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Green Buildings: A Solution For The Construction Industry To Sustain In Indian Market

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ABSTRACT

Sustainability means the measures and initiatives that the companies take to survive themselves in the future market. There can be various methods and actions that the companies can take to survive in the market, these can be formulating business strategies to fulfil the needs of the present stakeholders, installing new technologies to be updated and competitive in the market and Imposing efficient business models in each and every steps/process of business. These business models and strategies differ from company to company and even from one industry to other. What matters in the end if these corporates are able to sustain in the market. However, achieving sustainable growth is not an easy task, the corporates has to make sure that the related stakeholders are happy and satisfied. With the increasing environmental and climate concerns, the stakeholders give importance to three corporate sustainability pillars (3 pillars of Sustainability by john Elkington in 1994, called Triple Bottom line are Profit, People and the Planet). In today's era the companies and businesses which manages to make profits keeping in mind the social and environment footprints can only sustain in the market for longer term.

Today India is one of the second fastest growing economies in the world and construction Industry is one of the second largest contributor in economy after agriculture. The construction industry is facing a boom in the market due to various initiatives taken by government for the growth of the industry like Housing for all and Smart Cities. The construction industry doubtlessly should be considered the most responsible industry which has huge role to play in the climate destructions. The growth of construction sites and building will be in abundance in coming years. But there is need to heed on the fact that consumers are now aware that globally buildings emit 40% of GHG (Green House Gas) in the environment, which causes large destruction to the environment and the human health. With the increasing awareness, the consumers are demanding the construction industry to shift to green construction (green building). Our Research emphasises on the need for the construction industry to shift its paradigm to green construction in order to sustain in the market. Our research also gives an insight about the emergence of green building in Indian market and its benefits to developers. Last but not the least it also points out the challenges faced by construction industry in adopting green practices and provides recommendation to overcome those challenges.

Keywords: Sustainability, Construction Industry, Green Buildings.

INTRODUCTION

Today it is very important for an industry and a business to have business strategies and models in hand to sustain themselves in the future. If the business has plans in hand for sustainable growth, they will definitely survive in the market for longer term. Sustainable growth means a realistic growth that a company can achieve without running into problems. (Rekha Sampath, 2005), This report says that sustainable growth is the maximum pace with which the company can grow revenue without depleting its financial resources. So it is that optimum growth rate which will generate the company enough returns and sales to finance its operations keeping the capital structure of the company constant. But now a days a company cannot achieve sustainable growth only by earning maximum profits, but it also needs to consider the other factors to survive like the company's impact (carbon footprints) on the environment.

Due to rapid urbanisation and increase in population in the country, there has been huge destructions in the climate change. The construction industry doubtlessly should be considered the most responsible industry which has huge role to play in these climate destructions. There has been a huge shift of executives and intuitional investors towards greener projects. They learned that greener projects are not only ethical endeavour but also a profitable one as well. Therefore, construction industry has faced a major shift due to investors inclining towards efficient techniques. Construction industry is one of the second largest industries in India after agriculture contributing 11% to India's GDP growth. The United Nations Environment Programme (UNEP) reported that globally buildings account for 40% of total energy consumption and 30%

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of GHG emissions. Therefore, stakeholders are now demanding for green buildings which promises better future. There is a high need for construction industry to incorporate green building technologies and strategies in the built environment as people are realizing that green building makes sense.

REVIEW OF LITERATURE

(Singh, 2018),
This paper studies the impact of conventional buildings in the environment, Further, this paper introduces the concept of green buildings, its features and most importantly material's life cycle and how careful selection of materials can minimize the destruction in the environment. It emphasized on principles of sustainable building design to ensure building systems does not emit harmful and toxic substances.

(Albert, Amos, & Ernest, 2017),
This paper conducted a study through empirical research method where the questionnaire survey was conducted and data was collected from 104 international green building experts from around 20 countries to evaluate the importance of promotional strategies, the study indicated there were 12 promotional strategies which are significantly important to promote the green building technology. The researchers found that financial and market based incentives, availability of better information on cost and benefits of green building technologies (GBT's), government policies and regulations and green rating and labelling are the top four strategies which will highly promote the adoption of GBT's.

