



Eurbanlab Project Library

Institute for Sustainability

Why?

- Information about sustainable urban development is
 - **Scattered** – projects are highlighted in journals, on company systems, in people's heads...
 - **Inconsistent** – different people collect and prioritise different elements of sustainable urban development
 - **Repetitive** – everyone knows about BedZed, Freiburg and the Crystal....

Why?

- Urbanlab is collecting examples of sustainable urban innovations
 - from across Europe
 - in one place
 - in one format
 - of completed projects and those in planning
 - of big systemic projects but also smaller niche innovations
 - of ‘heroic’ projects that look to transform the sector but also those delivering important incremental change

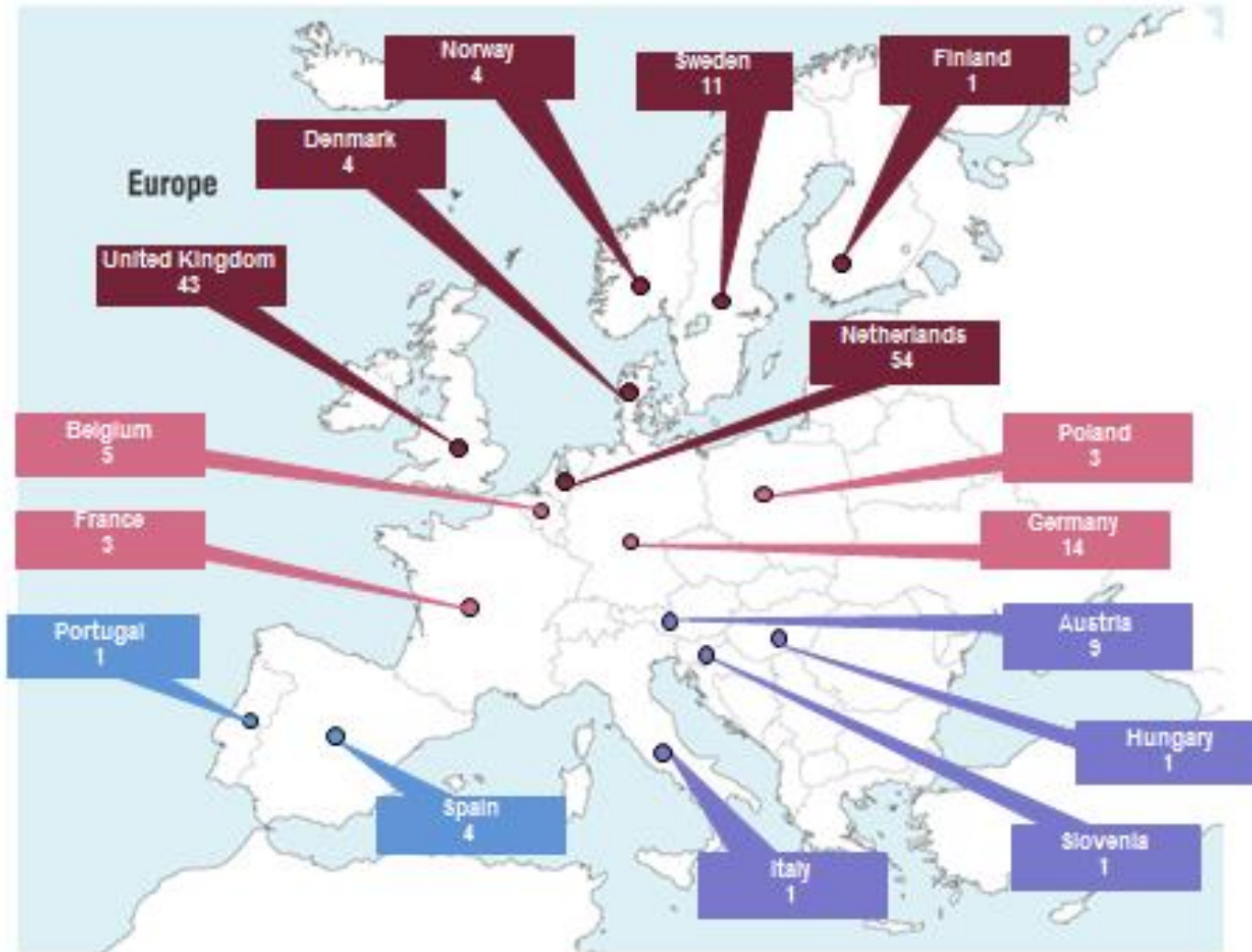
What?

