

Domestic and International Application

Victoria Kate Burrows

University of Nottingham, England

Buildings are responsible for significant impacts on the environment. They account for around half the UK's emissions of carbon dioxide, the main 'greenhouse' gas.

However the environmental impact of a building is not restricted to energy use. The Building Research Establishment's Environmental Assessment Method (BREEAM) is a tool that measures the overall environmental impact of a building throughout its life and provides guidance on ways of minimising the adverse effects on the global and local environment, whilst promoting a healthy and comfortable indoor environment. The assessments generate a single score, which allows buildings to be directly comparable with others within a sector. The methodology is flexible, technically robust and independently governed. As a result, BREEAM is a widely accepted and respected scheme that sets a benchmark for sustainable development in the built environment worldwide.

Keywords: BREEAM; environmental assessment; environmental performance.

1. INTRODUCTION

BREEAM was created in 1990, and the portfolio of schemes has continued to develop and improve in response to changing legislation and increased demand, to ensure that the schemes continue to encourage best practice. BRE is responsible for the training of third party assessors and the quality assurance, licensing and certification processes.

In 2005, BREEAM was awarded the 'Best Program' Award at the influential 2005 Tokyo World Sustainable Building Conference and acknowledged as 'the most successfully executed programme for promoting sustainable practices, and influencing other initiatives worldwide'.

In the UK 85,786 buildings have been certified to date, and a further 621,140 are

currently registered for assessment. From registration, assessments can take anything from several months to several years to complete depending on the length of the construction process. The current focus on sustainability due to an increased evidence of climate change is a major factor in the rapid expansion of BREEAM worldwide, as developers and stakeholders recognise the

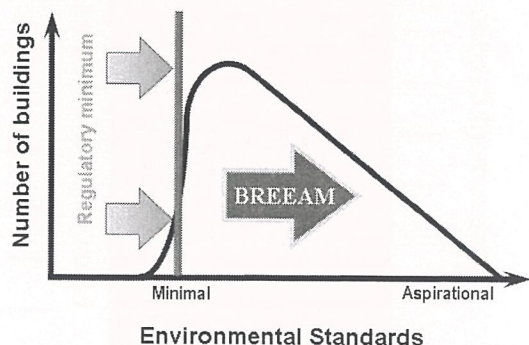


Figure 1: Mass Market – BREEAM's aim

environmental, economic and social benefits of sustainable buildings. BREEAM's aim is to raise the standards of all buildings above the regulatory minimum (Figure 1).

2. BUILDING TYPES ASSESSED

BREEAM has a number of standard schemes covering a wide range of building types:

- Office buildings
- Court buildings
- Light industrial units, warehouses and workshops
- Prison accommodation
- Retail outlets and shopping centres
- Schools
- Housing
- Multi-residential accommodation e.g. Student accommodation

In addition, the BREEAM Bespoke methodology can be used to assess any building not covered by one of the above schemes, including concert halls, university buildings, sports facilities etc. A standard scheme is also currently being developed for health buildings.

BREEAM schemes are able to assess new build developments as well as major

refurbishment projects, and Management and Operation stage assessments are also possible in the non-domestic Schemes.

3. THE ASSESSMENT PROCESS

BRE trains, examines and licences organisations and individuals to carry out BREEAM assessments and to work with design teams to ensure that their buildings achieve the rating they require. Assessments are carried out early in the design stages to ensure maximum influence over the building design and performance.

BREEAM is a credit based system, and addresses the following key categories across all standard schemes.

- Management: Policies, commissioning, site management and procedural issues.
- Health and Wellbeing: Indoor and external issues affecting health and wellbeing.
- Energy: Predicated and operational CO₂ emissions and other energy saving issues.
- Transport: Transport related CO₂ emissions and other location related factors.

