Research Paper

The "Greenification" of the Central Business District of Jakarta

One Small Step for Jakarta's Commercial Property, One Giant Leap for Indonesia's Sustainable Investment

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Abstract

Reducing carbon emissions is a global mission to overcome humankind's biggest challenge of the 21st century. Several movements have been established to reduce carbon emissions as they have set the roles to reduce emissions to limit global temperature growth to less than 2 degrees Celsius in the long-term, or ideally 1.5 degrees Celsius above the pre-industrial level. Indonesia is committed to reducing carbon emissions by 29% from BAU (Business-As-Usual) practices through its own effort and is also committed to the NZE (Net Zero Emissions) target by 2060 or sooner. In the private sector, one of the initiatives that corporations could implement is to reduce carbon emissions in the real estate or commercial property sector, which is estimated to contribute around 40% of global carbon emissions. The implementation of sustainable building development in Indonesia was started by the establishment of the GBCI (Green Building Council Indonesia) in 2009. Subsequently, due to continuous growth in the importance of sustainability, Indonesia's government has issued several regulations to strategically encourage the "greenification" of Jakarta's commercial property, especially in its CBD (Central Business District). The outcomes of developing sustainable buildings are crucial in the effort to reduce carbon emissions as the demand for green-certified buildings is continuously growing as investors, occupiers, and talents are currently more aware of urban sustainability's importance. Investors prioritise building or buying assets that are recognised with green certification as 78% of investors accept that climate risk also means financial risk. Furthermore, around 80% occupiers agree to prioritise buildings that could help reduce carbon emissions and more than 60% of the talents in Asia Pacific countries believe that sustainability initiatives are a requirement for nowadays business. Sustainability, through green building development, has become the new and upcoming leverage to attract investors, occupiers, and talents. Along with the data analysis using a qualitative and quantitative approach, spatial visualization will also be used in this research to display the existing location of green buildings agglomeration. Expectantly, the exploration and comprehension of this study, which associates green building development and investment in urban sustainability, might identify a new way of planning and investing from the private sector's perspective, specifically the real estate market.

Keywords

Green Building, Sustainability, Real Estate, Investment, Urban Economy, Jakarta CBD

1. Introduction

1.1. Findings

Greenification, as part of the actions of reducing carbon emissions for climate resilience, is one response to overcome humankind's biggest challenge of the century. As a global mission, several movements have been established to help accomplish the goal in a macro framework. Those were administered even before the 21st century began as in the Kyoto Protocol: international treaty of 1992 UN FCCC, and during this 21st century as in the Paris Agreement: international treaty of the 2015 UN FCCC.

