Green Building certification suitable for Bangladesh: Insights from worldwide certification system

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Abstract. Green building implementation in Dhaka has become essential due to rapid urban growth in recent years. In response to this growth, the Bangladesh National Building Code (BNBC) 2020 and Rajdhani Unnayan Kartripakkha (RAJUK) regulations aim to promote sustainability. Although Bangladesh has 277 LEED-certified projects, many LEED criteria are not incorporated into the BNBC, highlighting the absence of mandatory green building provisions. To bridge this gap, the national green building certification known as the Building Energy Efficiency and Environmental Rating (BEEER) was introduced. However, its adoption and presence in the construction sector remain minimal. This study investigates BEEER's limited implementation by gathering expert insights and conducting a comparative analysis with global certification systems. Focusing on systems most relevant to the local context, we perform a detailed gap analysis of their categories, scoring methods, and applicability. The findings show that while BEEER aligns well with Bangladesh's needs, it suffers from low recognition and insufficient integration. Further comparison with established national systems helps identify areas for improvement. The findings offer strategic recommendations to strengthen BEEER and promote sustainable urban development in line with SDG 11, contributing to a more resilient future for Dhaka and Bangladesh.

1. Introduction:

Dhaka is growing at an extremely fast rate, estimated population of around 24.7 million which has increased over the last 75 years (1). This growth is mainly due to internal migration, and Rajdhani Unnayan Kartripakkha (RAJUK) (which means Capital city Dhaka Development Authority) currently approves around 6000 new buildings each year to meet rising demand (2). However, this rapid urbanization has led to serious issues, including environmental pollution, traffic congestion, increased pressure on energy and water resources. To manage this growth, Bangladesh has introduced several urban planning regulations, such as the Building Construction Act (1952), the Town Improvement Act (1953), and the Bangladesh National Building Code (BNBC) (2). RAJUK uses these tools to regulate development, but enforcement is still limited, as a result, environmentally harmful outcome. In this context, green construction has become essential for sustainable urban development. The necessity of sustainable development is not only about

reducing environmental impact but also about building resilience to climate change and protecting cities like Dhaka from future disasters. Although the current national building code includes sustainability requirements and encourages renewable energy use, it only partially overlaps with international standards and does not fully support green building practices across all sectors.

Local initiatives like the BEEER (Building Energy Efficiency and Environment Rating), which was made by SREDA (Sustainable And Renewable Energy Development Authority in Bangladesh) system, offer a promising foundation for a national green certification system. However, its implementation has been slow, but received government approval in 2024 (3). Efforts by RAJUK and the Bangladesh Green Building Academy are ongoing, but disagreements and a lack of unified direction continue to hold back progress (2). Considering this situation, this research focuses on understanding why BEEER, despite being developed as a localized green building certification system, has not gained wider recognition or use compared to global systems like LEED. By exploring the current development stage of BEEER, collecting expert and stakeholder opinions, and examining the critical implementation gap between BEEER and national green building certifications worldwide, the study aims to highlight key gaps and opportunities for improving the promotion and adoption of green building certification in the country.

2. Literature Review

2.1 Development of Dhaka City and Challenges on Sustainable Development

In recent years, the Dhaka metropolis has faced significant challenges due to population growth driven by internal migration. Dhaka is now a megacity, with an estimated population of around 24.7 million compared to just 335,760 in 1950. In the past year alone, the city added approximately 717,200 people, demonstrating a 3% annual growth rate (1). This rapid urbanization has facilitated development but has also created environmental, social, and economic problems. Migration from rural to urban areas happens due to both pull factors, such as industrial opportunities and city services, and push factors, including natural disasters, poverty, and limited rural employment (4). However, this influx of people often strains existing infrastructure, leading to challenges related to housing, education, services, and jobs (5), which makes it difficult to identify a single root cause. Managing these issues is essential to creating a sustainable urban future, especially in the construction sector.

