COMPREHENSIVE REVIEW OF CORPORATE REAL ESTATE MANAGEMENT (CREM) AND THE GROWING IMPORTANCE OF SUSTAINABILITY

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ABSTRACT

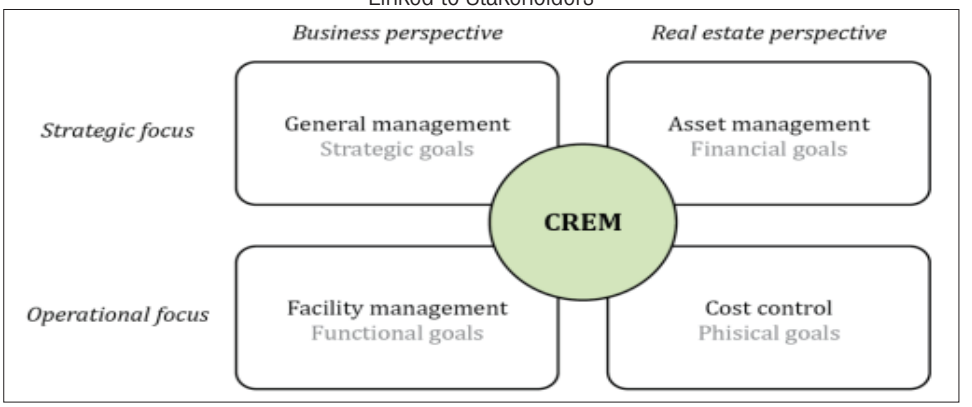
This article emphasises the necessity of integrating sustainability into Corporate Real Estate Management (CREM) practices and the significant benefits it can provide to organisations, stakeholders and the community. This research promotes sustainable CREM techniques as a strategic necessity since the built environment contributes to global issues including climate change and resource depletion. Sustainability integration in CREM is essential for environmental protection and responsible resource management, according to Garmston et al. (2020). The research seeks to explain how CREM sustainability practises can support global sustainability goals by promoting energy efficiency, carbon reduction and environmental conservation. Sustainability in CREM benefits stakeholders including employees, investors and the community, according to the research. Ambrey et al. (2018) found that sustainable companies attract and retain talent better, improving employee happiness and productivity. The report also examines how sustainable CREM might improve community ties through social and ethical issues. Report goals and objectives include Raising Awareness: inform CREM experts, organisations, and stakeholders about built environment sustainability, guidance: provide practical advice on implementing sustainability into CREM practises, including green building certifications and sustainable design, strategize, emphasise the economic and social benefits for organisations to overcome sustainability integration issues in CREM. The article intends to help CREM professionals adopt sustainable practices that connect with global environmental goals and contribute to organisational performance and community well-being.

Keywords: *Sustainability, green technology, corporate real estate management*

1. INTRODUCTION

Corporate Real Estate Management (CREM) is crucial for organizations, encompassing strategic planning, acquisition, utilization, and optimization of real estate assets. There's a notable shift towards sustainability, driven by global environmental concerns (Smith et al., 2019). CREM's importance for corporate success is recognized globally (Haynes, 2012; Shiem-Shin et al., 2014). Joroff et al. (1993) proposed five stages: taskmaster, controller, dealmaker, entrepreneur, and business strategist. To reach the strategic level, managers must progress through these stages. Krumm, Dewulf, and de Jonge (2000) and Appel-Meulenbroek (2014) support this model.CRE managers need technical, analytical, and strategic skills to become business strategists (Krumm, Dewulf, & de Jonge, 2000; Appel-Meulenbroek, 2014). de Jonge's (1996) model identifies four elements: general management, facility management, asset management, and project management, which align with stakeholder goals (Den Heijer, 2011).

