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Compliance Assessment of an Existing Office Building with Updated Local Regulation in Jakarta

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ABSTRACT

This study evaluated the compliance level of an existing office building in Jakarta, Head Office Building X, against the latest local regulation, Pergub DKI Jakarta No. 20/2024. This assessment was important for identifying compliance gaps in older buildings, since the building was constructed before the regulation came into effect. The regulatory provisions were interpreted qualitatively and translated into measurable indicators, which were validated using triangulation by reviewing available documents and validating them through on-site observations. The compliance checklist consisted of 24 indicators grouped into four categories: high-rise building provisions, accessibility, minimum infrastructure, and environmental requirements. Each indicator was assessed using three levels—compliant, partially compliant, and non-compliant—and converted into a 2/1/0 scoring system to produce a compliance matrix and category-level percentages. The results showed a total score of 14 out of 48 points (29.17%) The highest compliance was found in the high-rise building category (83.3%), while accessibility and minimum infrastructure were relatively low (12.5%). The environmental category did not meet the requirements (0%), mainly due to limited technical evidence available for verification. Overall, these findings highlight the need to prioritize improvements in accessibility and measurable environmental performance in managing existing public buildings, particularly Head Office Building X.

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1. INTRODUCTION

Jakarta is one of the metropolitan cities in Indonesia and has experienced significant urban growth. This rapid development, combined with the highest population density in Indonesia, has resulted a shift toward vertical urban forms, especially for residential and office uses. Since 1967, high-rise buildings have emerged as a defining building typology that shaped the urban character in Jakarta (Effendi et al., 2021; Santoso et al., 2021).

Many older buildings that have already been constructed, especially in the 1900s, were not considered aspects of safety, energy efficiency, and environmental sustainability (Jagarajan et al., 2017; Mazzarella, 2015). Policies regarding environmental sustainability or green buildings initiatives (Sutikno et al., 2024) at the city level not only encourage energy efficiency but also deliver socio-economic benefits and risk management against unintended consequences, when policies are supported by inclusive planning and holistic implementation (Franco et al., 2021). As concerns about building safety and reliability continue to grow, many countries have also begun developing newer regulations to accommodate these issues (Sun et al., 2016).

Recently, building regulations in Indonesia have gradually shifted from a prescriptive approach toward a more performance-based orientation (Astarini & Utomo, 2020; Perpres Nomor 12, 2021). The performance-based concept affects the management and utilization of space strategies shaped by factors such as user interest factors, building management, design collaboration, and the perceived risk of loss (Astarini et al., 2020). At the local level, newer regulations begin to pay attention to aspects that emphasize safety, comfort, energy efficiency, and environmental sustainability (Pemerintah DKI Jakarta, 2024). This direction also aligns with global concern, since the building and construction sectors are major contributors to energy consumption and emissions, building energy consumption accounts for more than one-third of the global final energy consumption and contributes to nearly a quarter of greenhouse gas emissions (Dean et al., 2016).

These regulatory shifts inevitably raise questions for older buildings that were constructed before newer regulations were introduced, even though the permits were legally issued under previous codes, the ability of the building to ensure user safety and long-term environmental sustainability is not always clear. For that reason, compliance with existing buildings with newer regulations should be assessed not only at the building scale, but also within the context of governance and overall implementation capacity at the city level. In addition, from an operational perspective, buildings that have been in use for more than two decades are prone to deterioration and functional obsolescence, which strengthen the case for conducting feasibility assessment of utilization as part of the sustainability development strategy (Juliardi et al., 2021).

Existing high-rise buildings in Jakarta were developed under earlier regulations both in terms of spatial planning, which in some cases is not aligned with the latest RTRW (Sari, 2021), as well as in terms of safety and performance standards. At the same time, Jakarta is one of the cities that is relatively progressive in building policies (Dean et al., 2016), including efforts to initiate environmental sustainability (Farizal et al., 2024). One of the recent policy updates issued by the local government is the Jakarta Governor's Regulation (Pergub) No. 20 of 2024 concerning Buildings. These regulation addresses key priorities, such as building safety, accessibility, energy efficiency, and environmental sustainability (2024). Importantly, it does not only apply to new developments, but it also affects existing buildings, particularly in relation to fulfilling the physical requirements. As a result, existing buildings that do not yet

aligned with the new regulations may face practical challenges in quality control (Meijer & Visscher, 2017).