To respond to these challenges, Bangladesh has introduced the Bangladesh National Building Code (BNBC) 2020, which sets minimum standards for building design, construction, materials, use, and maintenance (6). Its goal is to protect life, health, property, and public welfare by ensuring quality and safety in construction practices. As the main authority responsible for approving buildings and enforcing regulations based on the BNBC in Dhaka, RAJUK faces challenges as many construction sites still fail to comply with these established standards (2). This is due to multiple factors, including lack of awareness, high costs, weak enforcement, poor coordination, and insufficient training, along with limited availability of sustainable materials, shortage of skilled labour, and the absence of a clear direction for sustainable urban development (2), further compounded by issues like inadequate water supply and poor-quality control (4).

Another critical issue is the environmental threat. Dhaka ranks as one of the most polluted cities in the world. The city's foundation for long-term sustainability is weakening due to air pollution and environmental neglect (7). Flood risks are increasing because of climate variability, rapid urban expansion, and inadequate infrastructure and planning. Bangladesh is already vulnerable to climate change, facing frequent floods, droughts, cyclones, and storms (8). As noted by Alam and Mullick (9), much of this is caused by disorganized development, weak regulation,

and overuse of natural resources. As the building sector, responsible for 32% of global final energy use and 39% of CO_2 emissions (10), significantly contributes to climate change, highlighting the urgent need for energy-efficient and environmentally responsible building practices in Bangladesh to address both its energy crisis and climate risks. While green building practices could reduce global carbon emissions by 15–20% (11), their implementation in Bangladesh is hindered by challenges cited above, making the development of green building initiatives through certification a crucial step forward.

2.2 Challenges on implementation of national green building certification

Bangladesh has the highest number of LEED-certified RMG factories in the world (12). LEED is currently the most widely applied green building rating system in Bangladesh, with 277 certified buildings (14). LEED gained momentum after the collapse of the Rana Plaza factory building in Dhaka in April 2013. The incident resulted in 1,134 deaths and approximately 2,500 injuries, making it the deadliest non-deliberate structural failure in modern history and the deadliest garment factory disaster ever recorded (12). The disaster drew global attention to workplace safety and building standards in the RMG sector. Public interest and media pressure led to the initiation of strategies aimed at improving hazardous workplace conditions. As a result, LEED certification was marketed to factory owners as a symbol of safer, more sustainable buildings that could improve worker health and attract international buyers (13). Although the certification improved overall building safety, through better site hazard assessments, construction material quality control, and adherence to construction standards, many owners later expressed frustration over the cost and complexity of the system, questioning its relevance to the local context.

To address the limitations of foreign certification systems like LEED and to provide a locally appropriate framework, BEEER system was developed under the Ministry of Power, Energy, and Mineral Resources (3). BEEER consists of 50 credits divided across nine categories. Each credit specifies performance criteria for buildings and assigns points based on compliance. Currently, BEEER covers both existing buildings and new constructions under a single guideline, with expectations for future development of typology-specific rating systems. Notably, BEEER is linked to the BNBC, and features such as cool roofs are included as passive design measures for promoting energy-efficient and green building design (3). Present-day construction and operational practices in Bangladesh are resource-intensive, with the residential sector alone consuming over 56% of the country's total electricity generation in 2021(3). This demand continues to rise, according to data from the Ministry of Power, Energy and Mineral Resources.

According to report (12), the evolution of Bangladesh's green building initiatives began in 2009 with the establishment of the Green Architecture Cell (GrACe) at BUET, initiated through a joint research effort between BUET and the German organization GIZ. The committee aimed to promote green architectural concepts through advocacy, training, design, and research. Meanwhile, the Housing and Building Research Institute (HBRI) completed the Eco Housing Project, the first government-led green building initiative. A key milestone came in 2011, when Epic Group's Cosmopolitan Industries Pvt. Ltd. became the first LEED-certified project in the country. In 2012, SREDA was officially established under the SREDA Act to implement energy efficiency programs and develop relevant policies, rules, and guidelines. With support from IFC–World Bank, HBRI also drafted the Guidelines for the Green Building Code. In 2017, Bangladesh Bank and SREDA created a point-based framework for green refinancing in the private sector. Finally, in 2018, SREDA introduced BEEER Version 1, followed by the 4th revision submitted in November 2020. The finalized guidelines for Green Building were incorporated as a new chapter