Figure 1: Amalgamation of the CRE Management Model (de Jonge, 1996) and CRE Domains Linked to Stakeholders



Source: Den Heijer, 2011

The realization of the environmental impact of real estate operations is underscored by the study conducted by Greenberg and Levy (2020), which found that the carbon footprint of commercial buildings is a major concern. This concern has prompted a re-evaluation of traditional CREM practices, leading to an urgent need for the integration of sustainability elements into the management of corporate real estate portfolios. Several trends and developments have underscored the importance of sustainability in CREM. The shift towards sustainable building certifications, such as LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Method), reflects a broader industry movement towards environmentally responsible practices (Jones, 2021). Moreover, regulatory pressures and stakeholder expectations are increasingly influencing organizations to adopt sustainable CREM practices (Smith & Johnson, 2018). Challenges, such as the rising costs of non-renewable resources and the volatility of energy prices (Eichholtz et al., 2022), further emphasize the necessity for CREM to integrate sustainability. The financial implications of sustainable practices, as demonstrated by research from Chan et al. (2017), indicate that sustainable buildings can yield long-term cost savings and enhance overall portfolio performance. In the evolving landscape of CREM, where global concerns about sustainability, coupled with industry trends and challenges, have necessitated a strategic focus on integrating sustainability elements into CREM practices.

2. LITERATURE REVIEW

2.1 Sustainability Integration in Asset Management

The concept of sustainability is nascent. In 1972, the scientific community introduced sustainability to global politics with the report 'the limits to growth'. Establishing the link between economic growth and environmental sustainability became a political priority. The 1973 global oil crisis highlighted the dependence on fossil fuels, leading to increased focus on energy conservation (IISD, 2011). After the World Commission of Environment and Development released the report 'Our Common Future' in 1987, it gained global attention. This research provided pioneering insights into social, economic, and environmental factors, connecting economic growth, environmental challenges, and wealth disparities on a large scale (VROM, 2010). The most commonly used definition of sustainable development is found in the United Nations 1987 report, *"Development which meets the needs of current generations without compromising the ability of future generations to meet their own needs."* Sustainability involves meeting present human requirements without harming mankind, nature or welfare. We may apply five general protection principles for sustainable development to real estate.

i. Preservation of the natural environment;
ii. Protection of natural resources;
iii. Protection of human health and well-being;
iv. Promotion of social values and public goods;
v. Protection of capital and material goods.

Using social, economic and environmental implications, Elkington (1995) created the triple bottom line theory (TBL) with the three P's: people, planet and profit. People relate to social dimensions in a region, including health, safety, education, social capital and quality of life. Planet refers to the environment, including water quality, energy consumption, natural resources, waste and land use. Profit relates to economic factors such as income, expenditures, taxes, business climate, employment and revenue. According to Slaper and Hall (2011), sustainability is becoming a priority for businesses, non-profits and governments. The TBL can be used as an accounting framework for organizations to monitor sustainability, including social and environmental components in addition to financial indicators.

2.2 Corporate Real Estate Sustainability Management

Real estate and sustainability are interconnected, with growing understanding of their importance (Eichholtz, Kok & Quigley, 2013). Sustainable measures for the built environment, which accounts for 40% of global energy use, are becoming increasingly important (Taylor, 2013; Eichholtz et al., 2013). According to NOS (2015), the built environment accounts for 36% of national CO2 emissions in the Netherlands. While sustainable real estate is crucial, there is less theory on implementing it as a strategy (Jensen et al., 2014). Gibler and Lindholm (2011) introduced sustainability as a new real estate approach in CRE portfolios only recently. Haynes (2012) established 10 components of CREM, including planet, position, purpose, procurement, place, paradigm, processes, people, performance, and productivity, based on real estate alignment theory covered in chapter 2. For optimal alignment of the CRE strategy with the organizational strategy, all elements must be aligned. Haynes (2012) was among the

first to identify planet as a CREM. *"Building for current generations without hindering future generations' ability to meet their own needs."*

The CRE portfolio should connect with environmental and CSR challenges, according to the author. According to Shen et al. (2012, in Haynes, 2012), future trends in CRE sustainability include:

i. Increased energy use and carbon footprint transparency;
ii. CRE as an energy source and consumer;
iii. Reliable and renewable energy, potable water, and waste distribution;
iv. Efficiency monitoring and control technology;
v. CRE as a sustainability awareness tool.