Buildings owned by State-Owned Enterprises (BUMN) are strategic public assets because they serve large numbers of users and often function as key parts of national infrastructure. In that sense, public buildings have a higher level of risk and safety responsibility (Druķis et al., 2017; Muhamad Salleh et al., 2020). Their ability to comply with regulations is a representation of infrastructure governance. Public assets, including buildings, need to be managed carefully to ensure continuity of service, which means they must remain adaptive and resilient as risks evolve over time (Lukito et al., 2019).

This study examined a public building in Jakarta owned by BUMN and used as an office with a high-rise building typology. Head Office Building X was constructed before the enactment of the latest regulations in 2024, making it relevant to evaluate how well the existing design aligns with the current regulations. Studies that focus on public assets are important because they provide evidence to strengthen decision-making in the management of public assets (Lukito et al., 2019). Addressing existing buildings is also important for achieving environmental sustainability, because if older buildings continue to operate without performance upgrades, energy consumption can remain locked in, making future overall energy savings harder to achieve (Dean et al., 2016). This matters because a building's environmental impact is shaped not only during construction but also by its operational efficiency across its service life (Sutikno et al., 2025).

The latest building regulation applicable in Jakarta is Jakarta Governor Regulation (Pergub) No. 20 of 2024. This regulation also revokes Pergub No. 135 of 2019, which was more closely oriented toward the provisions of Building Permits (IMB), whereas the 2024 regulation covers more comprehensive aspects of building reliability.

This study assessed the conformity of existing conditions of Head Office Building X with local regulations under Pergub DKI Jakarta No. 20 of 2024. The analysis aimed to identify the aspects of the building with the highest potential for nonconformity. The findings can then serve as a reference for building managers to follow up such as making policies or making technical improvements.

2. RESEARCH METHODS

The stages of this study are presented in Figure 1. This study adopted a case study approach focusing on Head Office Building X in Jakarta to evaluate the compliance gap between existing buildings and new regulations. This study used a qualitative approach to interpret the regulation (Bowen, 2009) and field findings which were then translated into compliance index. Pergub DKI Jakarta No. 20/2024 served as the main normative framework and were extracted into measurable parameters.

The analysis followed four systematic steps: (1) mapping relevant articles and clauses; (2) identifying measurable parameters; (3) grouping the parameters into categories; (4) defining the required evidence to verify compliance. Data were collected using triangulation (Amaratunga et al., 2002) by collecting existing documents, such as architectural, structural, and utility information from as-built drawings (Juliardi et al., 2021), and validating them through on-site observations.

The compliance indicators (Table 1) were developed based on the regulatory structure in Pergub 20/2024 and were grouped into four categories: (1) accessibility; (2) environmental sustainability; (3) the provision of high-rise buildings; and (4) safety and minimum infrastructure. Compliance was assessed using a three-level classification: compliant (C), partially compliant (PC), and non-compliant (NC). Partial compliance, for example, refers to

cases where required facilities were present but did not meet the specified dimensions. Each indicator was then scored using 2/1/0 system, and the results were presented in a compliance matrix per indicator (Roberts et al., 2019; Thakur et al., 2025).