- Urbanlab partners are identifying projects that –
 - Demonstrate application of low carbon, climate resilient development
 - Are at the scale of large or multiple building and upwards
 - System solutions (not single technologies applied in isolation)
- Once identified, an **Innovation Case** is completed for each project
 - Short description including photo
 - Project categorised by e.g. retrofit or new build, areas of innovation – energy, built form etc.

What?

- Innovation Cases are assessed for their potential
 - Impact
 - Innovativeness
 - Replicability
 - Financial viability/sustainability
- Those scoring highly are researched further, with the engagement and approval of the project owner, to produce a **Showcasing** report

Where are we now?



**Total
Innovation
Cases
163**

Accelerating urban innovations



Eurbanlab Library - Examples



De Kroeven, Holland

- Retrofit according to Passive House Standard
- The renovation completed in less than 5 days
- 85% decrease in energy use.



Eurogate, Austria

- World's largest Passive House settlement with about 2,000 flats
- Heating energy demand between 7 and 15 kWh/m² per year



Sleephelling, Holland

- Retrofit of listed residential building to passive house standards
- Maximum energy use of 30KWh/m² per household (v. 15KWh/m² for new build passive)



Blue Planet, UK

- carbon positive, BREEAM Outstand. rated development
- total operational cost savings of up to £189,000 p.a.
- 100% of energy & heat supplied by renewable sources



Blackfriars Bridge & Train Station, London

- Retrofit of major train station spanning both sides of river Thames
- achieved CEEQUAL excellent rating
- 6,000m² of PV panels
-> will reduce CO₂ emissions by 550t pa



Eurbanlab Showcases

Project summary

Location
Lüneburg, Germany.

Overall site
The gross floor area after development will be around 82,500m², with an estimated 73,000 users.

Key impacts
Total area increase with energy requirement of 15,000m²
Final energy reduction of 41 kWh/m² for electricity
Final energy reduction of 109 kWh/m² for heating

Project partners
Unknown

Project status
Completed in 2014

EurbanLab evaluation status
Not yet assessed



'University campus Leuphana', Germany

"Climate-neutral campus development"

Development process:

Leuphana University recognized the need to engage in sustainable development and, next to sustainability research & education, the university aims for sustainable campus development since 2004. The Harswalle City of Lüneburg is currently conceiving a long-term climate protection and energy efficiency strategy and the municipal activities in this area are coordinated by the climate protection unit. The climate neutral ambition of the university is well connected to the city's long-term sustainability strategy.

As a public construction project, and as part of a project within the climate protection initiative, the overall project is being predominantly paid for with governmental funding. As part of the major 'Innovations-Incubator Lüneburg' project, the EU provided funds for development. Innovative aspects relating to the integral planning and energy efficiency are being subsidised by the German Federal Ministry of Economics and Technology. Refurbishments of the local heating system and part of the roof conversions were financed through the German government's Economic Stimulus Package II in 2010. Lastly, as the town of Lüneburg will be using the new central building as an event centre, the town is also contributing to the costs. The renovation of the existing buildings will be put out to tender and implemented using energy savings contracting. For the central building a PPP (public private partnership) process was examined. Unfortunately, the negotiations with bidders did not result in an economic advantage compared with conventional self procurement, which will now be conducted based on a 3-year planning and PPP process with good cost security.

