

# **A Study of Developers' Perspective on Sustainable Housing Solutions and the Green Corollary of Pune and PCMC**

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## **Abstract:**

The pledge to restore sustainability by Indian government is supported by infrastructural growth of cities, especially those which is considered as an economic powerhouse. A UN study forecasted that by 2030, 43 megacities will have 10 million inhabitants who would be spread in mostly developing nations where low income prevails. Such cities are expected to foresee speedy urbanization, necessitating the need for sustainable infrastructural management like smart city initiatives and green action plans. Sustainable urban growth is aligned with achievement of eleventh sustainable development goal, which is contemplated for making human settlement in cities inclusive, resilient, inclusive, safe and sustainable, offered through sustainable housing solutions (SHS). This study explores the developers' outlook on sustainable housing solutions (SHS) and the green building initiatives within the developing cities of Pune and PCMC. The study discussed sustainable policies, practices and financial incentives attached with SHS. The study is focused on developers' outlook who are an important driver for sustainability management in real estate projects. The city of Pune and PCMC have seen a boost in demand for sustainable housing but green building initiatives suffers structural impediments which are unique and institutional for developers'. The researchers' conducted survey and semi structural interview with 100 developers' of Pune and PCMC, to understand financial, regulatory, structural factors that restricts and promotes green housing plans. The study contributes to the limited academic literature in this area and provides valuable insights to policymakers, developers, and investors, committed to sustainable urban growth.

**Keywords:** Developers' perspective, Green Innovative Housing Solution, Real Estate, Sustainable Economic Development, Sustainable Urban growth

## **1. Introduction**

The concerns for climate change is on the rise, in the reality business globally. The industry happens to act as key driver to India's economic development as it generates employment opportunities to both skilled and unskilled workers. This sectors induces GDP growth, provides rippling effect in employment generation to manufacturing and service sector and also stimulates demand for many supporting sectors like cement, steel and transportation. The trend of construction catering to Indian economy is expected to rise by 12-15%, indicating its detrimental role in nation's economic performance. The construction industry ranks third among the 14 major sectors in terms of direct,

indirect and induced effects in all sectors of the economy (Indian Real Estate Industry report – Dec 2019).

The enormous demographic pressure in India has necessitated urbanization. The property business has to thrive with changes in global demands, work towards integrating sustainable development principles in the real estate, understand market dynamics and respond to the regulatory environment. The transformative shifts in the real estate industry is a presentation of ever changing societal needs, so developers in current business scenario are sensitive towards green building standards wherein they promote technology adoption, energy efficient practices and respond to the demands of environmentally conscious consumers and businesses. These variations can also be seen in its four sub sectors like retail, housing, hospitality and commercial real estate, wherein companies leverage sustainable business models for achieving competitive advantages as they identify and cater to the needs of environmentally conscious consumers. Companies that has prioritized sustainability in their business models have enticed investors in highly transparent markets like U.S., Canada, and Australia. The United Nations have established the **Sustainable Development Goals** which consist of 17 interconnected goals directed towards improving sustainability index of nations by addressing issues like climate change, poverty, inequality and environmental degradation. Sustainable development has been defined by Brundtland Commission as the development that meet the needs of the present without compromising the ability of future generation to meet their own needs ([www.un.org](http://www.un.org) ).In meeting with the pledge of sustainability, the construction sector is expected to play a pivotal role as it significantly impacts natural resource consumption and GHG emissions, it also influence the national commitment to mitigating climatic risks.

The business in real estate domain interprets the need to respond to climate actions, through various sustainable business models that aligns towards achievement of competitive advantages (Nosratabadi et al, 2019). One such practice for improving the sustainability score is adopting the green building standards. The construction industry therefore has seen significant transitions in adapting to green building standards which itself embraces a range of codes, follows the rating system, benchmarked for sustainability in the construction business. The focus on adapting green standards is to make business energy efficiency, improve indoor air quality, improve sustainable site selection, and make responsible material usage. These factors are expected to control and regulate the ecological impact throughout their business lifecycle.

The rapid proliferation in India's population has led to major challenges like natural resource depletion, pressure on infrastructure and increase in carbon footprints, thereby compromising the sustainability score at global sustainability index. Since there is a projection that India's majority, around half of the total population, will reside in urban areas, it is an alarming call for regularising the energy consumption patterns in Indian construction sector. The requirement for essential services will increase exponentially and to keep pace with the liveability index of cities will be an added developmental challenge. This dramatic increase may trigger energy supply shortages impacting the quality of life of people. The evidence of research is growing in establishing the operational efficiencies but extant literature directs us towards the prevalence of major lacunae that needs exploration for covering the critical gaps which retracts establishing the standards and retrofitting tactics for sustainable housing solutions.