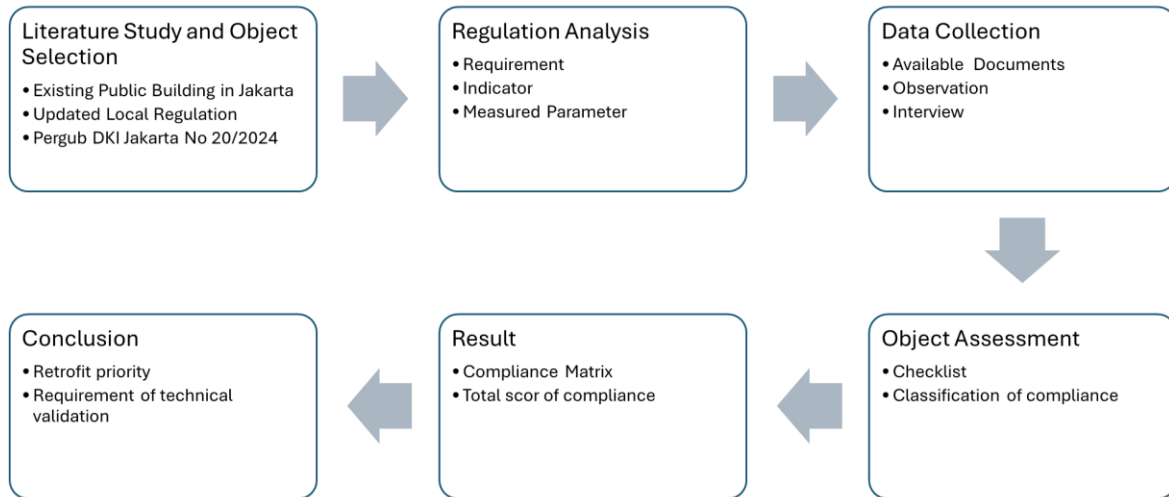


Figure 1. Existing conditions of fire man access and fire safety exit (Source: Author, 2025)

Table 1. Compliance Indicator

Category	Parameter	Measurable Indicators/Criteria
High-rise Building	Elevator	Buildings with more than 5-storeys are equipped with an elevator.
	Refuge floor	Buildings with more than 24-storeys or a height of more than 120 m provide a refuge floor at least 1-storey.
	Fire man access	A fireman’s lift is provided within the fire safety shaft: 1 unit if the floor area is <900 m ² , 2 units if it is 900-2000 m ² , and 2 + 1 for each additional 1,500 m ² if the floor area is more than 2000 m ² .
	Emergency exit	An emergency staircase is provided with a width of > 1200 m and is equipped with a smoke-stop lobby or firefighting lobby.
	Building clearance	The required clearance from the site boundary is 4m for 1-6storeys, 6m for 7-10storeys, 8m for 11-14storeys, and 10m for 15->17storeys.
	Helipad	The construction of a helipad must be approved or recommended by the authorized agency.
Accessibility	Accessibility obligations	Public services/ public use buildings provide accessible entry, ramps, disabled parking, and disabled toilets.
	Access to circulation for people with disabilities	Accessible route requirements include width ≥1.8 m; non slippery flooring; barrier-free access; handrail in hazardous areas; sufficient lighting; guiding paths; net clear height ≥2 m.
	Ramp disability laziness	– Ramp slope requirements are cross slope ≤2°; longitudinal slope ≤5° outdoors & ≤6° indoors.
	Disability ramp handrail & curb	– Curbs are ≥10 cm high; Continuous handrails are provided on both sides at height of ≥80 cm.
Disability ramp landing	– Landings are provided as follows: start/end landing length ≥1.2 m; textured & non-slippery; tactile; should not face doors directly; intermediate landings are provided every 9 m with a landing length ≥1.5 m.	

Category	Parameter	Measurable Indicators/Criteria
	Disabled parking location	– The nearest accessible route location is such that the maximum distance to the main building/facility/parking gate is 60m.
	Disabled parking dimensions	– Parking width ≥ 3.7 m (single) or ≥ 6.2 m (double).
	Disabled parking connectivity & markings	– Connected directly to the buildings; Contrast symbols & clear signage.
	Disabled toilets number	– Each male & female toilet includes ≥ 1 disabled toilet.
	Disabled toilet dimensions & doors	– Min size 152.5×227.5 cm; the net width of the door ≥ 90 cm, opens to the outside; embossed signages.
	Vehicle ramp basement – distance & pedestrian	– If the ramp is in front of the building: the distance of the outer wall of the ramp to GSI min 3 m; Provide a wide ≥ 1.8 m pedestrian path leading to the building.
	Straight vehicle ramp	– Length ≤ 30 m + landing min 5 m; slope $\leq 1:7$; Ramp width min 3 m (1 way) or 6.5 m (2 way with a 50 cm separator).
Minimum infrastructure	Minimal infrastructure coverage	– Ensure minimum infrastructure includes accessibility, pedestrian access, fire and rescue access, etc.
	Rainwater storage buildings	– Acceptable stormwater retention/infiltration facilities include shallow/deep infiltration wells, infiltration/retention ponds, bio-pore infiltration, reservoirs, etc.
	Zero Run Off/Zero Delta Q	– Other retention facilities may also be used as long as they meet the Zero Run Off/Zero Delta Q principle within the site.
	Pedestrian access inside the site	– Pedestrian path width ≥ 1.8 m; continuity; integrated; access for all users, including persons with disabilities; durable/non-slippery/permeable material; guiding blocks; separate from vehicle access; near the main access; equipped with signs/markings, lights, shades, trash cans.
Environment	IHBI-based KDH	– KDH = percentage of total IHBI area to site area; IHBI calculated (Area RTH \times value \times FHBI) + element bonus; KDH & IHBI are listed in the licensing documents and described; The owner is responsible for maintaining the KDH elements.
	Zero Run Off/Zero Delta Q	– Zero Delta Q: retain/accommodate runoff so that peak discharge does not increase; Zero Run Off: no runoff discharge to city drainage system/river.

