Case study

Front End Planning for Energy Efficiency in Hospitals: The 'Nye Østfoldsykehuset' Project, Norway

The project

The pilot project in Norway involves four hospitals: Østfoldsykehuset, St. Olav's, Universitetssykehuset i Nord-Norge and Haukeland Universitetssykehus.

It focuses on influencing the national 'front end' planning strategy for hospital construction, to better enable the procurement of energy effective, low carbon solutions. Front end planning is concerned with activities and decisions taking place in advance of a building project getting underway and before any selection or purchase of goods and services. It concentrates on initial project conception through to the development of a comprehensive business plan, and then subsequent project programming, assessment and quality assurance – steps that underlie and influence procurement decisions.

Background

A joint survey by the Norwegian LCB-HEALTHCARE team and the national 'Lavenergisykehuset' (Low Energy Hospitals) research group showed that hospital planners and decision-makers lacked focus and clear goals when trying to procure new, innovative and 'low-carbon' solutions. This survey, together with experience gathered from a number of strategic workshops, demonstrated that Norway's hospital sector needed better and more detailed guidelines and evidence concerning energy use both in individual buildings and in the functional areas within those buildings.

At the outset, none of the individual investments being planned by the partner hospitals had explicit goals for CO_2 emissions or energy consumption, including the procurement of the medical equipment that would be used in the completed infrastructure.

"When planning documentation and calculations of costs and benefits is unclear and not comparable between projects, it is easy to go for the safe option."

Asmund Myrbostad
Pilot Project Co-ordinator, Norway

The LCB-HEALTHCARE project was an opportunity to introduce rigour and a common methodology to this area, and to encourage decision makers to consider issues previously given little consideration, for example:

- The location and form of the infrastructure: alternatives were not being examined from the point of view of low carbon outcomes or energy efficiency.
- The organisation of functions within the hospital: this was generally considered only from an operational viewpoint, despite a clear impact on energy demand.
- Evaluating alternatives and seeking innovative solutions: although guidelines required procurers to consider alternative energy solutions, in practice this rarely happened or was superficial.
- Increased investment: the concept of 'invest to save', i.e. spending more now to save on future energy costs and carbon emissions, did not feature strongly in the decision making process, thus undermining life-cycle costing as a strategic tool.

In spite of Environmental Guidelines for sustainable procurement of public buildings that were published in 2004, a recent survey (ref: Klima og miljøtiltak i spesialisthelsetjenesten 01.12.2010, cited in a report from the Regional Health Trust) indicates that there are no new build hospitals that are showing outstanding performance on energy efficiency.

Survey results: linking form and use to planning for low carbon, energy efficient infrastructure

The joint survey, based on reports and planning documents, pilot workgroup meetings and workshops, reported on some key issues in procuring energy efficient solutions for the hospital sector. These included:

- **Renewable energy use.** None of the projects had explicit goals for sustainability in energy production or CO_2 emissions.
- **Project methodologies.** These varied considerably between projects, and none used common tools such as BREEAM, LEED or other integrated design processes.
- **Functional demands.** The survey found no use of energy efficiency requirements in the procurement of medical or other hospital-specific equipment.
- **Flexibility and user demand.** All projects were found to make use of standard, existing technologies for heating, lighting and ventilation, and these solutions were not challenged. There was no discussion of how the need for future flexibility in use of hospital buildings might impact on the choice of energy solutions.
- **Location and form.** None of the hospital projects considered the location, shape or structure of buildings from the point of view of how these factors might affect procurement of energy systems.
- **Organisation and production.** The connection between the functional aspects of hospital infrastructure and the consequences for energy demand, was not explicit in the planning and design of buildings.
- **Evaluation criteria.** Planning guidelines state that projects should describe more than one solution; in practice, this is not generally done in any detail.
- **Increased investment.** Life-cycle cost calculations were applied in most of the projects, but late in the planning process – too late to influence decision making. The effects of increasing investment for energy efficient solutions were therefore not factored in to project plans.
- **Energy performance contracting.** Energy performance was not included in contracts with the supply chain.
- **Energy effective solutions as a strategic aim.** Most of the projects were aware of the importance of looking to purchase energy efficient buildings, and say this is strategic aim for their organisations.

Next steps

The joint LCB-Low Energy Hospitals survey has identified major weaknesses in how information is used by decision makers in the early stages of a project, when goals and priorities are set. In general, there is a lack of understanding and documentation of the dependencies between hospital functions, individual departments and equipment, and the technical solutions needed for energy use in the buildings.

This sets the scene for future activity. The pilot project has shown that procurement of energy efficient solutions should take into account 3 to 4 different functional areas, and the aim is now to have this revised specification included in the Norwegian Technical Regulations. The LCB-HEALTHCARE pilot project in Norway is therefore in a position to influence the structure and content of national guidelines for hospital planning, to implement changes that can counter some weaknesses, and to establish a foundation for learning from experience and making comparisons between projects.

The Norwegian Low Energy Hospitals network will work with representatives from the Directorate of Health and Social Services on developing national guidelines for strategic technical planning, to establish the future framework for energy effective solutions for the hospital sector.

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