, Director, Yale Office of Sustainability, Yale University (Panel Leader)
Yale’s Greenhouse Gas Reduction Goals and Strategy: Reshaping the Way We Think and Innovate

Alexander Wokaun, Head, General Energy Research Department, Paul Scherrer Institute
Greenhouse Gas Reduction Strategies at the Paul Scherrer Institute

Paul MacArtain, Project Manager, Center for Renewable Energy, Dundalk Institute of Technology
Dundalk Sustainable Energy Zone: A Campus in the Community

Klaus Helling, Manager, Campus Program, Environmental Campus Birkenfeld
Zero-Emission-Campus: Successes and Experiences of the Environmental Campus Birkenfeld

In the discussions at the panel session and the plenary summary, points raised included the following:

Best practices on greenhouse gas reduction strategies include university leaders taking public risks by stating challenging short- and long-term greenhouse gas goals. This can be supported by spelling out the benefits for universities more clearly, both related to cost savings and public relations advantages. Also, committee engagement in an energy task force can help consensus building on reduction strategies and goals. The strong integration of new technologies (e.g., wind, biomass, solar, and geothermal) can make reduction strategies more feasible and more attractive. A commitment to clearly set metrics can help institutions stay the course, and outreach to related community initiatives can support the role of universities as responsible change agents.

Challenges to successfully implementing greenhouse gas reduction strategies include high growth and new construction on many campuses, and the need to reach high standards for renovations. Financial mechanisms often make it difficult to optimize investments and operating costs in a holistic manner, and there often is a divide between “base load” considerations (academic activities, residential, labs) and implication of these for transportation. Behavioral changes are required to achieve challenging goals, and the knowledge base needs to be continuously enlarged. Finally, there is the need to distinguish clearly between institutional goals on the one hand and per capita goals on the other, and a certain willingness to take risks is needed to set meaningful “stretch goals.”

Priority issues that need particular attention include the creation of a common set of metrics and baselines, good coordination of internal initiatives (e.g., decision making on construction and transit), and the successful engagement of top leadership. Also, establishment of suitable financial mechanisms, focused application of new innovative technologies, and integrating new opportunities for research, student engagement, and curriculum development were seen as important.

Solutions, tools, and services that would be helpful for the network to provide include support in setting greenhouse gas goals and targets (institutional and per capita), grounded in better clarified metrics for meaningful comparisons. Also, contributions to the further development of building standards (new construction and renovations) and help with processes to apply new technologies, optimize current systems, and capture waste would be helpful.
Panel Session A2: Campus Master Planning and Public-Private Partnerships

The following panel presentations started the panel session discussions. They are available at the International Sustainable Campus Network website.

**Michael Salzmann, Project Director, Science City, ETH Zurich (Panel Leader)**
Introduction to Panel on Master Planning and Public-Private Partnerships

**Larry Eisenberg, Executive Director, Facilities Planning, Los Angeles Community College District**
The Los Angeles Community College District: Innovation and Integration

**Hans Halvorsen, Manager, Campus Program, University of Copenhagen**
Campus Master Planning and Public-Private Partnership: University of Copenhagen

**Joseph P. Mullinix, Deputy President, Administration, National University of Singapore**
Observations from National University of Singapore

In the discussions at the panel session and the plenary summary, points raised included the following:

**Best practices** discussed included initiatives linking campus master planning to energy concepts for whole regions and areas. A strategic and transparent management of the sustainability process has proven to be crucial. Beyond building energy issues, this process can include, for example, transportation concepts, opportunities for employment training, or furniture concepts (high purchase volumes can be an incentive for manufacturers to change the production process). Also, water conservation and treatment strategies are included in best practice examples of campus master planning.