(Source: Pergub DKI Jakarta No 20/2024)

This study had limitations related to the availability of existing building data. Head Office Building X has been in operation for a long time, and the existence of its as-built drawings could not be confirmed. To obtain more reliable existing condition data, the research team first conducted a site survey, field measurements, and re-drawing. In addition, access to internal records, such as complete licensing documents and technical details, was limited. For that reason, the findings were reported by distinguishing between verified and unverified indicators, depending on the availability of the evidence.

3. RESULTS AND DISCUSSION

The compliance matrix is presented in Table 2, which summarizes how the existing conditions of Head Office Building X align with Pergub DKI Jakarta No. 20/2024 across four categories: high-rise building, accessibility, minimum infrastructure, and the environmental requirements which are detailed into 24 indicators. Overall, compliances as presented in Table 3 indicate that the building achieved 14 points out of a maximum of 48 points (29.17%).

Table 2. Compliance Matrix

Category	Parameter	Status (C/PC/NC)	Score (2/1/0)	Verification (V/NV)	Notes
High-rise Building	Elevator	C	2	V	There are 3 passenger elevators and 1 service elevator.
	Refuge floor	C	2	V	There is no escalator, so it can be said that it does not violate the regulations.
	Fire man access	PC	1	V	There is a fire elevator but only 1 piece, while the needs according to the requirements are 2 pieces.
	Emergency exit	PC	1	V	There are 2 fire stairs, but they are wide <1200 m and there is no firefighting lobby.
	Building clearance	C	2	V	The clearance to the site limit is 9m and 14 m, it has met the minimum requirement of 6m.
	Helipad	C	2	V	There is no helipad, so it can be said that it does not violate the regulations.
Accessibility	Accessibility obligations	NC	0	V	There is no disabled access in the form of ramps, toilets, and disabled parking.
	Access to circulation for people with disabilities	PC	1	V	The width of the access > 1.8m, but there is no guiding block.
	Ramp disability – laziness	NC	0	V	There is no disability ramp.
	Disability ramp – handrail & curb	NC	0	V	There is no disability ramp.
	Disability ramp – landing	NC	0	V	There is no disability ramp.
	Disabled parking – location	NC	0	V	There is no disabled parking.
	Disabled parking – dimensions	NC	0	V	There is no disabled parking.
	Disabled parking – connectivity & markings	NC	0	V	There is no disabled parking.
	Disabled toilets – number	NC	0	V	There are no disabled toilets.
	Disabled toilet – dimensions & doors	NC	0	V	There are no disabled toilets.
	Vehicle ramp – distance & pedestrian	PC	1	V	There is a ramp outside the building with 5m, which is >3m, but there is no pedestrian path on the edge of the vehicle ramp.
	Straight vehicle ramp	PC	1	V	There is a vehicle ramp <30m, with a width of 5m

Category	Parameter	Status (C/PC/NC)	Score (2/1/0)	Verification (V/NV)	Notes
					that is >3m, but a slope of 1:4,4 which < 1:7.
Minimum infrastructure	Minimal infrastructure coverage	PC	1	V	There is access to the fire truck but it does not surround the building, there is no special pedestrian path, there is an emergency staircase even though it has not met the provisions.
	Rainwater storage buildings	NC	0	NV	There were no infiltration wells, infiltration ponds, bio-pores, or reservoirs.
	Zero Run Off/Zero Delta Q	NC	0	NV	There were no infiltration wells, infiltration ponds, bio-pores, or reservoirs.
	Pedestrian access inside the site	NC	0	V	There are no pedestrian paths, no guiding blocks, markers, and garbage cans.
Environment	IHBI-based KDH	NC	0	V	There is only a green space on the ground floor, there is no Blue Open Space, KDH's calculation does not pay attention to IHBI.
	Zero Run Off/Zero Delta Q	NC	0	NV	There were no infiltration wells, infiltration ponds, bio-pores, or reservoirs.

