



Quick start

>> design for environment

Endorsements, Standards and Rating Tools

Also noteworthy is the more recent introduction of environmental rating tools, eco-product databases and environmental labels. Depending on specific product or project requirements, some organisations offer their tools and reputation as a means of underscoring or verifying the environmental performance of commercial furniture:

Green Star – Interior Office Rating Tool > www.gbcaus.org

Developed by the Green Building Council of Australia, the tool is designed to assess the environmental impact of an 'Interior Office' fit-out and covers commercial furniture categories including chairs, workstations and partitions. The tool features 'materials calculators' that consider material content, durability, environmental management systems, as well as design for modularity.

EcoSpecifier > www.ecospecifier.org

This on-line product database featuring environmentally improved building materials, products, finishes and adhesive continues to attract attention from manufacturers and product suppliers eager to secure some level independent credibility. The assessment criteria offer the furniture designers with a sense of key impacts that need to be addressed in any DfE process.

Australian Environmental Labelling Association > www.aela.org.au

AELA has released a voluntary environmental performance standard for 'furniture and fittings' that covers office and domestic furniture. Its embryonic status and industry relevance in Australia has yet to be established.

MBDC - McDonough Braungart Design Chemistry > www.mbdc.com

The US based firm – MBDC – has conducted pioneering design sustainability research and assessments for companies like Herman Miller and DesignTex. MBDC have managed to bridge the gap between commercial and ecological imperatives in an intelligent manner, however their focus is on major global corporates. Of particular note is the MBDC Cradle to Cradle™ Certification process, which has global relevance to design and manufacturing.

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The next DfE Quickstart is scheduled for July 2006. Feedback is welcome, and suggestions for future topics are encouraged. Contact Product Ecology to discuss further at email: info@productecology.com.au

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Furniture Sustainability by Design...

Design for Environment (DfE) or EcoDesign is about developing products in a way that reduces their environmental impact. The aim is to design products that are functional, desirable, cost effective, and have no harmful side-effects on the environment or human health.

Product designers and commercial furniture manufacturers are well placed to lock-in positive environmental features such as low impact materials, cleaner production methods, extended product life and design for disassembly, refurbishment and recycling. At the same time, the design process can lock-out negative attributes such as toxic and hazardous substances, energy intensive materials and product characteristics that increase the risk of premature disposal.

The furniture sector worldwide, including Australia and New Zealand, is demonstrating an advanced state of environmental consciousness and design sophistication. Manufacturers and their designers are showing what can be done when the market is demanding and specifiers are informed.

DfE has much to offer the process of furniture sustainability and churn reduction despite the often uncontrollable influence of fashion over interior spaces. This Quickstart presents an overview of key furniture DfE issues and a sample of proactive companies.

Furniture and the Environment

Continuing research and impact assessment is highlighting how and where commercial furniture is contributing to various environmental problems. In particular, the process of 'office churn' is directly resulting in high levels of solid waste and the non-recovery of materials. The problem of churn emerges from the effect of fashion on the workplace and the perceived need for tenants to rejuvenate the workplace. The premature disposal of commercial furniture due to churn can lead to solid waste impacts.

From a life cycle perspective, materials choice and manufacturing can also have a significant influence over the extent of furniture impacts. The use of toxic and hazardous substances as part of the production process should be closely examined with a view to avoiding or phasing out such substances.

A sample of direct and indirect impacts along the life cycle may include:

- Biodiversity impacts due to extraction, harvesting and source of raw materials.
- Use of timbers such as rainforest species and scarce hardwoods leading to loss of forest ecosystems and possible biodiversity. Use of plantation timbers from poorly managed areas resulting in habitat damage, soil erosion and water pollution.
- Energy production causing greenhouse gases related to steel and aluminium production, as well as other materials.
- Hazardous substances used during materials processing, finishing and production can lead to emissions as well as contamination concerns.
- Emissions to air from the manufacture and distribution of furniture leading to smog and human health problems.
- VOCs from furniture materials, adhesives and finishes can lead to indoor air quality impacts during installation and operation.
- Solid waste from end-of-life furniture represents an inefficient use of materials and components and a contribution to environmental problems associated with landfilling.



Drivers for Furniture Sustainability

A diverse range of factors is helping to improve the environmental performance of the commercial furniture sector in Australia:

- The general boom in green buildings and sustainable office fit-outs
- Market demand from interior designers, architects and specifiers in general
- Market demand from facility managers and procurement/purchasing managers
- Global trends in DfE and cleaner production
- Increased availability of environmentally improved manufacturing materials
- Product procurement guidelines and standards
- Sector-wide competitive pressures

Collectively these factors represent a substantial set of drivers – commercial and environmental – which are transforming the marketplace.

DfE Strategies and Guidelines

DfE strategies and guidelines for furniture can cover a diverse range of issues from low embodied energy materials and reduced greenhouse gas emissions, through to toxics, solid waste and improved indoor environment quality. For a comprehensive overview on furniture related DfE refer to *Environmentally Improved Office Furniture: A Guide to the Key Issues*¹.