**Challenges** include the need to secure flexibility and functionality in construction (buildings are often constructed with a lifetime of up to 100 years, but are really useful only for 20 to 25 years in a modern university setting). Furthering relations between campus and city, bringing social and cultural activities on campus, and setting effective economic incentives for sustainable campus master planning are important. In all this, not only similarities between university settings but also differences (e.g., resources, climate, land availability, etc.) need to be considered.

**Priority issues** that need particular attention were seen to include the further development of guidelines and standards, processes for effective renovations and lifecycle management, and good coordination of contractors. Also, the scalability of sustainable master planning guidelines will be a key issue.

**Solutions, tools, and services** that would be helpful for the network to provide include master planning guidelines that do not just optimize components of a campus, but the whole system. This has been achieved at the building level, but not yet effectively for overall master planning. Clear guidelines, particularly on the planning process, would be very valuable.

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**Participant comment**

**Paul MacArtain**, Project Manager, Center for Renewable Energy, Dundalk Institute of Technology (Ireland)

“It was with the construction of a large wind turbine that we laid the foundation stone for our sustainable campus here in Dundalk. We are now seeking knowledge as to how we can further pursue the concept of sustainability and what measures are required in the planning, building, and management of the campus. The International Sustainable Campus Network is an excellent opportunity to acquire the knowledge needed, to contribute our own experiences, and to meet important, competent, and farsighted people in this field.”
Panel Session B1: Locating Drivers for Sustainability in University Management Systems

The following panel presentations started the panel session discussions. They are available at the International Sustainable Campus Network website.

**Claude Siegenthaler, Director HERZ, Hosei University Tokyo (Panel Leader)**
Introduction to Locating Drivers for Sustainability in University Management Systems

**Roger Baud, Executive Director, ETHsustainability**
Sustainability at the ETH Domain and at ETH Zurich

**Juan Reiser, Pontificia Universidad Católica del Perú**
Managing University Social Responsibility (USR)

**Per Lundqvist, Professor of Energy Technology, KTH Stockholm**
A Strategy and an Example to Increase Sustainability at KTH

In the discussions at the panel session and the plenary summary, points raised included the following:

**Best practices** were discussed before the background of **priority issues** seen for drivers of university sustainability, including the following: economic drivers such as lifecycle costing, social drivers such as student empowerment (which challenges faculty and administration), academic drivers such as out-of-the-box coordinated visioning exercises and role modeling. Impact analyses and environmental management systems have been seen to contribute to successful initiatives. And best practice cases integrate the cognitive impact of universities on society as an essential component in their university sustainability drives.

**Challenges** include achieving progress on how to combine technological and social views on sustainable development. It was noted that “generic sustainability courses” that were not integrated well into the particular educational context had often failed.

**Solutions, tools, and services** that would be helpful for the network to provide include exercises in external driver mapping and sharing role models. A key issue seen was support for a closer contextual integration process on sustainable development education. This would be especially timely in view of the Bologna process, which creates a window of opportunity for curriculum change in European universities.

Panel Session B2: Sustainable Mobility on Campus

The following panel presentations started the panel session discussions. They are available at the International Sustainable Campus Network website.

**Hans-Björn Püttgen, Director, Energy Center, EPF Lausanne (Panel Leader)**
Sustainable Mobility on the EPFL campus

**Roberto Battistini, Mobility Manager, Università de Bologna**
Methodologies of Analysis and Actions for Sustainable Mobility

**Eddi Omcren, Environmental Manager, Göteborg University**
Sustainable Communication, Travel and Transportation: Examples from Göteborg University

**Bart Meehan, Associate Director, The Australian National University**
ANUgreen: Corporate Sustainability of the Australian National University
In the discussions at the panel session and the plenary summary, points raised included the following:

**Best practices** discussed included proactive support by top management for sustainable mobility at institutions like ANU or Göteborg University. Specific events, competitions, and promotions, low-cost offer of bicycles, options for telecommuting and car pooling and sharing have all been found to be helpful.