(Source: Author, 2026)

Table 3. Percentage of Compliance by Category

Category	Number of Indicators	% Compliance	C	PC	NC	% Verified
High-rise Building	6	83,3%	4	2	0	100%
Accessibility	12	12,5%	0	3	9	100%
Minimum infrastructure	4	12,5%	0	1	3	50%
Environment	2	0%	0	0	2	50%

(Source: Author, 2026)

In the high-rise building category, the compliance score was the highest at 83.3%. Head Office Building X has 10 floors, so it does not require a refuge floor. The building was also served by three passenger elevators and one service elevator. In addition, the building clearance exceeded the minimum requirement. However, the main concern lies in the lack of comprehensive aspects of life-safety. Because the floor area of Head Office Building X is more than 900 m², the regulation requires two fire safety shafts equipped with fireman lifts. Meanwhile, in the existing condition there was only one fire safety shaft equipped with a fire man lift. The fire-fighting lobby also still had double access to the pantry, and the building had only one emergency staircase, which was not equipped with a smoke-stop lobby (Figure 2).

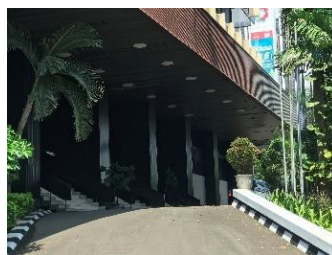


Figure 2. Existing conditions of fire man access and fire safety exit
(Source: Author, 2025)

For the accessibility category, as shown in Table 3, the building achieved only 3 points out of 24 (12.5%). The existing condition of Head Office Building X paid limited attention to accessibility requirements, especially for people with disabilities. No accessibility ramp was provided (Figure 3a), and there was also no designated disabled parking (Figure 3c), or accessible toilet, not to mention guiding blocks. The only element that was partially fulfilled was circulation access with a width of more than 1.8m, but it was not supported by ramps and other essential accessibility features. Similarly, the vehicle ramp did not meet the required 1:7 slope standard, it had a steeper slope of 1:4.4. In addition, the vehicle ramp was not accompanied by a pedestrian path along its perimeter (Figure 3b). Based on these findings, users with disabilities were not able to access the entire building independently and would require assistance from officers.



a. The access to the building was only a staircase without a ramp



b. Vehicle ramps were not accompanied with pedestrian way



c. There was no dedicated parking space for people with disabilities

Figure 3. Conditions of accessibility criteria
(Source: Author, 2025)

In the minimum infrastructure category, compliance was also low at 12.5% (Table 3), and only 50% of the indicators could be verified. For example, information needed to confirm compliance with the zero run off/zero delta Q principle was not available. Life safety access, pedestrian routes were present, but they did not fully meet the requirements. Field observations also showed that the pedestrian path was not integrated continuously from the site entrance to the building. Instead, pedestrians often shared the same access with vehicles and separated access for pedestrians only provided as stairs from drop-off and pick-up zones.

Head Office Building X did not meet the environmental compliance indicators. No evidence of rainwater runoff storage was identified whether it is directly discharged into the city drainage system or retained first based on calculations to prevent an increase to peak discharge. The building's green area (KDH) appeared to be limited to ground level landscaping without paying attention to the LHBI, and there were no roof gardens or vertical greenery systems. The compliance gap in environmental aspects should be understood not only as a limitation of the existing design, but also a part of broader policy implementation challenges. New policies regarding environmental sustainability can also lead to unintended consequences if they are not supported by responsive implementation on a city scale (Franco et al., 2021).

Overall, the compliance level of Head Office Building X with the latest local regulation was low at 29.17%. This should not be seen as solely a technical shortfall, but also as an indication that building management strategies have not fully adopted a performance-based design logic. Since performance requirements can affect property management strategies (Astarini et al., 2020), improvements to existing buildings should be carried out not merely as a checklist completion but as part of a long-term asset management strategy. In the context of global energy savings, routine maintenance or partial renovations that do not improve energy performance can contribute to an energy lock-in making future savings harder to achieve (Dean et al., 2016).

Finally, these findings support sustainability strategy at the utilization stage, encouraging more detailed technical audits prior to renovation or retrofit so that improvements follow a cycle of evaluation (Juliardi et al., 2021). The limited technical evidence for certain indicators should also be interpreted as a governance challenge in public assets management, not only as a technical issue. Strengthening documentation and improving access to reliable data are essential to improve quality control for existing public buildings (Lukito et al., 2019). Further improvement in assets management can also be supported through BIM technology (Nguyen & Kim, 2011), enabling more transparent and real time control by owners, managers, users, and the public.

