

Economic Adjustment and Building Product Certification

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The economic difficulties, currently facing Australia, simultaneously provide both a great challenge and a remarkable opportunity for the suppliers of innovative building products. On one hand, product development and marketing budgets will be tighter – on the other hand builders and developers will be looking for products that “do the job” cost efficiently. All thinking/caring Australians want to “do the right thing” in respect of preserving our environment. We wish to build and reside in sustainable buildings, which are energy-efficient, non-toxic, low-impact structures. However, no matter how well intentioned, we run the risk of making some foolish design decisions.

To appreciate this problem, one must first understand the design/building process. Building designers commence with the needs and aspirations of the owners; they consider the physical limitations of the sites; and then create concept designs within the regulatory limits of the Building Code of Australia. The next step is detailed design, based on commercially available building products. Here is where it gets tricky. If designers wish to embrace innovative building products, they must first be confident that the claimed sustainability properties are indeed real and relevant. The dilemma is best demonstrated by some examples.

Consider the different applications of single-glazed and double-glazed windows. The embodied energy of a double-glazed window is approximately twice that of a single-glazed window. However, the in-service thermal performance of double-glazing is often far superior to that of single-glazing – but not in all climates, all comfort level regimes or in all common combinations of free-running and air conditioning. At the “detailed design” stage, what simple accurate technical specifications are available to designers, to give a balanced assessment of both embodied energy and in-service energy use?

Consider shower heads. We all understand the need to “save water” in Australia, but wide-spread removal and replacement of existing shower heads represents considerable cost in dollar terms and to the environment. Is it worth it? In areas of water shortage – “Yes, it saves building another dam or treatment plant.” However, in areas of high rainfall with low population and available hydro-electricity the answer is “No”. What really matters - Saving water; saving energy to pump the water; or saving greenhouse gas emissions from carbon-derived energy to pump the water? Even in new buildings where replacement is not an issue, rational decision-making on the type of shower head to be specified is not necessarily simple.

Consider masonry walls. In winter, heat trying to pass through a high thermal mass wall will become trapped, and part will slowly pass back into the room at night. In summer the reverse occurs. However, this phenomenon is only beneficial in benign climates, where the ambient temperature crosses the comfort level – e.g. Brisbane, Sydney and the like. When should a designer choose to use high thermal mass walls (such as masonry), confident that the life-cycle energy and life-cycle green house gas emissions are being minimised for the particular application in the particular climate?

These are just three examples that highlight the need for clear building product specifications, which cater for both embodied impacts (raw material, transport, manufacture, construction etc.) and in-service impacts. It is acknowledged that the presentation of such information in a simple-to-use format is not easy; but the down-side of failing to do so is the proliferation of misleading information and the selection of inappropriate building products.

Let us return to the single-glazed / double-glazed window situation. An Ecolabel that compares various single-glazed windows to their peers, and a completely different Ecolabel, doing the same exercise for double-glazed windows, is of no help to the designer. Both types of windows need to be considered as competing alternatives for the same applications - One set of circumstances (application and climate) will favour single glazing, while a different set of circumstances will favour double glazing.

One solution is to provide series of building product specifications that are “benchmarked” against an agreed standard. Environmental benchmarking is not a difficult. It is just a matter of measuring the life-cycle environmental impact of a standard form of construction, measuring the life-cycle environmental impact of the proposed alternative, and comparing the two. The difficulty lies in selecting an appropriate “benchmark”. It has been proposed that a suitable “benchmark” is the “most common form of construction satisfying the building regulations”. For example, if single glazing is acceptable under the Building Code of Australia in a particular application and climate, but double glazing has a lower life-cycle impact, then double-glazing may be considered to be “sustainable”. Otherwise, claims of sustainability should not be made.

The economic downturn represents a “wild card” in the game of specifying sustainable building products. Designers will be more inclined to specify “eco-friendly” products only when such contributions to sustainability are convincingly demonstrated.

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