**Challenges** include the fact that the high cost of real estate near campus often force students to move far away, leading to more transportation demand. Teleconferences also have downsides as compared to meetings in person. And as different campuses have different needs, solutions developed for one campus do not always work for others. Overall, the difficulty to get reliable campus mobility information was seen a challenge that should be tackled.

**Priority issues** that need particular attention are enhanced two-way collaborations with local municipal and regional authorities, and mobility solutions for better integration between local communities and campus (e.g., concerts, theatre productions, or exhibitions on campus). The fact that local transportation companies are often de facto monopolies needs to be considered in finding solutions for sustainable mobility on campus.

**Solutions, tools, and services** that would be helpful for the network to provide include better database management (e.g., for parking and car pooling), better systems to monitor behavioral patterns, and processes for better coordination of work and class schedules between institutions relying on the same transportation systems. Also, contributions to the identification of socioeconomic factors influencing driving decisions would be helpful.

The plenary discussion on panel results was closed by a wrap-up statement from Edward Denton, Vice Chancellor of Facilities Services at the University of California, Berkeley. He emphasized that while many detailed challenges and solutions to campus sustainability differ between academic institutions around the globe, there is also a clear similarity of the most important issues. This means that a common experience exchange and shared learning process is feasible, and will be very valuable. In addition, he stressed the importance of student involvement for sustainable campus sustainability programs. The passionate, demanding students at Berkeley are a good example of the driving force that students can be for campus sustainability.

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**Participant comment**

**Hans B. (Teddy) Püttgen**, Director, Energy Center, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

“The question of mobility is highly relevant for universities, as they effectively are small to medium-sized cities. Public transportation or bicycling for students and staff should be promoted whenever possible. When such solutions are not practical, ample parking space around the campus periphery should be provided along with suitable on-campus transportation. Such parking facilities can, in turn, provide opportunities for innovative energy production and/or vehicle recharging technology demonstrations. On campuses, soft mobility solutions, featuring, whenever feasible, high-technology added value or demonstration potential, should be systematically adopted. The particular campus geographical situation and primary mission must be taken into account when considering mobility solutions.”
Sustainability in Practice:
Zero-Energy Building Forum Chriesbach Building

The main conference day was concluded with the conference dinner at Forum Chriesbach, the new headquarters of the ETH Domain’s aquatic research institute Eawag. A welcome by Ulrich Bundi, Eawag, followed by a guided tour, introduced the advanced features of this building that exemplify sustainable construction. Over dinner, Martin Zollinger from the Zurich Cantonal Bank explained the reasons for his bank’s major contribution to sustainable construction at Science City.

Ulrich Bundi, Senior Scientific Counselor, Eawag Aquatic Research

The office and lab building Forum Chriesbach sets new standards for sustainability. Through the use of innovative construction and building technologies, the building is essentially carbon neutral and does not require conventional heating and cooling systems. The result is four times less energy use than that of a typical building with commercial state-of-the art technologies. A sophisticated sanitary system with rainwater flushing and “NoMix” toilets to separate urine for improved wastewater management and for nutrient recycling in agriculture is a practical demonstration of research results from Eawag.

Martin Zollinger, Vice Chairman of the Board, Zurich Cantonal Bank (ZKB)

ZKB is a full-service bank wholly owned by the canton of Zurich, which does not require maximization of returns alone but also contributions by the bank to development of the region. A generous donation by the bank supports the sustainable construction of the new sports center of Science City. This engagement ties in well with the long-standing positioning of ZKB as a supporter of energy efficient construction. The bank earns approximately 50% of its income from the mortgage business, and has established itself as a leader with regard to sustainability here early on, for example with the inception of an ecological mortgage model already in 1992.

Participant comments

Edward Denton, Vice Chancellor, Facilities Services, University of California, Berkeley (USA)

“Every day I find that more and more people are realizing that sustainability is an essential concept for running a campus successfully. Now that we have done our greenhouse gas emission study, sustainability is becoming a matter for the Board. And with that comes increasing funding, making it possible to carry out the required projects. Now we have to tackle the big issues and, at the same time, take some actions that may only have limited practical effect, but that raise awareness among the people on campus as regards the cultural change we are working on.”

