
Integration Concept of Sustainable Engineering

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2.1 Introduction

Modern civil engineering mega-projects dealing with buildings, bridges, and infrastructures take sustainable engineering into consideration for the development and execution of their projects. Since sustainable development and sustainable engineering are rather broadly covered as global issues, each individual needs to take personal responsibility for environmental, social, and economic questions whose performance outcomes may impact the life cycle of the structure. An integration concept on sustainable engineering will deal with emerging criteria and concept for a strategic approach to the planning, execution, operation, and maintenance phase of the building process. It can be shown that approaches to and strategies for these issues result from individual consciousness, national policies, and global actions. Current research has been conducted on the sustainability perspective of areas such as global climate changes, CO₂ levels, life-cycle assessment (LCA), green design rating, emerging trends in sustainable engineering, and sustainability monitoring and evaluation criteria. However, there may still be more areas requiring further research to apply an integrated concept to emerging strategies for building a process to achieve the goals. Then the methods and procedures appropriate for each community or society can be explored. However, a quantifying performance method also needs to be used as a measure to guarantee satisfactory findings.

2.1.1 Sustainable development

Sustainable development has played an important role in the environmental, social, and economic quotients of human beings and their individual contribution, perception, and response. Analysis of such behaviour is significant in order to reach a public consensus of a sociocultural perception, and to understand the environmental impacts on the macro-diversity of the ecology system. The responsibility of the public or community with regard to environmental problems should emphasize the ecosystem, health, well-being, and natural resources. It is also well