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*Article*

# Beyond Certification: A Social-Level Evaluation Framework for Green Buildings through Community Perception and Design Visibility

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**Abstract:** While existing green building certification systems such as LEED, BREEAM, and CASBEE have advanced technical standards for sustainable construction, they often neglect the social dimension of sustainability—how green buildings are perceived, accepted, and understood by the public. This study addresses this gap by proposing a conceptual framework that supplements traditional evaluation systems with three socially oriented dimensions: Community Acceptance, Green Property Awareness, and Visual Perception. Developed through a qualitative synthesis of interdisciplinary literature from environmental psychology, green design, and social sustainability research, the framework is presented as a three-dimensional Venn model, emphasizing the intersection of symbolic visibility, public engagement, and intuitive recognition. It offers a new lens for assessing the social resonance of sustainable architecture, providing practical guidance for designers, planners, and policy-makers aiming to align technical performance with public perception. The framework also contributes to ongoing discourse on inclusive sustainability practices by linking green building evaluation with broader global goals such as the United Nations Sustainable Development Goals (SDGs). Although conceptual in nature, the model lays a foundation for future empirical research, including the development of measurable indicators and participatory evaluation tools.

**Keywords:** Green building; Social sustainability; Evaluation framework; Community acceptance; Perceived sustainability

## 1. Introduction

In recent decades, green building has emerged as a vital strategy in the global response to climate change, resource depletion, and environmental degradation. Widely adopted evaluation systems such as LEED (Leadership in Energy and Environmental Design) in the United States, BREEAM (Building Research Establishment Environmental Assessment Method) in the United Kingdom, and CASBEE (Comprehensive Assessment System for Built Environment Efficiency) in Japan have played a significant role in standardizing sustainable practices throughout the life cycle of buildings—from design and construction to operation and demolition (Maskil-Leitan et al., 2020). These frameworks primarily emphasize energy efficiency, material conservation, and ecological performance, helping to promote a technically rigorous and environmentally responsible approach to architecture and urban development (Fatourehchi & Zarghami, 2020b).

Despite their comprehensiveness, existing green building evaluation systems tend to focus heavily on technical and professional dimensions, with limited attention paid to public

perception and social engagement. Most certification criteria are designed for architects, engineers, developers, and regulatory bodies, overlooking the everyday experiences and intuitive judgments of ordinary users and nearby communities (Maskil-Leitan et al., 2020). This gap poses a fundamental challenge: if sustainability is to become a widely shared cultural value, then green buildings must not only be sustainable in design but also feel sustainable to the people who encounter and inhabit them (I. M. Lami & Mecca, 2021).

To date, the social dimension of green building evaluation remains underdeveloped. Concepts such as community acceptance, visual perception, and intuitive recognition of sustainability have not been systematically incorporated into mainstream assessment frameworks (Chen et al., 2022). As a result, buildings that achieve high scores in technical evaluations may still fail to foster awareness, trust, or identification among the general public. This disconnection undermines efforts to cultivate long-term behavioral and cultural shifts toward environmental responsibility (Šatrevičs et al., 2021).

This issue is particularly urgent in the current context of rapid urbanization and global climate challenges, where public engagement and behavioral change are essential for achieving sustainability goals. As more cities promote green construction projects, the success of such initiatives increasingly depends on whether citizens understand, support, and internalize the values these buildings represent. Without effective communication at the social level, green architecture risks becoming a closed professional discourse — technically valid but socially invisible (Zhang et al., 2021). Bridging the gap between certification and public meaning is no longer optional; it is a necessary evolution in sustainable development practices.

In light of this, the present study proposes an expanded framework for green building evaluation that incorporates social-level criteria into the assessment process (Fatourehchi & Zarghami, 2020b). By introducing three supplementary dimensions — community acceptance, green property awareness, and visual perception—this research aims to address the missing link between technical sustainability and public cognition. Rather than replacing existing systems, the proposed model functions as a complementary tool to enhance the social legitimacy and intuitive accessibility of green buildings. This approach seeks to contribute to the broader discourse on sustainable architecture by highlighting the importance of aligning environmental performance with social visibility and community resonance.