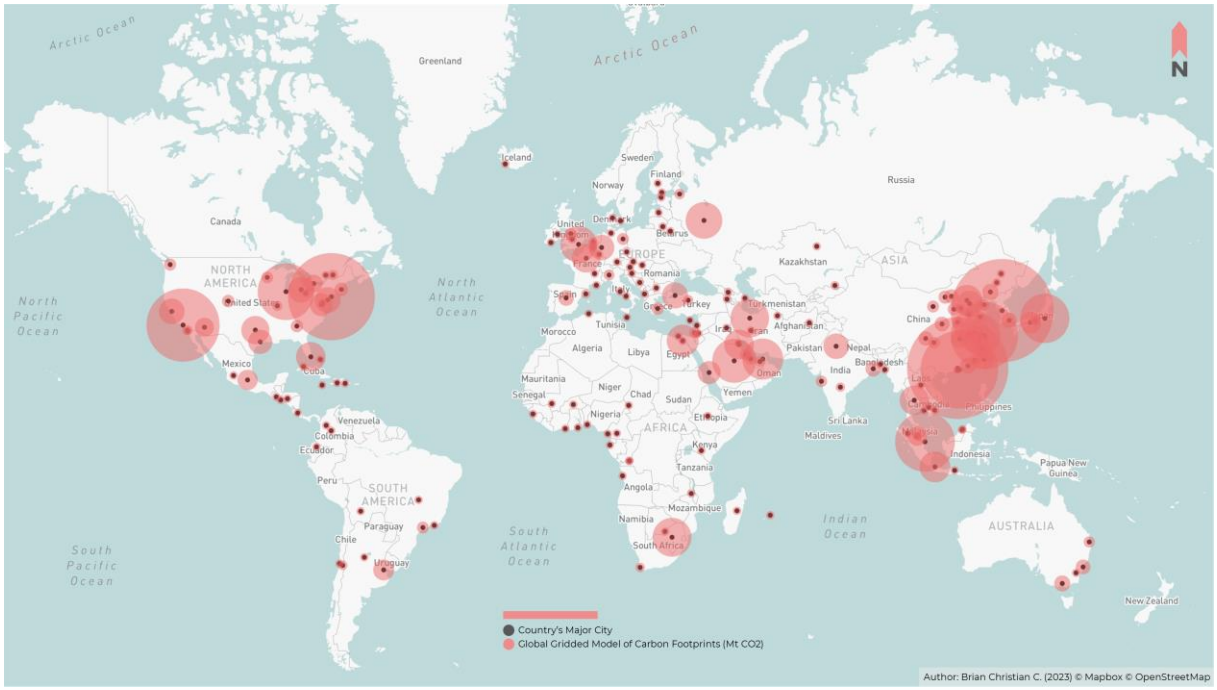


Figure 01. Map of World's Major Cities and the 2018 Estimated Top Carbon Footprints by City. Source: City Carbon Footprints. Output: Mapbox Studio & Microsoft Publisher (Author's Design) [1][2].

Cities represent intense concentrations of populations and consumption. Even allowing considerable margins of uncertainty, footprints are highly concentrated (Moran, D., et al., 2018). The map above visualizes the locations of the world's major cities, based on general demographic and economic values, along with the estimated production of carbon footprints. The model is called GGMCF (Global Gridded Model of Carbon Footprints) which provides globally consistent and spatially resolved annual carbon footprints of individual cities. Cities in the East Asia and Southeast Asia are dominating the global carbon footprints proportion due to the high rate of population growth and rapid level of urban development. In this scope, reducing carbon footprints means reducing carbon emissions to limit global temperature growth to less than 2°Celsius in the long term, or ideally 1.5°Celsius above the pre-industrial level.

While in the East Asia region, Seoul (South Korea) and Guangzhou (China) have the global highest level of carbon footprints, respectively at 276.1 Mt CO_2 and 272.0 Mt CO_2, Southeast Asia region has Singapore at 161.1 Mt CO_2 and Jakarta (Indonesia) at 83.7 Mt CO_2 as part of the top 20 cities with the highest level of carbon footprints. Considering the total carbon footprints of those 100 cities reaching around 6229 Mt CO_2, Indonesia has contributed to more than 1% of the estimated CO_2 emissions produced. The statistic is one reason for Indonesia to be committed to reducing carbon emissions by 29% from BAU practices through its own efforts and up to 41% with international assistance as stated in the NDC document (JLL, 2022, Indonesia's Journey Towards Sustainable Real Estate, p.4). Indonesia has also committed to the NZE target and is expected to reach this goal by 2060 or sooner (Ministry of Energy and Mineral Resources of the Republic of Indonesia).

1.2. Terms & Focus

In this Research Paper, "greenification" is a term used to define the transformation process of making an area or sector greener, traditionally by the addition of trees and other plants. The Author aims to expand this term on the involvement of city planning, site design, and building development process. The concept of green infrastructures and nature-based solutions has emerged as a way to secure the provisioning of ecosystem services in a human-dominated landscape (Ahem, et al., 2014).

This Research Paper is focusing on the scope of Jakarta CBD (Central Business District), the "golden triangle" of Indonesia's capital city, a roughly triangular area as the agglomerations of the city's tallest skyscrapers and busiest districts. Besides the gradually developed commercial clusters e.g., SCBD, Mega Kuningan, and HI Roundabout, the CBD is also served and connected by various public transportations of Jakarta. The CBD represents the commercial heart of the metropolitan area, containing the highest density of institutional-grade office products, major infrastructure hubs and government and cultural anchors (JLL, 2023, The Future of the Central Business District, p.2). The Jakarta CBD, due to its high rate of agglomeration and rapid level of operation, contributes more significantly to the carbon footprint level compared to the most of less commercialized and/or industrialized areas inside the city, suburban areas, and regions far from the urban perimeter.

