

Green Campus

UNIVERSITY OF COPENHAGEN




# GREENCampus

## Climate and energy planning and actions at University of Copenhagen

Tomas Refslund Poulsen, Teamleader Green Campus





Green Campus

### Four campuses in Central Copenhagen – 1.000.000 m<sup>2</sup>

#### City Campus

- Faculty of Law
- Faculty of Science
- Faculty of Social Sciences
- Faculty of Theology
- Central Administration

#### North Campus


- Faculty of Pharmaceutical Sciences
- Faculty of Science
- Faculty of Health Sciences

#### Frederiksberg Campus


- Faculty of Life Sciences

#### South Campus

- Faculty of Humanities



- 1 million m<sup>2</sup> buildings,
- 37,000 students, 7,500 employees, including 5,000 scientists



# GREENCampus

# CLIMATE ACTION UNIVERSITY OF COPENHAGEN

RESEARCH & DISSEMINATION IARU INTERNATIONAL SCIENTIFIC CONGRESS ON CLIMATE CHANGE

CLIMATE EDUCATION & DISSEMINATION

GREEN CAMPUS REDUCING THE UNIVERSITY'S CARBON FOOTPRINT

More: [www.climate.ku.dk](http://www.climate.ku.dk)



**GREEN**Campus

## Why energy and climate focus?

- **Focus on reduction in energy consumption and –expenses**
- The most important direct environmental impact
- Demonstrating an green and responsible university  
If not universities – who should then?
- Saving money for core activities: research and education



**GREEN**Campus

### Key issues

- Top management focus and commitment
- Short term ambitious reduction targets
- Keep focus on where reductions are achieved
- Considerable investments needed - but pay-back time is good



**GREEN**Campus

### Key 2013 Goals for Green Campus at the University of Copenhagen

- **Energy consumption shall be reduced to a level that is 20% below that of 2006, measured as energy consumption per man year for staff and students**
- **CO2 emissions from energy consumption shall be reduced to a level that is 20% below that of 2006, measured as CO2 emission per man year for staff and students**

Goals were approved by the university's board in October 2008

UC strategy "Destination 2012": UC must be one of the greenest campus' in Europe"



**GREEN**Campus

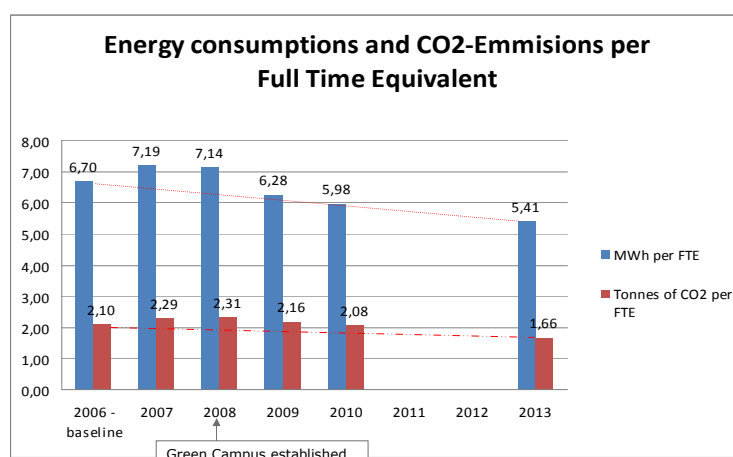
## Internal Climate and Energy Actions – responsibilities

- **Campus Steering Committee:** Project owner. Rector is head and includes prorector, university director, all 8 deans.
- **Team Green Campus (3 persons) :** Overall planning, annual green accounts and energy actionplan for the university. Development and coordination of transversal initiatives like the campaign Green Actions on behavior
- **Faculties:** Energy demand management and operations, incl. annual energy report, energy action plan and energy friendly behavior. Pays their own energy bill.
- **All units:** Own everyday behavior. Inclusion and implementation of energy and sustainability considerations in execution of assignments fx.:
  - The building department uses energy conscious design of building projects
  - IT Department works with green IT (with Green Campus)
  - Purchasing Department works with green purchasing (with Green Campus)



