

Received: December 2023 Accepted: January 2024

DOI: <https://doi.org/10.58262/ks.v12i2.140>

## Effective Toolbox for Sustainable Urban Planning of Real Estate Development: A Systematic Review

Jady Zaidi Hassim<sup>\*1</sup>, Francisca Romana Harjiyatni<sup>2</sup>, Erna Sri Wibawanti<sup>3</sup>, Mohd Zamre Mohd Zahir<sup>4</sup>, Muhamad Helmi Md Said<sup>5</sup>, Kaka Grace Emmanuel<sup>6</sup>

### Abstract

*A city is structured through urban development. Research on the impact on legislation on sustainable urban real estate development is scarce. Therefore, a systematic literature review was done from a multidisciplinary perspective to determine how real estate development can become more sustainable. PRISMA was used for the review involving six databases generating six main themes and 36 subthemes. The research found that there must be comprehensive legislation, proactive management and implementation strategy. Thus, we suggest transfer of knowledge, information, and lesson learning from other jurisdictions for an effective legal regime in urban real estate development.*

**Keywords:** Policy, Urban planning, Sustainability, Smart city, Systematic review.

### 1.0 Introduction

The most popular topic in global development research is urbanisation. This is in answer to the Sustainable Development Goal 11 (SDG11), "Make cities and human settlements inclusive, safe, resilient, and sustainable." This goal was expanded by the United Nations (UN) in 2016 when it adopted the New Urban Agenda (NUA) (Klaufus et al., 2017; Wu et al., 2018). The UN defines urbanisation as the movement of people from rural to urban regions (UN, 2004; Shen et al., 2010). According to 2010 projections, little more than half of the world's population lives in cities, and by 2050, that figure will rise to 66 per cent (Leskinen et al., 2020; UN, 2018). Current research disclosed that cities and built environments consume roughly 75 per cent of the generated energy while emitting only 60 to 70 per cent of greenhouse gas emissions (Kammen,n.d.; Sunter, 2016; Leskinen et al., 2020). Similarly, buildings account for roughly 40 per cent of energy consumption and carbon emissions (IEA, 2018), while the real estate sector accounts for roughly 60 per cent of the national, corporate, and individual wealth totalling around \$200 trillion (Savills, 2016).

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<sup>1</sup> Associate Professor and researcher at the Faculty of Law, the National University of Malaysia (Universiti Kebangsaan Malaysia), 43650 UKM Bangi, Selangor, Malaysia, Email: [jady@ukm.edu.my](mailto:jady@ukm.edu.my)

<sup>2</sup> Lecturer and researcher at the Faculty of Law, Janabadra University (Universitas Janabadra), Jl. Tentara Rakyat Mataram No.58, Bumijo, Kec. Jetis, Kota Yogyakarta, Daerah Istimewa Yogyakarta 55231, Indonesia, Email: [sisca.rh@gmail.com](mailto:sisca.rh@gmail.com)

<sup>3</sup> Lecturer and researcher at the Faculty of Law, Janabadra University (Universitas Janabadra), Jl. Tentara Rakyat Mataram No.58, Bumijo, Kec. Jetis, Kota Yogyakarta, Daerah Istimewa Yogyakarta 55231, Indonesia, Email: [erna@janabadra.ac.id](mailto:erna@janabadra.ac.id)

<sup>4</sup> Senior Lecturer and researcher at the Faculty of Law, the National University of Malaysia (Universiti Kebangsaan Malaysia), 43650 UKM Bangi, Selangor, Malaysia, Email: [zamre@ukm.edu.my](mailto:zamre@ukm.edu.my)

<sup>5</sup> Email: [mhelmisaid@ukm.edu.my](mailto:mhelmisaid@ukm.edu.my)

<sup>6</sup> PhD Candidate and researcher at the Faculty of Law, the National University of Malaysia (Universiti Kebangsaan Malaysia), 43650 UKM Bangi, Selangor, Malaysia, Email: [p103253@siswa.ukm.edu](mailto:p103253@siswa.ukm.edu)

According to research, urban real estate is influenced by technical innovation and sociological change (Nase et al., 2015). Urban real estate is also about boosting the value of land in certain locations by partitioning and employing it as a platform, storage, or depot for the accumulation of goods and services (Lai et al., 2019; Lai & Lorne, 2019). Urban real estate incorporates urban designs which are synonymous with innovation (Nase et al., 2015). Developers create value through innovation while investors preserve value. Real estate is more about managerial improvements than technical ones (Kauko, 2013, 2019). As a result, real estate actors involved in valuation, investment, and development must include management and maintenance in their analyses (Kauko, 2019) to reduce the adverse effects of urban development. This is because studies have proved that urban development has a variety of environmental effects, such as the replacement of natural cover with impermeable surfaces and the direct impact on habitats, ecosystems, endangered species, and water quality through land use (Nahrin, 2020; Harun, N. et al, 2015; Halid, S.N. & Hassim, J.@. Z, 2021).

Thus, in urban areas, environmental critical areas (ECAs) or environmentally sensitive areas (ESAs) also known as ‘protected areas’ in the form of agricultural land, canals, rivers, water bodies, woods, and hills must be conserved to maintain ecological balance and biodiversity (Nahrin, 2020). These vital or sensitive places must be protected against development since transforming them into real estate has serious effects on the natural ecosystem. Protected areas are legally declared places with the goal of conserving, maintaining, and safeguarding biodiversity, associated ecosystems, and cultural value (Dudley, 2008) that have been impacted by habitat destruction and degradation (Rodríguez-Rodríguez et al., 2019). This habitat depletion and degradation has been linked to land development policies that substitute natural land use (Rodríguez-Rodríguez et al., 2019). According to the 1992 Convention on Biological Diversity, protected areas include: natural reserves, parks, sites of community importance, specially protected areas, study zones (coastlands and islands), and climate (Rodríguez-Rodríguez et al., 2019) that require legal protection against loss in global realm. Rodríguez-Rodríguez and Martínez-Vega found that legal and managerial protection worked well to stop land development in many protected areas. This is because legal enforcement shapes offender beliefs about detection ability, penalty assignment, and severity of punishment (Rodríguez-Rodríguez & Martínez-Vega, 2018). Figure 1 below gives a short summary of the role of the resilient community in the current global discussion on urban sustainable development.