Research by Kuijstermans (2012) highlights benefits such as reduced exploitation costs, extended depreciation periods, higher rental levels, future-proof design, increased letability, reduced vacancy risk, higher residual value, higher productivity, improved employee health, reduced absence due to illness, increased employee satisfaction, and a greener approach. The CRE strategy support sustainability theory, addressed in chapter 2, suggests that a conscious sustainable real estate strategy impacts the performance of other real estate strategies. Implementing a sustainable real estate plan is called corporate real estate sustainability management (CRESM). UNEP (2014, p19) defines CRESM as: *"Integrated management of economic, environmental, and social aspects across an organization's property activities and investment decisions. This includes strategies, methods, and institutions that promote corporate governance and sustainable company and product development."*

Masalskyte et al. (2014) discovered that CRESM can benefit all three elements of the TBL. A summary of the benefits is shown in Table 1.

Table 1: Possible Benefits of CRESM

Environmental benefits	Social benefits	Economic benefits
Efficient use of resources	Healthy and comfortable working environment	Increase real estate market value
Lower life cycle impacts	Employee engagement	Cost reduction
Sustainable workplaces	Employee satisfaction	
Other issues related to physical building features	Employee productivity	

Source: Masalskyte et al., 2014

According to UNEP (2014), operational property management information essential for CRE sustainability decision-making includes performance and physical property characteristics. Performance attributes can be measured during operation. Physical property parameters, including technical and functional quality, are identified during project planning. The TBL divides performance characteristics into three groups, as shown in Table 2.

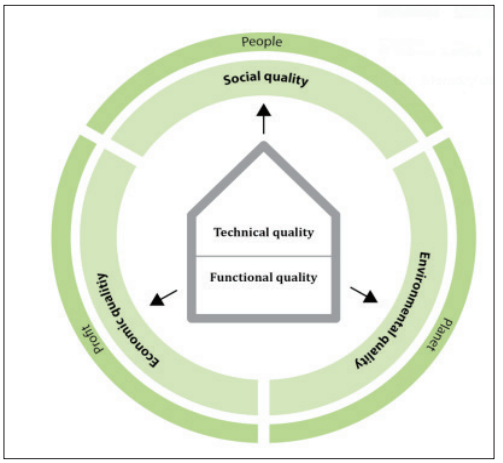


Table 2: Categories of Real Estate Sustainability Performance Characteristics

Social quality	Environmental quality	Economic quality
Aesthetic quality	Energy performance	Life cycle costs
Urban design quality	Resource depletion	
Cultural value	GHG-emissions & GWP	
Health and wellbeing	Impacts on environment	
Indoor air quality	Land use change	
Comfort	Water consumption	
User safety	Wastewater	
User participation and control	Waste (construction and use)	
Accessibility		

Source: UNEP, 2014

2.2.1 Petronas: A Leader in CREM in Malaysia

Established in 1974, Petronas (Petroliam Nasional Berhad) is the state-owned oil and gas corporation of Malaysia. Petronas is an all-inclusive energy firm that does everything from producing and exploring for oil upstream to processing and distributing its refined products downstream. Among the world's leading energy companies, Petronas has a presence in over 50 nations. Office complexes, manufacturing sites, and residential properties are all part of the vast real estate portfolio managed by the firm. In order to maximise asset utilisation, guarantee sustainability, and support the company's strategic objectives, a strong strategy to Corporate Real Estate Management (CREM) is required for this broad portfolio (Petronas, 2023).

Practices (1) Efficient Use of Space

As part of its CREM plan, Petronas aims to maximise the use of available space. In order to find ways to optimise space, the corporation is always looking at its real estate assets. To meet the needs of a changing workforce while keeping costs down, many

companies are adopting more flexible work arrangements, such as hot-desking, open floor plans, and flexible workplaces (Petronas Annual Report, 2022).

Practices (2) Controlling Energy Use

An integral part of Petronas' CREM processes is energy management. In order to keep tabs on and manage energy usage throughout all of its locations, the business has put money on cutting-edge energy management systems. Use of HVAC (heating, ventilation, and air conditioning) systems that are less energy intensive is part of this. Significant energy savings and a decrease in greenhouse gas emissions have resulted from the installation of these technologies (Petronas Sustainability Report, 2022).

Practices (3) Efforts to Promote Sustainability

The CREM practices of Petronas demonstrate the company's dedication to sustainability. The Petronas Towers, the corporate headquarters, are a landmark in ecological architecture and contemporary CREM. The towers have received global acclaim for their eco-friendliness thanks to its cutting-edge building management systems, water collection from rain, and energy-saving features (LEED Gold Certification, 2019). The Petronas Towers aren't the only properties in the company's real estate portfolio that have adopted green construction practices. Sustainable construction practices include things like reducing trash and increasing biodiversity in and around their buildings (Petronas, 2023).