Sustainability Aspects:

The site has been supplied with a local heating system comprising CHP (waste heat industrial gas CHP, approx. 2 MW of electricity, 3.5 MW of heat) since the 1990s. Leuphana has been working for years to mitigate the effects of climate change and, through incentive in-house developments such as the use of CO₂ traffic lights, the main campus has been operating climate-neutral since 2007. Additionally, solar panels of 29,200 kilowatt hours have been installed, reducing the carbon footprint by ten tons of CO₂ each year. Car sharing is offered on campus as well as organic food at the local canteen. Moreover, since the beginning of 2012, all sites of the University have been fully supplied with ecopower. Lastly, an innovative solar energy plant produces climate neutral energy. conferences are organized in a climate neutral manner, energy savings campaigns help to reduce CO₂ emissions and residual greenhouse gas emissions are offset by participating in climate protection projects.

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Although the planned expansion of the campus buildings will increase the usable space by around 25%, the aim is to reduce the overall energy consumption of the campus. Moreover, CO₂ emissions and the primary energy requirements will be further reduced to 'net zero' or 'less than zero' by means of energy saving measures and by optimising the energy system. A seasonal thermal storage system will maximise the degree of utilisation of the renewable CHP heat or comparably generated heat (i.e. solar thermal).

Energy efficient building
The new 14,000m² main building is a significant step towards the CO₂-neutral campus goal. The energy-efficiency approach aims to address infiltration and transmission heat loss through building design measures and sustainable techniques. The combined heat and power (CHP) generation is at the heart of the energy-efficiency technology, including use of excess heat for the building's absorption cooling technology, buffer 'storage' of low temperatures in the sprinkler tank, the provisioning of the needs of other buildings on the campus, and heat storage in the ground which can be used to balance out seasonal fluctuations in demand.

Existing buildings will be renovated by replacing windows, installing internal and external thermal insulation, installing insulation on the basement ceiling and upper floors and in the roof space, as well as optimising the ventilation system. The characteristic brick facade must be preserved, requiring the deployment of innovative insulating materials. The use of LED lighting is also planned.

Conversion of the energy concept
The plans for constructing the new central building provided an opportunity to fundamentally reconsider the energy supplies for the campus. It was also decided to optimise the system energetically and to convert it to using renewable energy sources. The corresponding energy concept plans to use cascaded heat and incorporates a seasonal heat storage tank.

Project's Impact:

- Total area increase with energy requirement of 15,000m²
- Final energy reduction of 41 kWh/m² for electricity
- Final energy reduction of 109 kWh/m² for heating
- Creation of 220 jobs after development

Further information

<http://www.leuphana.de/en/home.html>
<http://www.eit-climate-kic.com/en/innovation-projects/leuphana-university-climate-neutral-campus-de.html>

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EurbanLab Portfolio of Innovation Cases

EurbanLab Portfolio of Innovation Cases

How the library works

The screenshot displays a filter menu with the following categories and options:

- Spatial Scale**
 - Single Building
 - Neighbourhood or District
 - Town/City
 - Multiple Sites with Multiple Contexts
 - Higher scale (region or above)
 - Other
- Land Use Type**
 - Residential
 - Commercial
 - Public Institution
 - Mixed Uses
 - Transport
 - Green/Blue Belt
 - Other
- Project Type**
 - Retrofit
 - New Build
 - Both retrofit and new construction
- Sectors of Innovation**
 - Agriculture
 - Built Environment
 - Energy
 - Water Resources
 - Waste and Pollution
 - Transport and Mobility
 - Adaption to Climate Change
 - Other
- Type of Innovation**
 - Financial/Fiscal
 - Technical
 - Political/ Governance
 - Behavioural
 - Education/Knowhow
 - Other

- Searchable by filters and key words
- Links Innovation Cases, Showcases and Assessments
- Provides Eurbanlab team and project contacts

Stadstuin Overtoomse Veld, Amsterdam

- Aim: 470 dwellings and commercial business spaces
- Also: minimize failure costs
- Financial incentives linked to realised goals



Bombay Sapphire Distillery

- BREEAM Outstanding rating at design stage
- carbon emissions at production facility are forecast to fall by 60%
- hydro-electric water wheel, PV panels and a bio-fuelled boiler