4. CONCLUSION

This study assessed the compliance level of an existing building, Head Office Building X in Jakarta, against the latest local regulation, Jakarta Governor's Regulation (Pergub DKI Jakarta) No. 20/2024. The regulation was translated into 24 indicators grouped into four categories: high-rise building, accessibility, minimum infrastructure, and the environmental requirements. Out of the 24 indicators, Head Office Building X achieved 14 points out of a maximum of 48 points, resulting in an overall compliance score at 29.17%. The highest compliance was recorded in the high-rise building category at 83.3%, followed by accessibility and minimum infrastructure, both at 12.5%. The environmental category scored 0%, however, some indicators in this category could not be fully verified due to limited access to existing condition data. This opens an opportunity for follow up research to trace and map field conditions regarding the availability of facilities to meet zero run off/zero delta Q, which

was not feasible in this study because confirming underground facilities, such as infiltration wells or ponds, would require excavation or subsurface detection methods beyond the available tools and approach.

Beyond the compliance figures, the findings revealed a clear pattern, where the core components of high-rise building tended to be compliant, while aspects that demand public service quality (accessibility) and measurable environmental performance (IHBI/KDH and runoff control) were still lagging. This indicates that the challenge for existing buildings is not only a lack of facilities, but also about how newer regulations push older buildings to move beyond simply functioning toward being more inclusive, safer, and more technically verifiable.

The low accessibility compliance also indicates that, without relatively simple improvements, such as proper ramps, designated accessible parking, accessible toilets, guiding paths, and clear pedestrian routes, public buildings may continue to limit independent access for certain user groups. Therefore, accessibility renovations should be positioned as an early priority, rather than postponed until a major retrofit program.

Meanwhile, in the environmental performance, this study highlighted an important regulatory shift. The existence of green space alone is not enough, because what is assessed is measurable green blue performance (IHBI/KDH) and rainwater management. The limited technical evidence that emerged in this study also points to a common issue in older buildings: documentation gaps. Without site utility documents, calculation data, and well-maintained operational records, compliance is difficult to verify, and quality control becomes weaker.

Overall, the fundamentals of high-rise building have been established, but the latest regulations place stronger demand on inclusivity by paying attention to accessibility for people with disabilities, as well as environmental sustainability regarding rainwater management. Based on these findings, building managers can make quick improvements in the accessibility category, add minimum infrastructure, and review the compliance of the zero run off/zero delta Q criteria. Future research can then build on this baseline assessment to develop more precise and feasible retrofit recommendations.

REFERENCES

- Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: application of "mixed" research approach. *Work Study*, 51(1). <https://doi.org/10.1108/00438020210415488>
- Astarini, S. D., & Utomo, C. (2020). Performance-based building design of high-rise residential buildings in Indonesia. *Sustainability (Switzerland)*, 12(17). <https://doi.org/10.3390/su12177103>
- Astarini, S. D., Utomo, C., Negoro, N. P., Sari, A. F., & Rohman, M. A. (2020). The influence of performance-based building design on the strategy of retail property in Indonesia. *Sustainability (Switzerland)*, 12(21). <https://doi.org/10.3390/su12218801>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2). <https://doi.org/10.3316/QRJ0902027>
- Dean, B., Dulac, J., Petrichenko, K., & Graham, P. (2016). Global Status Report 2016: Towards zero-emission efficient and resilient buildings. In *Citation*.
- Druķis, P., Gaile, L., & Pakraštīņš, L. (2017). Inspection of Public Buildings Based on Risk Assessment. *Procedia Engineering*, 172. <https://doi.org/10.1016/j.proeng.2017.02.106>
- Effendi, M. F., Ridzqo, I. F., & Dharmatanna, S. W. (2021). An Overview of High-Rise Buildings in Jakarta since 1967 to 2020. *IOP Conference Series: Earth and Environmental Science*, 933(1). <https://doi.org/10.1088/1755-1315/933/1/012001>