Claude Siegenthaler, Associate Professor for Environmental Accounting, Hosei University, Tokyo (Japan)

“Hosei University understands its role to be that of a social entrepreneur who helps, through research and teaching, to move society toward sustainability. A sustainable campus is an essential precondition for living up to this vision. The campus embodies credibility and proves that we have done our homework. I further expect an inspiring effect from the cooperation with the International Sustainable Campus Network. Cooperation with partner universities and applying widely recognized standards will motivate our associates and be a kind of reward for their work.”
Outlook on Network Building

The final conference morning started with remarks by Gerhard Schmitt, Vice President for planning and logistics of the host institution, ETH Zurich, on the progress of launching the International Sustainable Campus Network and on its possible collaboration with the International Alliance of Research Universities (IARU). The remainder of the morning was dedicated to an outlook on collective network-building. This discussion on next steps was moderated by Bernd Kasemir, sustainserv. Main points made, follow-up steps envisioned, and concrete commitments made by participants included that the network will more clearly be called International Sustainable Campus Network to distinguish it from other national and regional networks, with which it will collaborate. Key to its development will be targeted small working groups that develop products and services of common interest. The findings of these working groups will be shared and discussed in the wider network over a common internet portal, in working sessions via telephone or video conferences, and in annual conferences. Working groups with concrete commitments are:

1. **Best practice awards** (inspired by the UK Green Gown Awards for campus sustainability) will lead to the recognition of outstanding sustainable campus initiatives worldwide. At the same time, they will allow the continuous compilation of a library of best practice cases from the award entries. They will also present opportunities for sponsors to clearly communicate their commitment to sustainable campus development. The best practice awards will integrate the other key topics mentioned below in the competitions. The following participants committed to participate in leading this effort:
   - Therese Brekke (Stanford)
   - Tillmann Cosack (Environmental Campus Birkenfeld)
   - Klaus Helling (Environmental Campus Birkenfeld)
   - Peter Hopkinson (HEEPI, UK)
   - Bart Meehan (Australian National University)
   - Julie Newman (Yale)
   - Eddi Omrcen (Göteborg University)
   - Leith Sharp (Harvard)
   - Claude Siegenthaler (Hosei University, Tokyo)

2. Working group(s) on **gap analysis of current best practice, including building standards**, and on gaps in currently available award schemes will support this program. The gap analysis on best practice and standards will provide input into national and regional discussions on the improvement of standards for planning and building. Also, universities interested in peer feedback on campus sustainability programs could be supported. The following participants committed to participate in leading this effort:
   - Austin Andrade (Representative of Angola, at the ETH Zurich)
   - Edward Denton (University of California, Berkeley)
   - Manfred Hegger (Technical University of Darmstadt)
   - Paul MacArtain (Dundalk Institute of Technology)
   - Bart Meehan (Australian National University)
   - Joe Mullinix (National University of Singapore)
   - Odilo Schoch (Schoch Architectural Services)
   - Roland Stulz (Novatlantis)

3. A further group will focus on **financial mechanisms for campus sustainability**. This will include the question of how lifecycle costing can become better integrated into leading institutions’ financial planning, and how universities and departments can be incentivized by being able to capture the financial benefits of sustainable campus planning (instead of those benefits being kept back by the funding agencies). The following participants committed to participate in leading this effort:
Austin Andrade (Representative of Angola, at the ETH Zurich)
Hans-Peter Burkhard (University of Zurich)
Frances Dyke (University of Oregon)
Jacob Hojbjerre (Danish University & Property)
Dong-Bin Huang (ETH Zürich)
Benni Zemann (BFH)
The progress of this group’s work will be shared among others with Leith Sharp (Harvard) and Peter James (HEEPI, UK) who are active on these issues, but want to concentrate on other parts of the network-building for now.