## 2. Literature Review

### *2.1 International Green Building Evaluation Systems*

Green building evaluation systems have become vital instruments in promoting sustainable practices across the global construction industry (Ding et al., 2018). As environmental challenges grow more severe, governments, architects, and developers are increasingly expected to adopt structured sustainability assessments to ensure that new buildings minimize ecological impact and optimize resource efficiency (Zhang et al., 2019). In response, a variety of evaluation systems have been developed worldwide, each tailored to regional policy goals and environmental contexts. Among the most prominent are LEED (Leadership in Energy and Environmental Design) in the United States (Ferrari et al., 2022), BREEAM (Building Research Establishment Environmental Assessment Method) in the United Kingdom (Doan et al., 2017), and CASBEE (Comprehensive Assessment System for Built Environment Efficiency) in Japan. Additionally, systems such as HQE (France), NABERS (Australia), and GBTool (Canada and others) have emerged as localized solutions for sustainable construction.

While these frameworks differ in structure and emphasis, they share a common focus on measurable environmental criteria. For example, LEED awards points in categories such as energy and atmosphere, materials and resources, water efficiency, and indoor environmental

quality. BREEAM evaluates ten key categories, including energy, transportation, materials, and waste management. CASBEE incorporates life-cycle assessments, evaluating environmental quality alongside environmental load reduction. These systems generally operate through a point-based or weighting mechanism, which aggregates performance across technical categories to determine an overall sustainability rating or certification level.


**Figure 1.** Comparison of Major International Green Building Evaluation Systems

These systems have undoubtedly played a critical role in elevating environmental standards in the built environment. They provide developers and designers with clear guidelines and performance benchmarks(Lu et al., 2018), encourage innovation, and offer regulatory alignment in many jurisdictions. Moreover, certification often yields financial and reputational benefits, such as higher property values, tax incentives, and improved branding.

These national and regional systems are increasingly expected to align with the broader international agenda outlined in the United Nations Sustainable Development Goals (SDGs). Among the 17 goals, several directly relate to sustainable construction, including Goal 11 (Sustainable Cities and Communities), Goal 13 (Climate Action), Goal 7 (Affordable and Clean Energy), and Goal 12 (Responsible Consumption and Production). These connections emphasize the need for green building evaluation systems to address not only environmental performance but also social inclusion, cultural relevance, and public engagement (Figure.1) (Hazem et al., 2020).

However, despite their technical comprehensiveness, these evaluation systems tend to prioritize professional and environmental dimensions while largely excluding social and perceptual aspects of sustainability (Table 1). The core audiences for these systems—engineers, architects, developers, and policymakers—interact with buildings differently from the general public. For example, a building that scores highly on energy efficiency may still appear indistinct or uninspiring to local communities. Similarly, green infrastructure may be strategically invisible to non-expert users, limiting its educational or symbolic impact. This technical orientation, while effective from an environmental engineering standpoint, creates a blind spot in the way sustainability is communicated and experienced (Kim et al., 2013).

As cities aim to foster sustainable lifestyles, the perception and acceptance of green buildings by ordinary citizens become increasingly relevant. Current systems, while successful in advancing technical goals, often fail to answer a simple but important question: do people recognize this building as "green," and do they care? Addressing this gap requires broadening the scope of evaluation to include social-level indicators that reflect intuitive, visual, and community-based dimensions of sustainability.