## 2. Literature Review

Saheed Matemilola and Oluwaseun Muraina (April 2023) in the paper titled ‘Sustainability and Sustainable Development in Real Estate Industry’ highlighted the necessity of implementing environmental friendly practices in real estate for improving long term business continuity and social equity. The study discussed lack of awareness on the benefits of green practices in real estate sector and pointed the scarcity of empirical researches and how sustainability endeavours impacts the market dynamics like property values. The benefits that stakeholders derive from sustainability is not known. The author also highlighted the developers’ dilemmas on integrating sustainability plans under the enjoin of traditional construction methods. The study findings established the significance of regulatory practices crucial for implementing sustainable solutions in construction business framework. The study also enhances the role of technological innovation, energy efficient practices for making operational cost minimum.

Violeth Nyoni, William Broberg Piller, Olli Vigren (Dec 2023) -In this paper titled ‘Sustainability action in the real estate sector, the researcher discussed an organizational and institutional perspective of implementing sustainable development practices and emphasized on the need of guidelines for improving green standards in real estate sector. The study emphasized the need to implement and establish a clear framework for standardizing practices across industry. The researcher has explained that there should proper guidelines for implementing the sustainable development practices.

The study explained a relationship of organizational leadership and sustainability initiatives. The Institutional framework which promotes policies favouring sustainability can act as an incentive but the benefit of which can be realized well under green leadership. The organizational commitment for sustainability can be interwoven in the cultural framework of an organization. This framework can lead to effective stakeholder engagement including customers, local communities and investors but in absence of desirable collaboration among stakeholders’ the sustainability actions gets impeded for its effective outcomes.

Yusra M, David J.B.Maher Al-Shaer (April 2014) - In this research paper titled, “The Role of Real Estate in Sustainable Development in Developing Countries: The Case of the Kingdom of Bahrain, the researcher highlighted the need of a supportive framework and effective governmental policies for sustainable development. The study discussed major barriers like lack empirical support for sustainability actions and their outcomes in developing nations, insufficient awareness about impediments like financial and technological constraints, influence of regional and cultural factors on sustainability factors in real estate industry, lack of empirical research on economic incentives for adopting a sustainable framework in this industry. The researchers also highlighted the social implications of sustainable housing plans, and emphasized its relevance in promoting social inclusion which is linked to eliminate or regulate poverty of nations. However, it was suggested that for such action plans, support of government and private machinery is crucial, then sustainability endeavours can be made effective in city of Bahrain.

Amtul Wahab, Iffath Unnisa Begum, Aanchal Sirsat, Aavula Chitra Bhanu, Adsare Niketha, Aedlol Priyanka (April 2024) – The research has shed light on government initiative and the need to streamline processes for enhancing transparency. It is suggested that this may attract more investors in real estate sector. The study has also highlighted the importance of understanding market demand and the investors’ strategies to target specific market.

## 2.1 Research gaps

On the basis of the literature review done, the researchers have found a few pertinent gaps in the sustainability literature in context to construction industry wherein academicians can bridge the gaps.

- Quantitative studies on developers' challenges in constructing green buildings has not been done and there is insufficient literature as well as lack of empirical evidence towards such studies that supports this.
- There is need of research that examines how the local contexts influence the implementation and outcomes of green action plans.
- There is limited studies on understanding the developers' perspective towards constructing green buildings.
- The significance of local context in implementing sustainable development plans has not been done.
- Research is needed to explore how developers can effectively integrate sustainable practices with traditional construction methods.
- There is need of specific study in examining how implementation is influenced in different organizations, in specific region and cultural framework, therefore researchers should focus and explore country and regional specific barriers for effective sustainable plans in real estate sector.
- Studies should cover and state how existing guidelines can impact sustainability outcomes so that they can provide strong evidence for effective implementation. Therefore, academicians can impinge upon new guidelines and focus their attention on the outcomes of these guidelines in improving the green building standards in construction industry.
- Academicians should spot on the impacts of sustainable practices and its outcomes on economic growth in developing countries, they should discuss the relevance of technological factors and financial factors in leveraging the sustainability performance of real estate companies, and they should cogitate and highlight findings on perceptive challenges and opportunities favouring developers' performance linked with sustainability implementation.
- Research gaps are also present in awareness factors wherein institutional factors should be highlighted, so that sustainable housing plan could be strategized well for effective performance. Therefore, a collaborative partnership focussing on a helix where academicians and researcher can support the cause of sustainability for industry and can fulfil the requirement of further studies as noted by the researchers in this study

## 3. Objectives of the study

- To identify the perceived importance of implementing green building principles
- To determine the developers' constraints in implementation of green building practices

## 4. Research Methodology

This research is based on triangulation method wherein the researchers' have utilized semi structured interviews with an inductive approach of data analysis. The research findings are analysed in tabular format with the help of thematic analysis, where themes are first generated through coding, on the basis of respondent frequency. The codes generated were converted under themes and sub themes presented in tabular format below. The researchers' preference for thematic analysis was to identify new research dimensions with freedom and flexibility while studying the pertinent question stated in the research objectives.