**Figure 1:** Global Discussion on Urban Sustainable Development.

Sustainability reflects the shared consensus on how to combat improper real estate development and management (Trinkūnas et al., 2018). Sustainability refers to vehicle mileage/journey savings, enhanced modes of transportation options, and decreased social exclusion (Smith & Hattings, 2005). Because real estate is the biggest source of carbon emissions, it has a big negative effect on the environment (Thanh Le & Warren-Myers, 2019). Climate change, global warming, and emissions that contribute to sea level rise all pose significant sustainability challenges (Balaras, et al., 2007; Trinkūnas et al., 2018). Further, smart growth and transit-oriented development (TOD) are important aspects of long-term sustainability (Heller., 2011) which is concerned with the way sensible laws and knowledge exchange might help to sustain an unsustainable real estate market (Kauko, 2019). Hence, several international agendas for sustainable development were drafted, signed, and adopted at the global realm to serve as a legal framework for urban development sustainability, which are described below.

### **1. 2030 Agenda, Sustainable Development Goals (Sdg)**

In September 2015, the UN General Assembly endorsed the 2030 agenda which is a blueprint for future dignity, peace, and prosperity for the global population and the planet. These SDGs reflect the urgent demand for action by all countries, whether already developed or still developing, in form of a global partnership. Ending poverty and other deprivations must go hand-in-hand with initiatives to promote health and education, decrease disparities, make cities and communities sustainable, and spur economic growth, while fighting climate change and preserving the seas and forests. The 17 SDGs attempt to balance global social, economic, and environmental components of sustainable development.

### **2. SDG 11: Inclusive, Safe, Resilient, and Sustainable Cities**

Leaders and other actors must find sustainable solutions to urban social and economic concerns to accomplish the SDGs. All SDGs are important for urban development, and their targets and indicators should be part of the monitoring and evaluation framework for urban plans.

### **3. International Guidelines for Urban Transportation Planning (IG-UTP)**

This guideline aims to improve policies, plans, and designs for compact, socially inclusive, better integrated, and connected cities and territories that support sustainable urban growth and are climate resilient. IG-UTP promotes urban and territorial planning principles in city and territory design.

### **4. New Urban Agenda (NUA)**

This agenda was set during Habitat III in Quito, Ecuador, in October 2016. It a global plan for achieving sustainable urban development and wants to make cities better to be able to solve the problems of the world.

- Stopping perverts through sustainable urban development
- Long-term urban prosperity for all
- Green urban development

To realise these transformative commitments effective implementation mechanisms that enable policy frameworks at the national, sub-national, and local levels are required, in addition to integrating participation planning and management of urban spatial development. Also necessary are effective means of implementation complemented by international cooperation and efforts in capacity development including the sharing of best practises, policies, and programmes among governments at all levels.

## 5. UN-Habitat's Five: Sustainable Neighbourhood Planning Principles

- i. **Adequate Street Space and Efficient Street Network:** The goal is to achieve connectivity throughout the city and neighbourhood, addressing not just cars and public transport but also cycling and walking. The street network should occupy 30 per cent of the land and average 18km per km<sup>2</sup>.
- ii. **Adequate Density and Compact City:** This theory prevents urban sprawl from rapid population increase and urbanisation. Sustainable cities should increase density without cutting public space. A territory's and context's specifics should determine population density. The recommended density is 15,000/km<sup>2</sup>, 150/ha, or 61/acre.
- iii. **Mixed Land Use:** It aims to offer various, compatible, and adaptable land uses and activities in the same neighbourhood, so people can live, work, and access services in a smaller space. Promoting the 15-minute city means inhabitants can walk or cycle to all amenities within 15 minutes. At least 40 per cent of the neighbourhood's floor space should be used economically.
- iv. **Social Mix:** It strives to create socio-economically diverse communities for social cohesiveness, integration, and engagement. Having a diversity of housing types, prices, and tenures can help. 20 to 50 per cent of a residential floor area should be low-cost housing, and no tenure type should exceed 50 per cent. This approach limits single-function blocks or neighbourhoods to promote mixed land-use and a dynamic neighbourhood. Less than 10 per cent of a neighbourhood should be single-function blocks.

The urban real estate toolkit and its proper selection are critical for the effective achievement of urban sustainability (Shen et al., 2011). Urban sustainability and planning are all-encompassing developments that are linked to sprawl, peri-urbanisation, and unsustainable patterns of natural resource use (Klaufus et al., 2017). As such, sustainability outcomes should include not just scientific analyses of environmental sustainability but also socioeconomic elements (Wu et al., 2018). Social sustainability acts as a safety net for original residents to retain and sustain their social capital (Wu et al., 2018). Making cities more inclusive, smart, and resilient (Naldi, Nilsson, & Westlund, 2015) will not only address a major problem in the global south where the poor are still excluded from potential benefits of urban real estate sustainability development (Klaufus et al., 2017; Zoomers, 2017), but also solve global environmental hazards for a safe and healthy environment. A recent survey discovered that open space not only shapes or reshapes urban areas but also improves social life and serves as a disaster risk management tool (Timalsina & Subedi, 2022). This can only be achieved where there is an effective, comprehensive, and enforceable legal framework in place as well as an effective regulation on planning policy limiting local authorities' discretionary powers on permissions to minimise the negative impact of urban development on the environment (Volker et al., 2019).

Legislation is the foundation upon which a city is founded, fashioned, designed, and protected; even in matters such as land subdivision, legislative action is required (Omollo & Opiyo, 2020). Land-use regulations provide for land-use permits, designated public or private land, the nature of land use, healthy living environment, and specifics on approval or restriction on development by local authorities (Christensen & Gabe, 2018). Zoning by-laws, building codes, sub-division regulations, curve-cut permit system, historic preservation laws, and tree-cutting laws are all examples of land-use regulations for sustainable development (NUA, 2017; Sorensen & Hess, 2015; Yashkina et al., 2020). Human activities determine land use (Ioana-alexandra & Nicolin, 2017), and whether environmental changes occur is entirely dependent on population. Sustainable development seeks to achieve win-win outcomes for the economy, the environment, and society (Lai et al., 2019). It acts as a leveller, balancing the many interests

of human activity, its well-being, and the environment. Sustainable urban real estate development is only achievable with an effective legal framework. Therefore, urban real estate development must demonstrate its commitment to sustainable development rules by observing legislative provisions, committing to responsible urban investing as specified by the United Nations Environmental Programme Finance Initiative (Leskinen et al., 2020), and considering a properly organised or managed setting to minimise societal and environmental effects of investments and preserve these natural resources to guard against harmful air and water pollution (Nahrin, 2020). Many countries do not consider sustainable investing principles of asset management because research shows that only Europe, the United States, Canada, Japan, and Australia follow these standards (GSIA, 2018).

