

Sustainable Campus Design Guidelines

ISCN Charter

This ISCN Charter was prepared by participating tertiary institutions during the 2nd International Sustainable Campus Network Conference of April 23rd-April 25th 2008 in Zurich, Switzerland. The ISCN Charter commits institutions of higher education to abide by the following sustainability principles regarding structural developments of their campuses.

Scale

The campus forms the spatial entity of all school sites that are interrelated with their (urban) environment. Apart from existing buildings, all open spaces (both in-between and neighboring the buildings) are part of the campus and are therefore to be included in sustainable considerations.

Design Quality

High quality of architecture and open space design is a prerequisite for the development of a sustainable campus.

Participation

All people active on the campus or involved with the campus development are to be included in the process of a sustainable campus development.

Education

The environmental consciousness of all campus users is to be encouraged through science related learning and practical everyday experience.

Handling of Resources

Utilized construction materials and expendables as well as energy production on the campus fulfill requirements of sustainability and CO₂-neutrality.

Life Cycle Costs

Regard for and knowledge of life cycle costs will play a role within all campus investments.

Process

Sustainability on the campus will be established as a process whose efficiency is devised through appropriate measures implemented by policy makers.

Change Management

Stakeholders are to be involved as early as possible with the change management in order to guarantee acceptance and attitude changes in favor of a sustainable campus development.

Monitoring & Controlling

The sustainability of a campus is a developmental process whose findings must be illustrated, evaluated and controlled.

Zurich, April 2008

Sustainable Campus Design Guidelines

Explanation

Universities are given a leading role in the creation of a sustainable future. For this reason, through a Novatlantis initiative, the 'International Sustainable Campus Network' was founded in April 2007 at ETH Zurich as a consortium of 25 universities from 5 continents. As a result, several initiatives concerning sustainable development of university campuses have been developed.

Goal

The Sustainable Campus Design Guidelines define principles of sustainability, themes/goal-oriented criterias and the course of action; all of which serve as fundamentals for a commitment in regard to a sustainable campus development.

Definition Campus

The definition of campus herein describes the overall facilities of a tertiary institution, meaning the site as well as all installations, buildings and affiliated higher-education institutions. Based on the location of the school, campuses can be categorized as either inner-city or green-field (suburban), as well as concentrated or distributed campuses. Most campuses are either loosely bundled in a main location or merged into concentrated compounds. Universities increasingly consist of several campuses spread within the respective city or region, together building a network of decentralized clusters (distributed campus).

Furthermore, campuses can be classified as follows: mono-cultural (exclusively university and primary facilities such as study and research facilities, libraries, dining halls and sport centers), or mixed-use (additional urban offerings such as restaurants, cafés, retail, housing, kindergartens, conference and cultural features as well as economic utilizations such as spin offs, start ups, businesses or entire technological parks). Whereas American and Asian suburban and urban campuses usually integrate living and urban services, in continental Europe the mono-functional campus remains the dominating form. However, the mono-functionality of urban campuses is compensated by their central location in the middle of the city.

Suburban campuses consist mostly of monolithic mega-structures which are consciously incorporated into nature in order to provide maximal peace and concentration. The separation from the city, considered an advantage in the past, isolates these campuses from urban structures and public impact. It's obvious that this isolation and mono-culture of suburban university campuses creates a disadvantage when compared to urban campuses, additionally lacking sufficient social and urban environments for the contemporary knowledge society. These disadvantages can be balanced through measures such as the improvement of public transport, enhancement of living spaces, community and commercial facilities, as well as structural measures.

The Sustainable Campus Design Guidelines serve as a high quality and trendsetting example for a sustainable development of urban space, independent from the appearance of a tertiary institution.

Content

The `Sustainable Campus Design Guidelines` are comprised of the following components:

ISCN Charter

The charter is a document which certifies that the universities signatories have committed themselves to the principles of a sustainable campus development.

Explanation of the ISCN Charter

The explanation in the report of the ISCN charter serves as a clarification of the charter.

Guidelines

The guidelines provide the framework and process of a sustainable campus development, independent from individual geographic and socio-cultural situations.

Target Agreements

The target agreements define the guidelines in both form and content, creating a mutual understanding of the target agreements between all involved planners. Local conditions are taken into consideration concerning the implementation of the goals.