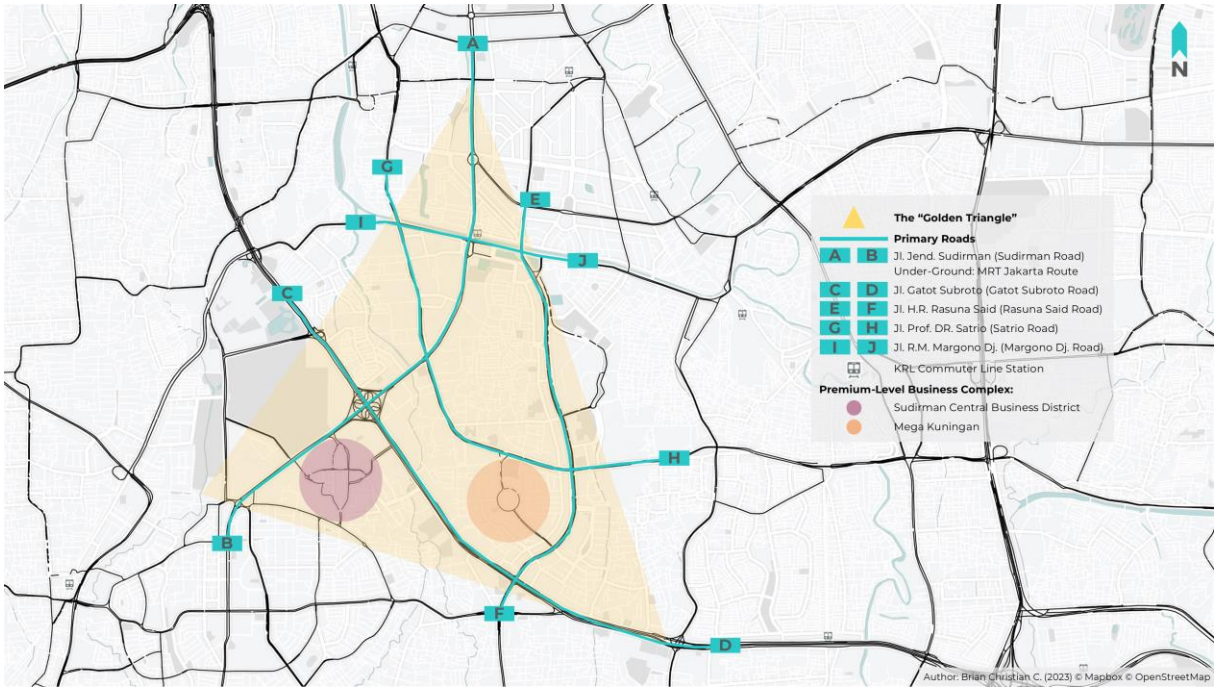


Figure 02. Map of Jakarta CBD and Primary Roads. Source: Google Maps & Google Earth (Author's Analysis). Output: Mapbox Studio & Microsoft Publisher (Author's Design).

Furthermore, the situation in the Jakarta CBD area could be associated with nowadays sustainability requirements as various commercial buildings need to accomplish more on energy efficiency and carbon emissions. This is supported by the fact that on a global level, more than 1 billion square meters of office space will need to be retrofitted by 2050 and 80% of office buildings that exist today will still be in use in 2050, meaning that they will have to be retrofitted at a rate of at least 3% to 3.5% per year if net-zero targets are to be met. Refurbishing buildings comes at a lower environmental cost than new developments. Renovations can take place with carbon impacts of less than 500 kg of CO_2 per square meter, well below the 500 kg to 1,500 kg of CO_2 per square meter seen in new development. This will be significant in helping cities in their move towards carbon neutrality (JLL, 2023, The Future of the Central Business District, p.7).

2. Theories and Objectives

2.1. Urban Theories

Market forces in the development of cities relate to how the location decision of firms and households causes the development of cities. The nature and behaviour of markets depend somewhat on their locations therefore market performance partly depends on geography (McCann, 2001). Connected with the Bid Rent Theory, the idea explains how CBD affects and is affected by the market growth, inside and outside the relatively indivisible perimeter. Alonso's General Theory of Movement establishes an important advance in Spatial Interaction Modelling (De Vries, J., et al., 2000). The theoretical foundation set by William Alonso has developed into the topics we understand now as urban economics and how, as one of the three pillars of urban sustainability, it affects the development of commercial property and the private sector's vital components. Considering the spatial organisation of activities within cities, urban economics addresses questions in terms of what determines the price of land and why those prices vary across space, the economic forces that caused the spread of employment from the central core of cities outward, identifying land-use controls, such as zoning, and interpreting how such controls affect the urban economy (O'Sullivan, 2003). However, the market-oriented development in urban economics shall not overcome the importance and urgencies of the other two pillars: environment and society. Without planning, new values may displace existing ones, but even if a net gain results there may well be considerable losses (McHarg, 1971). For a sustainable investment, or even better urban sustainability, the aspects of nature's preservation and people's consideration should be more prioritized. Autocrats like Alexander the Great and Philip II could build cities according to well-thought-out and carefully matured plans, because they could impose their will by force; but a city which is to be the outward expression of a strong desire to secure the best interests of all its inhabitants can, among a self-governing people, only arise as the outcome of much patient and well-sustained effort (Howard, 1902).