This is a systematic literature review on the impact of effective legislation on urban real estate development to achieve sustainable development. Although several systematic literature reviews have previously been carried out on urban sustainable development, yet none has considered the impact on legislation on urban real estate sustainable development. Abdullah et al. (2020) carried out a systematic review on Islamic estate planning. Gil-Gracia et al. (2015) carried out a systematic literature review on the core components of smart city beginning from 2000, while Jiang et al. (2019) carried out a systematic literature review on the purpose, components, and contexts of 'smart' urban governance through a socio-spatial context which can improve understanding of the challenges of smart cities. On the other hand, Kaklauskas et al. (2021) carried out a systematic review on sustainable construction investment, real estate development, and COVID-19. However, this study is the first systematic and interdisciplinary review on sustainable urban real estate development. This review is very important because it reveals the place of legislation as key to achieving sustainability in urban real estate development. The review examined the ongoing discussion about sustainable urban real estate development and examined its positionality amidst the international agendas for sustainability development. The essence is to determine whether these legal frameworks have been fully utilised in states urban real estate development, and whether sustainable development can indeed be achieved by 2030.

The review is divided into five sections. The first section will give a brief overview on urban real estate sustainable development and the legal framework. The second section will discuss the methodology used in this review. The third section will analyse the result of the review before the fourth section will discuss the findings. The fifth and last section will give a conclusion and implication for policy and practice. Therefore, the paper will shed the light of the urban planning that is relevant to the sustainability.

## **2.0 Methods**

The review used a combination of the PRISMA method adopted by Shaffril et al., Felix and Lee, and Shaffril et al. (Felix & Lee, 2019; Mohamed Shaffril et al., 2021; Shaffril et al., 2018). PRISMA was used to run the systematic review, eligibility, and exclusion criteria, and steps of the review process and data abstraction (Md Said MHB & Emmanuel Kaka G., 2023; Nur Farahiyah Mohd Nasir et al, 2020). The collection of data is so significant (Rajamanickam, Ramalinggam, et al, 2019; Mohd Zamre Mohd Zahir, et al, 2021; Shah, Nurin Qistina Izarudin, et al., 2023; Tengku Noor Azira Tengku Zainudin, et al, 2021) for the research and this reviewing process (Rahman NHA, et al, 2023; Nurul Hidayat Ab Rahman, et al, 2022; Mohd Zamre Mohd Zahir, et al, 2022).

## 2.1 Prisma

PRISMA means Preferred Reporting Item for Systematic Reviews and Meta-analyses. It offers three unique features which are: 1) defines clear research questions that allow for systematic research; 2) identifies inclusion and exclusion criteria, and 3) examines a large database of literature within a given period. In this study, PRISMA was employed for rigorous research into articles related to sustainability in urban real estate development. The research questions were formulated as follows:

**RQ1.** What are the elements of sustainability?

**RQ2.** What are the features of sustainable urban real estate development?

**RQ3.** How does use of legislation assist society in achieving urban real estate development sustainability?

**RQ4.** What are the drawbacks in achieving urban real estate sustainable development?

To answer the research questions, we set up the criteria for the search of relevant articles that could address the research questions. To answer RQ1, the articles selected had to be peer-reviewed, written in polished English, and address urban real estate development, legislation, and sustainable development. They had to relate to sustainable urban real estate development from any part of the world. For RQ2, we considered articles that reported on the features of sustainable urban real estate development. RQ3 considered articles that stress the importance and impact of legislation as a means of achieving sustainability in urban real estate development. Finally, RQ4 searched the articles to examine the drawbacks or challenges to achieving sustainability in urban real estate development.

## 2.2 Resources

This systematic review commenced in March 2022 and took a rigorous period of four months of data sourcing and analysis. The first step taken at that stage was to identify the importance of the research before defining the procedure for the search and establishing the scope of the search, namely legislation as a means of achieving urban real estate sustainable development, which enabled the scope of the research to successfully answer the research questions (RQs). However, the databases to be included in this review were not limited to a specific period, even though the articles that passed the eligibility test and were included in the study proved to be from 1996 to 2022. The six databases used for this research are Wiley, Web of Science, Scopus, Taylor & Francis, Springer, and Emerald. The representation of articles used in the review via the database and the total number of articles included from each database is shown in the PRISMA flow chart of Figure 2 below.

## 2.3 Eligibility and Exclusion Criteria

For an article to pass the eligibility test to be included in the Systematic Literature Review (SLR), certain eligibility criteria were set for both inclusion and exclusion. Since time was not a factor in the research and no restriction was put on region, the article had to be peer-reviewed, written in polished English for easy understanding and interpretation, relate to sustainable urban real estate development from any part of the world, and be published in a reputable journal with a high impact factor. Table 1 below shows the details of the inclusion and exclusion criteria adopted.

**Table (1):** Inclusion and Exclusion Criteria.

Criteria	Eligibility	Exclusion
Literature type	Journal (articles), peer-reviewed, published in a reputable journal with high impact factor	Journals (systematic review), book series, book, conference proceedings, chapter in a book
Language	Polished English	Other than English
Focus/Country	Studies on sustainable urban real estate development from any country	Studies on sustainability outside urban real estate development
Report	Qualitative, quantitative, mixed-method, and doctrinal, answering the RQs	Deviating from the RQs
Timeline	Not a factor	Not a factor

## 2.4 Systematic review process

Under this subsection, we described the four stages used in identifying each article from March to July 2022, which were later included in the SLR. The first stage was the search stage to extract articles from journals in the databases using the search string. Certain keywords were employed for each of the databases used, such as the following:

(Urban real estate development OR Real Estate Development OR Urban growth OR City growth OR Cities development OR Smart growth OR Smart city OR Transit-Oriented growth OR Transit-Oriented development AND Sustainable development OR Sustainable growth OR Sustainability AND Toolbox OR Tools OR Elements OR Features OR Indicators OR Measures AND Legislation OR Law OR Regulations OR Legal framework OR Policy).