**Table 1 Comparison of Major International Green Building Evaluation Systems**

| Country / Region | System Name | Key Evaluation Categories | Certification Levels | Focus Features |
|---|---|---|---|---|
| USA | LEED (Leadership in Energy and Environmental Design) | Energy efficiency, water use, materials, indoor air quality, innovation | Certified, Silver, Gold, Platinum | Market-driven; widely adopted; lifecycle assessment |
| UK | BREEAM (Building Research Establishment Environmental Assessment Method) | Energy, water, waste, materials, transportation, ecology, management | Pass, Good, Very Good, Excellent, Outstanding | Oldest system; holistic and flexible |
| Japan | CASBEE (Comprehensive Assessment System for Built Environment Efficiency) | Environmental load reduction, indoor environment, QL/QN score balance | S, A, B+, B-, C | Uses life-cycle environmental efficiency ratio |
| France | HQE (Haute Qualité Environnementale) | Energy, water, comfort, health, environmental risks | 3 to 5 stars | Emphasizes health and comfort alongside performance |
| Germany | DGNB (German Sustainable Building Council System) | Environmental quality, economic quality, sociocultural & functional quality | Bronze, Silver, Gold, Platinum | Balanced weighting; includes social and economic dimensions |
| Australia | NABERS (National Australian Built Environment Rating System) | Energy, water, indoor environment, waste, greenhouse gas emissions | 1 to 6 stars | Operational performance focus; post-occupancy based |
| Canada | GBTool (Green Building Tool) | Site, energy, indoor environment, materials, emissions | Flexible scoring | Academic in origin; flexible framework |
| Netherlands | GPR Gebouw | Energy, environment, health, quality of use, future value | 1 to 10 scale per domain | Emphasizes future-proofing and user experience |
| Norway | EcoProfile | Energy, materials, transportation, emissions | Qualitative profile | Designed for Nordic climate and community integration |

### *2.2. The Absence of Social-Level Indicators in Existing Frameworks*

Although green building evaluation systems have significantly advanced environmental performance standards, their scope remains largely confined to technical and professional criteria. These frameworks—such as LEED, BREEAM, CASBEE, and others—are primarily designed for use by architects, engineers, developers, and policymakers. As a result, the metrics they adopt emphasize measurable outputs: energy consumption, water efficiency, carbon

emissions, material sourcing, and life-cycle analysis. While this approach ensures scientific rigor and regulatory alignment, it systematically overlooks the experiential, perceptual, and community-related aspects of sustainability.

A recurring limitation across these systems is their lack of consideration for how green buildings are perceived and understood by non-expert users and the broader public(Kim et al., 2013). In most cases, a building that achieves the highest level of certification may be indistinguishable from an ordinary structure to someone passing by. Architectural cues such as solar panels, green roofs, or advanced ventilation systems are not always intuitively recognized or appreciated by lay observers. As a consequence, the symbolic and educational potential of green buildings is underutilized. Rather than serving as everyday reminders of sustainability, these buildings often become invisible to those not directly involved in their design or management.

Moreover, few evaluation systems incorporate indicators related to community acceptance or public engagement during the planning and implementation stages. Green construction projects may impact surrounding neighborhoods, yet evaluation frameworks rarely assess how well a project communicates its sustainability goals to the local population or integrates into the community's identity and values. Without formal mechanisms to account for public feedback or perceptual alignment, there exists a disconnect between the intent of sustainability and its social resonance.

The lack of visual and intuitive cues in current systems further complicates efforts to mainstream sustainability (Y. Liu et al., 2024). Recent studies in environmental psychology suggest that visual exposure to "green" elements—such as natural materials, vegetation, and visible eco-technologies—can significantly influence public perception and environmental behavior. However, existing assessment tools rarely include such qualitative or emotional dimensions. As a result, sustainable buildings may fail to inspire, educate, or empower the public, undermining the long-term cultural adoption of ecological values.

In sum, while current green building frameworks are effective in promoting technical sustainability, they fall short in addressing social-level sustainability—a critical dimension for achieving broad-based behavioral change. This gap is especially problematic as cities increasingly seek to position sustainability as a shared civic priority. Without indicators that reflect community integration, intuitive recognition, and emotional connection, green buildings risk becoming exclusive symbols of expert discourse rather than inclusive platforms for collective transformation.

### *2.2 Toward a Socially Inclusive Sustainability Evaluation*

In response to the limitations of purely technical assessment models, recent scholarly discourse has begun to advocate for more socially inclusive approaches to sustainability evaluation(Mirzoev et al., 2022). The concept of social sustainability—which encompasses issues such as equity, inclusion, community well-being, and participatory governance—has gained prominence in the fields of urban planning and environmental policy. Within this broader framework, scholars have increasingly called for evaluation systems that go beyond material and environmental metrics to incorporate human-centered and perception-based indicators (I. Lami & Mecca, 2020a).