2.2. Research Objectives

In the track of Invest Wisely, by the 59th ISOCARP World Planning Congress and the 5th Urban Economy Forum, the Author aims to share the idea of how cities and communities could progress into a sustainable and regarding place due to their friendly environment, inclusive society, and prosperous economy. It explores the topics of climate change and urban sustainability through the real estate market or commercial property development, as one of the most influential private sector businesses. In Indonesia, starting from Jakarta, several policy briefs have already been published to initiate the common objective. The Governor Regulation of DKI Jakarta No. 38 of 2012 on Green Buildings regulates the implementation of green buildings in Jakarta. The regulation introduces mandatory requirements for new and existing buildings in the areas of energy and water use efficiency, indoor air quality and thermal comfort, waste management, soil treatment, and construction practices. The Jakarta International Stadium is a prime example of a green building in Jakarta, receiving a Greenship Platinum certification from the Green Building Council Indonesia (C40 Cities, 2017, Green Building Implementation). Jakarta also has the "30:30 Commitment" aiming to reduce energy and water consumption and GHG – Greenhouse Gases emissions by 30% by 2030. Jakarta's Green Building Program targets compliance for 100% of new buildings and 60% of existing buildings with the program in 2030. The implementation of sustainable buildings in Indonesia was encouraged by the establishment of the Green Building Council Indonesia 20 years before the targeted year. Subsequently, due to continuous growth in the importance of sustainability, Indonesia's government has issued several regulations to spur the implementation of green buildings (JLL, 2022, Indonesia's Journey Towards Sustainable Real Estate, p.3). Sustainability has become the new and upcoming leverage to attract investors, occupiers, and talents, which is aligned with the common objectives and global missions established through the multilateral consensus.

3. Path to Sustainability in Indonesia

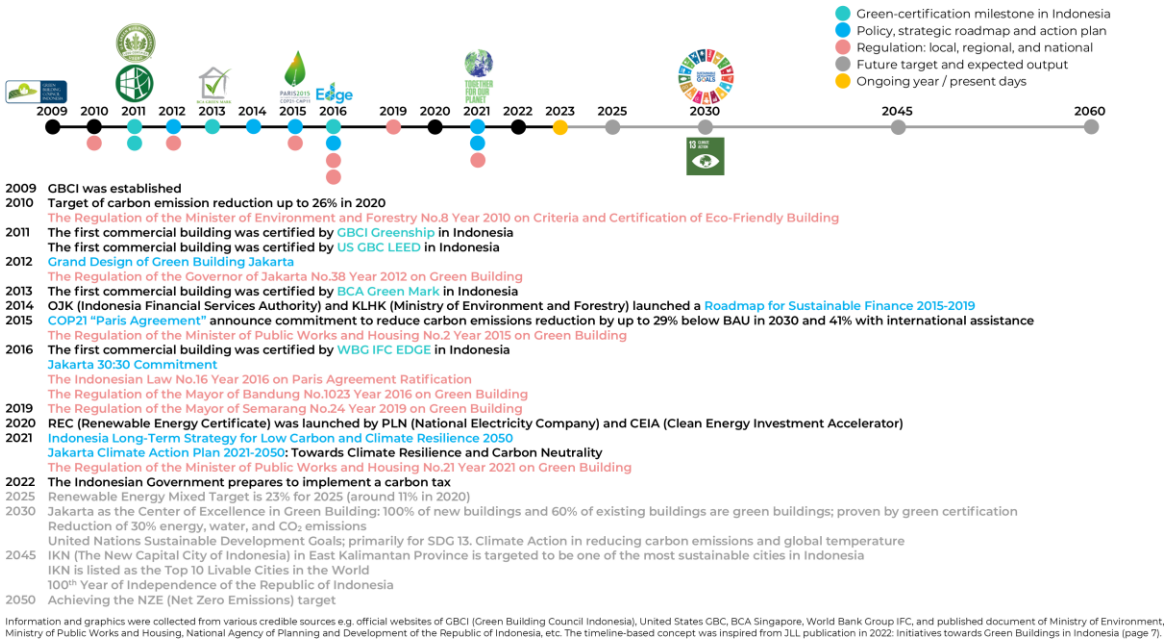


Figure 03. Year-Based Occurrence, Policy, and Regulation of the Sustainability and Net Zero Target in Indonesia. Source: JLL Indonesia. Output: Microsoft Publisher (Author's Design).

There are four well-known green certifications or rating systems used in Indonesia for the buildings to officially carry the green reputation and potentially leverage their asset value. Those green certifications are: (1) LEED, launched in 1998, by US GBC – the United States Green Building Council, (2) Green Mark, launched in 2005, by Singapore BCA – Building and Construction Authority, (3) Greenship, launched in 2009, by GBCI – Green Building Council Indonesia, and (4) EDGE, launched in 2015, by WBG IFC – World Bank Group International Finance Corporation. Despite both LEED and Green Mark having set the cornerstones of green certifications earlier, primarily in global scope, than GBCI Greenship, the path to sustainability in Indonesia is summarized to begin when the first council of green building in Indonesia was established.