(Dhingra & Gupta, 2017),
This paper studies about the current status of green buildings growth in India, The paper attempts to teach people about the concept of green buildings and encourage and motivate them to adopt the green building concept in their own houses to support sustainability.

(Tathagat & D. Dod, 2015),
This paper recognized that with the growing climatic crises such as increasing concentration of greenhouse gases and global warming there will be an urgent need to improve the energy efficiency of construction industries by constructing green buildings, it also identifies that there a lot of incentives which are provided by government and municipal bodies to GRIHA certified green buildings, like processing fee is waived off by SBI for home loans which are GRIHA compliant.

(Zuo & Zhao, 2013),
This paper is a critical review of existing literatures, the researchers found out that the research prevailing on green buildings are confined to its benefits, costs, and ways to achieve green buildings. The paper also reviewed that existing studies are more focused on environmental aspects of sustainability from green buildings, therefore there is much more awareness required to shift the benefits from green buildings to achieve social sustainability as well.

Scope of Study
The study talks about the green buildings taking over the construction industry in emerging Indian market. The study was focused to review the increasing need for the construction industry to shift to green construction to sustain in the market. It also focuses on how green buildings can enhance the competitiveness of construction industry for sustainable growth. This study will benefit the other researchers who wants to explore about the advantages of green buildings to developers and builders in the construction industry.

RESEARCH OBJECTIVES

1) To understand how rampant urbanization has an impact on construction industries.
2) To study the concept of green buildings.
3) To understand the emerging need of green buildings as a solution for construction industry to enhance their competitiveness in the market.

RESEARCH METHODOLOGY

The research methodology used in this paper is based on secondary data collected from the secondary sources such as articles, research papers, sustainability reports, bank's websites, etc.

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DISCUSSIONS AND FINDINGS

Construction Industry in Indian Market

After agriculture industry, construction industry is next in line which makes about 11% of India's GDP, contributing a significant portion in India's economy by providing employment. India is on its way towards the sustainable growth in the infrastructure segment.

One of the major segments of construction industry is real estate construction which includes residential construction, commercial construction and Infrastructure developments like roads, railways, power, etc. In the recent market construction industry has regained growth movement in 2018 as well as 2019, with output hovering around 8% which was at 1.9% in 2017. Residential construction market is expected to be in its leading position in 2023 by accounting for 30.1% of the industry's total value. Initiatives like "Housing for all and Smart city" is driving the growth of the sector, also rapid urbanisation has a major role to play in development of the industry. Addition to this the demands for office space are expected to rise due to India's emergence as preferred outsourcing destination. Thus, it clearly portrays that the growth of construction sites and buildings will be tremendous in the coming years.

Rampant Urbanization Giving Rise to Pollution and Unsustainable Business Practices

(Nandy, Chandra, & Sharma, 2018), India – a developing country is estimated to have 1.37 billion population size based on recent UN data of 2019 and will surpass China by end of 2024. The country as a whole has a population density of 416 people per square kilometre which ranks 31st in the world. Growth of construction sites and buildings will be tremendous in the coming years as it is expected that floor area in India is expected to be doubled by 2025. With a massive increase in population and urbanisation there is a huge increase in global warming due to air conditioners and emissions of greenhouse gases. As per (Saha, 2018) 70% of the infrastructure emits carbon emissions which is ridiculously harmful to the environment. This constitutes a huge amount and will have a detrimental impact on the environment and our future generations, if not taken care of

WHO report highlights that Delhi is the most polluted megacity in the world. It also estimated that around 7 million people across the globe are dying each year due to ambient and household air Pollution, following Mumbai the fourth largest polluted city in world. Compared to china smog, India's Delhi pollution seems to be worst as twice of it which is even reducing plant ability to photosynthesize sunlight. This clearly portrays India's position which is getting worse day by day.

Globally building and other construction are responsible for 36% of energy use and 39% of the carbon construction emissions and developing counties has an upper hand on this. Its high time that the construction industry takes a step towards adopting zero carbon buildings for a sustainable tomorrow.

