

building with timber

Timber.org.au

Newsletter

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Green building rating systems – the good news for timber!

Introduction

The development of sustainability rating systems is good news for the timber industry. Timber is one of the most environmentally friendly building materials, and this attribute plays a major role in contributing to building sustainability.

This newsletter provides a brief overview of the main sustainability rating systems, emerging trends and links to further information.

We are now over halfway through the Year of the Built Environment and with new sustainable housing regulations coming into force in NSW, Victoria and the ACT this month, building codes demanding energy efficient homes are now in place Australia wide.

The regulations follow those introduced by Western Australia, Northern Territory, South Australia and Queensland that, at a minimum, require new housing to satisfy the energy efficiency requirements of the Building Code of Australia (BCA).

As governments and industry continue working toward achieving a more coherent, complete, accurate and uniform green buildings ratings system, some sectors of the industry are quite concerned that the building rating systems do not adequately reflect the sustainable approach being taken by Australia's forest and timber industry.

Most sustainable building rating systems are still based on calculations of the energy efficiency of the completed building or measure the comparative thermal performance of the building envelope only. However, a common failing with such systems at present is minimal evaluation of the actual materials selected for construction.

This is now being addressed on a national scale with equal involvement from both government and industry. A number of research and certification bodies are also making a valuable contribution. The forest and

forest products industry has also made a significant contribution to these developments..

Flowing from the Regional Forestry Agreements (RFAs), Australia has seen the development of third party certification schemes including the Australian Forestry Standard (AFS) and the Forest Stewardship Council (FSC), which seek to provide greater confidence in claims about sustainable forest management. Both will include Chain of Custody Certification, providing commercially for the first time a paper trail for timber from the point of extraction to point of sale.

The AFS provides the forest and wood products industry with a national standard to assess and certify its products as sustainably produced. Timber sourced from AFS certified forests will meet the Green Building Council of Australia (GBC) material selection requirements. For example, *Green Star - Office Design* awards credits for the procurement of sustainable timber. With AFS certification, consumers are guaranteed that timber is from a well-managed forest and meets world's-best practice sustainability requirements.

The GBC's Green Star rating tools awards up to two (2) credits where the percentage of timber and composite timber products used in the building and construction works are from AFS or FSC. The Green Star rating tools also awards points where reused or recycled timber, or timber as specified using the revised Good Wood Guide.' '

The ecoSelect brand recognises Australian hardwood timbers from regenerating forests that rigorously applied standards including the State Code of Forest Practices, Forest Management prescriptions, Regional Forest Agreements, the Flora and Fauna Guarantee, and State and Federal acts and regulations. Ecoselect, therefore, is a useful resource when selecting timber for a sustainable housing project.

Visit www.timber.org.au, to access a broad range of more comprehensive and detailed up-to-date publications and downloadable documents.

National and state-based initiatives

Nationally, new energy performance standards are being rolled out within the Australian Building Code for both commercial and residential buildings. So far the focus has been mostly on energy. However, a wider set of variables is being absorbed into developing 'green' or 'sustainability' ratings systems.

Green Star rating tools- Green Building Council of Australia (GBC or GBCA)

The Green Building Council (GBC) is an industry-based organisation developing an Environmental Rating System for commercial buildings in Australia. Its aim is to promote sustainable development and improvements in the property industry of Australia, by encouraging developers to adopt an accreditation system for implementing a green building programs, technologies, design, practice and operations. Green Star is therefore a rating tool which focuses on the environmental impact of the built form, considering health problems in relation to indoor activity and air, introduced energy issues, water and pollution. It functions as an accreditation system, increasing the requirements that need to be met in order to gain credits, defining the grey area of 'sustainability'. The building is then rated on a scale of 1 to 5 stars over five areas of sustainability.

ABGR – Australian Building Greenhouse Rating Scheme

The ABGR scheme is performance based, and not design based, providing accredited assessments of office buildings. This national system rates Greenhouse performance of new and existing buildings on a star rating scale of 1-5, with the ability to rate the whole building and tenancy separately.

A building with a high star rating should be more energy efficient and cheaper to run, and result in less greenhouse gas emissions. The key focus for its use is on existing buildings, which is good news because 95% of buildings are already existing structures. However, it only applies to commercial buildings.