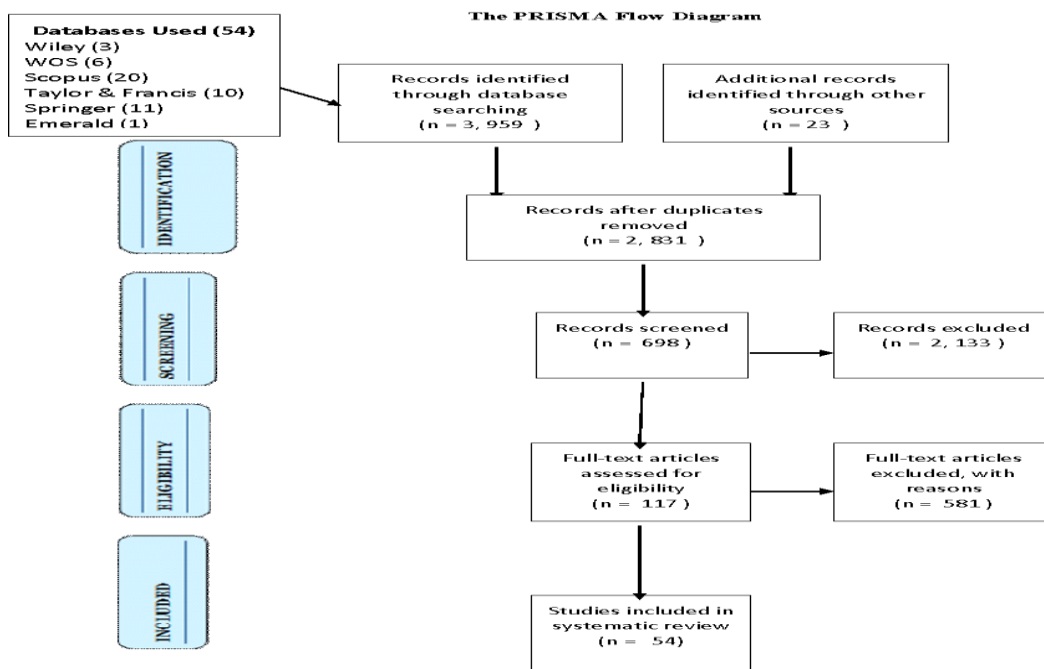
The second stage was the screening stage, where out of a total of 3,982 articles gathered from the six databases and 1,151 articles from other sources were excluded for similarity, thus leaving a total of 2,831 articles. Another 2,133 articles were excluded because the abstract did not suit the research, thus leaving a total of 698 articles. The eligibility test was conducted in the third stage, where after a thorough and in-depth study of the selected articles a total of 581 articles were excluded, thus leaving a total of 117 articles that were considered eligible and could answer the research questions. The last stage was the systematic review stage, where the 54 eligible articles that could answer all the RQs were included in the SLR. Only these articles were included because they would not only answer the research questions but addressed the key issues. Figure 2 showing the PRISMA flow chart describes the entire process of the search. **Table 2** lists the summary of findings presented according to themes and subthemes.

## 2.5 Data Abstraction and Analysis

The study found a total of 3,959 articles from the six databases, with additional 23 articles from other sources. The combined results from all the databases totalled 3,982 articles. After extracting duplicates and articles not written in English, 2,831 articles remained. Upon reviewing the titles, abstracts, and keywords were reviewed, a total of 698 articles related to the study remained. Upon an in-depth study and review of the 698 articles, only 117 articles were found eligible, and 54 out of the 117 were used for the final systematic review. The process is illustrated in the PRISMA flow chart in Figure 2.

## 2.6 Quality Assessment

After the selection process, the articles that were selected had to undergo the Quality Assessment test (QA) to determine the quality of the reviewed articles. The purpose of QA was to ensure that the selected articles related to legislation on sustainable urban real estate development were of high quality and guaranteed unbiased research findings. This would help other researchers to strive for high-quality publications. In this process important information extracted from the articles were included in the SLR to be used in the review.



**Figure 2:** Prisma Flow Chart.

### 3.0 Results

This systematic literature on the place of legislation in achieving sustainable urban real estate development at the end of the study found six main themes and 37 subthemes. They are: elements of sustainability – environmental, ecological, social, cultural and economic/financial dimensions; features of urban real estate sustainable development including urban growth boundary, TOD, mixed-use, small blocks, public green space, non-motorized transit, public transit, car control, green buildings, renewable and district energy, water management and water; working toolbox for urban real estate sustainable development – stakeholder participation, climate change, spatial inclusion, alignment to international agendas, certification and financial costs; planning policies which includes, strategic planning, land management plan, sectoral plan and neighbourhood plan; proactive management and implementation; challenges to achieving urban real estate sustainable development like sprawl, diversity, conflicting planning policies, rigid planning and democratic regimes, poor government policies/non-comprehensive policies, management, implementation and poor resource utilization. For ease of reference, we used diagrams to summarise some of the arguments of the articles included in the review of our findings. Table 2 shows the summary of the findings according to themes and sub-themes.

#### 3.1 Elements of Sustainable Development

As identified in the review, a total of 28 articles discussed the three main elements of sustainability: environmental/ecological, social/cultural, and economic/financial dimensions. However, 18 authors (Bindzárová, 2016; Candel, 2022; Gierko, 2021; Kauko, 2012, 2013, 2019; Kelly et al., 2004; Lai et al., 2019; Liu et al., 2020; Mcelfish, 2007; Said et al., 2011; Shen et al., 2011; Trinkūnas et al., 2018; Wu et al., 2018; Zhang et al., 2021; Zhou & Wu, 2020) decided to discuss five themes: environmental, ecological, social, cultural, and economic/financial dimensions. Figure 3 below shows a summary of their discussion on the elements of sustainable development.





Author(s)/ year	Elements of sustainability	Features	Toolbox	Planning policies	Management	Challenges
(Zhang et al., 2021)	√	√	√	√	√	√
(Vega-Azamar et al., 2015)	√	√	√	√	√	√
(Klaufus et al., 2017)	√	√	√	√	√	√
(Goldberg-Miller, 2018)	√	√	√	√	√	√
(Gruenig, 2002)	√	√	√	√	√	√
(Wu et al., 2018)	√	√	√	√	√	√
(Lai et al., 2019)	√	√	√	√	√	√
(Lewyn, 2007)	√	√	√	√	√	√
(Newman, 2008)	√	√	√	√	√	√
(Lloyd & Peel, 2005)	√	√	√	√	√	√
(Lai & Lorne, 2019)	√	√	√	√	√	√
(Gierko, 2021)	√	√	√	√	√	√
(Zhou & Wu, 2020)	√	√	√	√	√	√
(Liu et al., 2020)	√	√	√	√	√	√
(Wadley, 2004)	√	√	√	√	√	√
(Kendall, 1999)	√	√	√	√	√	√
Elements of sustainability	Features	Toolbox	Planning policies	Management/Implementation	Challenges	
EN=Environmental	UG= Urban Growth Boundary	SP=Stakeholder participation	ST= Strategic Planning	PM= Proactive Management	SR= Sprawl	
EC= Ecological	TD= Transit-Oriented Development	CA= Climate Action	LM= Land Management Plan	IS= Implementation Strategy	DT= Density	
SL= Social	MU= Mixed Use	SI= Spatial Inclusion	SC= Sectoral Plan		PP= Planning Policies	
CL= Cultural	SB= Small Blocks	IA= International Agenda	NP= Neighbourhood Plan		RP= Rigid Planning	
EF= Economic/ Financial	PG= Public Green Space	CT= Certification			PG= Poor Government Policies	
	NT= Non-motorized Transit	FC= Financial Cost			MG= Management	
	PT= Public Transit				IP= Implementation	
	CC= Car Control				RU= Resource Utilization	
	GB= Green Building					
	RE= Renewable Energy					
	WM= Water Management					
	WA= Water					



Figure 3: Summary of the Elements of Sustainable Development.