Practices (4) Technology for smart buildings

As a means to better manage its property holdings, Petronas employs smart building technologies. Internet of Things (IoT) sensors, data analytics, and automated building systems are some of the technologies that can optimise a building's performance and make occupants' lives easier. Petronas is able to increase the efficiency of its real estate assets, save operational expenses, and proactively manage maintenance thanks to smart technologies (Petronas, 2023).

In summary, space optimisation, energy management, sustainability, and smart technology are all part of Petronas's CREM plan, which is both thorough and innovative. The dedication to these principles by the corporation helps achieve its larger goals while also improving the efficiency and sustainability of its real estate assets.

2.3 Factors Influencing the Promotion Of Sustainable Practices In Real Estate

Sustainability implementation in real estate portfolios is driven by stakeholders and their drivers (Hoendervanger, van der Voordt & Wijnja, 2012). Falkenbach, Lindholm, and Schleich (2010) identify three built environment sustainability drivers.

i. External drivers
ii. Corporate drivers
iii. Property-level drivers

External influences include top-down market factors like building sustainability certificates, but only environmental legislation is necessary. Examples of international legislation include the Kyoto Protocol and the UN Principles of Responsible Investment. Most national levels have legislation affecting stakeholder groups, including carbon emissions, energy efficiency, water usage, and waste management. Additionally, external influences may include subsidies for green construction and better financing arrangements. Growing sustainability knowledge in business and community may lead to corporate image benefits. Limited empirical research suggests that sustainability leads to improved rental levels, lower property expenses, reduced hazards, and higher property values at the property level (Falkenbach et al., 2010). The built environment has many stakeholders (Hoendervanger et al., 2012). Due to the financial and long-term nature of real estate in finance, health and well-being, image, culture, spatial planning, and the environment, stakeholders have distinct roles and interests with significant stakes. A large number of stakeholders with diverse interests exist. According to Hoendervanger et al. (2012), stakeholders can be categorized into three categories.

i. User growth
ii. Corporate stakeholders
iii. External parties

Building users include all structural and incidental users of a building and its facilities. Employees, subtenants, and clients are structural users. Incidental users include customers who buy goods or services. Company stakeholders include financiers, including owners, shareholders, and banks as financial providers. External stakeholders include non-financial or operational parties who want to influence the real estate, such as local residents, municipalities, and others who may experience inconvenience due to the property.

2.4 Sustainability Reporting

Transparency in disclosing business sustainability practices has increased due to the growing relevance of sustainability, responsibility, reputation improvement, and external effects from stakeholders. Various methods can assess sustainability in the built environment. New solutions address transparency and sustainability in real estate. Jansen (2015) compared popular techniques and rating standards for evaluating sustainable real estate performance, as shown in Table 3. While each technique has unique criteria and weights, they all prioritize energy, materials, and health. Water receives less emphasis, and aspects like trash and sustainable sites are assessed in only one technique, similar to stakeholder involvement.

Table 3: Comparison of Measurement Tools

Criteria (%)	BREEAM	LEED	GRESB	Green Star	GPR Building	Energy Star
Management	12	8	31	10		
Transport	8	25		10		
Energy	19	25	44	20	20	100
Water	6	5	44	12	20	
Materials	12,5	19	44	10	20	
Pollution	10	11	44	5	20	

Criteria (%)	BREEAM	LEED	GRESB	Green Star	GPR Building	Energy Star
Land use and ecology	10	5		8		
Waste	7,5					
Sustainable sites		16				
Health and wellbeing	15	13	26	10	20	
Stakeholder engagement			26			

Source: Jansen, 2015

Three prominent sustainability assessment methodologies are widely used in the construction and real estate industries. The first, BREEAM, evaluates projects across eight categories including management, transport, energy, water, materials, pollution, land use and environment, sustainable sites, and health & wellbeing. It assesses new, existing, and area development projects. The second method, LEED, focuses on five sustainable performance categories: sustainable sites, energy and atmosphere, water efficiency, indoor environmental quality, and materials & resources. It applies to new building, operations and development projects.

