



Embodied Energy and CO₂ Analysis of Industrialised Building System (IBS) and Conventional Building System

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ABSTRACT

The Malaysian Construction Industry significantly important in development vision of 2020 by reducing 40% of carbon emission. Moreover, the industry has contributed to negative impacts on the environment, not only on consumption of natural resources but also in the consumption of embodied energy and emitting million tons of carbon emission annually. In fact, Malaysia is categorized the 30th in the world's ranking in carbon emission level. Therefore, it is necessary to acknowledge embodied energy and carbon emission amongst other factors in selecting construction method for projects. However, it is lack of studies on the assessment of embodied energy and CO₂ of building projects in Malaysia. The Green Building Index (GBI) has been introduced to guide the construction stakeholders in reducing the level of embodied energy and carbon emission and the impact of buildings on the environment. Industrialized Building System (IBS) has been recommended as one of the alternatives to minimize the usage amount of construction material and reduce the construction time as well as wastage. Nevertheless, the implementation of IBS still remains in doubt because the benefits have not been fully recognized and well defined in the construction industry. This paper presents an analysis of carbon emission from adoption of IBS as construction method in order to identify and quantify the main sources of energy and carbon emission and it proposes environmentally friendly materials as replacements for conventional construction materials to achieve the implementation of sustainability in Malaysia.

Keywords:

Embodied Energy, CO₂ Analysis,
Industrialised Building System

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1. Introduction

Over the years, the construction industry has been stigmatized as the greatest share of energy consumption, high CO₂ emissions and wasteful resources which gave huge negative impacts towards

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