





# Barriers and project management practices in green buildings

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## Abstract

Building construction includes wide range of activities, such as extracting materials, treating and utilising them for construction, executing and operating the building and finally demolishing it after its life span. All these process results in enormous consumption of available resources and generate large amount of green house gases. This apparently results in global warming and resource depletion. Green buildings are considered as the optimal solution to overcome the negative effects of construction industry over the environment. Green buildings have manifold benefits in different sectors such as environment, economic and social. Hence many construction sectors across the world have now leaned towards green construction. In recent decades exponential growth of green buildings is observed globally. Though green building has attained considerable growth, there are several hurdles and challenges need to be faced from the constructor side. Also, the current management practices adopted in conventional building may not satisfy the requirements of the green building. The main theme of the paper is about barriers and project management practices in green building industry, since the other things are only supporting elements it is not included in the abstract. The design complexity in green building requires more modification in the existing project management practices. This paper listed out the barriers faced by the green building constructors as well as project management practices needs to be adopted to achieve green goal.

## Introduction

Global warming is the critical problem that world is facing today. Higher energy consumption and generation of green houses are the key factors influencing global warming [18]. Construction industries are the significant contributors of green house gases as well as they are the higher energy consumers. Recent studies revealed buildings almost accounts for 40% of consumption of energy and 30% of generation of green house gases. Moreover construction industry is the major contributor to carbon dioxide gas emission [3], [4]. The alarming increase in green house gas emission and increased impact on the environment has pushed construction sector to look for an alternative solution. Recent researches show that sustainable practices in building construction will reduce the harmful effects on the environment.

A study conducted in 99 green buildings in United states found out that the buildings constructed by adopting green technologies consumes 30% less energy when compared to conventional building (The Economist, 2004). There is a significant growth in green buildings in the past few decades. Despite that promoting green technology faces several

barriers and challenges. The first and foremost barrier in green building is the higher investment cost. Green buildings create extreme pressure on the constructor side to manage a project with a tighter budget and tighter profit margin [5]. Apart from the economic issues there are several other challenges are associated with green building, this includes market demand, people attitude, knowledge sharing, awareness among the public, motivation from top management, training in green building technology, government support. The benefits of Green building are shown in Fig. 1 given below.

Meanwhile the predesigning and the execution phase of green building encompass more complexity. The project management practices for the conventional building may not be suitable for a green building. Hence the management practices adopted in construction sector needs significant changes for promoting green building within the acceptable budget [5]. Since the paper is a review paper, various methodology adopted in the industrial sectors were enclosed. Also, questionnaire method of study conducted in the industrial sector was reported. The barriers of Green building are shown in Fig. 2 given below.

This paper comprehends the barriers in adopting green technology and construction management practices for achieving green goals.

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## Section snippets

### Results and discussion

#### a) Green building and its benefits

In general a green building is defined as structure that has less impact on environment and resource efficient throughout the entire life cycle of building (Environmental Protection Agency, 2016). Green buildings refer to designing and constructing buildings in such a way so that they have reduced negative effect on the environment (Liu, 2005). Green building and sustainable design can be defined as the construction which are constructed in due considering the...

### Conclusion

Green buildings are considered as the best possible solution to tackle adverse effect on the environment caused by the construction industry. Green buildings are not merely an accumulation of building materials, technology and other building innovations rather green buildings provide holistic solution in terms of project life cycle process that covers project planning, designing and operating. Green buildings has enormous environmental, economic and management benefits. This paper is about...

### CRedit authorship contribution statement

**P.R. Kalyana Chakravarthy:** Conceptualization. **R. Suganya:** Validation. **M. Nivedhitha:** Formal analysis. **A. Parthiban:** Investigation, Methodology. **S. Sivaganesan:** Resources....

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

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