

Property needs sustainability

Robert Cohen and Bill Bordass explain why the UK property market can no longer afford to ignore the value of energy efficiency in buildings.

For many years, architects and builders have faced improving standards for the energy performance of new buildings. In April 2002, the latest *Building Regulations Approved Documents Parts L1 and L2*, became law, tightening specifications and introducing new categories of performance, for example on air-tightness. From now on the ratchet will tighten even faster.

New policy instruments will put the squeeze on UK buildings from three directions. First, the recent Energy White Paper, committing the country to ever tougher standards for the built environment. Secondly, the intention to upgrade *Part L* by the end of 2005, just three years after the last revision. Thirdly, the European Energy Performance of Buildings Directive (EPD) requires action in all member states; and, most radically, in existing as well as new buildings.

The EPD targets three main areas: better energy performance standards for new buildings and refurbishments; energy labelling of all buildings at the point of completion, sale or rental; and regular inspection of boiler and air conditioning systems. The requirement for an energy label will turn energy performance into much more of a market driver – as is already happening for white goods. In addition, all buildings over 1000 m² which are frequently visited by the public must display an energy certificate prominently at all times: this will reward the owners, occupiers and managers of energy efficient buildings and provide ammunition to the public to put pressure onto the rest. Member states are required to transpose the EPD into their national laws by the beginning of 2006 – exactly how is left up to them. A member state can delay the labelling requirement by up to three years if it can show it lacks the necessary qualified experts.

All sectors of the economy are being affected by a raft of new EU legislation which is needed to meet the Kyoto commitment to reduce greenhouse gas emissions and concerns about security of supply. Buildings are in the firing line because the building stock is the single largest source of CO₂ emissions, account-

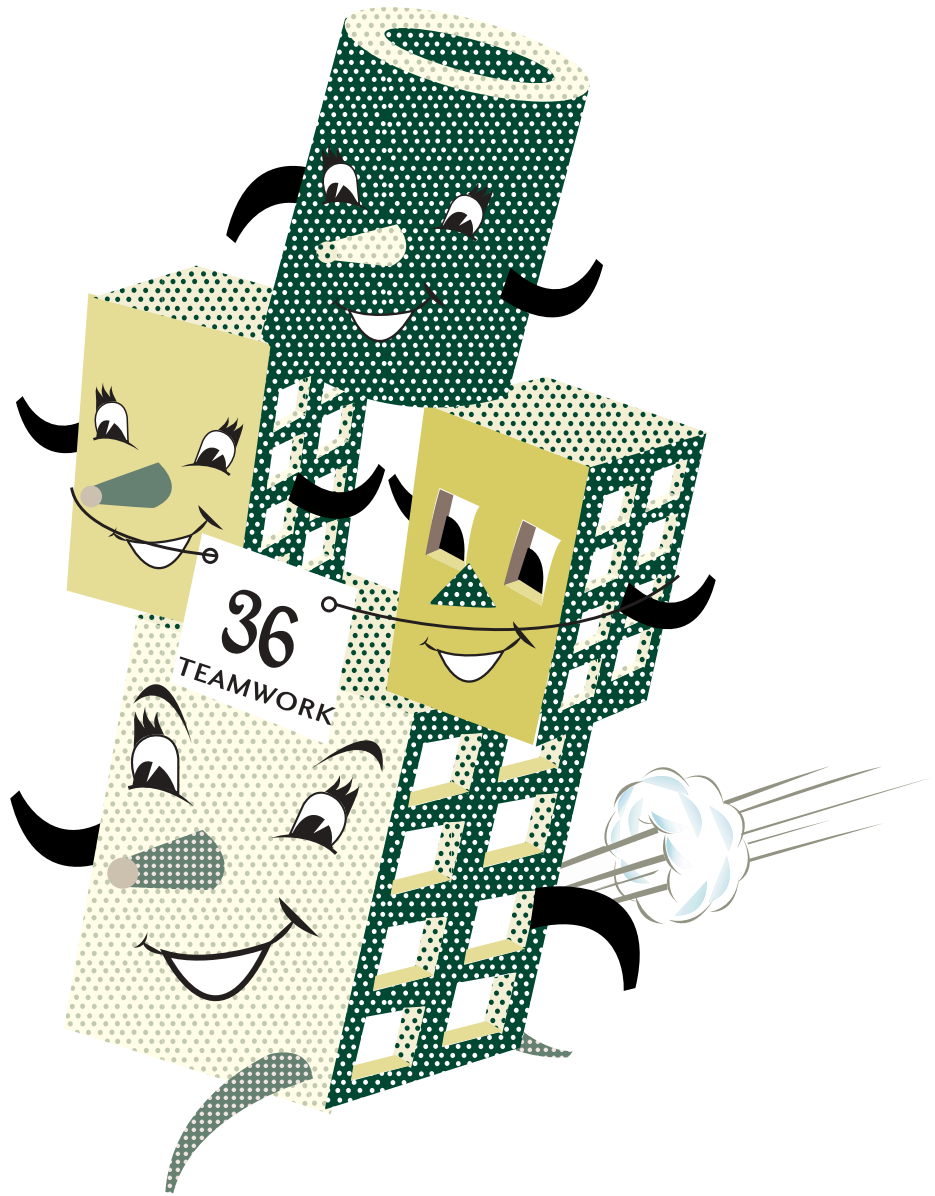
ing for more than 40% of final energy consumption. And the pressure will continue: the EPD requires regulations to be tightened at least every five years. How might the stakeholders in building procurement prepare for this future?

