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Going Green

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Construction

DERMOT KEHILY examines the question of what constitutes a 'green building' and explores the United States Green Building Council's rating system – LEED.

Going green

Sustainable development is defined in the Brutland Report (1987) as "development that meets the needs of today without compromising future generations in meeting their own needs". Sustainable development encompasses a whole system analysis of the effects of design, not just on environmental issues, but also on social and economic issues. Any criteria assessing sustainable design and construction must assist decision makers in reaching the best option that balances the total economic costs against social and environmental consequences.

Environmental considerations in Ireland

Traditionally, environmental considerations have not been on the agenda in the Irish construction industry. Much of Ireland's environmental and building control legislation since the 1970s has been initiated by directives from the European Union. Many professionals and contractors, while paying lip service to the relevant buzz words, such as energy efficiency, embodied energy and green construction, have achieved little to promote a sustainable future in the industry, other than meet the minimum requirements set out in the legislation. However, in recent times a responsive minority in the industry has begun to practise and push sustainable and green building principles.

Drivers for change

The primary drivers for change can be traced back to a number of well-documented United Nations conferences in the 1990s, notably Agenda 21 in Rio de Janeiro in 1992, the Kyoto Protocol in 1997, and the Earth Summit in Johannesburg (2002). Many EU directives on sustainable development are a result of Europe collectively signing up to pr
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enacted EU directives on sustainable development over the years – predominantly through Part L of the Building Regulations, the formation of the SEAI and the implementation of the building energy rating (BER) system – the industry itself has been putting measures in place over and above what is required by law. Many of these measures are born in the international domain, but the Irish construction industry is starting to use these principles and recognise their potential, not just for implementing greener construction practices, but also in the marketing and finance of construction projects. An example of this is the recent formation of the Irish Green Building Council (IGBC). The IGBC's founding members are taken from a broad spectrum of professionals, academics and industry representatives from within the construction industry in Ireland.

Green building councils

Those companies and individuals who participate in green building councils worldwide recognise the need for transformation of the built environment to one that is sustainable and based on accepted principles of green construction. There are now over 20 established GBCs in the world, with another 60 emerging. The work of the United States Green Building Council (USGBC) has led to a number of federal departments and many state and local governments across the US adopting the USGBC's green building rating system, LEED (Leadership in Energy Efficiency and Design) for the sustainable procurement of public funded projects. This is really the 'cart before the horse', where the industry is setting the standard for sustainable construction and design rather than the government. Approximately half of the Fortune 500 companies have built or are building green buildings, and have also been incorporating rating systems into their corporate governance programmes. If Ireland is to promote this country as a good place to do business and attract investment, we must not only embrace these policies but also train our professionals and contractors in green building methodologies and rating systems.

Green building rating systems

To address environmental assessment methods it is necessary to address what constitutes a green building. One construction professional or contractor might envisage a green building to be one that promotes energy efficiency, while another might see green building characteristics encompassing energy efficiency, water conservation and natural ventilation. No one document or organisation owns the definition of sustainable design and construction, or has the authority to police it. However, BREEAM from the BRE in the UK, LEED from the USGBC, Green Star, which originated in Australia, and the German rating system DGNB, are among the most prevalent rating systems used internationally. Categories in these rating systems and considerations common to a number of other best practice calculation methodologies in sustainable construction are determined to be: minimisation of pollution; reduction in the consumption of natural resources; reduction in energy consumption during material production; construction and use; and, the creation of a healthy, comfortable space to live and work. This article will briefly outline the LEED system, not because it is necessarily best practice or more widely used than any other rating tool, but rather because the author was trained as an LEED Accredited Professional (AP), and much of the methodology and practices in LEED are similar to other rating tools.

Leadership in Energy Efficiency and Design

LEED is an internationally recognised green building rating tool, providing third-party verification where a project was designed and constructed using strategies aimed at improving performance across a number of sustainability matrices. The system was developed by the USGBC, which was formed in 1993. The first LEED programme was launched in 1998. The programme has evolved through the years and now includes rating systems for individual building types, such as: LEED for Core and Shell; LEED for Existing Buildings; LEED for Homes; and, LEED for Commercial Interiors. The credits change to suit the construction type in each LEED system, but the focus on the five major LEED categories remains the same. These categories are:

1. **Sustainable sites.**
2. **Water efficiency.**
3. **Energy and atmosphere.**
4. **Materials and resources.**
5. **Indoor environmental air quality.**

Each category is further broken down into a number of credits, and points are allocated on the basis of compliance with individual credits. The overall point rating determines the level of the LEED standard attained. There are four levels of LEED certification, as shown in **Figure 3**: Certified; Silver; Gold; and, the highest standard, Platinum. To maximise efficiency and a greater prospect for a higher rating, it is important that an LEED AP is involved in the design process and guides the client and the design team through the process. First the assessor must register the project with the USGBC. As the design and construction progresses, the LEED AP will track changes and provide documented evidence that each credit has been met. Once the project is complete, the documented evidence will be submitted for verification to the USGBC. The USGBC provides the design team with resources, such as checklists and templates, to assist in standardising and streamlining the process.

Opportunity

Society of Chartered Surveyors Ireland members can guide prospective clients in gaining an accredited green building rating.

Conclusion

There are a number of LEED APs in Ireland and many more BREEAM assessors. These assessors come from a wide range of disciplines in the industry. Many LEED APs in the US come from a background in construction cost management, assessing each credit and point in line with its impact on the building's whole life cycle cost. An opportunity exists for Society of Chartered Surveyors Ireland members to guide prospective clients in gaining an accredited green building rating from LEED, BREEAM or any of the rating tools outlined above. Quantity surveyors are particularly well placed to offer this type of advice, as they can advise on green building attributes and associated credits while possibly giving the client an indication through life cycle cost analysis of the system or buildings payback and return.

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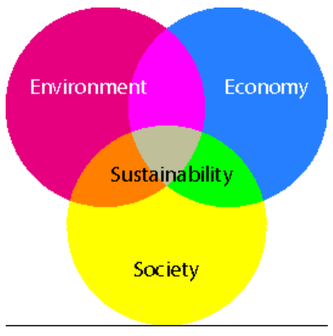

FIGURE 1: Circles of sustainable development.

FIGURE 2: LEED categories (Source: USGBC).

FIGURE 3: LEED certification standards (Source: USGBC).