A summary of such guidelines includes:

- Manufacturing with low embodied energy materials, materials with recycled content, materials manufactured with renewable energy, minimised wastage.
- Design furniture which can be easily refurbished, disassembled and/or recycled;
- Design for durability – this can be achieved by identifying and eliminating potential weak points in the design; particularly for operational components.
- Design for re-use and re-manufacture – commercial furniture should be designed for re-use.
- Design for disassembly – ensure that the overall design allows dismantling. This strategy facilitates easier repair and maintenance.
- Design for recycling – this means that the materials used to manufacture a product could have a secondary use, either as the same product or as a different product. Avoid adhesives and incompatible materials.
- Beware! Solvent based adhesives, paints, varnishes and lacquers emit VOCs mostly during the drying stage but some can continue to emit VOCs long after production and assembly.
- Beware! Materials containing formaldehyde – a suspected carcinogen in humans – found in products such as compressed timber fibre boards, plywood, textiles and carpets
- Beware! Fabrics and foams can harbour already air borne VOCs only to be re-released in a cocktail effect at a later time when the interior temperature increases due to extra heating during winter or direct sunlight.

Wharington International (Aust) > www.sustainablefurniture.com.au

"Wharington International is committed to the sustainable and eco-efficient manufacture of commercial furniture and responsible product stewardship through encouraging careful selection of durable and recyclable materials, clean production methodologies and up-holding our Environmental Pledge to take back our furniture at end of life."

Sample product(s)	Max chair, ReDefine lounge
Environment factors	Strong commitment and action of furniture sustainability. Sustainable application of materials and manufacturing methods. Developer of Recopol™ recycled plastic produced from end-of-life (EoL) electrical and electronic products as well as post-industrial plastic waste. Manufacturer of Recopol™ recycled plastic furniture shells for other designers/producers. Environmental pledge to take-back their products for recycling. The Re-Define Sofa and Lounge Chair Range is the first Sofa manufactured in Australia to have been accredited with the AFRDI Blue Tick to Commercial Level 4.



Interlink Commercial Furniture (Aust) > www.interlinkfurniture.com.au

"The option to recycle is an important design priority and is a continued focus in Interlink's selection of materials and development of new products."

Sample product(s)	Aero and @CALL workstations
Environment factors	Sustainable application of design, materials and manufacturing methods. Active specifier of recycled materials. Proactive development and implementation of company-wide environmental systems and tools. Explicit advocate of EcoDesign and value of applied R&D.



Formway Furniture (NZ) > www.formway.com

"Demonstrating how design can integrate environmental factors within a commercial context is a critical step towards rethinking the workplace and moving towards more sustainable patterns of production and consumption."

Sample product(s)	Life chair, GRID workstation
Environment factors	Focus on connecting design, innovation and sustainability. Sustainable application of design, materials and manufacturing methods. Effective commercialisation of flagship eco furniture acknowledged worldwide. Strong commitment to achieving high levels of furniture sustainability through research, design, supply chain management, cleaner production, Product Stewardship and information outreach. Proactive adoption of Life Cycle thinking and LCA.



Herman Miller (USA) > www.hermanmiller.com

"Our efforts to advocate for and protect the environment – notably our Design for Environment (DfE) protocol – have resulted in products and programs that link us with customers who also share our passion for treating the natural environment with respect."

Sample product(s)	Mirra and Celle chairs
Environment factors	Long history and commitment to DfE and a range of other environmental tools and strategies. Sustainable application of design, materials and manufacturing methods. Adoption of the MBDC Cradle to Cradle Design Protocol. Well developed environmental tools and systems comprehensively applied. Strong focus on the connection between good design and overall corporate responsibility.



ESO Group (Aust) > www.esogroup.com.au

"ESO Group aims to ensure that the placement of sustainable furniture creates environmental, social and economic benefits for the betterment of the entire community at large."

Sample product(s)	Pulse lounge, Rest and Nub chairs
Environment factors	Strong business focus on furniture sustainability. Specifier of recycled and renewable materials. User of Recopol™ recycled plastic shells. Proactive commitment to good design, sustainability and affordability. ESO Group will take-back their products for recycling.



Zenith Interiors (Aust) > www.zenithinteriors.com.au

"By complying with all the relevant legislation and regulations, our aim is to continually improve our work practices and procedures that affect the environment. We actively promote the efficient consumption of raw materials and energy resources. Our aim is to significantly contribute to a society of sustainable development."

Sample product(s)	Options workstation
Environment factors	Commitment to Life Cycle Assessment (LCA). Sustainable application of design, materials and manufacturing methods. Exemplary case study in SME attention to practical sustainability. Strong advocate for furniture sustainability and external communications. Noteworthy investment in environment related R&D.



1. *Environmentally Improved Office Furniture: A Guide to the Key Issues including Specification Guidelines*, in The BDP Environment Design Guide, 2002. Written by John Gertsakis and Kirsty Maté, Published by the Royal Australian Institute of Architects.

Other Australian and overseas companies at the forefront of designing and producing environmentally improved commercial furniture include, Schamburg & Alvisse (Aust), Schiavello (Aust), Steelcase (USA), Knoll (USA), Haworth (USA) and Wilkhahn (Germany).