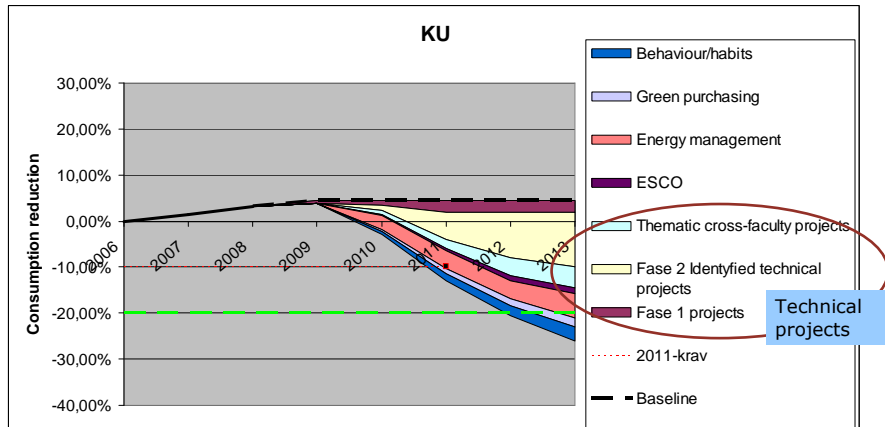
**GREEN**Campus

## On the way to the target



**GREEN**Campus

## How UC's reduction targets will be met

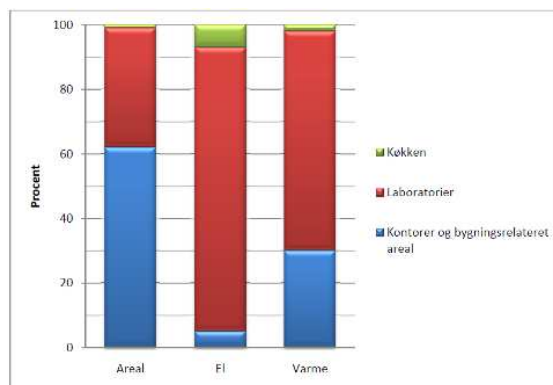


Prognosis of potential savings effects:  
Percentage savings (kWh/full-time equivalent) relating to the consumption in the referential year 2006.



**GREEN**Campus

## Majority of reductions to be achieved i lab-buildings



"Våde fag"



"Tørre fag"

4-6 times higher energy consumption in lab. areas



**GREEN**Campus

## Technical energy projects

### 2007-2010

Approx. 55 projects implemented

### Currently

Approx. + 70 ongoing projects

### To be implemented 2012-2013

Approx. 60 projects waiting for verification and/or implementation

Projects covering:

- **Building specific projects:**, technical improvements and regulations of heating, cooling and ventilation, insulation, lighting.
- **Projects transferable to other buildings:** ventilation, cooling, lighting, controlling
- **Transversal projects:** improved energy management, fume hoods, lab. freezers, regulating, insulation



**GREEN**Campus

## Estimation: Necessary budgets to reach targets 2013

Activity/million DKK	2008	2009	2010	2011	2012	2013	Total
<b>Approx. Million EURO</b>	0,7	1,3	2,7	6	4	2	16

### **It pays off:**

Reduction target on 20 % in 2013 equals savings on energy expenses approx. 5 million Euro/annually.

Average pay-back period : approx. 4-5 years.

**Projects 2008-2010: energy expenses for 2.5 million Euro saved annually**



**GREEN**Campus

## Green Lighthouse – a CO<sub>2</sub> neutral building



New carbon neutral building, 1000 m<sup>2</sup> for:

- student service functions
- study administration
- meeting facilities and
- faculty club

DK Energy target building operation (primary energy):

Today: 97,3 kWh/m<sup>2</sup> p.a.

2020: 30,7 kWh/m<sup>2</sup> p.a.