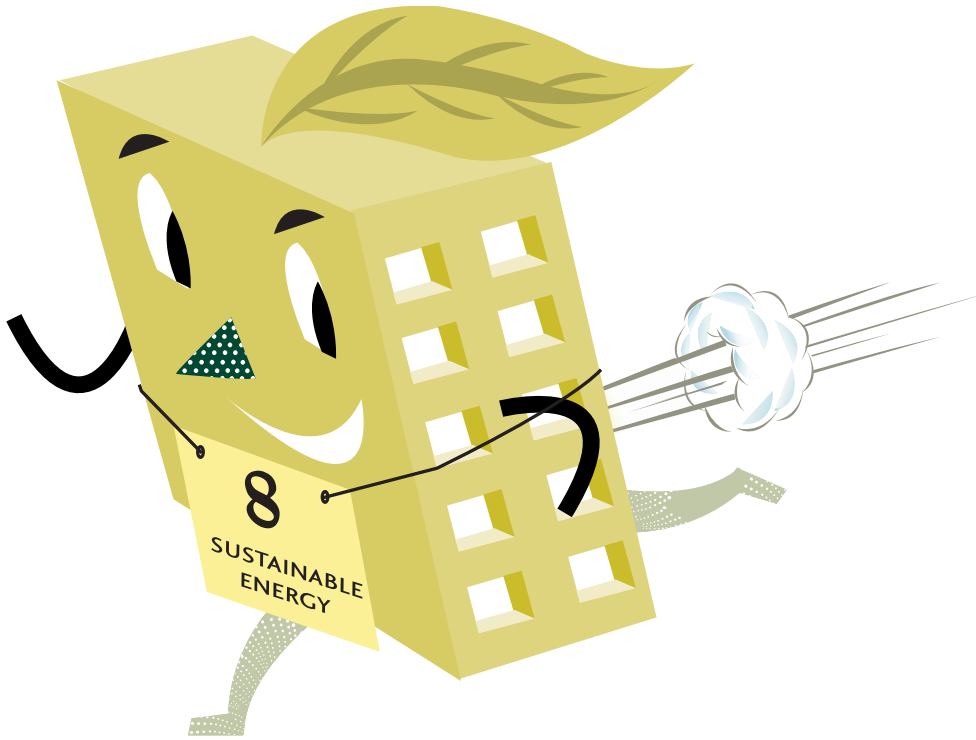
Client priorities

Developers procure a building but do not occupy it. They let it out or sell it on: sometimes to an owner-occupier (including public sector organisations); more often to an investor, typically a property company. Historically, their investment in energy efficiency beyond market norms has not been

rewarded, because the market has not valued life cycle issues at the point of sale or rental. But times are changing: for example, while a BREEAM environmental certificate does not yet guarantee a higher market value, it does give an edge when tenants are choosing between two buildings. In the longer term, as investors and occupiers become more interested in environmental performance and corporate social responsibility, more sustainable, energy-efficient buildings will be seen as better, longer-lasting investments and command higher values, and developers will want to provide them.

Pre-let buildings are procured by developers





on behalf of clients who plan to rent them. These have become popular in recent years, as businesses affected by rapid global change have become less certain about their long-term requirements. They also fit the management trend for organisations to focus on their core businesses, outsource their property, and release capital. Developers like pre-lets too: they provide some protection from the vagaries of the speculative market while the building is going up. However, the developer does not want the building to depart too far from market norms, in case their customer no longer wants it. Good pre-lets have often been more energy-efficient than speculative buildings, because the occupier has kept a close eye on user requirements while not having to bother with the messy business of actually delivering the building. As energy efficiency rises up the agenda, we could see some interesting innovations here.

Occupier organisations which are committed to more sustainable ways of working may be able to put more effort into low energy solutions, regarding added costs as an investment which helps to reinforce their ethos and public image, and attract and retain staff and customers. Owner-occupiers and user clients for pre-lets can also be more precise about their requirements and work with the design and building team to develop an energy strategy and achieve a design solution which really suits them.

However, in today's rapidly changing world, even owner-occupiers:

- seek more flexible, adaptable, and if possi-

ble standard solutions to accommodate change;

- want to protect the value of its property investment in relation to standard valuation criteria;

- require an 'exit strategy', in case it needs to move out, sell, or sublet.

Hence its buildings are now more likely to comply with market norms (for example the *BCO Guide 2000*) even if these do not entirely reflect the occupier's immediate needs.