Green Buildings- A Solution to Sustain

With increasing global carbon emissions, business owners and investors are becoming increasingly aware of how natural resources are being depleted due to construction Industry. As per (Abergel, Dean, & Dulac, 2017), Real estate sector is gradually facing an increase in demand for green homes and green offices, as these green constructions promise a far better future for the people and the environment. The sustainable buildings are surely at the nascent stage in the country. If construction industry does not shift its paradigm to green buildings and green structures, there is a high possibility that there will be a time when this industry will be closed down and will not able to sustain in the market for the long run. Increasing consumers are preferring environment friendly construction not only because of its impact on the environment but also because of its cost efficiency, and green buildings serves both of these purposes.

What are Green buildings?

Green buildings are the sustainable building construction designed as an environmentally responsible and energy efficient over its useful life from planning, design, construction and occupancy. Green buildings are considered to be the net zero carbon buildings which catalyse to sustainable development.

Green buildings have following properties:

- Emits less carbon gases in environment
- Where water, energy, and other Resources can be efficiently used

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- Focuses on recycling of waste and waste reduction.

These buildings are designed in such a way which will have less overall impact on the natural environment and also on human health, resulting in minimization of the carbon footprints on the global environment. Due to these increasing climate destructions, Indian government has also signed a Paris agreement and promised to contribute its part to bring global carbon emissions within 2 degrees of preindustrial temperatures. In order to make the Paris agreement a reality green building would serve a perfect example.

Emergence of Green Buildings in India

With the Formation of IGBC (India Building Council) by CII (Confederation of Indian Industry) in 2001, India took a pioneering step towards the sustainable development with a mission to make India a sustainable built environment.

India inclined towards the green building movement when CII- Sohrabji Godrej Green Business Centre was awarded as the first platinum LEED (Leadership in Energy and Environmental Design) rated green building in Hyderabad India. From then there has been an exponential growth in green buildings in India. As per the report provided by Dodge data and analytics there has been a great push towards the demand of green building around 20 countries when surveyed. This survey includes India as well, also it is expected that demand of green building in these economies will continue to rise till 2021. **Figure 1:** gives an idea about the expected demand of green buildings in three sectors (Residential Construction is 54% Commercial Construction is 47% and Retrofits & Existing building 24%)

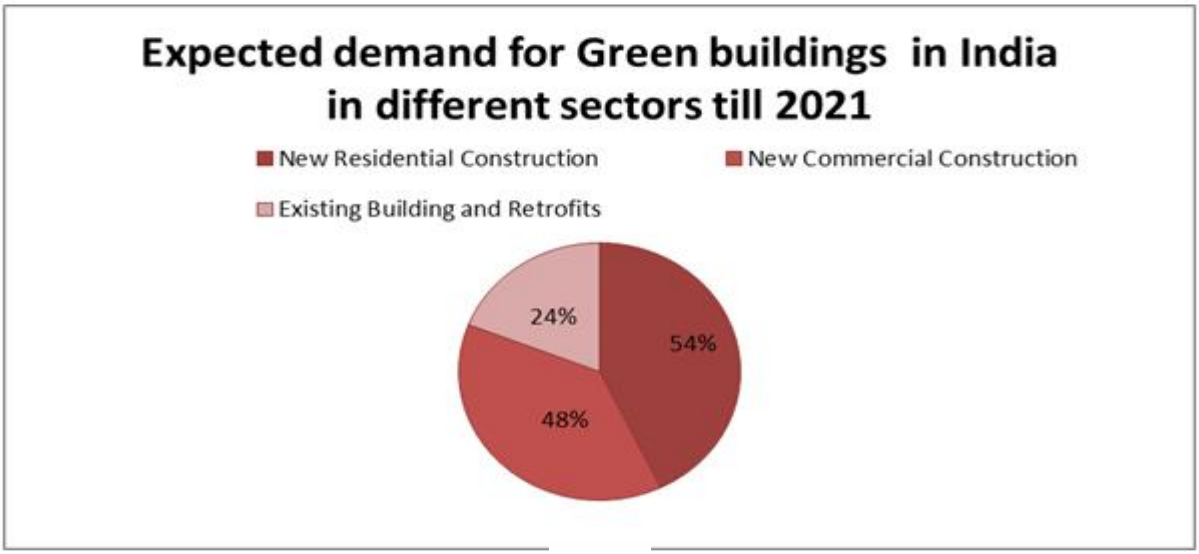

Figure-1

Source - Dodge Data and Analytics (2018 data -2021(expected))