4. Another key point that will be the focus of a working group is change management in universities, including education (curriculum elements) and social impacts. This work will consider synergies between teaching, research, and planning for sustainability. The following participants committed to participate in leading this effort:

- Roger Baud (ETHsustainability)
- Roland Brouwer (Polytechnique Mania, Mozambique)
- Peter Hopkinson (HEEPI, UK)
- Per Lundquist (KTH Stockholm)
- Eddi Omrcen (Göteborg University)
- Juan Reiser (PUC Peru)
- Claude Siegenthaler (Hosei University, Tokyo)

Further issues that will be considered by the network over time, possibly in further working groups and partly as cross-cutting issues across working groups, include:

- Integrating existing building standards into master planning standards
- Process guidelines for sustainable campus planning (including how to create buy-in) in cross-regional and cross-cultural comparisons
- Guidelines for behavioral choices (e.g., including personal CO₂ calculator)
- Sustainable purchasing
- Global applicability of processes and standards (for developing and for developed countries)
- Options for student exchanges with developing country participation

It was agreed that Novatlantis would be in touch with the whole group, and support the information exchange between the working groups.

Participant comment

Gerhard Schmitt, Vice President for Planning and Logistics, ETH Zurich (Switzerland)

“Within the next few years, the Sustainable Campus Network will become the leading global network in its field. Anyone who intends to build a new campus will contact the Network. There will be hundreds of such projects in coming years, especially in the Asian region. We also expect to be contacted by those who need to rehabilitate an existing campus or would like to learn how to integrate these ideas into research and teaching. Having joined forces in the International Alliance of Research Universities (IARU), ten of the world’s leading research universities are also acting as prime movers behind the idea of the sustainable campus.”
## Appendix: Kick-off Meeting Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Institution</th>
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<tr>
<td>Affentranger</td>
<td>Christoph ETH Board, Real Estate</td>
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<tr>
<td>Andersen</td>
<td>Else University of Copenhagen, Project Campus Coordinator</td>
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<td>Andrade</td>
<td>Austin ETH Zürich, Representative of University of Angola</td>
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<td>Baltensberger</td>
<td>Kurt ETH Board</td>
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<td>Battistini</td>
<td>Roberto Università di Bologna, Mobility Manager</td>
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<td>Baud</td>
<td>Roger ETHsustainability, Executive Director</td>
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<tr>
<td>Baumann</td>
<td>Julia EPFL Lausanne, Student</td>
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<td>Bingeli</td>
<td>Marcel sa partners</td>
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<td>Braun*</td>
<td>Sara Seed Sustainability</td>
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<td>Brekke</td>
<td>Therese Stanford University, Sustainability Program Manager</td>
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<td>Brouwer</td>
<td>Roland Ministry of Education and Culture, Mozambique, Coordinator of the Polytechnics Support Unit</td>
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<td>Brundiers</td>
<td>Katja seed sustainability, Director</td>
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<td>Bundi</td>
<td>Ulrich Eawag, Senior Scientific Counselor</td>
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<td>Bürgi</td>
<td>Thomas Thomas Bürki GmbH</td>
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<td>Byrne</td>
<td>Raymond Dundalk Institute of Technology, Centre for Renewable Energy</td>
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<td>Capezzali</td>
<td>Massimiliano EPF Lausanne, Chaire de gestion des systèmes énergétiques</td>
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<td>Carabias-Hütter</td>
<td>Vincente Zürcher Hochschule Winterthur ZHW / ETH Institut für Nachhaltige Entwicklung</td>
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<td>Chevroulet</td>
<td>Tristan Ecole Polytechnique Fédéral de Lausanne, Energy Center</td>
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<td>Christiaanse</td>
<td>Kes ETH Zürich, Chair of Architecture and Urbanism</td>
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<td>Cosack</td>
<td>Tillmann Environmental-Campus Birkenfeld, FH Trier, Manager of Campus Programme</td>
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<td>Denton</td>