The challenge

The EPD can transform a property market which in the past has not put much explicit value on energy efficiency or sustainability in general (although technological improvements, such as more efficient lighting, have been progressively assimilated). The challenge is to produce more generic approaches to the energy efficiency of buildings, which meet the requirements of developers, investors, tenants and owner occupiers.

It is not enough for buildings to be designed to be energy efficient. They must be managed that way too. This has been particularly difficult in tenanted, particularly multi-tenanted, buildings where responsibilities are split between landlords, their agents, and individual tenants. The current system also contains many disincentives to energy efficiency, for example with landlord's energy costs, whatever they are, being passed on in the service charge. While some property portfolio managers have worked with their tenants to improve these situations, the norm is still one of much avoidable

So which approaches should procurers and their designers be looking for when seeking a low energy solution? In our view the three golden rules are:

1. Get to the roots of energy consumption

You can help minimise energy requirements by thinking in the sequence below:

- a) Reduce demand: for example by using the building envelope to reduce energy demand (eg insulation, shading, thermal mass, natural ventilation, and daylighting).
- b) Increase efficiency: provide more efficient plant (eg boilers, fans, lighting, etc).
- c) Avoid waste: control plant and equipment to power-down (or better still switch off) when not needed (eg by bems time settings, absence detection and daylight control for lighting, and automatic power down of office equipment).
- d) Consider renewable supplies – but only after demand has first been minimised.
- e) Set out energy efficiency ambitions at the outset, track progress through design and construction, monitor energy consumption, and examine how the completed building performs in relation to expectations.

2. Don't make the building too complicated for the management available

A building and its systems should be no more complicated or demanding than its occupiers can cope with.

- a) The building should be efficient and minimise management requirements by eliminating unnecessary complexity.
- b) A complex building which demands a lot of management – and gets it – is a high cost, high yield strategy for a small minority of organisations that can justify this level of management through added functionality, staff satisfaction and brand image.

3. Balance the ventilation strategy with the building's external environment

- a) Window ventilation alone is best suited to simpler buildings with relatively shallow floor-plates and where it is reasonably clear who controls what and how.
- b) Sometimes noisy and polluted external environments make openable windows impractical and air conditioning is required. Take advantage of energy saving opportunities such as heat recovery, free-cooling and night ventilation.
- c) Often you can get the best of both worlds with a mixed-mode strategy. More low-energy buildings may well be like this, but the strategies need thinking through carefully, at least until clear standards emerge.

waste. The transparency provided by mandatory energy certification based on actual (not just predicted) energy performance will help to overcome this.

Most of the principles applicable to new-build projects are just as relevant for fitout, alteration and refurbishment, except that some design parameters are more constrained. *Building Regulations* already require refurbishment work on office buildings to comply with minimum energy efficiency standards, and Certification under the EPD will increase pressure for improvements.

The doubts

In the current tough economic climate, procurers may well ask their advisers some blunt questions before proceeding with a low energy design. Candid yet insightful responses might be as follows:

Does a green building earn worthwhile returns on the extra investment? Low energy designs are not inevitably more comfortable and productive. However, well-designed, well-built and well-managed buildings definitely will be.

Do low energy buildings offer bottom line benefits to anyone except the occupier? Is it a big enough commercial driver to encourage a

typical tenant to select the lower running cost building in preference to another of similar amenity but higher energy costs? Not enough at present because the outcomes are not measured, valued in the marketplace, or by-and-large readily predictable by designers. But the EPD will help all this along.

Better design is claimed to translate into higher profits. How about green design? Yes it can, but it is not a technical fix. Many of the published studies ignore a major hidden management dimension.

For example, some US studies show massive improvements in educational outcomes from daylight schools, but it is likely that it was not just the daylight but the whole client-designer-user relationship that created a different type of school that drove the better results.

Can more capital intensive, energy efficient design pay for itself? It doesn't necessarily have to be more capital intensive. There is a lot one can do to design-out causes of energy waste and design-out, not design-in, maintenance and management burdens – unless these are acceptable to the occupier. In today's buildings (and society!), there is a pathological tendency for energy-consuming systems to default to on. We must work together to stop this where we can; or to make them extremely efficient if 24-

hour availability is essential.

What facts and figures are there to substantiate payback periods? It is not a straight payback argument. You need to get the whole system to work better. Often the better investment will be in thought and time than in technology. At present, much comes unstuck because designers and occupiers do not get the opportunity to work together to fine-tune the building during the early months of operation and to learn from this experience. A culture of service before energy economy also ignores the wider agenda of helping to prevent climate change.

Conclusions

The intensity and frequency of floods, droughts and heat waves are sharpening society's recognition that man-made climate change is with us, and that its effects could be more rapid and severe than anticipated. This, plus legislation such as the EPD will rapidly transform energy efficient buildings into shrewd economic investments, whatever today's short-term property valuations may say.

Robert Cohen is principal energy consultant, Energy for Sustainable Development (ESD).

Bill Bordass is principal of William Bordass Associates.