About Us

Authors: Roland Stulz (novatlantis), René Sigg (Intep), Birgit Hattenkofer (Intep), Kerstin Höger (ETH Zürich), Wilhelm Natrup (Ernst Basler + Partner AG).

Zurich, April 15th 2008, Version V 2.1e

Copyright © novatlantis, 2008

Contact address: novatlantis, Überlandstrasse 133, CH - 8600 Dübendorf

Sustainable Campus Design Guidelines

Guidelines

Scope

This document is a component of the “Sustainable Campus Design Guidelines”. The sustainability principles mapped out in the ISCN Charter are described in the following. Themes and criteria are used to elaborate on the agreed objectives. The participating universities must substantiate the implementation of and compliance with the agreed objectives through the use of respective tools and processes.

Sustainability Principles

Scale

In order to evaluate the sustainability of a campus, all locations of the institution as well as the relation to its urban or suburban environment must be taken into consideration.

Further factors include the access to transportation as well as the internal and external connection network; more specifically, the integration with social, cultural and business environments (i.e. catalytic conditions, synergy effects) as well as the promotion of intellectual exchange and academic life (i.e. through informal activities), all of which are improved by the proximity of study, research, services and living.

Design Quality

A high design quality of buildings and open space is a prerequisite for the sustainable development of a campus. It is imperative to maintain its tectonic and programmatic flexibility all the while creating its identity: convertibility or even deconstruction is to be taken into account concerning not only the space-concept of the buildings and entire campus area, but also the choice of building materials and construction technologies. In order to evaluate the well-being on the campus, attention needs to be given to the following criteria: safety, light, air, radiation, and thermal and noise protection.

Participation

All participating groups are given an opportunity to effectively contribute to the design process of a sustainable campus development. In addition, the various groups must evaluate the preconditions for on-campus participation. Furthermore, the general setup has to be such as to guarantee a social and cultural integration of various groups on the campus. Communication-facilitating meeting points or support services for handicapped individuals underline the quest to achieve a “campus for all”.

Education

Besides the acquisition of codified knowledge, tacit knowledge plays a major role in sustainable learning, research, living and behavior on the campus. Tacit knowledge relies upon social contacts between students, teachers, scientists, inhabitants and visitors of the campus. The concept of proximity allows for the coincidental meeting of individuals in the campus area. These clusters, built by necessity, can enhance specific areas of the campus and through direct contact, potentially produce advantages in favor of specialized campus areas.

Handling of Resources

The use of resources required for mobility as well as the logistics of the campus, including food supply and expenditures, needs to be controlled carefully. The stock flows on the campus as well as between campuses and peripheral areas must be examined. In this process, the availability and origin of raw materials as well as the environmental impact during production (grey energy) need to be considered. In addition, energy requirements for heating, cooling, electricity and coverage of energy demand (i.e. percentage by renewable energies); land consumption; and the diversity of species are important criteria in the evaluation for decreased handling of resources.

Life Cycle Costs

The campus buildings and grounds need to be evaluated not only considering initial costs, but also all costs accumulated over the life cycle. Particularly investment decisions need to be made in consideration and knowledge of consequential costs. Concerning investments, all consequential costs must be appraised and evaluated in regard to a life span of 60 years per building. Capital expenditures, including the acquisition of funds for investments, are case-specific and need to be examined separately.

Process

The sustainability process and participating protagonists can vary from institution to institution. In spite of this, basic common grounds exist: support by the institution's leadership is imperative and the establishment of a department for sustainability allocated to a sustainability professional expedient for the purpose. All individuals involved in campus life are an active part of the sustainability process. A variety of initiatives encourage the implementation into practice. Students, as future decision makers, serve as multiple functions.

Change Management

Sustainability on the campus is an aspect of daily life which concerns all campus users and those affected by the campus. The combination of a practical example of a sustainable daily life and students' identification with their tertiary institution leads them to a change of behavior; and along with it, eventually an unstoppable culture change. The measures are supported and expediated through activities, project groups etc. under the guidance of the sustainability professionals who are associated with the institution.

Monitoring & Controlling

The implementation of the guidelines into practice is a process which demands ongoing attendance and monitoring. Professional sustainability workers survey, control, document and inform stakeholder and campus attendees about the gradual process within the respective institution's defined goals.

Sustainable Campus Design Guidelines

Target Agreements

(on the basis of the documentation SIA 112/1 ‚Sustainable Construction‘) as exemplary background information; tools to reach the target agreements can be individually selected, edited and adjusted by tertiary institutions.