**Green Lighthouse:**

**22 kWh/m<sup>2</sup> p.a. excl PV (78% savings)**

**CO<sub>2</sub> neutral incl. PV**



**GREEN**Campus

[www.climate.ku.dk/green\\_campus/](http://www.climate.ku.dk/green_campus/)

UNIVERSITY OF COPENHAGEN
Danish | KUinet (Intranet) | Phone Book | Shortcuts

Green Campus

The University of Copenhagen will work towards becoming one of the greenest campuses in Europe

Destination 2012

**Green Campus - Making the University of Copenhagen one of the most sustainable universities in Europe**

The University of Copenhagen is among Denmark's largest workplaces. More than 40,000 employees and students pass through its 1,000,000 square meters on a daily basis. A workplace of the University of Copenhagen's size and research profile must recognize its 'green responsibility', as it is stated in the University strategy "Destination 2012". Read more about the University's Green Goals.

**Energy and Climate**

In the following years, the University of Copenhagen will maintain a strong focus on reducing energy consumption and CO<sub>2</sub> emissions. Energy and Climate.

**Green Action**

**GREEN ACTION – WE MAKE A DIFFERENCE**

JOIN UNIVERSITY OF COPENHAGEN'S CAMPAIGN FOR ENERGY-EFFICIENT HABITS

Read more about University of Copenhagen's campaign for energy-efficient habits: Green Action.

**Green Lighthouse**

A new carbon-neutral house has been built at North Campus and is now being used for student service functions, study administration and meeting facilities. Read more about Green Lighthouse.

**Campus**

Read about the plans for the University's four campuses "The New Campus University".

- Home
- Sustainable Campus Development
- Engagement and Collaboration
- Energy and Climate
- Global Collaboration
- Goals and action plan
- Green Purchasing
- Green Results and Indicators
- Organization
- Contact

Climate and Sustainability

Green Campus  
University of Copenhagen  
Nemsgade 10, Postboks 2177  
2107 København K

Contact:  
Green Campus  
trp@adm.ku.dk

**GREEN**Campus









UNIVERSITY OF COPENHAGEN

Green Campus





## Green Action


**Green Action is the University of Copenhagen's campaign for energy-efficient behaviour.**

At least 4-5 % could be saved just by energy-efficient habits, which is approx 1 mio. EURO per year -> more money for the Faculty's research and education

- Engaging employees and students in sustainability efforts
- Showing that we are sweeping our own doorstep


<http://groengerning.ku.dk/english/>





UNIVERSITY OF COPENHAGEN

Green Campus



## Green Action

**250 voluntary green ambassadors taking local actions**

**Simple advice on most important issues to be targeted:**

- Laboratories
- Offices, incl. IT

**General communication**

- Posters, wallposters, stickers, articles, newsletters etc.

**Materials offered**


- Technical devices (energysaving sockets, timers a.o.)
- Communication materials for creating attention and to motivate

**10 Green student teams touring each faculty**

- Energy experts "light"
- Giving basic technical support and advice
- Creating attention

**Competitions and "carrots"**

- Web-based competitions with great prizes
- Which faculty performs the best



[www.groengerning.ku.dk/english](http://www.groengerning.ku.dk/english)

# GREEN Campus



Campaign in 2009:  
Savings over a 3 week period equaling 0,5 - 0,7 million  
Euro/annually

Inspiration :

Energy-efficient habits for the laboratory:  
[http://groengerning.ku.dk/english/lab\\_greenguide.pdf/](http://groengerning.ku.dk/english/lab_greenguide.pdf/)



- The 24-7 university
- Maintain management attention and priority
- Labs using more and more energy demanding equipment
- Staff at facilities/operations - limited and lacking qualifications and energy focus



## International cooperation on sustainability

UC member of the IARU  
(International Alliance of Research Universities).

### IARU Activities

- Climate Change – Int. Scientific Congress 2009
- Workshop about “Greening Universities”
- Sharing of best practices
- Announcement of common IARU reduction targets
- Development of Tool Kit for universities going green

### **IARU:**

- Australian National University
- ETH Zürich
- National University of Singapore
- Peking University
- University of California – Berkeley
- University of Cambridge
- University of Oxford
- University of Copenhagen
- The University of Tokyo
- Yale University

Other international networks:

- Cooperation between Nordic universities
- International Sustainable Campus Network (ISCN)