Since its establishment, several regulations have been announced; more than five policies have been formulated to direct and guide the accomplishment of sustainability in Indonesia. The number of green-certified buildings increases from year to year, especially in Jakarta, tested and confirmed by those four green certification institutions. The impact of the Paris Agreement was also seen in most regulations and policies related to the Net Zero Emissions announced a year after COP 21's conclusion. In general, there are two targets of the government regulations and policies to initiate the carbon reduction efforts and drive the green buildings development. The first one is the private sector; commercial building owners and property developers which need to fulfil several requirements such as using environmentally friendly building materials, conserving water resources, improving waste management systems and recycling initiatives, also facilitating the building area with green open spaces. Those requirements are considered mandatory for certain categories and sizes of buildings: (1) commercial offices, shopping centres, and residential buildings with an area of more than 50,000 square metres, (2) hotels and hospitals with an area of more than 20,000 square metres, (3) educational facilities with an area of more than 10,000 square metres. The second one is the public sector; financial services institutions and government agencies need to provide research and reports related to sustainability progress. It consists of the data of financial, social, and environmental performance in conducting their functions and operations with sustainability values and principles (JLL, 2022, Indonesia's Journey Towards Sustainable Real Estate, p.8).

4. Data Consolidation and Analysis

4.1. Urban Tendency: Business-Centralized City

As a city with a business-centralized area, Jakarta has evolved into the economic and financial hub of the country and plays a significant role in international corporations, business establishments, and recently, sustainability accomplishments. The common goals came as an influence of globalization in which Jakarta has become part of the agenda. Global firms and markets need multiple global cities from where they can organize their operations (Taylor, et al., 2007) – as well as to be aligned with the envisioned sustainability goals and net zero emissions target.