NatHERS (Nationwide House Energy Rating Scheme)& AccuRate

The CSIRO developed Nationwide House Energy Rating Scheme is based on the already existing NatHERS software, now being upgraded and rebadged as *AccuRate*. This tool measures the comparative thermal performance of the building *envelope* – and *only* the building envelope.

NatHERS was developed with funding from State, Territory, and Federal Governments. The most prominent limitations that have been identified are that the program is limited to fixed constructions and zones, and ventilation is not sufficiently credited. These are areas that are presently being modified and with limited funding, having some verification tested.

NABERS - National Australian Built Environment Rating System

NABERS is the National Australian Built Environment Rating System. It took effect as of 2001, after the Australian Government Department of the Environment and Heritage (DEH), consulted with industry and other stakeholders to develop it.

NABERS is a voluntary system used alongside other rating tools, on properties established for one year or more, with the capacity to split ratings between tenant and landlord where required.

The system assesses a number of areas: the energy use and greenhouse emissions, refrigerant use, water use, storm water run off and its pollution, sewage outfall volume, transport, landscape diversity, toxic materials, waste, indoor air quality and occupant satisfaction. National average performance is banded as 2.5 stars. Best practice is banded as 5 stars. It is a web based rating system that includes user spreadsheets for commercial office base building, commercial office tenancy, commercial office whole building, or residential homes.



Developed between 1999 and 2002, the Australian Forestry Standard is Australia's first forest management standard.

BASIX - Building and Sustainability Index

BASIX, the Building Sustainability Index, is an interactive assessment tool that promotes sustainable residential design. The tool has recently become available on the internet and will be used by developers, architects and other design professionals to ensure that new homes meet the NSW Government's water and energy efficiency targets. BASIX is administered by the NSW Department of Infrastructure, Planning and Natural Resources.

BASIX relates to actual energy usage patterns of buildings, assisting and rewarding better design. The system is easy to update and is consistent in its coverage of different aspects of sustainable design and the built form.

The system covers such areas as sound, transport, water, energy, waste, indoor activities affecting air quality, materials, and ventilation. There is no single score, because each factor is of interest to different agencies, and it is not possible to have a poor score in any one area but achieve good rating by having higher scores in other areas.

BASIX aims to reduce compliance costs by its simplicity of operation. It also aims to provide a consistent framework across NSW.

EPGB - Environmental Performance Guide for Building

The Environmental Performance Guide for Building (EPGB) is an environmental performance guide for NSW Government Buildings developed by the NSW Department of Public Works and Services. EPGB is structured through a framework of environmental performance categories, suggested strategies, and references to external guides.

The EPGB details the environmental issues that should be considered at all stages of a construction project, from strategic planning through to design, construction and operation, to ensure that the finished product is a high performance building.

This system covers all stages of the building process, including such areas as: energy, greenhouse emissions, transport, land, biodiversity, water, materials, indoor ventilation and innovation.

EcoSpecifier

EcoSpecifier is a non profit organisation, which was formed as a result of collaboration between RMIT University's Centre for Design in Melbourne and Sydney-based ESD consultancy Natural Integrated Living. Its purpose is to help builders and others in the construction industry to better understand what is and what is not a 'green' building product.

The *Ecospecifier* web site contains a database of hundreds of independently vetted eco-preferable products which have been measured against 30 common industry categories and 130 sub categories.

Resources also include case studies, briefings, technical guides and training programs across all aspects of sustainable housing. A number of tools can be downloaded from the *EcoSpecifier* website, including life cycle analysis software and a green design strategies and analysis program.

The environmental credentials of timber

Over recent years, www.timber.org.au has published a number of research reports focused on establishing authoritative data on the environmental credentials of timber.

Two publications on www.timber.org.au with helpful summaries of this research are: *Environmentally Friendly Housing Using Timber – Principles and Environmental Benefits of Building with Timber*.

The first publication sets out the principles for designing and building environmentally friendly houses using traditional timber framed construction. Information is included on Greenhouse Gases, Embodied Energy and Life Cycle Energy.