### 3.2 Features of Sustainable Urban Real Estate Development

Under this theme, a total of 52 articles addressed at least one of the features of sustainable urban real estate development. The features include urban growth (Cho et al., 2015; Jenkins & Young, 2008; Salkin, 2007; Sorensen & Hess, 2015), TOD (Heller, 2011; Lima et al., 2016; Maulat et al., 2021; Suzuki H, 2013; L. Wang et al., 2021), mixed-use (Bindzárová, 2016; Heller, 2011; Lewyn, 2007; Lima et al., 2016; Smith & Hattingh, 2005; Suzuki, 2013; Walker, 2003; Wang et al., 2021), small blocks (Lima et al., 2016; Meentemeyer et al., 2013), public green space (Thanh Le & Warren-Myers, 2019; Yang et al., 2022), non-motorized transit (Gierko, 2021; Smith & Hattingh, 2005), public transport (Bindzárová, 2016; Kauko, 2019; Lima et al., 2016; Platt, 2004; Suzuki, 2013), car control (Christensen & Gabe, 2018; Gruenig, 2002), green buildings (Bigelow & Kuethe, 2020; Chiang, 2019; Christensen & Gabe, 2018; Doak & Karadimitriou, 2007; Gyurkovich & Gyurkovich, 2021; Kauko, 2019; Lai et al., 2019; Vega-Azamar et al., 2015; Zhang et al., 2021; Zhou & Wu, 2020), renewable and district energy (Benaissa & Khalfallah, 2021; Gil-Garcia et al., 2015; Kammen, n.d; Sunter, 2016; Kelly et al., 2004; Leskinen et al., 2020; Thanh Le & Warren-Myers, 2019), waste management (Candel, 2022; Gil-Garcia et al., 2015; Kauko, 2019; Newman, 2008; Said et al., 2011) and water (Bindzárová, 2016; Christensen & Gabe, 2018; Gil-Garcia et al., 2015; Mcelfish, 2007; Nahrin, 2020; Newton, Pears, Whiteman, & Astle, 2012; Zhou & Wu, 2020). Figure 4 below gives a summary of the authors' arguments.



Figure 4: Summary of the Authors' Arguments.

### 3.3 Government Toolbox for Sustainable Urban Real Estate Development

Government toolbox as a means to achieve sustainability in urban real estate development was raised in 42 articles, addressing at least one of the toolboxes. The urban real estate toolbox and

its suitable selection are critical for the effective achievement of urban real estate sustainability (Shen et al., 2011). Thus, potential failure stems from an insufficient selection of these toolboxes for leading and monitoring the sustainable urban real estate process (Kauko, 2019; Seabrooke, Yeung, & Ma, 2004). Studies (Kauko, 2019; Lai & Lorne, 2019) show that changes in technology and society influence real estate development. These toolboxes are as follows:

1) **Stakeholder Participation:** Researchers observe that structuring, implementing suggestions, and mastering plan implementation require successful stakeholder participation (Guo et al., 2021; Lloyd & Peel, 2005; Sorensen & Hess, 2015) in areas like strategic plans (Christensen & Gabe, 2018) mixed use (Walker, 2003), historic redevelopment (Lai et al., 2019), and a clear understanding of sustainability (Buitelaar & Bregman, 2016). To attain standard good practise, stakeholders must support the government plan (Han, 2019; Liang et al., 2021; Maulat et al., 2021; Trinkūnas et al., 2018), whereas the government must promote communication and meaningful stakeholder engagement (Bond & Devine, 2016; Robinson & Sanderford, 2016) for sustainable standard reporting to be effective (Brears, 2018).

2) **Climate Action:** Climate action adaptation strategies should be identified (Christensen & Gabe, 2018; Platt, 2004; Thanh Le & Warren-Myers, 2019), such as improved sponge city planning (Yang et al., 2022), and a city's goals and aims should be examined in relation to the risk of climate change (Kauko, 2019; Trinkūnas et al., 2018). Further, plan phasing should be applied in accordance with the legislative framework and government structure (Christensen & Gabe, 2018; Christensen & Sayce, 2015; Lima, 2018). Cool pavement materials (Gierko, 2021), tree planting for shade (Walker & Goubran, 2020; Zhou & Wu, 2020), evapotranspiration (Wu et al., 2018), reduced solar gains, rainwater harvesting, flood risk management (Alves, Gersonius, Kapelan, Vojinovic, & Sanchez, 2019), use of premature surface materials (Leskinen et al., 2020; Nahrin, 2020), green spaces, and green roofs to reduce runoff, drain widening, erosion and landslide risk management, vegetation cover for slope reinforcing (Vega-Azamar et al., 2015; Zhang et al., 2021), and building materials that reduce carbon emission like timber (Goubran, Masson, & Caycedo, 2019; Skullestad, Bohne, & Lohne, 2016; Stocchero, Seadon, Falshaw, & Edwards, 2016). Also necessary is to develop policies and legislation to safeguard the environment, energy, and water (Gil-Garcia et al., 2015; Mcelfish, 2007; Newton, Pears, Whiteman, & Astle, 2012; Salkin, 2007).