Lastly, GRESB assesses properties in seven categories: management, policy, disclosure, risks, opportunities, environmental monitoring, performance indicators, building certifications, stakeholder participation, and new construction/ renovations. BREEAM and LEED are commonly used to evaluate property-level sustainability, while GRESB assesses portfolio-level sustainability. For CRE managers, BREEAM and LEED are recommended for individual assets, while GRESB is ideal for investors to gauge the overall sustainability of their portfolio. This research focuses on CREM, so only BREEAM and LEED categories are explored to identify sustainability indicators. Combining different methods might be the best approach for assessing sustainability in practical situations. Table 4 summarizes key categories and sub-categories from two commonly used sustainability assessment methods, categorized by real estate sustainability performance criteria. Three sustainability performance variables for commercial real estate (CRE)-management, sustainable locations, and innovation-were excluded from consideration due to their misalignment with the sustainability areas outlined in CRE Sustainability Management (CRESM) theory. The management variable was deemed inappropriate as it represents an ongoing process rather than a specific CRE sustainability choice. Sustainable locations primarily relate to real estate and area development, which fall outside the scope of this research. Additionally, the term “innovation” is too broad to be considered a distinct variable as it encompasses all sustainability-related developments.

Table 4: Overview of sustainability variables and sub-variables

Area	CRE Performance variable	CRE Performance sub-variable
Social	Health and Wellbeing	Visual comfort
		Indoor air quality
		Safe containment in laboratories
		Thermal comfort
		Acoustic performance

Area	CRE Performance variable	CRE Performance sub-variable
		Safety and security
		Low-emitting materials
		Controllability of systems
	Transport	Public transport accessibility
		Alternative transportation
		Proximity to amenities
		Cyclist facilities
		Maximum car parking capacity
		Travel plan
Environmental	Energy	Reduction of energy use and carbon emissions
		Energy monitoring
		External lighting
		Low carbon design
		Energy efficient cold storage
		Energy efficient transportation systems
		Energy efficient laboratory systems
		Energy efficient equipment
		Drying space
		On-site renewable energy
		Green power
	Water	Water consumption
		Water monitoring
		Leak detection
		Water efficient equipment
		Innovative wastewater technologies
		Construction waste management
		Recycled aggregates
		Operational waste
		Speculative floor and ceiling finishes
		Adaptation to climate change
		Functional adaptability
	Land use and Ecology	Site selection
		Ecological value of site and protection features
		Minimizing impact on existing site ecology
		Enhancing site ecology
		Long term impact on biodiversity
	Pollution	Impact of refrigerants
		NOx emissions
		Surface water run off

Area	CRE Performance variable	CRE Performance sub-variable
		Light Pollution Reduction
		Noise attenuation
Environmental & Economical	Materials	Life cycle impacts
		Hard landscaping and boundary protection
		Responsible sourcing of materials
		Insulation
		Designing for durability and resilience
		Material Efficiency

Source: BREEAM, 2015; LEED, 2015; and UNEP, 2014

3. KEY CHALLENGES IN CORPORATE REAL ESTATE MANAGEMENT (CREM)

3.1 Environmental Challenges in Corporate Real Estate Management (CREM)

Environmental challenges significantly influence Corporate Real Estate Management (CREM) strategies and practices, particularly regarding energy consumption and carbon emissions. Sustainable energy practices, such as using renewable sources and energy-efficient technologies, are crucial for reducing buildings' environmental impact. Waste management is also a key concern, with CREM professionals focusing on reducing, recycling, and responsibly disposing of corporate facility waste to meet sustainability goals. Spangenberg et al. (2014) highlight the importance of aligning corporate practices with sustainability goals, particularly in energy consumption and waste management. By implementing environmentally conscious strategies, corporations can contribute to broader sustainability objectives and enhance their reputation as socially responsible entities. Reducing the carbon footprint in corporate real estate involves adopting green building practices. Academic research, like that by Johnson and Lundholm (2019) on the financial aspects of incorporating green features into real estate portfolios, offers insights into the economic implications of such strategies. These challenges emphasize the need for CREM professionals to develop comprehensive environmental strategies that extend beyond compliance to build sustainable and resilient real estate portfolios.

