



Strategies and measures for implementing eco-labelling schemes in Singapore's construction industry



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ABSTRACT

The issue of sustainability in the construction industry is very prominent, as the industry often causes adverse impacts on the environment through its use of large amounts of natural resources and by clearing large areas of their natural habitats. After the 1992 Earth Summit in Rio de Janeiro proposed the use of eco-labels to attain sustainable development, the growth and use of eco-labelling schemes have increased significantly. This study focuses on eco-labelling schemes, particularly the Singapore Green Labelling Scheme (SGLS) and the Singapore Green Building Product Certification Scheme (SGBPCS), and their contributions to the Singapore construction industry. The effectiveness of the schemes and of their drivers is determined through the analysis of survey results from two groups of samples (suppliers and architects) and interviews with some of the key stakeholders involved. It can be observed that the both the supplier and architect groups have some knowledge and awareness of eco-labelling schemes in the Singapore context. However, in terms of implementation, both schemes are only moderately effective in advocating the use and production of eco-labelled building products. It was also found that, out of several factors, "environmental rating" appears to be the only one that significantly influences the decision to use eco-labelled schemes. Furthermore, the results show that SGBPCS was not as heavily promoted in the architect group as in the supplier group. The architects perceived the SGBC advertisements to be less convincing than did the suppliers, and therefore they considered the SGBC's measures to promote the use of eco-labelled materials to be less effective. From the empirical results, strategies and measures are proposed for industry stakeholders to enhance the effectiveness of the eco-labelling schemes in the construction industry.

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1. Introduction

In the progress towards rapid urbanization and global economic development, various activities are believed to have contributed to a gradual but accelerating decline in the world's environment. This is especially true in the construction industry, where forest and vegetation are replaced by the impervious concrete surfaces of roads and buildings. The heavy use of natural resources in the fabrication of these infrastructures also imposes great demands on the environment. In Singapore, buildings consume about 31% of electricity and including households, this number rises to

almost half of Singapore's total energy consumption ([Building and Construction Authority, 2010](#)). Given rising concerns about environmental degradation, the construction industry needs to reduce its consumption of resources. Therefore, a distinction needs to be made between sustainable and non-sustainable resources, so as to make clear which alternatives have the lowest resource inputs, environmental emissions, and waste over their life cycles.

To help consumers make decisions about the products they procure and to decide whether they are environmentally friendly, eco-labels were introduced in the late 1970s ([Bratt et al., 2011; Hussain and Lim, 2001](#)), starting with the German Blue Angel. Such labelling aims to conserve the environment, encourage environmentally sound innovations, and build consumer awareness of these environmental issues ([Bratt et al., 2011; Gallastegui, 2002](#)). The eco-label, in contrast to a self-styled environmental symbol or claim statement developed by a manufacturer or service provider, is awarded by an impartial third party to products that meet established environmental leadership criteria ([Global Ecolabelling Network, 2004](#)). Eco-labels can cover a range of environmental

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Table 1
Direct environmental benefits of using eco-labelled products.

Resource saved/avoided per year (unit)	Amount saved per year by scenario %		
	5% Take-up	20% Take-up	50% Take-up
Electricity (GWh)	14,700	59,000	147,600
CO ₂ produced from energy use (tonnes)	9,318,000	37,270,000	93,175,000
Water use (mega litres)	12,285,000	49,138,000	122,846,000
Reduced hazardous substance use (tonnes)	13,800	55,400	138,400
Material Savings (other than hazardous substances) (tonnes)	530,700	2,122,700	5,306,700
Reduced discharges to water (tonnes)	30,400	121,700	304,200
Reduced air pollution (tonnes)	17,500	70,100	175,300

Source: Cadman and Dooley (2004).

attributes, which may include health issues, atmospheric and other environmental impacts, packaging and other industrial issues, to name but a few. When eco-labels are introduced, just like any other policy instruments, it is important to evaluate and estimate if, and how much, they contribute to achieving the objectives and goals. It appears that the lack of data or knowledge results in decision-makers being unable to determine conclusively if eco-labels are able to improve the overall environmental quality of society (Rubik and Frankl, 2005). Hence, it is essential to evaluate the strategies and measures taken in the implementation of the eco-labels.