A growing body of literature highlights the importance of perceived sustainability in shaping public attitudes and behaviors (Tafese & Kopp, 2025). Unlike objective metrics, perceived sustainability refers to the way individuals intuitively understand, identify with, and emotionally respond to sustainable environments. Studies in environmental psychology have demonstrated that visual cues—such as greenery, natural materials, light quality, and spatial openness—can significantly influence how people interpret and value a space. Buildings that

visibly reflect ecological values are more likely to reinforce environmental consciousness and foster sustainable habits among occupants and passersby.

In addition to visual perception, community acceptance has emerged as a critical yet underexplored dimension of sustainable development (Ketola, 2023). Research on public infrastructure projects and urban transformations suggests that local support is essential for long-term viability. Buildings that are perceived as disruptive, opaque in purpose, or culturally incongruent often face resistance or indifference. Conversely, when communities are actively engaged in the planning and communication processes, the resulting projects tend to enjoy higher levels of trust, satisfaction, and usage (Kelvin, 2024). These findings underscore the need to integrate social integration and narrative communication into sustainability evaluation frameworks.

Another important construct is what may be termed green property awareness—the degree to which the public recognizes and values the ecological features of a building(Komolafe & Oyewole, 2018). While certifications like LEED or BREEAM are meaningful within professional networks, they are rarely understood by the general public. A building may possess state-of-the-art energy systems, but if these features are hidden from view or poorly explained, their contribution to public sustainability awareness is minimal. To bridge this communication gap, evaluation systems must consider how green attributes are made visible, legible, and relatable to everyday users (Jim et al., 2022).

Taken together, these emerging perspectives suggest the need for a supplementary evaluation framework that integrates community perception, visual experience, and awareness-building into green building assessment. This paper responds to this need by proposing a three-dimensional model—comprising community acceptance, visual perception, and green property awareness—as an extension to conventional evaluation tools. By incorporating social-level criteria, the model aims to enhance not only the technical performance of green buildings but also their cultural meaning, public visibility, and civic resonance.

## 3. Proposed Social-Level Evaluation Framework

### *3.1 Conceptual Rationale: Why Social-Level Indicators Matter*

Traditional green building evaluation systems have been instrumental in promoting sustainable development. However, their overwhelmingly technical orientation creates a significant blind spot: the absence of indicators that capture how sustainability is perceived, accepted, and internalized by the public. As urban environments become increasingly complex and socially diverse, evaluating buildings solely based on measurable environmental outputs is no longer sufficient. To embed sustainability as a shared cultural value, it must not only be technically sound but also socially visible and emotionally resonant (Bragança et al., 2010a).

The public's understanding of sustainability often begins with perception—what people see, feel, and associate with a physical space. A building’s form, texture, signage, and integration with its surroundings can either reinforce or undermine its sustainable identity. Yet most green certification systems lack formal mechanisms for assessing such visual or perceptual aspects(Bragança et al., 2010b). Moreover, buildings that are certified as “green” often fail to communicate their environmental performance to the general public. Without visual cues or interpretive information, users and passersby may remain unaware of the sustainable technologies embedded within the structure.

Social-level indicators are also critical for promoting community engagement and behavioral adoption. Research in environmental sociology and behavioral psychology has shown that people are more likely to support, use, and advocate for sustainable infrastructure

when they feel informed and included (Cyril et al., 2015). A green building that is perceived as inaccessible, opaque, or disruptive may generate resistance—even if it performs exceptionally well in technical terms. Conversely, when communities are aware of and aligned with a building's sustainable features, they are more likely to feel a sense of ownership and pride, thereby reinforcing sustainable practices in daily life.

Furthermore, introducing social-level evaluation indicators allows buildings to serve as educational and symbolic tools within the urban landscape. By making sustainability more legible and intuitive, buildings can become active participants in shaping environmental culture. This aligns with broader goals of environmental communication and civic sustainability, where physical structures are not just objects but narratives—stories that reflect collective values and aspirations (Compan et al., 2024).

In this context, the proposed framework aims to fill the conceptual and practical gap left by existing systems. By integrating dimensions such as community acceptance, green property awareness, and visual perception, the framework seeks to enhance not only what buildings do for the environment, but also how they mean within society. The next section elaborates on these three dimensions in detail.