on Energy Efficiency and Sustainability in the BNBC, officially published on 11 February 2021(6). Despite this structured development process, BEEER remains in a limited stage of implementation. Stakeholders have yet to see tangible benefits comparable to those associated with LEED, contributing to its lack of widespread adoption.

3. Methodology

3.1 Target Study

This study focuses on improving the BEEER system by gathering expert insights to better understand the practical challenges of its implementation. Expert opinions are essential for identifying current limitations and proposing effective strategies for enhancement. The study also conducts a comparative analysis of scoring categories and point allocations, particularly in relation to LEED, to highlight areas where alignment could strengthen BEEER's structure. Furthermore, lessons from established national green building certifications are examined to inspire practical and context-specific implementation strategies.

Firstly, to evaluate BEEER's relevance to Bangladesh's local context, this research aims to support its integration into mainstream building practices and promote sustainable development. In the primary stage, the interview was conducted in person with these targeted experts due to diverse perspectives on urban development, construction, and sustainable building practices. Experts included the Chief Engineer and Urban Planner from RAJUK, a developer firm from Nazbel group, and an architect from Studio Morphogenesis. Also, an online interview was conducted with a civil engineer and an industrial engineer from Eclectic LTD. All interviews were audio-recorded, the opinions were later transcribed, and analysis was made based on the text. We asked questions about the green building category and experts shared their opinions based on their professional experience. The interviews focused on both micro topics (e.g., the role of innovative wastewater technologies in LEED certification) and macro topics (e.g., water-saving measures in current projects).

Secondly, a gap analysis between the BEEER system and LEED certification helps identify areas where BEEER falls short in terms of performance standards and applicability. The insights gained can be adapted to Bangladesh's local context to inform best practices. This analysis evaluates key criteria such as the absence of performance benchmarks and limited market acceptance, offering guidance for aligning BEEER more closely with global standards. The process begins by identifying LEED categories based on expert input, followed by matching them with corresponding categories in the BEEER system.

Finally, to strengthen the implementation of BEEER, it is essential to examine successful strategies from other national green building certifications such as CASBEE (Japan), GRIHA (India), and CGBEL (China), all of which effectively integrate local context and user needs. Among these, CASBEE stands out due to its widespread national adoption. Incorporating CASBEE's successful approaches, such as public awareness campaigns and promotional strategies, can provide valuable direction for advancing BEEER as a national certification system in Bangladesh.

3.2 Overview of Global Green Building Systems

Green building certification systems are globally recognized frameworks that assess the sustainability and environmental performance of buildings. These systems focus on a wide range of criteria, such as energy efficiency, water conservation, indoor environmental quality, carbon emissions reduction, waste management, and the overall environmental impact of a building throughout its lifecycle. By encouraging sustainable building practices, these certification

programs aim to reduce resource consumption, lower environmental footprints, and improve the health and well-being of building occupants. There are several globally recognized green building certification systems, each with a unique focus and scoring methodology. Among these systems, LEED and BEEER stand out as two prominent programs, though they cater to different regions and needs. LEED is a widely recognized and adopted system internationally, including in Bangladesh, while BEEER is a more localized framework aimed at adapting green building practices to Bangladesh's specific context.

LEED: The Leadership in Energy and Environmental Design, developed by the U.S. Green Building Council (USGBC), is a globally recognized certification program that evaluates building criteria, including energy efficiency, water conservation, indoor environmental quality, and CO2 emissions reduction. As a program that promotes sustainability in buildings, LEED applies to both new construction and renovation projects. LEED certifications are awarded at different levels (Platinum, Gold, Silver, and Certified) based on a total score out of 110 points, which serves as a benchmark for green building practices (14).