3) **Spatial Planning:** One of NUA's priorities is to refocus attention on urban planning to approach future city growth in a sustainable manner (Chiang, 2019; Kaklauskas et al., 2021; Klaufus et al., 2017; Zoomers, 2017). Conservation (Lai et al., 2019; Nahrin, 2020; Rodríguez-Rodríguez & Martínez-Vega, 2018; Zhang et al., 2021) like use-value assessment policy in US (Bigelow & Kuethe, 2020), extension (Dewey, 2008; Jenkins & Young, 2008; Karadimitriou & Pagonis, 2019; Lewyn, 2007), regeneration (Christensen & Gabe, 2018; Kelly et al., 2004; Susanna, 2022), and densification (Pérez, 2020; Sorensen & Hess, 2015; Suzuki, 2013) is achieved through the use-value stochastic region-growing algorithm (Meentemeyer et al., 2013). Structuring land according to existing infrastructural demand in residential and productive/logistic areas (Buitelaar & Bregman, 2016) is the purpose of spatial planning. Spatial planning uses zoning to capture cultural and environmental dimensions of sustainability (Christensen & Gabe, 2018; Christensen, & Sayce, 2015). Spatial planning practise can, in part, be measured by its ability to control the behaviour and activities of the public and private sector interests involved (Lloyd & Peel, 2005). Regulatory planning tools should ensure that restrictions are imposed through spatial planning and environmental regulations (Karadimitriou & Pagonis, 2019) that feature visual and functional linkages with the city's blue-

green ecological systems (Gyurkovich & Gyurkovich, 2021). Spatial planning requires strategic planning to minimise the effect of urban development on the environment, such as excessive carbon emissions, habitat loss, urban heat island effects, and heavy metal pollution of the soil (Barão et al., 2021) as well as a decrease in the quality of life for residents (Liu et al., 2020).

4) **Alignment to International Agendas:** Using new innovations such as smart city (Jiang et al., 2019), smart growth (Han, 2019; Wu et al., 2018), open building (Kendall, 1999), TOD (Maulat et al., 2021; Smith & Hattingh, 2005), blue-green urban infrastructures (Gyurkovich & Gyurkovich, 2021; Zhou & Wu, 2020), green buildings (Chiang, 2019; Trinkūnas et al., 2018; Vega-Azamar et al., 2015), historical or heritage conservation (Lemp et al., 2008; Walker, 2003), mixed use employing subdivisions (Sorensen & Hess, 2015) and zoning (Cho et al., 2015; Perez, 2007), social mix through exclusive and all-inclusive residential projects (Zoomers, 2017), condominiums (Newman, 2008) and high-rise and high timber buildings (Said et al., 2011; Skullestad, Bohne, & Lohne, 2016; Walker, 2003), wellness tourism and second home (Gabriel Brida et al., 2011; Susanna, 2022; Volker et al., 2019) as well as creative policy learning, lesson learning, and policy transfer (Goldberg-Miller, 2018; Newman, 2008) proved the reviewed articles had effects on international agendas.

5) **Certification:** To cut carbon emissions most cities rely on urban real estate to achieve large emissions reductions (Christensen & Gabe, 2018; Walker & Goubran, 2020). However, these reduction targets have been slow to be realised, thus prompting some governments to adopt required certification and reporting schemes requiring either a certificate or a standard to be satisfied (Christensen & Sayce, 2015). The UK, for example, established a legal document in 2008 that aims to reduce carbon emissions from all buildings to a near zero by 2050, requiring all structures to obtain an energy performance certificate (EPC) issued prior to sale with no restriction on the attainment level (Said et al., 2011) However, in 2018, a minimum energy efficiency standard (MEES) was established, requiring a rating of at least E with a minimum of 39 points on a scale of 100 before granting a lease (new or renewed). This applies to all privately rented and non-domestic properties. These MEES will compel landlords to upgrade and meet the minimum requirement of (20–35 percent) of existing properties or risk being forced out of the market due to a drop in value. As a result of the UK government's "Green Deal" policy, there will be a financial solution to assist with energy efficiency refurbishment and retrofit projects. The building energy efficiency certificate (BEEC) required at the time of sale and leasing in Australia requires NABERS energy efficiency ratings (Benaissa & Khalfallah, 2021; Thanh Le & Warren-Myers, 2019). Local governments are increasingly converting the voluntary programme into mandatory requirements and demand that a development attain some degree of green certification (e.g., EnergyStar, LEED, or BREEAM) as part of planning consent (Christensen & Gabe, 2019). In their LEED research in the United States, Bon and Devine (2016) discovered an approximately 8.9 per cent rental rate premium associated with LEED apartments, thereby confirming the power of the certification signal. Further, Robinson and Sanderford (2016) observe that the prices and rents of eco-labelled office buildings are higher than those of non-certified buildings that use ESTAR and LEED certification.

6) **Financial Costs:** These are required for the implementation of operations and strategic planning (Bindzárová, 2016; Kauko, 2019). At this point, an estimate of the whole cost should be made (Leland & Read, 2012; Leskinen et al., 2020) before financial mechanisms are chosen, and the financial strategy is evaluated and assessed (Leland & Read, 2012; Stocchero, Seadon, Falshaw, & Edwards, 2016). Incentives are used to manage financial costs.

The two major key legislative and financial incentives that promote sustainable urban real estate development are “carrots” and “sticks.” The carrots represent a positive financial incentive provided by the developer to encourage positive externalities such as “doing the right thing,” rebates and grants (e.g., the Australian Photovoltaic Rebate Program and Greenhouse Gas Abatement Grant), carbon credit trading (allowed by the Kyoto Protocol) or streamlining of the development application process which generally results in faster completion time and lower holding costs (Christensen & Sayce, 2015). On the other hand, the sticks refer to the imposition of a penalty or constraints on the developer in order to prevent negative externalities and promote sustainable urban real estate development, such as local zoning and building codes, taxes and levies (e.g., landfill levies), mandated renewable energy certificates, and/or slower processing time for development applications if projects do not include the desired sustainability outcomes (Christensen & Gabe, 2018).

### 3. 4 Planning Policies

1) **Strategic Planning:** Strategic development plans include projects, land development strategies, and community participation through public hearings (Doak & Karadimitriou, 2007; Karadimitriou & Pagonis, 2019). Planning takes into account land-use rules that provide answers and better development methods (Mcelfish, 2007). North American cities use a variety of public policy measures to promote sustainability, including transit-oriented development (TOD) (Maulat et al., 2021). NUA promotes the development of adequate and enforceable housing regulations (NUA, 2017 para 111) through subdivision (Sorensen & Hess, 2015), zoning with new streets and highways to minimise traffic (Lewyn, 2007) and wise expansion that increases reliance on public transportation is preferable (Sorensen & Hess, 2015). The goal is not to acquire the best bargain possible but to get as near to standard master plan as possible (Bindzárová, 2016). Strategic planning also provides for mixed land use by combining urban real estate development with vital services such as a mix of residential, commercial, and institutional facilities (Chiang, 2019; Siemiatycki, 2015; Smith & Hattingh, 2005). The properties can be mixed with culture, health, sports, leisure and other recreational facilities (Gyrkovich & Gyrkovich, 2021; Siemiatycki, 2015). Planning ensures that green real estate must meet existing objectives such as environmental protection, energy conservation, and emission reduction. It must also provide environmental benefits while maintaining a high standard of living (Ma et al., 2019; Zhang et al., 2021). Green forms include wall climbing plants, car parks, playgrounds, green infrastructure, and courtyards (Gierko, 2021; Vega-Azamar et al., 2015). Arguing that a plan-led system is a hierarchical planning system that allows for land use mixtures and densities (Sorensen & Hess, 2015). Development control is an administrative framework that guides planning authorities when evaluating development projects (Christensen & Gabe, 2018). Planning authorities can support a development request, reject it, or enable subject exclusions that benefit the community (Gruenig, 2002).