3.2 Economic Challenges in Corporate Real Estate Management (CREM)

Corporate Real Estate Management faces economic challenges in balancing cost optimization with maintaining quality workplace environments. Organizations must navigate market volatility and uncertainties impacting property values and rental prices. Financial modeling is crucial for assessing the feasibility, profitability, and risk of real estate investments. It aids in decision-making regarding acquisitions, disposals, and portfolio management, aligning with the organization's financial goals (Johnson & Lundholm, 2019).

3.3 Social Challenges in Corporate Real Estate Management (CREM)

Corporate Real Estate Management (CREM) faces significant social challenges concerning employee well-being, satisfaction, and flexible working arrangements. Meeting the demand for flexibility requires CREM professionals to redesign office layouts and incorporate technology for seamless communication (Becker & Steele, 1995). Another challenge is optimizing workspace design for productivity and collaboration while balancing the benefits of open offices with concerns about distractions (Becker & Steele, 1995; Wyatt & Murray, 2013). Addressing diversity and inclusion in workplace design and location choices is also critical. CREM strategies must accommodate diverse demographics, workstyles, and accessibility requirements to foster inclusivity and equity (Spangenberg et al., 2014).

4. RECOMMENDATIONS AND STRATEGIES

According to Roulac (2001), corporate real estate strategies are quite unusual. Corporate strategic management and the researchers' tendency to downplay the importance of real estate assets in company organisations are to blame for this weak link. Consequently, CREM was not given any importance. On the other hand, some CRE scholars have distinguished CRE from corporate business challenges and focus on real estate issues alone. For instance, Roulac (2001) aims to overcome this obstacle by highlighting how CRE strategies can help corporate organisations gain a competitive edge. According to Roulac (2001), a company's competitive advantages can be enhanced through superior CRE strategies that create and retain customers, attract and retain outstanding people, contribute to business processes, promote enterprise values and cultures, encourage innovation and learning, enhance core competency, and increase shareholder wealth. Listed below are practical suggestions, along with instructions and examples of good practice.

4.1 Conduct a Sustainability Audit

Step-by-Step Guidance:

1. Assess Current Practices: Evaluate the current state of your real estate assets, including energy usage, water consumption, waste management, and indoor environmental quality (Kats, 2010).
2. Identify Areas for Improvement: Pinpoint areas where sustainability can be enhanced, such as energy efficiency, renewable energy integration, and waste reduction (US EPA, 2023).
3. Set Baseline Metrics: Establish baseline metrics to measure progress over time. This includes tracking energy consumption, carbon emissions, water usage, and waste generation.

Best Practices:

- Engage third-party experts to conduct comprehensive sustainability audits.
- Use industry standards such as LEED or BREEAM for benchmarking (BREEAM, 2023).

4.2 Develop a Sustainability Strategy

Step-by-Step Guidance:

1. Define Objectives: Set clear and achievable sustainability goals aligned with the organization's overall mission and values (Elkington, 1997).
2. Create an Action Plan: Develop a detailed action plan outlining specific initiatives, timelines, and responsible parties.
3. Allocate Resources: Ensure adequate resources, including budget, personnel, and technology, are allocated to implement the strategy.

Best Practices:

- Incorporate stakeholder input to ensure the strategy meets the needs of employees, investors, and customers.
- Align sustainability goals with broader corporate objectives to ensure cohesive integration (Morris & Boyd, 2012).

4.3 Implement Energy Efficiency Measures

Step-by-Step Guidance:

1. Upgrade Lighting Systems: Replace traditional lighting with energy-efficient LEDs and install motion sensors to reduce unnecessary usage (Pérez-Lombard, Ortiz, & Pout, 2008).
2. Optimize HVAC Systems: Implement advanced HVAC systems with programmable thermostats and regular maintenance schedules to ensure optimal performance.
3. Conduct Energy Audits**:** Regularly perform energy audits to identify and address inefficiencies.

Best Practices:

- Utilize energy management software to monitor and optimize energy usage in real-time.
- Engage employees in energy-saving initiatives to foster a culture of sustainability (Janda, 2011).