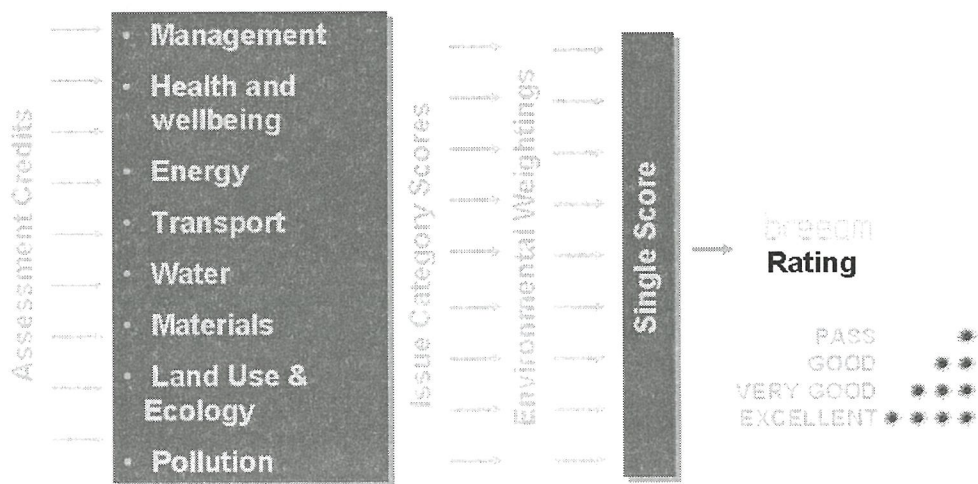


Figure 2: The BREEAM Assessment process

- Water:
Water consumption and efficiency.
- Materials:
Environmental implication of building materials, including life cycle impacts.
- Land Use and Ecology:
Encourages the use of previously developed and decontaminated sites and the conservation and enhancement of the ecological value of the site.
- Pollution:
Air and water pollution issues.

Buildings are assessed against credits in the above sections for achieving particular performance targets, and the scores for each section given an environmental weighting. The total score is used to determine the rating for that building on a scale of 'PASS', 'GOOD', 'VERY GOOD' or 'EXCELLENT' (Figure 2).

A certificate is then issued stating its rating, which can be used for promotional purposes.

4. WHO IS USING BREEAM?

BREEAM is popular with clients because it is easy to specify a performance standard and it is a third party certification scheme making the assessment independent. It is popular with the construction industry because it sets tangible targets which are easy to understand and it provides all parties with a mechanism of reflecting and recognising good environmental performance. BREEAM therefore allows design teams, planners, development agencies, managers and developers to specify the sustainability performance of their buildings in a way that is quick, comprehensive and visible in the marketplace.

- Property agents use BREEAM to promote the environmental credentials

and benefits of a building to potential purchasers and tenants.

- Design teams use BREEAM as a tool to improve the performance of their buildings and their own experience and knowledge of environmental aspects of sustainability.
- Managers use BREEAM to measure the performance of buildings, develop action plans, and monitor and report performance at both the local and portfolio level.

The following government and regulatory bodies in the UK currently specify that all of their buildings must achieve rating of 'VERY GOOD' or better under BREEAM:

- English Partnerships
- Department for Education and Skills
- Housing Corporation
- Welsh Assembly Government

In addition, the 2006 Sustainable Procurement Action Plan made a recommendation that government should mandate the application of BREEAM 'EXCELLENT' standards to all new government estate buildings and major refurbishment. This mandate was endorsed by the Prime Minister in June 2006 as UK government policy.

5. BENEFITS OF USING BREEAM

Current building methods can result in high energy and water usage, large quantities of waste, poor occupancy comfort and low user satisfaction. BREEAM addresses these environmental impacts, seeking to minimise them and reward best practice.

A BREEAM assessed building can mean:

- Improved functionality, flexibility, maintainability and durability.

- Lower embodied and operational environmental impacts.
- High user satisfaction, quality and control.
- Reduced operational costs.

Buildings designed to BREEAM standards offer environmental, economic and social benefits including:

- Demonstrating compliance with the environmental requirements from occupiers, planners, development agencies and developers.
- Supporting a corporate environmental strategy.
- Creating better work places, homes or leisure facilities.
- Increasing the marketability of a development both in terms of desirability and rentals.
- Demonstrating good and best practice.