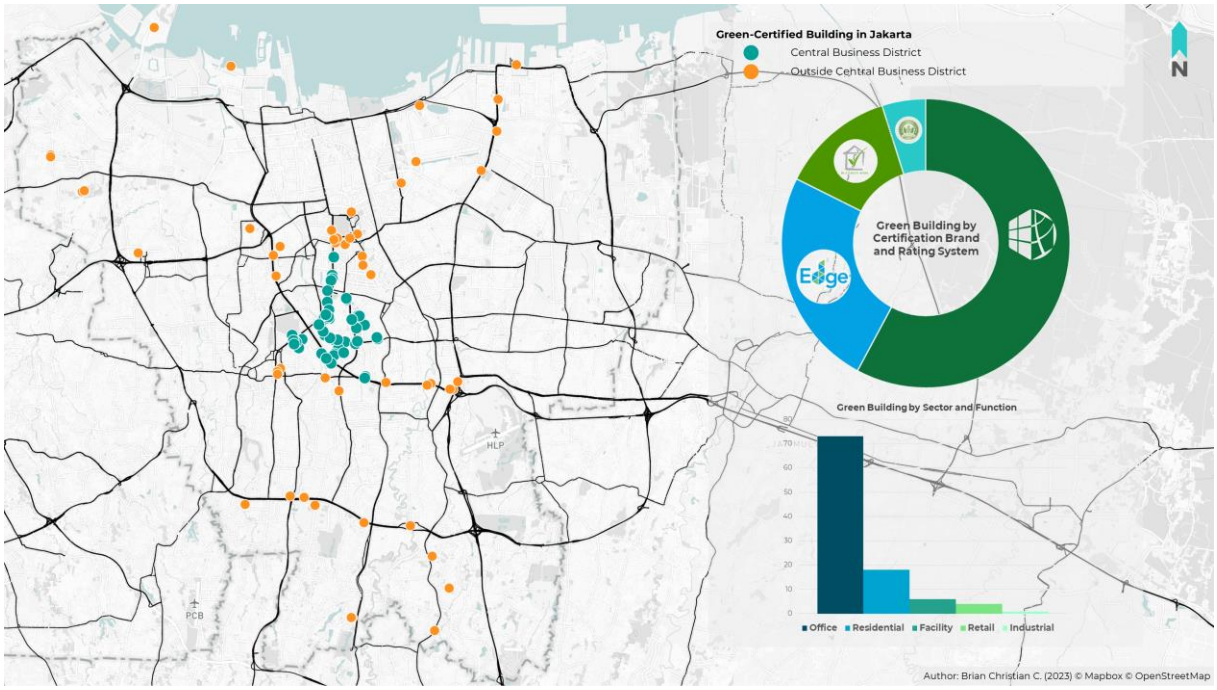


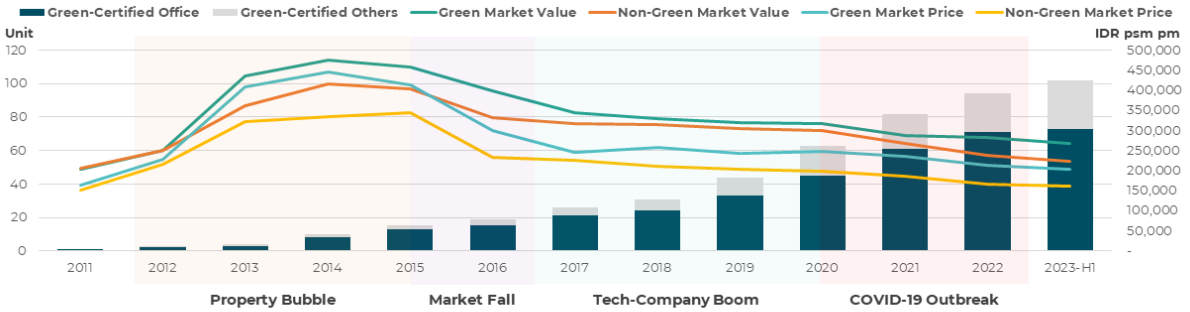
Figure 04. Green-Certified Buildings in Jakarta: Location, Certification, and Function. Source: GBC Indonesia, IFC World Bank, BCA Singapore, US GBC (Author's Analysis). Output: Mapbox Studio, Microsoft PowerPoint, and Microsoft Publisher (Author's Design).

The figure above displays information related to the location, certification, and function of green-certified buildings in Jakarta. From the first green certification year in 2011 to the first half of 2023, Jakarta has already more than 100 green-certified buildings. Despite having less than 10% of the total area in Jakarta, the Central Business District – more as an interpreted area rather than an administrative district, has around 48% of green-certified buildings concentrated. While green-certified buildings outside the Jakarta CBD are distributed without a significant pattern other than following the primary roads, the green-certified buildings in the business-centralized area could be identified as an agglomeration. More than 100 buildings are certified by four well-known green certifications used in Indonesia, respectively from the highest green-certified proportion: Greenship (57.8%), EDGE (24.5%), Green Mark (12.7%), and LEED (4.9%). The agglomeration among the green certifications proportion is presumptively influenced by brand popularity, pricing range, requirement standard, specification level, etc. As a business-centralized city, the "centralization" in Jakarta could be identified as more significant for the Office buildings (71.6%) as the green-certified buildings based on sectors and functions. The dominating figure is followed by eighteen Residential buildings: condominiums, serviced apartments, and flats (17.6%), several public Facilities (5.9%) such as Jakarta International Stadium, Istiqlal Mosque, Kemayoran Athletes Dormitory, TelkomSigma Data Center, then four Retail buildings: mall (3.9%), and one Industrial building: micro-sized factory (0.9%) located in Jakarta.

4.2. Urban Economy: Green-Certified Property

Sustainability has become mainstream and entered the private sector; one of the cores is real estate or commercial property which is already on the pathway through green building development, technology, and policy. Other than the factors of location and pricing, sustainability is considered one of the main priorities of both end-user lease agreements and long-term direct investments. In the Asia Pacific real estate market, around 70% of tenants or occupiers are willing to pay more than the market average to lease green-certified commercial offices; the landlords can expect premium-level rental rates as well from their green-certified buildings (JLL, 2021, Sustainable Real Estate: From Ambitions to Actions, p.10).

The journey was recorded from the first year of green-certified commercial building to the beginning of the property bubble era in 2012, where both massive supply and office demand were dominating the market and escalating the price. Followed by the "burst" or saturated market – forcing the price fall period, but later saved by the technological start-up boom in Indonesia which was started significantly in 2017. The trend and number of green-certified commercial buildings eventually emerged during the start of the pandemic era in 2020. It was presumed as an effort from building landlords or property owners to bring added value to their assets – which were struggling due to weakened demand and competing supply, to improve both technical performance and substantial reputation through the sustainability concept. This created more than just supply-demand dynamics in the market competition and reflected the urban economy growth in Jakarta, represented by the market situation in the CBD area.



Green-Certified Office refers to the cumulative amount of all green-certified buildings functioning as an office, including non-commercial ones such as government-owned buildings. Green-Certified Others refers to the cumulative amount of all green-certified buildings that functioned other than as an office; this includes the other property sectors e.g., residential, retail, industrial, and even public facilities. Green Market Value refers to the proportionate or weighted average of all green-certified commercial offices' asking price, in the context of an open primary market, on a yearly basis. Non-Green Market Value refers to the proportionate or weighted average of all non-green-certified commercial offices' asking price, in the context of an open primary market, on a yearly basis. The survey in this Research Paper, especially for this figure's data consolidation and analysis, was conducted both as a primary survey, by contacting the office's head of marketing or manager of the building, and a secondary survey through scheduled desktop search and published research report by multinational real estate consulting firms.