4.4 Integrate Renewable Energy

Step-by-Step Guidance:

1. Assess Feasibility**:** Evaluate the feasibility of integrating renewable energy sources, such as solar or wind, into your real estate portfolio (REN21, 2022).
2. Install Renewable Systems**:** Implement renewable energy systems where feasible, starting with pilot projects to demonstrate viability.
3. Monitor and Adjust**:** Continuously monitor the performance of renewable energy systems and make adjustments as needed to maximize efficiency.

Best Practices:

- Take advantage of government incentives and grants for renewable energy installations.

- Partner with renewable energy providers to secure reliable and sustainable energy sources (IRENA, 2023).

4.5 Implement Sustainable Building Practices

Step-by-Step Guidance:

1. Use Sustainable Materials: Select sustainable and locally-sourced building materials for new constructions and renovations (Wilson et al., 2015).
2. Incorporate Green Building Design: Design buildings with features such as green roofs, rainwater harvesting systems, and natural ventilation.
3. Achieve Green Certifications: Aim for certifications such as LEED, BREEAM, or Green Star for all new and existing buildings.

Best Practices:

- Conduct life-cycle assessments to understand the environmental impact of building materials and designs.
- Engage architects and engineers with experience in sustainable building practices (Kibert, 2012).

4.6 Enhance Waste Management

Step-by-Step Guidance:

1. Implement Recycling Programs: Establish comprehensive recycling programs for paper, plastics, metals, and e-waste (UNEP, 2022).
2. Reduce Single-Use Plastics: Eliminate or significantly reduce the use of single-use plastics within the organization.
3. Promote Composting: Introduce composting programs for organic waste in cafeterias and common areas.

Best Practices:

- Educate employees on the importance of waste reduction and proper recycling practices.
- Partner with local recycling and waste management companies to ensure efficient and effective waste disposal (Wilson et al., 2015).

5. CONCLUSION

This article addressed the management of corporate real estate sustainability, with a particular focus on the potential impact of physical and non-physical building attributes on the sustainability performance of such properties. Although sustainability performance can be assessed during the operational phase of a building, determining its full potential requires the establishment of all physical real estate attributes. The sustainability performance of corporate real estate is influenced by these physical real estate attributes, which encompass economic, technical, social, environmental, and functional qualities. In addition to physical, building-related factors, non-physical factors including tenant, occupant, and corporate conduct impact the sustainability performance of corporate real estate. However, it is possible that tangible real estate attributes could exert a more significant influence on the sustainability performance of the property and are considerably more susceptible to modification by the corporate real estate manager. Therefore, for the corporate real estate manager to effectively integrate sustainability principles into the real estate portfolio, operational decisions pertaining to the attributes of physical properties must be in accordance with the corporate real estate sustainability strategy, as outlined in the corporate sustainability strategy statement.

The necessity for sustainability in real estate is established by a multitude of stakeholders and their respective motivators, each of whom operates according to their own distinct roles and interests. External stakeholders, facility users, and corporate stakeholders comprise the stakeholders in corporate real estate. There are also three distinct categories of drivers that have the potential to inspire stakeholders: external, corporate, and property-level drivers. A number of commonly employed rating criteria for evaluating the sustainability performance of real estate have been identified, in addition to variables pertaining to the sustainability of corporate real estate. BREEAM and LEED are the rating systems that are most commonly implemented. Incorporating corporate real estate sustainability management theory into the process of subtracting the various categories from each standard rating results in the identification of eight sustainability variables and their corresponding sub-variables. In conjunction with the influence of tangible real estate attributes on sustainability performance, these rating criteria offer direction for integrating sustainability into the portfolio of corporate real estate.

The Corporate Real Estate Management (CREM) domain is shifting significantly with a heightened focus on sustainability. Businesses are increasingly aware of their environmental and social impact, driving the integration of sustainable practices into CREM. This extends beyond physical real estate to encompass socially and environmentally responsible business strategies. Sustainability is not just a trend but a crucial aspect of ethical business operations. Organizations adopting sustainable principles not only benefit the environment but also establish themselves as industry leaders. Anticipated developments include advancements in sustainable technologies, increased collaboration between environmental organizations and businesses, and deeper integration of sustainability into CREM operations. Given global efforts to address climate change, CREM's role in promoting sustainability will continue to grow.

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