Area/Theme	Criteria	Target Agreements
Society		
1. Community	1a Integration, Intermixture	Create optimal conditions favoring social and cultural integration. Reaching intermixture through the best possible proximity of research, study, living conditions, services and support.
	1b Social Contacts, Liveliness/Vitality	Promote informal and formal exchange (public and private) through the establishment of differentiated meeting points which also assure frame conditions for lifelong learning.
	1c Solidarity, Equality/Fairness/Justness	Secure generational-spanning support of handicapped individuals and gender equality.
	1d Participation, Regulation	Secure participation of all affected individuals and stakeholders as well as consider individual needs.
2. Design	2a Identity, Recognition, Spirit	Facilitate orientation and identity through recognition (i.e. establishment of address, landmark, and attractions). Ensure property adaptation and usage flexibility through specific technical and urbanistic requirements.
	2b Diversity, Network, Contextuality	Buildings and outside spaces should reflect the variety of uses (i.e. size, structure, materials, and textures). Secure the linking of various rooms through a ubiquitous connecting path network. Create access routes, visibility and common areas.
	2c Individual Design, Personalization	Establish a high degree of identification.
3. Uses	3a Basic Provision, Diversity of Uses	Ensure short distances, appealing diversity of uses and appropriate placement of these uses within the campus area. Consider supplementation of uses in peripheral areas.
	3b Slow, Public and Individual Traffic	Reduce motorized individual traffic by establishing efficient and safe public transport accessibility and network.

	3c Accessibility, Usability	Design buildings and outskirts in a handicap-friendly manner. Secure social integration of surroundings (openings).
4. Wellness, Health	4a Safety	Enhance visibility and lighting. Ensure a high sense of security, reduction of potential threats as well as operational safety around the clock.
	4b Light and Sun Protection	Optimal daylight in buildings and, according to needs, efficient lighting / sun protection on the campus.
	4c Indoor Air	Minimize impact on indoor air by allergens and pollutants.
	4d Radiation	Ensure minor levels of emissions of ionized and non ionized radiation.
	4e Thermal Protection, Indoor Room Comfort	Establish high level of comfort through efficient thermal insulation and appropriate indoor room comfort systems.
	4f Noise, Ground Vibration	Low levels of noise and ground vibration emissions in order to establish the recreational quality of outside spaces.

DRAFT

Area/Theme	Criteria	Target Agreements
Economy		
1 Infrastructure	1a Location (Entire area of the campus)	Secure long-term, location-appropriate economical use (i.e. investments, acquisition of finances). Promote economic structures in and/or around the campus.
	1b Building Fabric	Attain lifespan of construction parts focusing on value and quality-oriented durability.
	1c Building Structure, Construction and Alteration	Achieve high tectonic and urbanistic flexibility in order to adjust to altered room and usage requirements. Ensure efficient alteration, expansion or deconstruction options.
2 Life Cycle Costs	2a Investments	Acquire favorable financing means for investments. Investments made in consideration of life cycle costs.
	2b Utilization Costs	Low utilization costs by taking into account the respective influencing factors.

DRAFT

Area/Theme	Criteria	Target Agreements
Environment		
1 Flow of Materials	1a Availability of Raw Materials	Supply reliability, regional cycles and incorporation of a large amount of secondary raw materials.
	1b Environmental Impact	Minor environmental impact by the usage of construction and expendable materials during production.
	1c Pollutants	Use of expendable and building materials containing none or very minor pollutant levels.
	1d Recycling	Choice of construction and expendable materials with high recyclable values.
2 Energy Production and Supply	2a Heating and Cooling	Strive for low heating and cooling energy demand through structural, building-technical and production-technical precautions.
	2b Electricity	Establish minor electrical demand through conceptional, urbanistic and technical building measures.
	2c Coverage of Energy Demand	Employ a large percentage of renewable energy. Strive for CO ₂ -neutrality with a simultaneous efficient and stable supply.
3 Terrain / Landscape	3a Land Use	Ensure limited need of ground area and low amounts of ground sealing. Take into account microclimate and development of infrastructure.
	3b Outside Spaces	Establishment of a large variety of flora and fauna species.
4 Flow of Goods	4a Provision and Disposal	Waste prevention and an efficient infrastructure for waste separation and recycling.