2) **Land Management Plan:** A land management plan is a legal regulatory spatial document that transforms spatial strategy into specific land use plans (Karadimitriou & Pagonis, 2019; Maulat et al., 2021) which include uses, limits, obligations, and agreements as well as all land agreements (Candel, 2022; Gruenig, 2002). The plan includes specific issues such as social housing, green coverage, and nature-based solutions, transportation, water supply, wastewater and solid water management, social inclusion, resilience, and safety (Candel, 2022). According to studies, the environmental and social impact of a city plan is influenced by the reporting system (Christensen & Sayce, 2015; Thanh Le & Warren-Myers, 2019). Global reporting initiatives (GRI) require annual sustainability reporting from the public sector in

order to track progress toward sustainability (Christensen & Gabe, 2018). According to GRI, public agencies may conduct sustainability reporting in order to promote transparency and accountability, reinforce organisational commitments and demonstrate progress, serve as a role model for the private sector, improve internal governance, highlight the importance of their role as consumers and employers in various economies, and meet disclosure expectations and make information available to facilitate dialogue and effective engagement with stakeholders. This is due to the public sector's growing interest in the use of performance measures being driven by external and internal reporting expectations (Carmichael et al., 2019; Christensen & Gabe, 2018), even though sustainability, environmental, and social responsibility measures are the least used performance measures. As a result, for corporate sustainability reporting to be effective, the government must link it to public policy (Brears, 2018).

3) **Sectoral Plan:** Sectoral plans should be consistent with and integrated into the management plan (Lai et al., 2019; Timalina & Subedi, 2022; Yang et al., 2022; Zhang et al., 2021). Waterbodies and drainage systems, biodiversity corridors and wetlands, climate action, energy and information systems, mobility, heritage, housing waste management, slum restoration, and a network of public areas are just a few examples (Gil-Garcia et al., 2015; Nahrin, 2020). This is because these features will increase the quality of land use management by incorporating specific recommendations or spatial indices (Nahrin, 2020; Nase et al., 2015). Researchers suggested using TOD an urban development tool that takes geometric concepts into account while building sustainable communities (Lima, 2018; Lima et al., 2016; Suzuki, 2013) in sectoral plan. TOD promotes multifunctional criticalities in a multimodal mobility network that incorporates high density, mixed use, walkability, and a range of transportation options to make fundamental urban requirements easily accessible (Lima et al., 2016).

4) **Neighbourhood Plan:** This plan incorporates smart buildings that considers the social, economic, and environmental implications of a neighbourhood or smaller region (Kauko, 2019; Salkin, 2007), urban cell/block tools (Bindzárová, 2016), mixed land use (Heller, 2011; Wang et al., 2021) and open pacing (Timalina & Subedi, 2022). It uses comprehensive planning and data collection, both qualitative and quantitative analysis (Leskinen et al., 2020; Vimpari & Junnila, 2016), such as the use of AVMs, automated valuation processes designed to produce speedy answers within a pre-specified accuracy range when valuing many homogeneous sites and buildings using economies of scale, as suggested by Kauko (2019). Because AVMs can contribute to socioeconomic sustainability (Kauko, 2019), open buildings are used in architectural design (Kendall, 1999). Open buildings restore the existing structures and make them sustainable, in other words permanent and adaptable, over the next 100 years (Vimpari & Junnila, 2016). Also, TOD is more than just a development near a public transportation station (Lima et al., 2016). It is a neighbourhood concept centred on a station that is permeated by various density development, underutilised land, and traversed by a walking street to minimise pollution and enable richer interaction in streets (Suzuki, 2013). Once TOD's chosen neighbourhood cell is defined, an algorithm will be built up to organise the network of streets and blocks, resulting in good transportation accessibility (Lima et al., 2016).

### 3.5 Proactive Management and Implementation

**Proactive Management:** Kelly et al. (2004) stipulate that government policies should include a system for sustainable development that is led by a positive, proactive, helpful, simple, flexible, and quick plan. Environmental conservation management challenges must take into account finance, staffing, research, and monitoring. As a result, a regulatory policy that includes

both directives and guidance for developers is critical in guaranteeing sustainable development (Nahrin, 2020). One example is the use of use-value analysis to limit or slow the conversion of farmland into developed non-agricultural land (Bigelow & Kuethe, 2020; Zhang et al., 2021). Most sprawl is caused by infrastructure that is either delivered or stranded and left to degrade, so the government must examine the type of infrastructure in its control and management methods (Cho et al., 2015). Hard infrastructure such as roads, sewers, sewage treatment plants, water lines, and land must be considered, as well as “green” infrastructure like forest lands and wetlands (Mcelfish, 2007). An increase in the land-value tax bill increases development incentives during a recession while having no developmental effects during a boom (Cho et al., 2015; Christensen & Gabe, 2018; Leland & Read, 2012).

**Implementation:** Adopting best-practices policies is ineffective unless solid implementation techniques are developed (Han, 2019). This is accomplished by means of urban concentration or containment; spatial distinction; geographic hierarchy; spatial fairness; and spatial coherence (Buitelaar & Bregman, 2016). A planning system must be institutionalised or have standard operating methods with agreed norms that govern the connections between actors in social and political processes to succeed (Sorensen & Hess, 2015). Planning must also take into account cultural and practise specifications as well as the established relationship between traditional land-use planning and economic development (Lloyd & Peel, 2005). According to research, using a conformance-based plan implementation evaluation tool to assess the degree of policy implementation can be valuable for urban real state sustainable development (Carmichael et al., 2019; Laurian et al., 2004), and lesson drawing can be used to create more certainty through policy network by considering other urban case studies and back-engineering (or backward mapping) a policy plan (Goldberg-Miller, 2018). The government could focus implementation on the positive thermal effect of land while strengthening the intermittent layout of negative thermal effects (Liang et al., 2021). In other words, successful implementation does not require new laws; instead, it needs understanding, persistence, and support from the community (Mcelfish, 2007).

