

Introduction to the course

AG 2806 Environmental aspects of
the built environment

Autumn 2011

Main course content

- Two main parts: Which are the environmental aspects of the built environment and how can the environmental impact be assessed?
- Focus on that these issues are determined based on context (new/old buildings, Stockholm or Singapore....)
- Areas of protection: natural environment and people's health
- Two levels – city/city district and building
- Building focus
- Focus on understanding of significant environmental aspects and assessment methods, not on strategies, processes, etc.
- Focus on voluntary initiatives regarding environmental assessment, not on legislation
- Large course span: rough introductions of environmental aspects in meetings but possibility to deepen knowledge about particular environmental aspects more in project work.

Main course parts

- Interactive meetings which often needs preparation
- Last meeting: two practitioners will tell about how they work with these issues
- Project work in group – work with specific planning situation and its contextual importance for defining the most significant environmental aspects and types of assessment tools/indicators for suggesting environmental targets.
- Computer lab – test a basic life cycle based assessment tool for buildings in practice
- Mid-term home exam

Practical information

- Tove & Josefin at FMS are course coordinators
- Course literature available at Bilda apart from the course book
- Bilda will be used, <https://bilda.kth.se>
 - You need a kth.se account, KTH IT support centre, ground floor of the student union building, DKV 19
 - You need to be registered to the course

Bilda

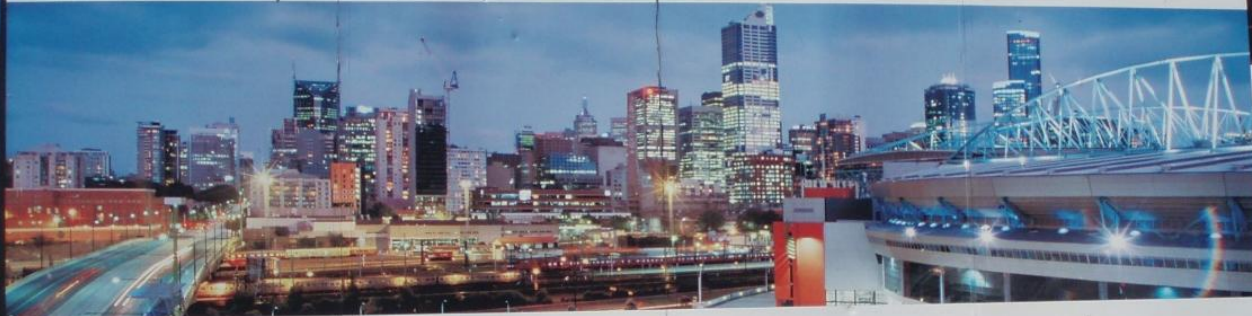
- News and Information will be published on the **Message board**.
- Exam answers and computer lab assignments shall be published at **Assignments**.
- All other documents related to the project that you are obliged to publish at Bilda shall be published at **Discussion**.

Course requirements

- Written exam at least grade E
- Computer lab – pass
- Project work – at least grade E
 - Presence at the scheduled supervision meeting, pre AND final seminars
 - Handed in at least 3 out of 5 meeting assignments in time
 - Handed in project plan in time
 - Handed in an individual critical review of another group's work in time
 - The report clearly shows that the project work task has been fulfilled, and follows the report content of the project work instructions.
 - The project work report is handed in within the pre-ordained time constraints
 - References are used in a consistent way that makes it easy to see how they are used, and where they can be found.
 - The report is written in a way so that it is clear which parts of it are taken from other sources, and which parts are the writers' own thoughts.
 - The report is readable, i.e. not too hard to follow and not too many errors.
 - Show the ability to orally present any part of the report within given time-frames.
- Meetings – strongly advised to participate in all meetings

Green/sustainable building

Picture your business here!