Figure 05. Comparison of Green-Certified Buildings Cumulative with Green-Certified and Non-Green Offices Market Value in the CBD Area of Jakarta. Source: GBC Indonesia, IFC World Bank, BCA Singapore, US GBC, and JLL Inc. (Author's Primary Survey and Analysis). Output: Microsoft PowerPoint (Author's Design).

Market price (offering price or transacted price) is the price tenants are willing to pay for leased office space, while market value (asking price or published rate) indicates the price set by property owners based on research advisory and valuation processes conducted by market researchers and asset valuators. Both market value and market price for green-certified and non-green offices are relatively similar, prices ranging from IDR 150,000 to IDR 165,000 per square meter per month (psm pm) before the property bubble era. Significant disparities in value and price were identified once rental rates started to rise due to strong demand and ample supply in the CBD area. Market prices for green-certified offices could even be maintained above IDR 400,000 psm pm for three years (2013 to 2015), on average 16.7% to 24.8% higher than the market prices of non-green offices. During the tech-company boom, despite the perceived oversupply of office buildings in the CBD area, creating a more competitive market, both green market value and price remained relatively better than the non-green market value and price. The resilience of green-certified offices' market value and price was further demonstrated during the COVID-19 outbreak or pandemic era, with approximately 20.3% to 22.4% higher values compared to non-green offices. On average, green-certified offices had market prices above IDR 200,000 psm pm, while non-green offices had prices below that figure in the last four years (2020 to the first half of 2023).

4.3. Urban Policy: Sustainability-Carried Technology

Leading the sustainability journey requires more than just green certifications. While they are sufficient to demonstrate green credibility, investing in technologies and cities that are at the forefront of climate change policies and actions is essential. In the private sector of commercial property, technology and data play a crucial in creating sustainable real estate developments. Investing in expertise and specialists in sustainability, as well as collaborating with other companies and sectors, can lead to better solutions. The Author agrees that all these elements have a profound impact on the definition of new policy styles and new urban governance tools (Taylor, et al., 2007).

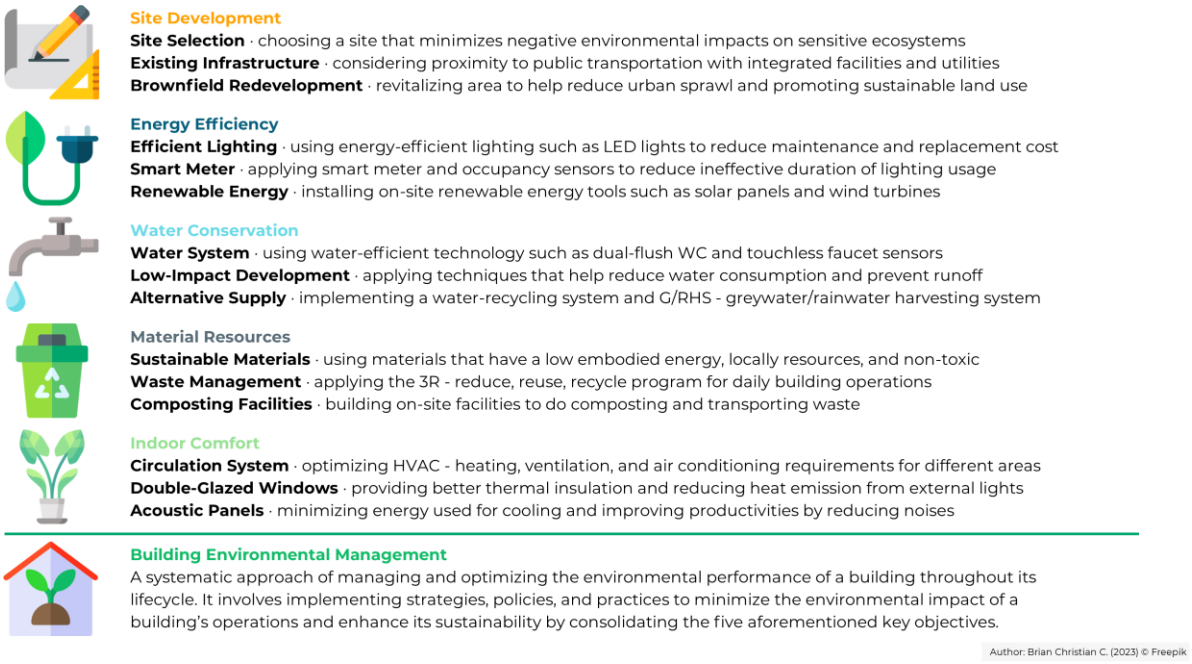


Figure 06. Five Key Objectives of Building Environmental Management. Source: GBC Indonesia and JLL Inc. (Author's Analysis). Output: Microsoft Publisher (Author's Design).