BREEAM: The Building Research Establishment's Environmental Assessment Method is the first green building rating system in the world (15). This framework used to assess net zero carbon, whole life performance, health, social impact, and biodiversity from new to refurbishment projects. It has five rating categories: Pass, Good, Very Good, Excellent, Outstanding (16).

CASBEE: The Comprehensive Assessment System for Built Environment Efficiency is a method for evaluating and rating the environmental performance of buildings and the built environment and it's developed by Japan in 2001. It uses a five-level rating system: S (Excellent), A (Very Good), B+(Good), B(Fair), C(Poor) (17).

CGBEL: The China Green Building Evaluation Label was developed in 2006. It also known as "China Three-star system". It has three type of rating system: 1-Star, 2-Star, and 3-Star (18).

GRIHA: The Green Rating for Integrated Habitat Assessment is India's national framework for the assessment of environmental impacts of built environments applicable to new and existing buildings. The rating framework operates on a scale of 1 to 5 Star (based on % score) (19).

BEEER: The Bangladesh Energy Efficiency and Environmental Rating is a national green building certification created by the Sustainable and Renewable Energy Development Authority (SREDA), Government of Bangladesh. BEEER evaluates buildings based on criteria such as energy, water, indoor environment, materials, health and safety, and innovation. Promoting sustainability in both new and existing buildings, BEEER assigns scores across different levels: Level 1, Level 2, Level 3, Level 4, and Level 5 based on a total score out of 115 points (3).

Although globally acknowledged green building rating systems have established evaluation frameworks, BEEER is still in development. In the BEEER guideline among the ten categories contains a Health and Safety category, within which labour safety is a key component, particularly in Section 45. The following aspects related to labour safety are mandatory credit: all necessary safety gear items are provided to all construction workers, firefighting equipment, and first aid box on site. And for workers, at least once in every 3 months, arrange safety training, indicate with safety and quotation signage, emergency lights, and emergency exits during construction. Also, as a mandatory credit, there is no direct weight in terms of points in Health and Safety. On the other hand, the guidelines also include goals of sustainable building, such as contributing to the reduction of climate change by saving resources in the building sector while improving economic prosperity and competitiveness, as well as alleviating poverty by considering both green and social standards. This approach can be understood as the socioeconomic impact. Since the LEED certification doesn't have specific category similar to Health and Safety (14), therefore we

consider that the BEEER certification is adjusted to Bangladesh's specific context by incorporating local criteria such as labour safety and socioeconomic impact (3).

However, as its certification levels remain under development, expert opinions are required to ensure clarity, ease of implementation, and a widely accepted green building framework that aligns with Bangladesh's regulatory and construction landscape. Table 1 presents a comparative overview of key features among global certification systems. It outlines their origin, key focus areas, inclusion of social sustainability elements, scoring methodology, and their applicability.

Table 1. Comparative Overview of Green Building Rating Systems

System	Origin	Focus Areas	Scoring System	Certification Levels	Applicability
LEED	USA	Energy, Water, IEQ, Site, Materials	110-point scale	Certified (40), Silver (50), Gold (60), Platinum (80+)	Global
BREEAM	UK	Energy, Waste, Health, Transport	100% scale	Pass (>=30%), Good (>=45%), Very Good (>=55%), Excellent (>=70%), Outstanding (>=85%)	Global
CASBEE	Japan	Energy, Resources, Environmental Load, Indoor Environment	BEE = Quality / Load	S (Excellent), A (Very Good), B+(Good), B(Fair), C(Poor)	Japan
CGBEL	China	Energy, Water, Indoor Environment, Materials, Site	100-point scale	1-Star, 2-Star, 3-Star	China
GRIHA	INDIA	Energy, Site, Water, Materials	105-point scale	1 to 5 Star (based on % score)	India
BEEER	Bangladesh	Energy, Water, Materials, Health & Safety	115 – point scale	Level 1(30-40points), Level 2 (41-50 points), Level 3 (51-60points), Level 4 (61-80 points), Level 5 (81 and above points)	Bangladesh