## *3.2 The Three-Dimensional Framework: Dimensions and Visual Model*

To address the social-level blind spots in existing green building evaluation systems, this study proposes a three-dimensional supplementary framework composed of the following key dimensions: Community Acceptance, Green Property Awareness, and Visual Perception. Each dimension represents a distinct but interrelated aspect of how buildings are understood, received, and symbolically integrated by the public. Together, they form a cohesive lens through which the social sustainability of green buildings can be assessed (I. Lami & Mecca, 2020b).

### 3.2.1 Community Acceptance

This dimension refers to the extent to which a green building project is supported, welcomed, and integrated by the surrounding community. Factors include whether local residents were informed or consulted during the planning process, whether the building contributes positively to neighborhood identity, and whether it minimizes disruption to daily life. Community acceptance is not only a matter of social goodwill but also a practical determinant of long-term success and usage (Taherkhani, 2022).

### 3.2.2 Green Property Awareness

Green property awareness addresses the public's ability to recognize and understand the sustainable features of a building (T. Liu et al., 2022a). It focuses on transparency and communication—whether the building visibly displays its environmental functions, provides interpretive signage, or includes educational components. Without such awareness, even highly efficient green technologies may go unnoticed, diminishing their potential to inspire and educate.

### 3.2.3 Visual Perception

This dimension captures the intuitive and aesthetic recognition of sustainability. A building may be perceived as "green" based on its materiality, form, integration with natural elements (such as plants, water, or light), and visual alignment with ecological values (Zhong et al., 2023). This perception influences whether the public associates the building with sustainability, regardless of technical certification.

These three dimensions are illustrated in the Venn diagram below (Figure 2). Each circle represents one of the core components of the framework. The central overlapping area, where all three dimensions intersect, indicates the ideal scenario: a building that is not only technically sustainable but also publicly legible, widely accepted, and intuitively recognized as

"green." Conversely, if a building only satisfies one or two of these dimensions, its social sustainability is considered partial or limited.

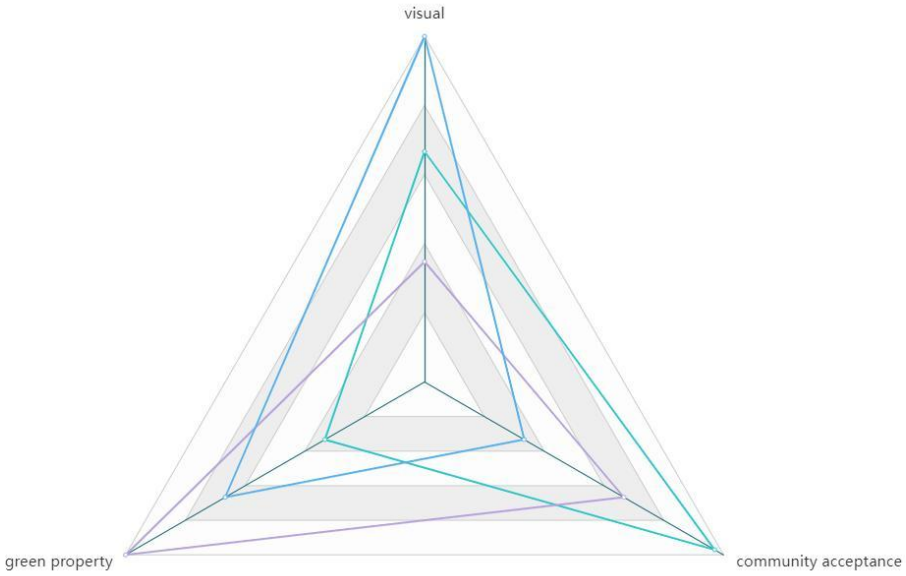


**Figure 2.** Comparison of Major International Green Building Evaluation Systems

### *3.3 Application Scenarios and Implications*

The proposed three-dimensional framework offers a flexible and adaptable tool for evaluating the social sustainability of green buildings across a range of real-world contexts. While it is not intended to replace existing certification systems such as LEED or BREEAM, it functions as a complementary layer that captures public-facing and perception-based dimensions often overlooked by traditional metrics. This dual approach—combining technical and social evaluation—can provide a more holistic understanding of how sustainable buildings operate and resonate in the urban landscape.