Devi Rajan – Green builder and founder of Canyon says, "When you build beautiful things, people take care of them., and durability is a cornerstone of sustainability

Why Should Construction Companies Adapt a Change to Green Buildings?

Green building benefits does not only limit to consumers and environment, but it is also beneficial to developers and builders. Some of these benefits are-

1) **Easy Marketability**- There would be definitely increase in reputation and brand name of construction company. As per WGBC (World Green Building Council) buildings with better sustainability credentials will have increased marketability, because Investors and occupants will be knowledgeable about the environment and social impacts of the built environment. This would pose ease in attracting clients.

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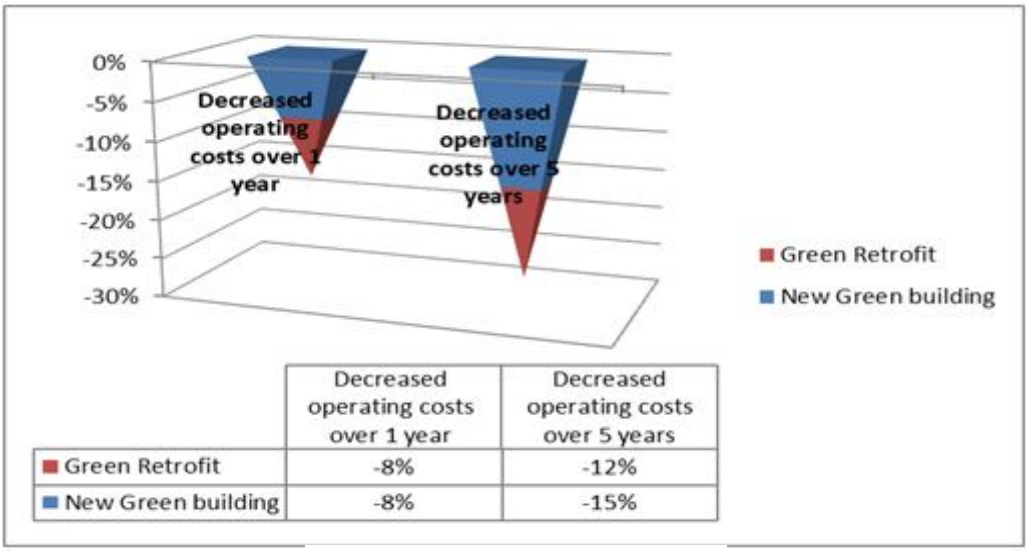
2) **Higher Sale Prices**- As per Dodge report, Donna highlights the fact that because of the business benefits to owners/occupants like save in operating costs and increase in asset value mentioned below, Investors and occupants are ready to pay more for greener projects at higher prices.

- **Savings in operating costs up to 5 years:** If we look at figure 2: The study conducted by Dodge. It clearly depicts that there has been an expected reduction in operating costs from 8% to 15% over 1 to 5 years. It means that there will be reduction in electricity bills, better comfort and better health with low operating costs. When compared to commercial buildings, air conditioning and lighting are the major costs. Since a lot of money goes to setting up these air conditioning units and power back up.



	Decreased operating costs over 1 year	Decreased operating costs over 5 years
Green Retrofit	-8%	-12%
New Green building	-8%	-15%

Figure 2: Survey conducted in 2018
(Source- Dodge, Data & Analytics)

- **Increase in asset value up to 7%:** Over the coming years the owners will be benefited if they have investments made in green buildings. With the rising concerns towards environment over time, the demand for green buildings will increase gradually resulting in an increased asset value.