4. Discussions on the Relevance of BEEER

4.1 Stakeholder Perspectives on Green Building Practices

This section synthesizes expert perspectives and compares Bangladesh's proposed BEEER green building rating system with globally established systems. Drawing on field interviews and comparative analysis, this section investigates how BEEER aligns with local expert priorities and contextual needs. Table 2 summarizes insights from expert interviews with four key stakeholders representing policy, regulation, engineering, and architectural design. Their inputs validate the core structure of BEEER and emphasize the institutional, technical, and behavioural shifts required for successful implementation.

Table 2. Expert Opinions Regarding National Green Building

Stakeholder Category	Affiliation	Key Insights
Policy Maker	Chief Engineer, RAJUK	• There is currently no institutional capacity for certifying green buildings • A national framework is being developed • Building materials, • Location, • Environmental conditions • Energy renewal conditions • Carbon emission reduction conditions, • Water consumption • Pilot projects and FAR incentives proposed; 2024 regulation amendments under discussion.
Urban Planner / Regulator	Urban Planner, RAJUK	• Rainwater harvesting • Sewage treatment plants • Solar panels • Water reuse, • Energy efficiency
Engineer / Developer	MD, Nazbel Group	• Stressed fire safety and material compliance. • Emphasis on certified fireproofing techniques. • Advocates phased implementation and user-friendly certification linked to local materials and practices.
Architect / Designer	Studio Morphogenesis	• Proper use of primary construction materials, • Adequate natural ventilation, • Rainwater harvesting systems, • Proper waste management, • Energy efficiency.
Industrial Engineer & Civil engineer	Chairman, Eclectic LTD.	• Focus on social status rather than environmental impact. • Heat Insulation • Suggest local product reconstruction such as block instead of bricks comply with environmental fact • Solar energy • Highlighted local awareness and the impact of environmental pollution • Emphasize social campaigns.

From Table 2, the key insights of expert opinion on national green building certification in the housing sector of Bangladesh. Policymakers, urban planners, engineers, and architects focus on energy efficiency, material compliance, and sustainability need for a well-organized certification framework. RAJUK officials highlight regulatory developments and pilot initiatives while developers emphasize fire safety and local material compliance. On the other hand, architects emphasize user-friendly certification aligned with local material and climate conditions. Also, industrial, and civil engineers advocate the social perception of green buildings and public awareness campaigns for sustainable practices for advancing the national framework.

4.2 Establishing BEEER's Relevance: Insights from Expert Comparison with LEED

While LEED remains the most recognized green building certification in Bangladesh, especially in the RMG sector, expert feedback reveals critical limitations in its application beyond industrial contexts. As shown in Tables 3 and 4, key stakeholders, including policymakers, developers, engineers, and architects, acknowledged LEED's technical value but raised concerns about its cost, complexity, and lack of alignment with local needs.

In contrast, the BEEER system demonstrates clear promise as a national certification framework. Its structure reflects context-specific priorities, such as construction safety, affordability, and compatibility with the Bangladesh National Building Code (BNBC). Many LEED categories such as water efficiency, materials use, and energy performance are addressed in BEEER, but in a more flexible and locally grounded manner. However, despite this alignment, BEEER remains underutilized and lacks visibility, primarily due to weak enforcement mechanisms, limited incentives, and insufficient awareness among developers and citizens. Experts consistently emphasized that without institutional support, BEEER may follow the same path as LEED, serving only niche sectors. This discussion reinforces the need for a country-specific approach, as seen in Japan's CASBEE system, which successfully blends national regulations, local practices, and public awareness. Thus, while BEEER offers a solid structural foundation, its success hinges on policy integration, phased mandates, and widespread promotion.