Concerns about the environment and development are not new in Singapore. Like many other countries, Singapore too has realized the importance of sustainable development. Currently, there are two eco-labelling schemes that have been introduced in Singapore; however, their effectiveness remained unknown. To evaluate the effectiveness of eco-labelling in Singapore's construction industry, this study reviews the current Singapore Green Label Scheme (SGLS) and the Singapore Green Building Product Certification Scheme (SGBPCS) for a start, followed by investigating the extent of implementation of these two schemes in the construction industry and to recommend strategies and measures to enhance their use.

2. Literature review

2.1. Background to eco-labelling

Originally introduced in Germany in 1978, eco-labelling has played an important role in the global expansion of environmentally friendly goods and services (Erskine and Collins, 1997). Eco-labelling was identified in Agenda 21 (Ball, 2002), as a way of encouraging consumers to reduce unsustainable consumption and to make wiser use of resources and energy in the drive for sustainable development. The Global Ecolabelling Network (2004) defines an eco-label as a label that identifies the overall environmental preference of a product (i.e. a good or service) within a product category based on life-cycle considerations. According to Piotrowski and Kratz (2005), unlike other environmental labels, eco-labels focus not only on the consumption of the product, but also take into account all the environmental impacts over the entire life cycle, including design, production, operations, maintenance, and disposal. Similarly, the International Organization for Standardization (ISO) defines the goal of eco-labels as:

"...through communication of verifiable and accurate information, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement" (ISO 14024:1999).

The ISO has classified the existing environmental labels into three types:

- *Type I:* Type I labels are considered positive labelling, because they identify positive environmental aspects of the product. "Voluntary" and "multi-criterion-based" are the key features of Type I eco-labelling. The requirement also includes the whole life cycle, and addresses the most relevant aspects of the performance requirements in the criteria document.
- *Type II:* These labels are developed internally by companies that want to describe the environmental benefits of their products and or services (Hussain and Lim, 2001). These can take the form of declarations, logos, commercials, and so on, referring to one of the company products (UNOPS, 2009).
- *Type III:* Type III labels consist of quantified product information about products based on life-cycle impacts. Environmental parameters are fixed by a qualified third party, and companies compile environmental information into the reporting format and these data are independently verified.

As a consumer, it is often difficult to tell if the production or properties of a certain product are environmentally friendly. Eco-labels thus help to inform consumers of information on the potential impacts on the environment based on the product or service's life-cycle considerations. For instance, several direct environmental benefits of using eco-labelled products are listed in Table 1.

In addition, with a prominent logo, the product will stand out more readily on store shelves. Desire to display the logo may induce manufacturers to re-engineer products so that they are less harmful to the environment, and this promotes competition among manufacturers. Furthermore, manufacturers may jump on the eco-label bandwagon to be able to charge a premium price for differentiating their products as more environmentally friendly. However, criticisms of eco-labelling have also been voiced. For instance, Erskine and Collins (1995) have listed an extensive range of drawbacks of eco-labels, including being elitist, being unable to prevent uncertified claims, and not being able to address many important environmental aspects. In addition, as goods or products are usually manufactured in developing countries, where costs are usually kept low, the manufacturers face the problem of asymmetric information due to the lack of knowledge about certain eco-label schemes to which they should conform. To make matters worse, some eco-labels use patented advanced technologies to define the standards, which is often difficult to access or are unaffordable. This becomes even more complicated when each developed country supports different underlying eco-labelling criteria, making it almost impossible for the manufacturers to exploit economies of scales (Monteiro, 2010).

2.2. Eco-labelling in Singapore

Like many other countries, Singapore has realized the importance of sustainable development. To develop awareness among consumers, many eco-labels have been introduced and can be

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