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Four principles of sustainability

The natural step

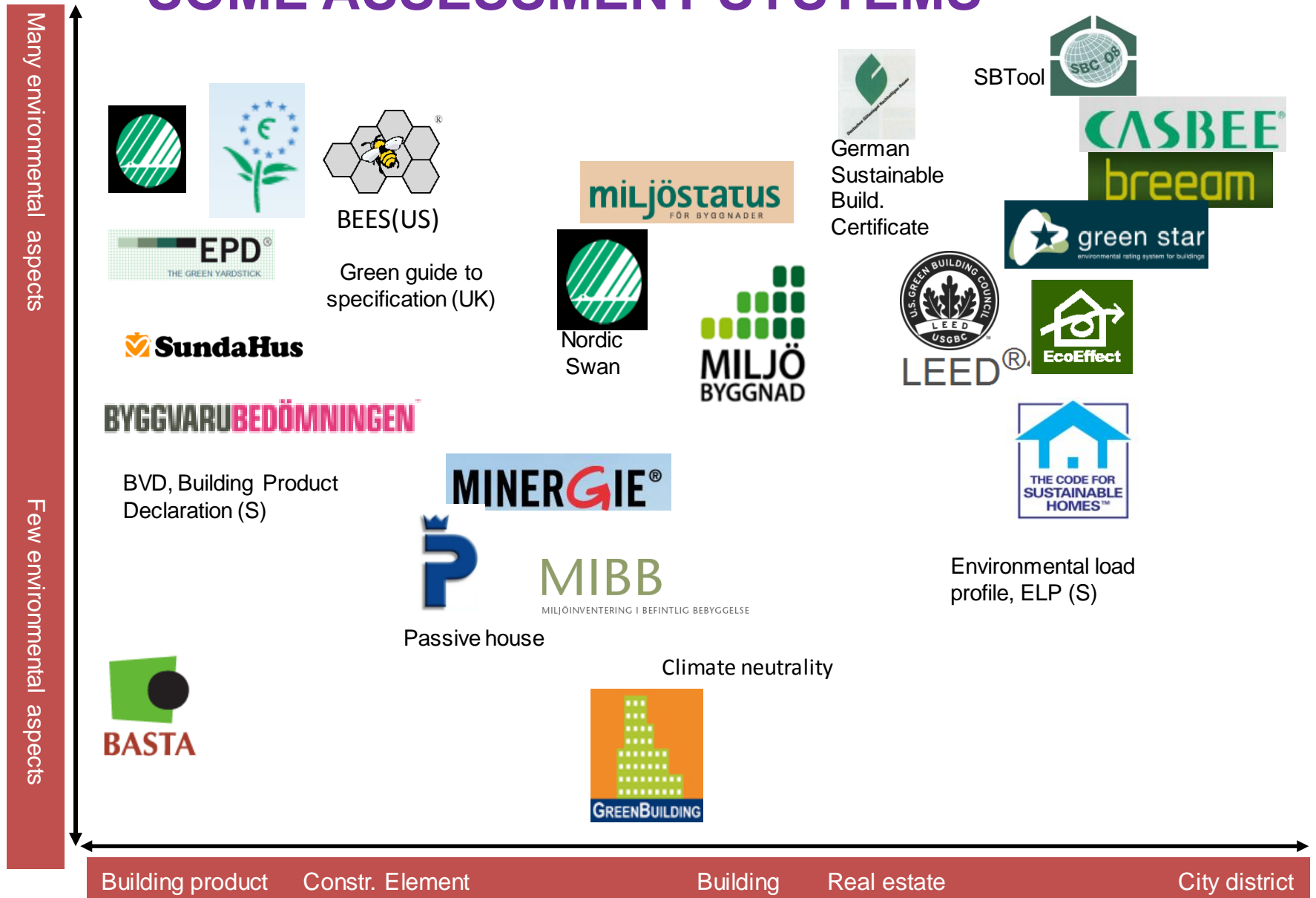
	To become a sustainable society we must...
	1. eliminate our contribution to the progressive buildup of substances extracted from the Earth's crust (for example, heavy metals and fossil fuels)
	2. eliminate our contribution to the progressive buildup of chemicals and compounds produced by society (for example, dioxins, PCBs, and DDT)
	3. eliminate our contribution to the progressive physical degradation and destruction of nature and natural processes (for example, over harvesting forests and paving over critical wildlife habitat); and
	4. eliminate our contribution to conditions that undermine people's capacity to meet their basic human needs (for example, unsafe working conditions and not enough pay to live on).