Table 3. LEED's Green Building Categories Mentioned by Different Stakeholders

LEED's Green Building Category	Stakeholder Category
1. Sustainable Sites	Policy Maker, Industrial Engineer & Civil Engineer
2. Water efficiency	Policy Maker, Urban Planner, Architect, Industrial Engineer & Civil Engineer
3. Energy & atmosphere	Policy Maker, Urban Planner, Architect, Industrial Engineer & Civil Engineer
4. Materials & resources	Policy Maker, Urban Planner, Engineer/Developer, Architect, Industrial Engineer & Civil Engineer
5. Indoor environmental quality	Policy Maker, Urban Planner, Engineer/Developer, Architect
6. Innovation	Industrial Engineer & Civil Engineer
7. Integrative process credits	Industrial Engineer & Civil Engineer

Table 4. LEED Green Building Categories Matched with BEEER Section

Green Building Category	Criteria	Matched BEEER Section
1. Sustainable sites	Site selection	Project Site Management
2. Water efficiency	Water efficiency	Water Conservation
3. Energy & atmosphere	Optimize energy performance, on-site renewable energy	Energy Management
4. Material & resources	Certified materials	Construction Materials Management
5. Indoor environmental quality	Outdoor air, Increased ventilation	Indoor Environment
6. Location & transportation	Daylight access	Building Envelope Design
7. Innovation	Optimize (energy), etc.	Energy Management,
8. Regional priority credits	Water efficiency	Water Management
9. Integrative process credits	Innovative	Innovation/Water Management

4.3 Integrating Local Context into National Certification

While LEED has helped introduce green building practices to Bangladesh, its foreign origin and rigid structure limit its suitability for wider national adoption. In contrast, Japan's CASBEE offers a locally tailored, policy-integrated model well-suited for informing BEEER's development. CASBEE, developed by Japan's Ministry of Land, Infrastructure, Transport and Tourism, has been widely adopted, certifying over 15,000 projects nationwide (20). It features the BEE (Built Environment Efficiency) score, which balances environmental load reduction with building quality, making it more holistic than LEED's point-based approach. CASBEE's integration into municipal planning, disaster resilience, and public housing illustrates how national alignment drives adoption. As shown in Table 1, national systems like CASBEE and GRIHA address country-specific needs, but CASBEE is chosen as the reference for BEEER due to its scoring innovation, regulatory backing, and proven domestic success.

Policy Recommendations Inspired by CASBEE

- Mandatory Guidelines with Awareness Integration: Require all new developments to meet at least Level 1 BEEER certification, supported by clear implementation rules and nationwide awareness programs. As seen in CASBEE's success, zoning-based mandates combined with government-led education and outreach can significantly boost industry compliance and public trust.
- National-Level Recognition: BEEER-certified buildings should be prioritized in government-led projects, like CASBEE's mandated use in Japan.
- Public Incentives: Offer citizen-level benefits, such as utility bill discounts for energy-saving homes, as done through CASBEE-based FAR incentives.
- Market-Based Tax Policies: Penalize high-impact materials (e.g., burnt bricks) and provide VAT reductions for eco-friendly alternatives, following CASBEE's materials strategy.
- Mandatory Developer Guidelines: Require at least Level 1 BEEER certification in new projects, backed by clear technical guidance, reflecting CASBEE's zoning-linked mandates.

5. Conclusion

This study analysed the BEEER system through expert interviews, a comparative gap analysis with LEED, and a study of successful strategies from national green building certification systems. Findings reveal the importance of aligning BEEER's criteria with local practices, addressing current performance gaps observed in LEED's application in Bangladesh, and adopting effective promotional and regulatory models from systems like CASBEE. These insights inform a context-specific roadmap to enhance BEEER's credibility, applicability, and national adoption as Bangladesh's nationally recognized green building certification, tailored to the country's unique environmental, social, and economic conditions.