**Research Design:** The researchers have used semi-structured interviews to understand developers'

perspective on adoption of green buildings as housing solutions for Pune and PCMC region. The study is focused on building a comprehensive understanding about sustainable housing solutions available in the form of guidelines and prevalent challenges faced by developers. The study intends to highlight the influence of financial incentives on green building practices.

**Area of the study** – the study is focused on the developing city of Pune and PCMC as these areas have seen significant growth in real estate development.

**Sample Size-** The researchers used a representative sample of 100 real estate developers who are spread across different projects in Pune and PCMC region.

## 5. Findings, Discussions and Suggestions:

Environment changes are eye opener for everyone. The real estate developers who are our respondents are taking well calculated steps to ensure and encourage responsible living. However Sustainability endeavours are compromised in a few segment from developers' perspective as depicted in the findings generated in table 3.1. These findings are generated by an inductive approach using thematic analysis done from the interview data. Themes and sub themes are generated.

Themes Generated	Sub themes	Findings	Insights
1. Developers' Awareness and Attitudes	1.1: Positive Awareness and Adoption	65% agree on awareness and implementation of green practices.	Developers recognize importance but face external challenges.
	1.2 Limited Awareness in Certain Segments	15% disagree due to abundant natural resources.	Geographic factors influence attitudes toward sustainability.
2. Importance of Green building principles	2.1 Substantial growth in client demand for sustainable homes	72% agree on importance for sustainability due to client demand.	Market demand drives adoption of green practices.
	2.2 Developers' skepticism	18% disagree due to perceived challenges.	Resistance stems from feasibility concerns or lack of immediate benefits.
3. Implementation constraints	3.1 The cost dimension	68% agree that high costs are a major barrier.	Financial constraints limit green building adoption.
	3.2 Dearth of technical expertise	76% highlight need for training in sustainable techniques.	Technical knowledge gaps hinder effective implementation.
4. Prevailing incentivization scheme and regulatory control	4.1. Awareness vs. accessibility	76% are aware of incentives but face systemic barriers.	Institutional inefficiencies reduce incentive utilization.

	4.2 Inadequacy of Financial Support	78% disagree on adequacy of incentives due to certification challenges	Developers demand increased funding and simplified processes.
5. Need for Simplification and Training Programs	5.1 Simplification of Regulations	82% agree on need for simplified regulations.	Streamlined processes could boost adoption rates.
	5.2 Advanced Training Programs	84% agree on need for skill development initiatives.	Training can empower stakeholders to overcome barriers.

Table 3.1: Research interview data ( developers from Pune and PCMC region)

#### • Discussion:

In lieu of existing information outreach and cost constraints, the developers' faces many hiccups in implementing the green building standards. The findings suggest that developers are aware about the perceived significance of establishing green building principles on account of market driving forces like client's demand but conventional practices and scepticism creates blockages in adoption. Whereas it is quintessential to implement the green building plans in cities like Pune and PCMC but the acceptance of green building standards is still in an infancy stage as held by many developers' viewpoint.

From the developers' perspective, the inhibiting factors for challenges in adoption of green buildings standards are governed by factors like high cost, technologies, stakeholders' perceptions, lack of green cultural framework, sluggish consumer demand, silos in governmental and institutional factors, ignorance among stakeholders' regarding their benefits and the opportunities attached with green infrastructural growth. The cost factor in implementing green building acts as a challenge for developers too. They have also highlighted factors like lack of information, perceptive issues of customers and long payback period as impediments for adoption of green housing solution. The green building concept is still emerging in India and other developing nations. Indian customers largely do not relate well with the marketability of green housing.

Many government plans in India addressed for sustainability could not work because of loopholes in strategies made by developers or either they faced economic and social crises. On account of variety of challenges, the green housing solutions could not get proper acceptance in society. This study, therefore addressed the rising need of spreading information on the incentives attached with implementation of green plans by developers in the reality segment of the industry with respect to Pune and Pimpri Chinchwad Municipal Corporation Region.

#### 6. Suggestions:

- There is need of more programs or the activities which create awareness among the society for the sustainable development and green buildings.
- There is need of more funds for sustainable development practices.

- There is need ease formalities and some perks to the home buyers/society by the local government.
- Real estate sector showing positive steps towards sustainable development and creating awareness among the society but it is possible for current projects still, there is need of development in old areas of Pune and PCMC which are much crowded and less chances to implement the practices.
- Need of awareness for green financing programs such as Green Bonds, Green Loan etc.

## 7. Limitation of the Study:

The study is restricted to Pune and PCMC cities but for inclusive sustainable growth, there is need of further studies in developing cities such as Nagpur, Solapur, sub urban areas of Mumbai and Bangalore. There is need of study on certain zoning rules, which may help the builders in creating advanced eco-friendly projects.

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