6. CODE FOR SUSTAINABLE HOMES

Launched on the 10th April 2007, the Code for Sustainable Homes will replace BREEAM's Ecohomes scheme for assessing all new build domestic developments in England. Heavily based on the Ecohomes standard, the scheme has been developed in conjunction with the Department of Communities and Local Government and industry wide consultation. It sets minimum mandatory standards of performance in energy efficiency, water efficiency, surface water management, site waste management, household waste management, and the use of building materials, for improvements over current minimum regulatory standards.

The Code is assessed using six levels, ranging from 'Code Level 1' to 'Code Level 6', illustrated with stars. Code Level 6 demonstrates Zero Carbon homes, a standard that will be required by all new homes in England by 2016.

Assessments are conducted at design stage, with formal certification issued upon completion of construction. The process of assessment is similar to that other BREEAM schemes, as are the training, licensing and certification processes.

Compliance under the Code remains voluntary except for those bodies listed in the previous section, however the government are minded to enforce the Code as a mandatory requirement for all new build domestic developments from April 2008. It is expected that similar mandatory schemes may be developed for other sectors.

7. BREEAM INTERNATIONAL

Buildings outside the UK can also be assessed using BREEAM. The routes of support are:

7.1 BREEAM International Accreditation

Developments with similar conditions to UK sites can be assessed using the standards BREEAM schemes.

7.2 BREEAM International Bespoke

Schemes are tailored to reflect the local climate and legislation by:

- Substituting local code or guidance material for UK code material where appropriate.
- Providing an appropriate standard or measurement method where none exists locally.
- OR a mixture of both the above (when local codes and practices meet part of the expectation).

Buildings recently assessed in this way include:

- The refurbishment of the historic Van de Kamp Bakery Building for Los Angeles City College, California.

- The new headquarters building for the European Investment Bank, Luxembourg.

BRE is also currently working with clients worldwide to develop BREEAM schemes for the assessment of buildings in countries as diverse as Algeria, Dubai, Hungary, Italy, the Philippines, Poland.

Sometimes this requirement is led by a multi national company wanting to rate its entire stock using the same environmental indicator.

7.3 BREEAM International Consultancy

This route involves fast tracking the development of a country (or region) specific building environmental assessment method. BRE's training materials, quality assurance and delivery procedures can be customised for the specific scheme.

7.4 BREEAM International Affiliate

The International Affiliate programme provides a free BREEAM training place, access to all documents and information, and an opportunity to meet and discuss requirements. If required, an option for the right to adapt BREEAM material is also available.

6. OTHER COMPETITORS

Similar assessment methods exist in other countries across the world. BREEAM's biggest competitor is the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) programme.

Heavily inspired by the BREEAM methodology, LEED shares the same aims although, to date, has a smaller share of its potential market than BREEAM, only 801 buildings^[3] have been certified under it since its launch in 1995. Direct comparisons between LEED and BREEAM are difficult

to draw due to the differences in the assessment processes and focus of the schemes.

LEED is assessed using 'Bronze', 'Silver', 'Gold' and 'Platinum' standards.

9. CONCLUSION

The BREEAM system challenges the construction industry to invest in increasingly sustainable construction techniques, technologies and materials. The robust assessment method allows for direct comparisons of the environmental credentials of building of the same type.

The focus on the environmental performance of buildings is increasing, driven by the market's desire for a sustainable, 'green' image. This is enhanced by the competitive rating system that BREEAM offers.

Ultimately, it is about decreasing the carbon emissions from the consuming giants – construction, buildings and transport – in a world where climate change is inevitable, to reduce its impact on tomorrow's world.

BREEAM is addressing a global problem with local solutions.

REFERENCES

- [1]The BREEAM Factfile and further information can be downloaded from www.breem.org
- [2]The BREEAM International Leaflet is available from BRE.
- [3]The United States Green Building Council website www.usgbc.org. Full information on LEED, including a complete list of certified projects to date (12th May 2007).