- Farizal, F., Noviandri, M. A., & Hamdani, H. (2024). Sustainability Development through a Nearly Zero Energy Building Implementation Case: An Office Building in South Jakarta. *Sustainability (Switzerland)*, 16(16). <https://doi.org/10.3390/su16167027>
- Franco, M. A. J. Q., Pawar, P., & Wu, X. (2021). Green building policies in cities: A comparative assessment and analysis. *Energy and Buildings*, 231. <https://doi.org/10.1016/j.enbuild.2020.110561>
- Jagarajan, R., Abdullah Mohd Asmoni, M. N., Mohammed, A. H., Jaafar, M. N., Lee Yim Mei, J., & Baba, M. (2017). Green retrofitting – A review of current status, implementations and challenges. In *Renewable and Sustainable Energy Reviews* (Vol. 67). <https://doi.org/10.1016/j.rser.2016.09.091>
- Juliardi, R. D., Puri, E. R., & Aziza, M. I. (2021). Temporary Occupancy Permit (SLF) for Building Sustainable Strategy. *IOP Conference Series: Earth and Environmental Science*, 738(1). <https://doi.org/10.1088/1755-1315/738/1/012079>
- Lukito, J. A., Susilawati, C., & Goonetilleke, A. (2019). Climate change adaptation in the management of public buildings: an Indonesian context. *International Journal of Building Pathology and Adaptation*, 37(2). <https://doi.org/10.1108/IJBPA-02-2018-0019>
- Mazzarella, L. (2015). Energy retrofit of historic and existing buildings. the legislative and regulatory point of view. *Energy and Buildings*, 95. <https://doi.org/10.1016/j.enbuild.2014.10.073>
- Meijer, F., & Visscher, H. (2017). Quality control of constructions: European trends and developments. *International Journal of Law in the Built Environment*, 9(2). <https://doi.org/10.1108/IJLBE-02-2017-0003>
- Muhamad Salleh, N., Agus Salim, N. A., Jaafar, M., Sulieman, M. Z., & Ebekoziem, A. (2020). Fire safety management of public buildings: a systematic review of hospital buildings in Asia. *Property Management*, 38(4). <https://doi.org/10.1108/PM-12-2019-0069>
- Nguyen, T. H., & Kim, J. L. (2011). Building code compliance checking using BIM technology. *Proceedings - Winter Simulation Conference*, 3395–3400. <https://doi.org/10.1109/WSC.2011.6148035>
- Peraturan Gubernur DKI Jakarta No 20 Tahun 2024 Tentang Ketentuan Tata Bangunan, Pub. L. 20/2024 (2024).
- Perpres Nomor 12. (2021). Peraturan Presiden Republik Indonesia Nomor 12 Tahun 2021 Tentang Perubahan Atas Peraturan Presiden Nomor 16 Tahun 2018 Tentang Pengadaan Barang/Jasa Pemerintah. *Republik Indonesia*, (086130).
- Roberts, C. J., Edwards, D. J., Hosseini, M. R., Mateo-Garcia, M., & Owusu-Manu, D. G. (2019). Post-occupancy evaluation: a review of literature. *Engineering, Construction and Architectural Management*, 26(9). <https://doi.org/10.1108/ECAM-09-2018-0390>
- Santoso, P. R., Fatma, D., & Setiawan, J. P. (2021). Regulating Compact Urbanity in Jakarta. *CTBUH Journal*, 2021(2).
- Sari, N. M. (2021). Analisis sebaran bangunan dan kesesuaian dengan rencana tata ruang wilayah (RTRW) Provinsi DKI Jakarta. *Majalah Geografi Indonesia*, 35(2), 133. <https://doi.org/10.22146/mgi.60823>
- Sun, X., Brown, M. A., Cox, M., & Jackson, R. (2016). Mandating better buildings: A global review of building codes and prospects for improvement in the United States. *Wiley Interdisciplinary Reviews: Energy and Environment*, 5(2). <https://doi.org/10.1002/wene.168>
- Sutikno, S., Hardjomuljadi, S., & ... (2025). COST MODEL DEVELOPMENT FOR GREEN BUILDING COMPLIANCE WITH INDONESIA'S REGULATION NO. 21 OF 2021. ... , *Methodology in Applied ...*.

- Sutikno, Sulistio, H., & Hardjomuljadi, S. (2024). Soft System Methodology for Green Building Design Concepts for Complying Building Regulation in Indonesia. *Operational Research in Engineering Sciences: Theory and Applications*, 6(4).
- Thakur, I., Patel, D. A., & Lad, V. H. (2025). Developing post-occupancy index (POI) for high-rise residential apartment buildings. *International Journal of Building Pathology and Adaptation*. <https://doi.org/10.1108/IJBPA-05-2025-0105>