



Taking a Holistic Approach to Sustainability

Newsletter dated:

4th July 2012

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How to improve the environmental performance of a building without actually changing the building itself?

Often, architects and building engineers who aim to make their buildings as green as possible stop at the point where the physical characteristics of a building are determined. Materials will be sourced to be as environmentally-friendly as possible, electrical and mechanical systems will be energy-efficient, construction materials will be treated and disposed of in a way that does minimum damage and the location of the building will take into account transport links. All of this is very good, and there have been many examples of buildings achieving very high BREAM or LEED ratings as a result of great design.

However, there are ways of increasing the environmental performance of a building that are less obvious than the materials and systems used to make building, but have more to do with how the people in the building make it work.

The environmental performance of a building can be measured in a number of ways:

- The amount of energy consumed per square metre of floor space, or
- The amount of energy used by each person in the building.
- However, the ultimate measure must surely be related to the amount of resources (energy consumed in operations, embodied carbon etc) used for a given amount of work done (which you could measure in terms of productivity, revenue or profit).

Essentially, if productivity can be increased in a given amount of workspace, then the resources (energy, materials, carbon) consumed per unit of productivity will be reduced.

Recent researches demonstrated the benefits of improving the well-being of office workers through means such as improving psychological comfort. Minor changes to the way the



workspace is managed has been shown to increase well-being which, in turn, has led to sustained improvements in productivity.

A series of studies carried out by Craig Knight and Tom Postmes, from the universities of Exeter and Groningen (Netherlands), has consistently shown a strong relationship between enhanced psychological comfort gained through “identity realisation”, which means the ability to express something of one’s self in the working environment; this resulted in a greater sense of well-being and physical comfort leading in turn to improved productivity.

Simple changes to the way people manage their own space, but without changing the structure of a workspace, can produce productivity gains in the order of 15-30% and well-being score increases of 40%. Even simple enrichment of spaces with essentially ephemeral items such as plants, art or fragrances has been demonstrated to improve well-being, comfort and productivity. In other words, a more humane work environment drastically improves productivity.

There are examples where old, draughty and badly-lit office blocks have been closed and replaced with state-of-the-art, highly efficient buildings only to see productivity dive: any environmental benefits gained through great design are nullified if the outputs from the building are less than they should be. The reasons for this are probably linked to a lack of a feeling of a home space, resulting in a sense of disempowerment.

This strongly suggests that building operators are potentially missing out on performance benefits by concentrating on the structure and systems in isolation of human factors.

Having said all of this, there are signs that the next evolution of green building and environmental rating systems are taking more account of well-being and other human factors. The Cascadia chapter of USGBC in the Pacific Northwest of the USA, for example, has developed a new green building design and rating tool that goes far beyond conventional, engineering-led green building systems.

The Living Building Challenge takes sustainability to a higher level than simply recording and reducing energy consumption. It is a holistic system that ties together elements of energy efficiency and well-being and even has a specific requirement for biophilia, a design that incorporates natural, or nature-inspired elements to help people reconnect with the natural environment.

The Living Building Challenge is not isolated to the Northwest of the USA and there are projects constructed to this standard in several countries. There is recognition that sustainability is more than just about energy conservation and greenhouse gas remediation, but encompasses much broader concepts about the sustainability of communities.

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