In practice, the framework can be applied in multiple scenarios. One potential use is as a supplementary module in public-sector or institutional building projects, particularly those located in residential neighborhoods or civic zones. By incorporating community acceptance and visual perception into the design and evaluation process, developers can anticipate and mitigate social resistance, increase transparency, and foster a greater sense of shared ownership (Fatourehchi & Zarghami, 2020a). For instance, green schools, libraries, and government buildings can serve not only as functional spaces but also as beacons of sustainability education, if designed and communicated with the public in mind.

The framework is also relevant in urban regeneration and redevelopment projects, where issues of public trust, aesthetic integration, and community impact are often heightened. In these cases, evaluating how visibly sustainable and socially welcomed a new structure is can guide planners and designers toward more inclusive and adaptive strategies. Similarly, in the private sector, developers aiming to build reputational capital may use this model to ensure that their green buildings are not only environmentally certified but also socially recognized and valued, enhancing brand identity and user loyalty (T. Liu et al., 2022b).

Beyond project-level applications, the framework holds implications for policy design and public engagement strategies. Municipalities and planning authorities could integrate social-level indicators into sustainability guidelines, funding incentives, or participatory review processes. Educational institutions could adopt the framework as a teaching tool to help architecture and planning students consider both environmental and social dimensions in sustainable design (Blomkamp, 2021).

Looking ahead, the model also lays the groundwork for future operationalization. With further development, each of the three dimensions could be translated into measurable indicators or public survey instruments, allowing for semi-quantitative or qualitative evaluation. For example, visual perception could be assessed through citizen photo diaries or user feedback apps; green property awareness could be evaluated via signage audits or environmental literacy tests; community acceptance could be tracked through participatory design records or social media sentiment analysis.

In sum, the framework offers a pathway toward socially integrated green building evaluation. By bridging technical sustainability with social meaning, it helps align design intentions with public perception—ensuring that green buildings are not only efficient and certified, but also understood, embraced, and lived by the communities they are meant to serve.4. Results

Describe the statistical methods used to analyze the data. Specify the software used and the specific statistical tests performed.

## 4. Methodology: Conceptual Framework Development

This study adopts a conceptual development methodology to construct a supplementary framework for evaluating the social sustainability of green buildings. Rather than employing empirical data collection or statistical testing, the research is grounded in theoretical synthesis, literature analysis, and problem-driven reasoning. The aim is to propose a model that addresses the observed limitations of existing evaluation systems by integrating social-level indicators into the assessment of green architecture.

The development of the framework followed a qualitative, iterative process informed by three main sources: (1) a critical review of international green building assessment systems (Kristoffersen et al., 2024), (2) interdisciplinary literature on social sustainability, environmental psychology, and community engagement (Akadiri et al., 2012; Chang & Lu, 2017; Eizenberg & Jabareen, 2017), and (3) the identification of conceptual gaps where technical performance metrics fail to align with public perception and participation.

Through this process, three dimensions were inductively formulated: Community Acceptance, Green Property Awareness, and Visual Perception. Each dimension reflects a unique but interconnected aspect of how buildings are socially perceived, integrated, and symbolically interpreted (Akadiri et al., 2012; Eizenberg & Jabareen, 2017; Too & Too, 2011). These dimensions were then visually structured using a Venn diagram to highlight their interdependence and to propose a composite zone of optimal social sustainability—where all three dimensions intersect.

The resulting framework is not intended as a prescriptive measurement tool but as a theoretical foundation for future applications. It can inform the design of survey instruments, participatory planning guidelines, or complementary modules in existing certification systems. While the framework is conceptual in nature, it offers a structured approach for integrating social visibility, intuitive recognition, and community relevance into the sustainability discourse.

## 5. Discussion

### *5.1 Theoretical Contributions*

This study contributes to the growing discourse on sustainable architecture by introducing a conceptual framework that emphasizes the often-overlooked social dimension of green building evaluation. While existing systems such as LEED, BREEAM, and CASBEE have advanced technical performance metrics, they largely remain detached from how buildings are perceived,

experienced, and accepted by the general public. By proposing a three-dimensional framework—comprising Community Acceptance, Green Property Awareness, and Visual Perception—this study expands the analytical lens of sustainability to include social and cultural interpretations of the built environment(Lozano, 2008).