The second publication analyses the environmental credentials of timber as a building material, from the forest to its incorporation in a building. Comparisons are made with other building materials and across various methods of construction.

The *Timber Design & Construction* datafile from the popular *Timber Manual* also provides some very useful advice about how best to apply the natural advantages of timber to enhance sustainability ratings.

R-value – sustainability ratings systems

One of the main themes in the Life Cycle Assessment aspect of sustainability ratings is the dependency of buildings on heating and cooling systems.

As of 2004, most states and territories implemented either through the BCA or independently, regulations which established minimal thermal requirements for residential buildings. The aim is to reduce operational energy usage for new homes as well as reducing greenhouse gas emissions for the residential sector.

The BCA requirements are found in Part 3.12 (Volume Two) of the Code. These are based on minimum R-values for different building elements and vary for different defined zones throughout Australia.

The documents provided below contain the most up-to-date calculated R-values for various timber framed building elements. They can be available at www.timber.org.au

Calculated R-values for timber

R-values for Timber Framed Building Elements (Complete)
R-values - Introduction section
R-values Roofs section
R-values Walls section
R-values Floors section

Technical references

Environmentally Friendly Housing Using Timber - Principles
Environmental Benefits of Building with Timber

Some useful links

Australian Green Development Forum
 AVEL: Australasian Virtual Engineering Library for Sustainable Development
 AGO: Australian Greenhouse Office:
 CRC: Cooperative Research Centres Foundation
 CSIRO: Building, Construction & Engineering Department of Industry, Science and Resources
 EDF: Ecodesign Foundation
 Department of Environment and Heritage
 Green Buildings Council of Australia
 Institute for Sustainable Futures
 National Heritage Trust
 Planning NSW
 Planet Ark
 SEDA: Sustainable Energy Development Authority (NSW)
 SEAV: Sustainable Energy Authority Victoria
 SEIA: Sustainable Energy Industry Association
 Square One Research
 SustainAbility
 Urban Ecology Australia

Year of the Built Environment

<http://www.builtenvironment2004.org.au/>

Codes Specifications Standards

Australian Forestry Standard (AFS)
 Building Code of Australia
 Construction Information Systems Australia (NATSPEC)
 Standards Australia
 Construction Specifications Institute
 CSIRO Built Environment

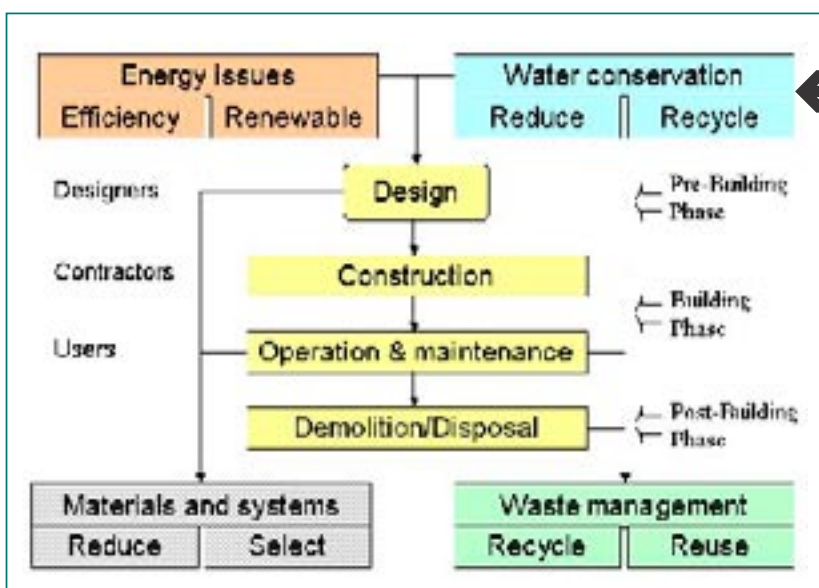


Table 2: Sustainable Construction Process:

Sustainable construction is defined as “the creation and responsible management of a healthy built environment based on resource efficient and ecological principles.” Sustainably designed buildings aim to lessen their impact on the environment through energy and resource efficiency. It includes the following principles:

- minimising non-renewable resource consumption
- enhancing the natural environment
- eliminating or minimising the release of toxic substances.