



BSRIA RELATED RESOURCES

STANDARDS GUIDANCE

Sustainable procurement. Guidance.
BSI, BS ISO 20400:2017, 52pp, figs, tabs and refs

Environmental management systems General guidelines on implementation.
BSI, BS EN ISO 14004:2016, 59pp, tabs and refs

Sustainability of construction works. Assessment of economic performance of buildings. Calculation methods.
BSI, BS EN 16627:2015, 63pp., figs, tab

Framework for the assessment of the sustainable use of materials. Guidance.
BSI, BS 8905:2011, 38pp, figs, refs

Sustainability in building construction. General principles.
BSI, BS ISO 15392:2008, 27pp, 4 figs, refs, biblio

JOURNAL ARTICLES

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A green home decision-making tool: sustainability assessment for homeowners
Li P, Froese T
Energy & Buildings, 1 September 2017, Vol.150, 421-431, 3 tabs, 6 figs, appendix, 41 refs

Building MoTs
Agha-Hossein M
BSRIA Delta T, December 2017, 22-24

Building energy transformation is possible now, really
Freihaut J, Tryson L
HPAC Heating/Piping/Air Conditioning Engineering, October 2017, Vol.89 (10), 18-22, 24

Climate co-benefits of green building standards: water, waste and transportation
Eisenstein W, Fuertes G
Building Research & Information, Special Issue: Rethinking Thermal Comfort, October / November 2017, Vol.45(8), 828-844, 6 figs, 16 tabs, refs

Move beyond green building: a focus on healthy, comfortable, sustainable and aesthetical architecture
Xie H, Clements-Croombe D, et al.
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Passivhaus rules
Ijeh I
Building (magazine), 24 March 2017, No.12, 34-37, photos

The state of the art of living walls: lessons learned.
Riley B
Building & Environment, March 2017, Vol.114, 219-232, 10 figs, 2 tabs, photos, 98 refs

Occupant perception of "green" buildings: distinguishing physical and psychological factors
Holmgren M, Kabanshi A, et al.
Building & Environment, March 2017, Vol.114, 140-147, 4 figs, 3 tabs, 69 refs

Green building megatrends
Yudelson J
Ecolibrium, May 2016, Vol.15(4), 74-78, 3 figs, photos

The absolute environmental performance of buildings
Nykjaer Brejnrod K, Kalbar P.
Building & Environment, July 2017, Vol.119, 87-98, 1 fig, 8 tabs, appendix, 46 refs



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Green building and sustainability *at a glance*

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WHAT ARE GREEN BUILDINGS?

GREEN BUILDINGS, WHICH CAN ALSO be called “green construction” or “sustainable building” means designing and operating buildings in ways that are environmentally friendly and economical of resources.

The principles can be applied throughout a building's life-cycle: from conception, building, operating, retrofitting and demolition.

WHAT IS SUSTAINABILITY?

SUSTAINABILITY WAS DEFINED BY the Brundtland Commission as “*meeting the needs of the present without compromising the ability of future generations to meet their own needs.*” (Brundtland Commission, *Our Common Future*, 1987). Sustainability can mean different things in different contexts. In terms of buildings, however, it is a design philosophy to create resource efficient buildings that are long lasting and reduce overall impact on environment and occupant health.



SUSTAINABLE PLANNING IN BUILDING DESIGN

BENEFITS

SUSTAINABILITY IS A CORE COMPONENT OF corporate strategy, to ensure engagement with all stakeholders. Having a sustainability strategy enables you to monitor and address sustainability issues in the most effective, authentic and beneficial manner. A corporate sustainability strategy requires top level engagement in the following processes:

- sustainability review
- stakeholder mapping
- workshop and brainstorming
- developing communications processes
- goal development
- executive briefings and papers
- ongoing sustainability advice

THE MAIN BENEFITS OF sustainable building include:

- reducing trash, pollution and degradation of the environment
- enhancing occupant health
- improving productivity
- making efficient use of energy, water and other resource



BSRIA'S EXPERTS SAY

WITH THE GOVERNMENT'S AIM TO INCREASE housing supply to 300,000 new homes per year, BSRIA says “the building industry must enter a new era of technology, data collection and advanced standards”. Maintaining high standards is critical to safe guarding the health and well-being of the occupants, as well as creating resilient, energy efficient and sustainable buildings.

Challenges faced by the sector today include:

- addressing issues around the quality of new buildings, the energy performance gap and sustainable construction.
- engaging with occupants to understand their needs and perceptions when designing buildings to optimise their health and wellbeing.

- understanding and complying with the regulatory and strategic implications surrounding the “low carbon” agenda.
- researching and developing new building methods such as off-site construction to increase energy efficiency and lower costs.

Helping to meet these goals, construction standards are being driven by the Building Regulations, European Directives, Local Authorities plans and other independent industry initiatives. Government incentives such as ECO, the former Green Deal, local initiatives and the introduction of newer policies as in the case of minimum EPC ratings for rental and commercial properties, further support the goals of continuous energy efficiency and overall sustainability improvement.



ASSESSMENT TOOLS AND STANDARDS

EPB

What is it?

The Energy Performance of Buildings (EPB) suite of standards, otherwise known as the BS EN 52000 “family”, consists of at least 30 European standards and 17 international standards.

In 2017, a comprehensive series of European (CEN) and international (CEN & ISO) standards was published to harmonise the methodology for assessing overall energy performance of buildings.