Unlike prior models that focus on energy efficiency, material use, or life-cycle emissions, the proposed framework addresses the symbolic and communicative function of architecture in shaping environmental awareness and behavioral change. It integrates insights from environmental psychology, design cognition, and community planning, thereby establishing a multi-disciplinary bridge between technical certification systems and public-facing sustainability indicators.

In doing so, the framework responds to recent scholarly calls for more inclusive and human-centered evaluation tools that can support behavioral transformation, cultural adaptation, and long-term sustainability literacy.

### *5.2 Practical Implications*

From a practical standpoint, this framework offers a valuable tool for developers, urban planners, architects, and policy-makers who wish to embed sustainability not only in building performance but also in public perception and community integration. Green buildings that are visually and symbolically aligned with ecological values are more likely to inspire sustainable behaviors, foster civic pride, and promote collective responsibility.

The framework can be applied in early-stage project planning as a design checklist or incorporated into public-sector guidelines for community consultation and visual communication. It may also support post-construction evaluations, helping assess whether a building is intuitively understood as "green" by its users and surrounding community. By doing so, it enables a feedback loop that connects professional intent with user interpretation, potentially leading to more meaningful and accepted sustainable development outcomes.

Moreover, the framework aligns with broader international goals such as the United Nations' Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action), by promoting inclusive, participatory, and perceptible sustainability practices.

### *5.3 Limitations and Future Research Directions*

While the framework provides a novel perspective on green building evaluation, it remains conceptual and exploratory in nature. The dimensions—though theoretically grounded—have yet to be operationalized into measurable indicators or validated through empirical data. Future studies could translate each dimension into a set of survey items, interview questions, or observational checklists, enabling quantitative or qualitative evaluation of real-world buildings.

Additionally, the relative importance or weighting of each dimension remains open for further exploration. Some buildings may excel in visual perception but perform poorly in community acceptance, raising questions about how trade-offs between dimensions should be interpreted or resolved.

Another promising direction is the development of participatory evaluation tools, such as citizen scoring systems, augmented reality overlays, or mobile feedback platforms, that empower communities to co-define what sustainability looks like in their local context.

Finally, cultural variation may influence how different communities perceive and accept green buildings. Cross-cultural validation of the framework would enrich its global applicability and refine its dimensions to reflect diverse values, norms, and expectations.

## 6. Conclusion

As sustainability becomes an increasingly central concern in global urban development, the evaluation of green buildings must evolve to reflect not only environmental performance but also public perception and social integration. This study addresses a key limitation in current green building certification systems by proposing a supplementary framework that incorporates social-level indicators into the assessment process.

Through a conceptual development approach, the study introduces a three-dimensional framework comprising Community Acceptance, Green Property Awareness, and Visual Perception. These dimensions capture essential aspects of how green buildings are experienced, understood, and embraced by non-expert users and surrounding communities. By shifting the evaluative lens beyond technical performance to include intuitive and cultural dimensions, the framework seeks to bridge the gap between professional intent and public meaning.

This framework holds significant practical implications for architects, planners, developers, and policy-makers. It can be used as a design and communication tool in early-stage projects, a public feedback mechanism during implementation, or a post-construction assessment module. Its alignment with the United Nations Sustainable Development Goals (SDGs) further reinforces its relevance in advancing inclusive and participatory forms of sustainability.

Nonetheless, the study remains exploratory. The framework has yet to be empirically tested, and its dimensions are currently defined at a conceptual level. Future research should focus on translating these concepts into measurable indicators and validating them through field studies, user surveys, or participatory design experiments. Moreover, cross-cultural applications could reveal how sustainability is perceived differently across regions and socio-economic groups, helping to refine the framework's adaptability and global relevance.

In sum, this study contributes to the ongoing rethinking of sustainable architecture by advocating for a socially inclusive evaluation paradigm. By recognizing that a green building must also look, feel, and function sustainably in the eyes of the public, the proposed framework lays the groundwork for more transparent, engaging, and human-centered sustainable development.

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