<http://www.thenaturalstep.org>

What is green building?

- Which environmental (sustainability) aspects should be considered?
 - Low use of resources?
 - No harmful emissions?
 - Healthy indoor environment?
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- What level of performance should justify the use of green?
 - Relative to others?
 - Relative to a carrying capacity, guideline value or similar?
 -
- Choice of system boundaries?
 - Performance purely of building properties? Or....
 - ...in relation to its site
 - ...also including use of building
- Buildings that stimulate a sustainable life style of building users?
- A development process with green buildings as the outcome?

SOME ASSESSMENT SYSTEMS



Focus of content in the rating tools

	LEED	BREEAM (CSH)	MILJÖKLASSAD BYGGNAD
ENERGY	Energy efficiency Renewable energy	Energy efficiency Reduced CO2 emissions	Low energy use Renewable energy
MATERIAL	Recycling of waste Reused material	Reduced CO2 emissions Recycling of waste	Embedded hazardous substances
INDOOR ENV.	Indoor air quality Thermal climate	Indoor air quality, thermal climate, lighting, (Daylight Noise), legionella	Noise, indoor air quality, thermal climate, daylight, legionella
SITE	Choice of site User transports	Ecology, biodiversity User transports	
WATER	Reduced water use	Reduced water use Flooding	Tap water quality Low emissions from individual sewage systems

Context dependency

Affects the choice of the most significant aspects and the appropriate method for assessing environmental impacts

- Impacts of interest – Local conditions impact the significance of different environmental targets
- Object of study – city, building, building material, new development, existing building...
- Purpose of the assessment – design support, evaluation...
- Actors to use the assessment
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Some more detailed context-related issues

- The preconditions regarding the local context and site
 - How does the site impact on possible green solutions (connection to green district heating...)?
 - What implications does the site have regarding providing a healthy indoor climate?
 - What ecological, recreational, heritage values of the site need to be considered extra if not deteriorated?
- The preconditions regarding the building use and users
 - What implications may the building use have on the life cycle impact?
 - What special requirements may building users pose regarding e.g IEQ?
 - How can building users be stimulated to contribute to a sustainable resource use?

Finally....

- *To conclude: there might not be no universal definitions on sustainable, green building. When turning it into practice, the context must play a role in how we define it.*

Next meeting:

Wednesday October 26th, 9-12, L42

To read:

- *Bolund, P, Hunhammar, S (1999). Ecosystem services in urban areas. Ecological Economics 29, pp. 293-301. (9 p.)*
- *Pages 205-223 - Part of chapter 7 in Beatley, T. (2000). Green Urbanism – learning from European Cities. (19 p.)*
- *Pages 145-148 (chapter 19) in Wheeler & Beatley (Eds.) (2009). The Sustainable Urban Development Reader, 2nd edition. Routledge, Oxon. (4 p.)*
- *Optional reading:
Pages 48-63 (chapter 3) in Halweil, B. & Nierenberg, D. (2007) Farming the Cities. In Worldwatch Institute (2007) 2007 State of the World: Our Urban Future. W.W. Norton & Company, London.*

To prepare:

Read the literature and answer the following questions (1-2 pages, bullet form is fine if you want).

Bring five copies to the meeting :

- 1) Which advantages are there/Why is it important with nature/green areas in the urban environment?
- 2) Which problems may arise from exploitation of natural environments/green areas in urban environments?
 - a. How do these problems affect the values/advantages you wrote about in question 1?