As real estate is one of the most contributing sectors of carbon emissions, stakeholders, including building owners, will need to balance the efforts from new construction to retrofitting, as new buildings alone will not get Indonesia to achieve the target (JLL, 2022, Indonesia's Journey Towards Sustainable Real Estate, p.17).

To amplify Jakarta's sustainability and green building targets, several objectives need to be formulated into strategic-level urban policies that covers the operational-level management procedures:
(1) Creating an investment climate: It is essential to attract interest from financial institutions to provide green loans and encourage investors to prioritize green buildings. By promoting a favourable environment for green investments, we can foster the growth of sustainable projects.
(2) Driving the corporate actions: It is crucial to raise awareness among corporations about the urgent need to implement net-zero targets and embrace sustainability. This not only positions them as leaders in attracting top talent but also enhances their reputation and competitiveness in the market.
(3) Supporting property developers: It is important to incorporate sustainability considerations into the development of new buildings. This involves integrating green building practices and technologies from the early stages of planning and design, including the process of retrofitting the building if necessary.

Those three interconnected aspects operate within a regulatory environment that encompasses both incentive and disincentive schemes to enforce the objectives. By implementing the strategic-level urban policies that covers the operational-level management procedures, Jakarta can make significant strides towards a greener and more sustainable future.

5. Conclusion

5.1. The "Greenification" of Jakarta

Jakarta's journey towards sustainability is well underway, especially in the sector of real estate. The city has made substantial progress in green building certifications, particularly in the CBD area, witnessed economic benefits from green-certified properties, and implemented urban policies to drive sustainability. This concentration of green-certified buildings reflects the city's business-centralized nature and its alignment with global sustainability goals, including those set by the Paris Agreement. By embracing technology, fostering collaborations, and formulating strategic-level policies, Jakarta can continue its path towards a greener future, contributing to global sustainability efforts and achieving its own targets for carbon reduction.

The economic implications of green-certified properties are also noteworthy in Jakarta. The market demand for green-certified commercial offices, the globally most valued and active real estate sector, has been considered strong, with tenants willing to pay premium rental rates for various offices located in the CBD area. This demand has been driven by growing awareness of sustainability and the willingness of occupiers to prioritize green buildings. The market value and price of green-certified offices have remained relatively higher than non-green offices, even in the face of market fluctuations and the COVID-19 pandemic. This resilience underscores the value and reputation associated with sustainability contribution from the private sector.

5.2. Technology and Policy for Sustainable Investment

To further advance sustainability in Jakarta, technology and policy recommendations are essential. Investing in sustainable technologies and data-driven solutions can lead to more effective and efficient real estate developments. Collaborations between companies, sectors, and experts in sustainability can yield innovative solutions and drive progress. Balancing efforts between new construction and retrofitting is crucial, as retrofitting existing buildings is necessary to achieve carbon reduction targets.

Strategic-level urban policies must be formulated to support Jakarta's sustainability goals. Creating an investment climate that attracts financial institutions and encourages green investments is crucial. Driving corporate actions and raising awareness among corporations about the importance of net-zero targets and sustainability is necessary to position them as market leaders. Supporting property developers in integrating green building practices and technologies from the early stages of planning and design, including retrofitting existing buildings, is essential for achieving sustainability objectives. Despite being considered just a small step in Jakarta's commercial property innovation, it has the potential to be a giant leap for Indonesia's sustainable investment.

The successful implementation of these recommendations will require a regulatory environment that provides both incentives and disincentives. Incentive schemes can encourage compliance with sustainability objectives, while disincentive measures can discourage unsustainable practices. Jakarta can make significant strides towards a better "greenification" and more sustainable future by aligning environmental-oriented technology and policy to strategic-level urban policies. Recommended initiatives and actions for sustainable investment include:

- ESG and NZE Strategies: Designing a strategy to translate commitments into a detailed action plan and conduct assessment to evaluate companies on how advanced they are in achieving sustainability.
- Energy Efficiency and Renewable Energy Supply: Reducing energy consumption, increasing energy efficiency, and installing alternative sources of energy to claim carbon credits.
- Retrofitting and Future Proofing: Prioritizing assets that are considered underperforming, identifying potential building retrofit strategy, and investing in asset facilities enhancement.
- Health and Wellbeing: Improving the health and wellbeing of the tenants/occupiers, as well as using human-centric design to encourage movement, collaboration, and productivity.
- Innovations and Digital Transformation: Adopting smart technology to track, monitor, analyse, and report sustainability data and carbon footprint.

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