Why use it?

The series is designed to help architects, engineers and regulators assess the energy performance of new and existing buildings in an holistic way.

Benefits

The advantage of the overarching EPB standards is that they offer choices to tailor the assessment to any national situation, worldwide. Building owners and operators can have flexible assessment of energy consumption and an optional range of tools and solutions to be utilised on a case by case basis.

BREEAM

What is it?

Launched in 1988, BREEAM is a sustainability rating tool created by BRE that measures buildings energy performance in terms of energy and water use, health and wellbeing, pollution, transport, materials, waste, ecology and management processes. The scheme was updated on 7th March 2018.

Buildings are rated and certified on a scale of “Pass”, “Good”, “Very Good”, “Excellent” and “Outstanding”. The assessments are carried out by independent, licensed assessors. There are various measures for differing types of buildings including new, existing, retrofitted, community and international sites.

Why use it?

The tool is designed to help building owners and operators to benchmark their organisations against specified energy efficiency and sustainability standards.

Benefits

As well as being an energy performance standard Passivhaus also facilitates excellent indoor air quality levels. The Passivhaus standard can be applied to any climate in the world and works equally as well in warm climates as it does in more moderate climates.

PASSIVHAUS

What is it?

Passivhaus or “Passive House” is the fastest growing energy performance standard in the world.

The core focus of the Passivhaus Standard is to dramatically reduce the requirement for space heating and cooling, while also creating excellent indoor air quality and comfort levels.

The Passivhaus standard was developed in Germany in the early 1990s by professors Bo Adamson of Sweden and Wolfgang Feist of Germany and the first dwellings to be completed to the Passivhaus Standard were constructed in Darmstadt in 1991.

Why use it?

The Passivhaus standards strengths lie in the simplicity of its approach enabling designers to build a house that has an excellent thermal performance and exceptional airtightness yet minimal energy consumption.

Benefits

As well as being an energy performance standard Passivhaus also facilitates excellent indoor air quality levels. The Passivhaus standard can be applied to any climate in the world and works equally as well in warm climates as it does in more moderate climates.

SAP

What is it?

The SAP (Standard Assessment Procedure) is an energy performance rating tool incorporated in Part L of the Buildings Regulations. The tool is now also part of the U.K. Government's methodology for calculating energy performance of self-contained residential buildings. Created in 1992 as a joint venture between BRE and the Department of the Environment, SAP was developed to provide a framework for calculating the energy performance of self-contained dwellings including flats but excluding communal areas. The most recent version, SAP 2012, was developed to underpin the 2013 Amendment to Part L of the Building Regulations for England and Wales.

Why use it?

The tool calculates the typical annual energy costs for space and water heating, lighting and CO₂ emissions.

Benefits

The energy efficiency and sustainability benefits include:

- metrics can be used improve future building design
- ensures compliance with Building Regulations
- ensures compliance with Government mandated guidelines for energy performance

LEED

What is it?

Leadership in Energy and Environmental Design (LEED) is a global “green” building certification programme that is popular worldwide. It covers design, construction, operation and maintenance. LEED is a voluntary environmental certification system developed by the U.S. Green Building Council in 2000 and is a competitor to BRE's BREEAM certification programme in the U.K. There are separate LEED systems for differing building types including new and existing buildings, commercial and residential sites, schools, healthcare and more.

Why use it?

LEED offers a set of energy efficiency rating tools for the design, construction, operation and maintenance of “green” buildings with the purpose of encouraging organisation to create energy an resource efficient buildings that are “healthy” to live in.

Benefits

This suite of tools is commonly used to verify and validate sustainability performance in buildings, offering formal accreditation. In particular, LEED standards focus on life cycle evaluation and long term environmental benefits.

SOFT LANDINGS

What is it?

The Soft Landings Framework is a joint initiative between BSRIA and UBT (Usable Buildings Trust). It was first published in 2009 and was updated in 2014 to align with the RIBA 2013 work stages. It is now developed by the BSRIA Soft Landings Group. The term “soft landings” refers to a strategy adopted to ensure the transition from construction to occupation runs smoothly and that operational performance is optimised. The Government Soft Landings (GSL) strategy was published in May 2011 with the intention of reducing the cost of public sector construction.

Why use it

Soft Landings is a building delivery process which runs through the project, from inception to completion and beyond, to ensure all decisions made during the project are based on improving operational performance of the building and meeting the client's expectations.

Benefits

A framework to ensure smooth commissioning and post commissioning of buildings and building services and ongoing support to ensure buildings continue to operate effectively and efficiently long after implementation.

COSHH

What is it?

The Control of Substances Hazardous to Health (COSHH) is the Guidance that states the obligations that employers must meet in order to comply with health and safety regulations concerning hazardous substances. Specifically, employers must reduce occupant exposure to:

- chemicals, and products containing chemicals
- fumes, gases, vapours and mists
- dusts
- nanotechnology
- biological agents and germs.

Why Use it?

According to HSE website, the tool enables employers to meet their obligations through: finding out what the health hazards are;

- deciding how to prevent harm to health (risk assessment);
- providing control measures to reduce harm to health
- making sure they are used
- keeping all control measures in good working order
- providing information, instruction and training for employees and others
- providing monitoring and health surveillance in appropriate cases
- planning for emergencies.

Benefits

Use of COSHH helps organisations to improve health and safety for employees and also leads to healthier buildings, cleaner working environment, greater productivity and reduced costs.