Making energy efficiency and innovation pay: an example of Kungsbrohuset office building, Stockholm, Sweden

Workshop Summary Report

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Held at UCL, London
As a part of the CLUES project, we are conducting a series of innovative international case studies on unique approaches to decentralised energy systems which could be applicable in the UK but have not yet been attempted. In order to present each case study to the UK, we are conducting a short series of interactive workshops. On February 2nd, 2012 we successfully held our fourth and final workshop – “Making energy efficiency and innovation pay: an example of Kungsbrohuset office building, Stockholm, Sweden.”

The aim of the workshop was to introduce the Kungsbrohuset building and its innovative features to UK practitioners, as well as to discuss whether eco-smart office buildings could be commercially feasible in the UK.

Attendees at the workshop included representatives of Jernhusen (the company that developed and owns the Kungsbrohuset office building), practitioners (e.g. British Land) and consultancies, academics and other interested parties.

1. Presentations

During the first part of the workshop two presentations were given, each followed by questions and answers. The first presentation1 by Klas Johanssen from Jernhusen (Stockholm, Sweden) introduced the concept of the Kungsbrohuset office building and its most interesting features, e.g. partial heating using heat gains from the neighbouring train station, the ‘green’ button, and the triple-glazed façade. The presentation also covered the process of design and construction of the building and the main selling points for the tenants.

1 Klas Johansson presentation can be found here: http://www-staff.lboro.ac.uk/~cvkc2/CLUES_Workshop_2Feb2012_Klas_Johanssen_presentation.pdf
The second presentation\(^2\) was by Sarah Cary from British Land\(^3\), in which she introduced the Ropemaker Place project in London and talked about the lessons learnt from constructing and cooperating this building.

2. Workshop discussion

The second session of the workshop was carried out in the form of a roundtable discussion. The aim was to look at the potential of using similar eco-smart and economically profitable offices in the UK, taking into account the similarities and

\(^2\) Sarah Cary presentation can be found here: [http://www-staff.lboro.ac.uk/~cvkc2/CLUES Workshop 2Feb2012 Sarah Cary presentation.pdf](http://www-staff.lboro.ac.uk/~cvkc2/CLUES Workshop 2Feb2012 Sarah Cary presentation.pdf)

\(^3\) Video about Ropemaker Place can be found here: [www.britishland.com/media.asp?PageID=168&category=8&mediaid=157](http://www.britishland.com/media.asp?PageID=168&category=8&mediaid=157)
differences in context of the UK and Sweden, as well as to investigate possible drivers that could encourage the building and operation of eco-smart office buildings and to identify potential solutions to any barriers for their wider implementation.

The following four themes were addresses and debated.

2.1 UK and Sweden contexts: similarities and differences

Some important differences were addressed during the discussion. While representatives of both UK and Sweden agreed that the energy price is currently much lower than it should realistically be, in Sweden the energy is taxed depending on the source. Moreover, Kungsbrohuset buildings owners sell the energy at various prices depending on the demand, whereas in similar buildings in the UK the energy rate is normally set at a fixed price.

In both cases discussed, the demand for office cooling was increasing; however there were not any district cooling systems which could be used as a back-up in case of extraordinary high demand or failure of the main cooling equipment. However, the approach to heating is very different in the two countries: Sweden has historically invested in district heating and so connecting to it is not a problem but rather a choice, whereas in the UK district heating is not as widely used and it makes little practical or financial sense to connect one building to a district heating system.

It was also discussed that in both the UK and Sweden businesses and tenants nowadays all expect the building to be energy efficient - the concept of a special 'environmentally friendly building', though fashionable and unique a few years ago, does not work as a unique selling point any longer.

2.2 Drivers

The discussion covered a list of drivers that could potentially encourage the wider popularity of eco-smart office buildings in the UK.

Key drivers discussed were the rising cost of energy and an increase in energy consumption. Security of supply can also encourage higher levels of energy generation on-site. Higher building standards and technological innovations could also play an important role in improving office building stock.
It was also emphasised that visibility and the reputation/image of the building owner/tenant can be a strong driver, but can also act as a barrier when 'being green' is not seen from only practical point of view but mainly as an image statement.

Another important driver mentioned during the discussion is the role of the project champion: this could be a construction manager who, because of his/her personal beliefs, encourage sustainable construction and helps others to find eco-smart solutions for the building operation.

### 2.3 Barriers

A variety of barriers that could prevent the wider popularity of eco-smart office buildings in the UK was discussed.

Governance barriers were deemed to be key, including the fact that building regulations seem to lag behind current requirements. The fact that they also do not seem to incorporate real data from existing buildings but are based on building modelling was also thought to be a problem.

Technical barriers also play an important role. The focus on construction is on improving the thermal properties of the buildings, which can lead to building overheating and hence can increase the cooling demand and therefore, the energy consumption. In addition, the design approach lags behind, mainly due to the fact that there is a lack of data on best practices and experiences.

Educational barriers was also seen as important: most of the graduates have not learnt about the operation of the building as their education has been focused on the design; this causes the lack of applied knowledge and results in a lack of qualified labour for building management.

Among the economic barriers, the most significant was the lack of trust in the current economic climate and therefore a general unwillingness to think about long-term feasibility.

### 2.4 Future

Thinking towards 2050, it was decided that the UK needs to focus on long-term and systematic thinking. Energy efficient office buildings were thought to be a good opportunity for future businesses in the construction sector, where 'best available' and 'energy efficient' will be an assumed requirement from the tenants. Overall the discussion concluded that eco-smart buildings would be highly replicable in the UK and will be a key part of the solution for achieving 80% carbon reduction by 2050.
3. About the CLUES Project

The CLUES project critically assesses the development of decentralised energy systems in urban areas in the light of national decarbonisation and urban sustainability goals. It examines the range and types of urban energy systems that are (and might be) installed. It further investigates the issues raised by the need for such initiatives to integrate with energy systems at the urban level in the UK, regional and national scales in order to effectively deliver energy and carbon reductions to 2050.

4 www.ucl.ac.uk/clues/