In the Global Dodge Report, Donna says that almost 69% of builders and 78% of remodelers believes that customers will pay for green, therefore, knowing about rising demands developers can get the advantage by asking higher prices.

3) **Green buildings ahead of stringent building codes:** "Les Bluestone Owner of Blue Sea Development Company", highlighted the fact that third party certifications obtain by green buildings helps the building to be ahead of stringent building codes and ensures higher quality structure, proving beneficial to developers and builders.

Green Buildings- Provides Competitive Edge Over Other Companies

Through green buildings, manufacturers and builders can reuse the materials what is already used in the construction project, since recycled metal is a long-lasting material that does not need frequent replacement. This results in less waste and provide unique element to architecture which he cannot achieve in other building models.

The stakeholders are definitely aligning towards this creativity which cannot be matched; thus, this creativity provides such construction company a competitive edge over other builders.

KB homes- Prime example of how green building helped them to outperform other construction companies in the market-

KB Home, one of the leading homebuilders in U.S., built its first Energy Star-certified home in 2001. From then it has committed towards providing sustainable homes. This helped the company to distinguish its products from the other builder's products during recession. Since then most of the available homes were old and inefficient, sustainability was a pioneering step which made them unique from other resale homes. This

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helped them in capturing the biggest share in the market, still being a leading market player in construction business.

Currently KB homes uses sustainability as a business strategy. They termed this business strategy as a cost reduction tool and core brand differentiator.

CHALLENGES AND RECOMMENDATIONS

- One of the main challenges to the developers and construction industry is the perceived higher upfront cost in building green construction. Government can provide the incentives like loans at lower interest rates, tax rebates and tax incentives to the developers who initiate to build green buildings in the market.
- Another challenge that influences the green building development is high prices to the purchasers, green buildings are a little costlier than other concrete and conventional buildings which restricts the buyer to buy green buildings reducing the competition for green buildings in the market with lower demand by the buyers and consumers, therefore this is the reason the developers and builders don't want to build something which cannot be sold. The government and the green councils and organizations should come up with the marketing drives where the public should be taught and made aware of how green buildings can reduce their operating and maintenance cost like they will end up paying less electricity, water, power and sanitation bills. This will ultimately increase the awareness and demand for green buildings by the public, therefore higher the demand, lower the prices. This marketing initiative by the government can bring the market for green buildings in India with greater competition and affordability.
- The required incentives by government for building green are less. The housing industry particularly sustainable homes are facing challenges. These incentives need to be increased like Extra FAR (Floor Area Ratio) should be provided to developers for investing in green buildings so that they can recover the extra costs incurred in construction and earn profits.
- Due to the lack of awareness and administrative support, the public residing in rural and urban areas believes that there has been a shortage of green products and materials which discourage developers to pursue green construction.
- Several policy incentives like Interest costs charged to developer can be reduced by faster approvals for green buildings and less development charges on construction of green buildings by state government.
- Green construction alone does not fulfil the larger goal of sustainability. But as per Indian context green real estate must also include town planning, sanitation and relevant social infrastructure. There is a need to take green building concept further to green town and cities.

LIMITATIONS OF STUDY

The findings of the study have to be seen in light of some limitations:

1) Time constraint: As there was limited time to conduct the research, the researchers could not contact the green construction experts for personal interviews and viewpoints.
2) The study discusses the green buildings as one of the major strategies for construction industries to sustain in the market. Future studies and researches may conduct the study on how other business models and strategies may help the construction industries to sustain in the market for longer term.

CONCLUSION

The green construction strategy is definitely going to stay in India, as this sector encourages interdependence and shared responsibility among stakeholders in the building value chains. Sustainable living is becoming a highlight in real estate industry in India because of the rising green building movement. The main aim is to create healthy living spaces for the Indian consumers through buildings that have a longer life and high performance by maximising recycling of materials and minimising environmental impact. The sooner

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the construction industry adopts to green practices, the better and longer it will be able to sustain in the market for the long run.

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