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A REVIEW ON GREEN BUILDINGS

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ABSTRACT

Green buildings have significant impacts on the environment, society and economy. Last decade have witnessed rapid growing number of studies on green buildings. this paper reports the view on the existing body of knowledge of researches related to green building and sustainable development of buildings and how to achieve it .the scope of green buildings and quantification of benefits of green buildings over conventional buildings and various approaches are made to achieve green building, current studies played predominantly focus on environment aspect of green buildings and some other way of sustainability of green building. Futureresearch opportunities were identified aspect of climate condition on effectiveness of green building, assessment tools. Green building includes recycle and reusable process, solar power generation, rain water harvesting, natural ventilation, solar passive envelop design including walls, roof insulation and fenestration and use of electrical equipment which use less power to operate as per ECBC. buildings material and methodology used in construction of green buildings are different that from conventional buildings and leads improvement in workers efficiency ,positive impact on environment ,reduces health problems and doesn't releases greenhouse gases .many countries have adopted green building concept because conventional building waste and its materials increase amount of CO_2 gas and have effect on society.

Keywords:Green Building, sustainability

I. INTRODUCTION

Green building is latest concept in which construction of buildings are done by the use of renewable resources and waste products obtained in coal site and some products which helps in insulation .conventional buildings leads to noise ,dust, traffic congestion , water pollution, air pollution, waste disposal during the construction stages. According to world business council for sustainable development building block accounts for 40% of total energy consumption ,apart from energy consumption building produces greenhouse gas emission which is responsible for global warming, green buildings helps in reducing these problems and the use of natural resources like sun light, woods, water cycle and other technology that reduces consumption of energy. Green building can be defined as the design r operation reduces or eliminate the negative impacts and create positive impact on our climate, environment and preserve precious natural resources and improve quality of life. materials are used in construction of green buildings such fly-ash brick made out of residue from coal

powered thermal plants , gypsum and other replaceable material fiberpaneling made from agricultural waste is also being used. Pulverized fuel ash and groundgranulated blast furnace slag are used in place of cement, flooring is done by either wool carpet or cork. Solar panels are used which convert light energy into electrical energy, fiber glass ,mineral wool and cell use are used for thermal insulation ,roofing is done by clay tiles and timber shingles. Other material and methodology are used to make building as green .some of construction have started constructing green building.

Green building have advantages over conventional building are -

1) Green buildings includes energy and water savings and reduces waste as well

2) Improve indoor environmental quality, greater employee productivity and reduced employee health cost

3) Low operation and maintenance costs and reduces greenhouse gas emission

4) Emission savings potential is as much as 84 giga-tonnes of CO_2 by 2050

5) Green building results in energy savings of 40-50% and water savings of 20-30% compared to conventional building

6) Global energy efficient measures could save an estimated 230-400 billion savings on energy.

7) Green building can make 10 times profit as compared to conventional buildings.

Some disadvantages of green buildings are as they take long time to construct ,initial cost is high ,required skillful workers ,availability of materials maybe far from site and have possibility of explosion during collection of combustible gases.

II. LITERATURE REVIEW

Ahn and Pearce (2013) conducted a case study to identify and analyze green design and construction practices that create green and luxurious environment. Two LEED platinum rated hotels were selected and data was collected on their green design and construction practices .they find that 34% of portal water was achieved as compared to conventional hotels, surroundings were to plant native and adopted plants to install drip irrigation system and use of geothermal energy instead of water cooled systems provided significant water savings.

According to survey conducted by U.S.Green Building Council 2009 on regional green building case study analyzed the post occupancy performance of green building conducted for 12 consecutive months, the element measured were water energy efficiency, greenhouse gas emission, energy efficiency, construction and operating cost, it was found energy performance was far better than conventional buildings, emission of greenhouse gas was very less and water consumption was 7.7 sq.ft. per year which was less as compared to conventional building.

Teig (2007) conducted a survey on "why green building has staying power? After drew responses from 218 corporate users and 166 developers of commercial estate finding has revealed that 52% of corporate respondent and 39% of developers currently own at least some "green" properties. Adoption of green concept efficiency of workers had increased and provide positive and healthy environment.

USGBC and sustainable Rhythm in (2010) conducted survey on "opening the door to green building" to analyze the market transformation, engaged multiple perspectives in the building industry to examine the issue of the overall market and perception of investment, it was found that 62% of the respondents indicated that there is significant premium to build green while 46% of that group believing that premium is above 10%, one can invest in green building and have more profit.

Griffin, et *al*. (2010) conducted research to find out the barriers in implementing sustainable structural materials in green buildings ,the researchers interviewed building design professionals in Oregon,US. Study revealed that primarily barrier s to implementing sustainable structural materials were the perceived increase in cost, regulations that don't recognize new green materials and systems. The lack of readily accessible and reliable information comparing alternative structural materials poses significant barrier in design.

Riese et *al.* (2009) conducted case study to measure the benefits of green buildings construction .method included building performance surveys and interviews with management. Result indicated that the employees agreed that the indoor environmental quality of new facility was superior to the old and productivity was enhanced by the view of outdoors, they felt better air quality and thermal comfort.

Jian Zuo and Zhen-yu-Zhao (2013) has conducted research on current and future of green buildings. they have found that green building will save 84 giga tonne of co2 by 2050,energy efficiency measures could save $230-$400billion.as time pass by green buildings will be in trend and have large number of benefits which will make earth resources usable for long long time.

III. CONCLUSION

The study reported that can be classified in three ways ; definition and scope of green buildings, benefits and cost of green buildings , way to achieve green building, the extensive literature review show that most of green buildings studies focus on environment aspect of sustainability such as energy consumption, water consumption, water efficiency and greenhouse gas emission together with technical solutions. The studies on social and economic aspects of sustainability are comparatively lean .the review also showed that there is move from focusing on building itself only the interaction between building and its users , some studies have reported the impact of thermal comfort and IEQ on occupants satisfaction, performance, and health conditions .construction of green buildings helps

in reducing waste ,recycle water through rain water harvesting ,solar energy is used in form of electrical energy. Construction of building have barriers in design cause raw material is not easy to find or technology nearby site. special population such as aged people , students and teachers could be paid more attention, aged people are more vulnerable to overheating and indoor environment quality , students can become the practioner in the future even the leaders in many sectors. Teachers may play vital role in building attitude and behavior of students towards the sustainability related issue and further building research. Construction of green buildings will increase the economic condition of nation as it have recycle process ,use natural and waste material for its construction and save million dollars in energy and savings on health and increase productivity of individuals. Green building should be adopted by government and encourage for its development and construction in nation.

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