While LEED has successfully raised awareness about sustainable construction, its limited applicability beyond the Ready-Made Garments (RMG) sector highlights the need for a localised framework like BEEER. Bangladesh currently leads the world in the number of LEED-certified garment factories, showcasing remarkable progress in the RMG sector. However, other industries remain largely unengaged. As the economy continues to grow, sustaining this global leadership requires expanding green certification efforts beyond garments. Identifying emerging sectors and supporting them with targeted policies and incentives will be key. Furthermore, lessons from Japan's CASBEE system underscore the importance of supportive policies, increased public

awareness, and incentive-based strategies to drive broader adoption. These findings represent an early step toward that goal by drawing insights from global and local certification systems and engaging with prospective stakeholders to pinpoint strategic gaps in implementation. Moving forward, stronger policy enforcement, active stakeholder participation, and financial support mechanisms will be essential. With these in place, BEEER can play a pivotal role in advancing sustainable construction across Bangladesh, supporting SDG 11, and contributing to a more climate-resilient urban future for Dhaka and beyond.

References

[1] https://worldpopulationreview.com/cities/bangladesh/dhaka, Last access 2025/02/05
[2] International Code Council & Smart Development Engineering (2019) Building Code Implementation and Enforcement Strategy for Urban Resilience Unit, RAJUK Situational Analysis Report
[3] Sustainable and Renewable Energy Development Authority (SREDA) (2023) BUILDING ENERGY EFFICIENCY & ENVIRONMENT RATING- Version II, Guideline for New Construction & Existing Buildings
[4] Rana M M P (2011) Urbanization and sustainability: Challenges and strategies for sustainable urban development in Bangladesh. Environment, Development and Sustainability, 13, 237-256
[5] Sultana R & Asad A (2021) Evaluation of Urbanites' Perception About Liveable City Using Analytic Hierarchy Process: A Case Study of Dhaka City. In AUC 2019: Proceedings of the 15th International Asian Urbanization Conference, Vietnam, pp. 367-381. Springer Singapore.
[6] The Bangladesh National Building Code 2021
[7] Razial, S., & Khan, N. A. (2018). Residents, Perception of Green Spaces for Urban Sustainability: A Case Study in Dhaka City
[8] Hoque S (2017) Green Development: A Case for Bangladesh. In International Conference on Sustainable Infrastructure 2017, pp. 135-144. American Society of Civil Engineers, Virginia.
[9] Jahangir A M & Akter M R (2014) Climate change effects upon massive land and housing development: Case of Dhaka, Bangladesh. International Journal of Climate Change Strategies and Management, 6(3), 315-331.
[10] Chowdhury M A, Sabrina H, Zzaman R U & Islam S L U (2022) Green building aspects in Bangladesh: A study based on experts' opinion regarding climate change. Environment, Development and Sustainability, 24(7), 9260-9284
[11] Ojo-Fafore E, Aigbavboa C & Remaru P (2018). Benefits of green buildings. In Proceedings of the International Conference on Industrial Engineering and Operations Management, pp. 2289-2297. Southfield, MI, USA: IEOM Society International.
[12] Joarder M A R (2022) Green Buildings Assessment Report for Bangladesh. European Commission, SWITCH-Asia Programme
[13] Matisoff D C, Noonan D S & Mazzolini A M (2014) Performance or marketing benefits? The case of LEED certification. Environmental science & technology, 48(3), 2001-2007
[14] https://www.usgbc.org, Last access 2024/10/15
[15] https://www.wbdg.org/resources/green-building-standards-and-certification-systems, Last access 2024/11/12
[16] https://breeam.com, Last access 2025/02/25
[17] https://www.ibecs.or.jp/CASBEE/english/index.html, Last access 2025/03/05
[18] https://www.segreene.com/en/china-green-building-evaluation-label, Last access 2025/04/05
[19] https://sustainable-infrastructure-tools.org/tools/green-rating-for-integrated-habitat-assessments-griha-for-buildings/, Last access 2025/03/25
[20] https://www.ibecs.or.jp/CASBEE/english/statistics.html, Last access 2025/04/10