<td>Edward University of California, Berkeley, Vice Chancellor Facilities Services</td>
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<td>Dyke</td>
<td>Frances University of Oregon, CFO and Vice President</td>
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<td>Eisenberg</td>
<td>Larry Los Angeles Community College District, Executive Director, Facilities Planning and Development</td>
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<td>Fricker</td>
<td>Jonas Zürcher Hochschule Winterthur ZHW</td>
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<td>Galletti</td>
<td>Anna Università di Bologna, Public Procurement Manager</td>
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<td>Gardner*</td>
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<td>Grau*</td>
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<td>Halvorsen</td>
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<td>Hegger</td>
<td>Manfred Technische Universität Darmstadt, Energy Efficient Building Design Unit</td>
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<td>Klaus Environmental-Campus Birkenfeld, FH Trier, Manager of Campus Programme</td>
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<td>Højbjergre</td>
<td>Jacob Danish University &amp; Property A, Engineer</td>
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<td>Holme Samsøe</td>
<td>Mikala Danish University &amp; Property A, Architect</td>
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<td>Peter HEEPI, Project Co-Director</td>
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<td>Huang</td>
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<td>Isler</td>
<td>Ulrich ETH Real Estate, Head of Department of Building</td>
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<td>Jeuthe*</td>
<td>Kolja BHP - Brugger and Partners Ltd.</td>
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<td>Kasemir*</td>
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<td>Kovári</td>
<td>Thomas feld4 Architektur und Planung</td>
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<td>Küchler*</td>
<td>Anton Journalist</td>
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<td>Kutt*</td>
<td>Miriam Novatlantis</td>
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<td>Larsen Rikke Kirstine</td>
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<td>Luetolf Tanja</td>
<td>Novatlantis, Sustainable Campus Project Coordinator</td>
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<td>Lundqvist Per</td>
<td>KTH Stockholm, Vice-Dean of Education, Department of Energy and Technology</td>
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<td>MacArtain Paul</td>
<td>Dundalk Institute of Technology, Project Manager Centre for Renewable Energy</td>
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<td>Martelli Kathrin</td>
<td>City of Zürich, City Counselor, Head of the Building Department</td>
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<td>Meehan Bart</td>
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<td>Mullinix Joseph P.</td>
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<td>Newman Julie</td>
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<td>Noetzi Daniela</td>
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<td>Reiser Gasser Juan</td>
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<td>Sharp Leith</td>
<td>Harvard University, Director Harvard Green Campus Initiative</td>
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<td>Siegenthaler Claude Patrick</td>
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<td>Tanner Stephan</td>
<td>Integrated Planning LLC Minneapolis, Principal</td>
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<td>von Orelli Lukas</td>
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<td>Weder Hans</td>
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<td>Wokaun Alexander</td>
<td>Paul Scherrer Institut, Head of General Energy Research Department (ENE)</td>
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<td>Wülser Gabriela</td>
<td>ETH Zürich, S-ENETH</td>
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<td>Young Diane</td>
<td>Community College Glendale, California, Professor of Business Administration</td>
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<td>Young Rocky</td>
<td>Los Angeles Community College District, Chancellor</td>
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<td>Zemann Benjamin</td>
<td>Berner Fachhochschule</td>
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<td>Zollinger Martin</td>
<td>Cantonal Bank of Zurich, Vice Chairman of the Board</td>
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* Conference Organization Team
Contact
Tanja Luetolf
Novatlantis – sustainability at the ETH domain
c/o EAWAG, Ueberlandstrasse 133
8600 Duebendorf, Switzerland
luetolf@novatlantis.ch
T. +41-44-3059465 F. +41-44-3059214
www.novatlantis.ch

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