Title: Construction of Energy-Efficient & Environmental Friendly Building in Pakistan: A Case Study

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Summary:

CO₂ emission from both commercial and residential sectors has increased tremendously and is leading to a serious problem of Global warming. Promoting green building development has become a necessity in most of the developed countries around the world. Green buildings can provide many social, economic and environmental advantages like increase in air and water quality, minimize waste streams, improve indoor air quality, enhance occupant health and comfort, reduce operating costs and enhance asset value and profits.

By studying different case studies around the world along with the qualitative study, the awareness regarding the green buildings in Pakistan can be quantified. Also by studying different ways to reduce energy, energy-efficient and environmental friendly building can be designed for Karachi whose design will further be recommended to the relevant authorities. Innovations and use of green technologies in the existing building design will help the country in reducing energy and water crisis.

PROBLEM STATEMENT: The absence of green buildings in Pakistan’s construction market is due to lack of awareness of the advantages of green construction, gaps in formal education, absence of managerial framework and the absence of detailed efforts. The current energy and water situation of the country demands for an urgent need to develop a sustained and detailed policy for developing energy efficient and sustainable buildings in the country which use energy, water and other resources easily. Green and sustainable construction is only possible when there is enough awareness among engineers, architects, contractors and owners about social, environmental and economic advantages of green buildings.

OBJECTIVES: To inspect and survey at least four local construction projects in order to determine whether they are utilizing green building practices and to determine whether local building contractors are aware of the green building techniques. An energy-efficient and environmental friendly building will be designed in Karachi having a plot size of 2000 sq yds. The proposed building will be having ground plus 20 floors partly for retail purposes and partly for recreational.

METHODOLOGY: The study is qualitative as well as quantitative and is divided into two parts. The first part will evaluate the awareness regarding the green buildings and its practices in local contractors/builders of Pakistan by conducting a survey. The second part will include design of an energy efficient and environmental friendly building in Pakistan. The design of the building will further be recommended to the concerned authorities. Data collection procedure consists of two parts:

1. A questionnaire to gather information regarding the impacts of construction activities on the environment and to evaluate awareness regarding the green buildings and its practices in local construction market of Pakistan. At least 60 members related to building construction within Karachi and also general public from Karachi are expected to be selected for around 60 questionnaires.
2. Conducting personal interviews with some of the professionals associated with at least 4 local construction projects.

EXPECTED FINDINGS: The findings will help model impact of construction activities on environment, major aspects of green construction and reasons we are lagging in green construction as compared to other developed countries. It creates awareness about green construction regulations and ensures that the requirements of ISO14001 Environmental Management System are met.

A 2000 square yards energy efficient building is designed and proposed incorporating VVVF elevators, heat & energy saving devices and will be recommended to the concerned authorities.