### 3.6 Challenges to Achieving Sustainable Urban Real Estate Development

1) **Sprawl:** Urban sustainability and planning are all-encompassing developments that are linked to sprawl (Klaufus et al., 2017). Similarly, the development of new and sustainable solutions within private properties leads to sprawl (Candel, 2022; Lewyn, 2007) because most sprawl is caused by infrastructure that is either provided or left stranded and decaying (Mcelfish, 2007). As a result, smart growth promotes more pedestrian-friendly streets and neighbourhoods, redevelopment of old cities and suburbs, and sprawl reduction through extensive regulations limiting suburban development (Hu, 2013; Lewyn, 2007). Adequate density and compact cities, such as TOD, can also help to reduce sprawl (Maulat et al., 2021).

2) **Diversity:** Lack of diversification occurs when there is a limited selection of property items to choose from, particularly in terms of home price levels, land use, and amenities (Kauko, 2013). Diversification is critical to ensuring the economic sustainability of urban real estate (Ma et al., 2019; Wang et al., 2021). This is because a developer may elect to pursue various types of urban development in addition to flats for family use, such as senior houses, student housing, and house and package developments (Ma et al., 2019). As a result, where there is no diversification, the economic value generated from urban real estate development decreases, and developers exit the market, thus harming long-term growth (Ma et al., 2019). Public policy, through the location of social housing schemes, can have a significant impact on the viability (Jones et al., 2009) of urban real estate to address the issue of lack of diversification. Land valuation determines the viability of an investment (Ma et al., 2019; Seabrooke, Yeung,



& Ma, 2004). This is due to the fact that an investment plan is an economic viability assessment to which cash, material, human, and technical resources are assigned to generate revenue for a specific time period up until desired gains are realised; thus, land evaluation is linked to sustainable urban development (Ma et al., 2019). Kauko (2012) asserts that in cases where costs are cut, the ecological and environmental aspects of sustainability are not met.

3) **Conflicting Planning Policies:** Conflicting planning policies have an impact on long-term development projects (Liu et al., 2020; Wu et al., 2018). Because there are no standard rules, it is easy for developers to avoid their signed obligations (Candel, 2022).

4) **Rigid Planning and Democratic Regimes:** Rigid planning and democratic regime (Kauko, 2013; Puustinen & Viitanen, 2015), restrictions in planning legislation, particularly those based on designation of special zones for conservation, landscape, and flood risk, have a negative impact on urban real estate development, thus limiting development (Kelly et al., 2004; Yashkina et al., 2020) and resulting in developments without public value (Candel, 2022).

5) **Poor Government Policies:** The absence of a comprehensive government policy has a measurable impact on sustainability (Nahrin, 2020) and leads to the implementation of a decentralised approach that is detrimental to the master plan as well as the poor population, such as the elderly or households, suffering multiple disadvantages due to the absence of social rehabilitation (Kauko, 2012; Puustinen & Viitanen, 2015). It can also result in land grabbing, such as the acquisition of public forest land as private property, usurpation of public or private land, illegal development on forest land, illegal approval of statutory plans and changing the status of forest land through fires and annulment of reforestation acts (Karadimitriou & Pagonis, 2019), violation of planning policy through illegal subdivision of plots, illegal issuance of building permits, and abusive application of exemptionary legal provisions (Karadimitriou & Pagonis, 2019; Kauko, 2012).

6) **Management:** A focus on development control/management rather than strategic planning contributes to some of the global sustainability difficulties (Christensen & Gabe, 2018). This is because most final decisions for development applications are frequently outsourced to politically chosen lay committee members, rather than professionals who are motivated by the long-term effectiveness of those judgments (Christensen & Sayce, 2015). Similarly, a lack of strategic planning may prevent residents in the area from adopting healthy lifestyles and contribute to diseases such as diabetes or cardiovascular disease (Carmichael et al., 2019). Furthermore, urban neighbourhood ruin has a detrimental impact on real estate markets, a rise in levels of violence, crime, and drug trafficking, as well as inhabitants' physical and mental health (Barão et al., 2021). Spatial planning without strategy planning results in excessive carbon emissions, habitat loss, urban heat island effects, and heavy metal pollution of the soil (Barão et al., 2021), in addition to a decrease in the quality of life for residents (Liu et al., 2020; Pérez, 2020; Perez, 2007). In severe circumstances, it can destroy native landscape patterns, resulting in a fragile region and the loss of permanent croplands (Jiang et al., 2019).

7) **Lack of Implementation Strategies,** such as lack of ranking and priority zoning, lowers the effectiveness of a strategic plan in addressing sprawl (Maulat et al., 2021) as well as the planning process which allows for too many political negotiations before implementation (Maulat et al., 2021). A study found that in Australia lack of awareness and perception of valuers on the NABERS rating system on valuation affected standard ratings in calculation of market value which in turn had an adverse effect on sustainability (Thanh Le & Warren-Myers, 2019). According to research, using a conformance-based plan implementation evaluation method to

analyse the degree of plan policy implementation can help to address this issue (Laurian et al., 2004). Other aspects, such as judicialisation, result in the obstruction of public policy, the expansion of political costs for state actions, and the potential for bargaining through administrative channels (Lima, 2018; Lima et al., 2016). Planning legislation restrictions, particularly those based on the designation of special zones for conservation, landscape, and flood risk, have had a negative impact on urban real estate development, limiting development (Kelly et al., 2004).

8) **Poor Resource Utilisation:** Poor resource utilisation results in a high cost-to-return ratio when dealing with an economising “innovation enterprise” (Kauko, 2019; Vega-Azamar et al., 2015). As a result, sustainable development must be managed alongside costs, returns, and habitation (Kauko, 2012) by delivering a price advantage and situating projects in an opportunity zone that can attract lower-cost capital for both residential and commercial property components (DeLisle et al., 2020). It also leads to poor building quality where costs have been reduced to attract younger families and first-time buyers (Kauko, 2012; Zhang et al., 2021) as well as bad timing with investment due to administrative and political parameters that are directly tied to the pricing of new products (Christensen & Gabe, 2018; Kauko, 2013). Hence, good use of resources makes money for a set amount of time or until certain goals are met.

#### 4.0 Discussion/Conclusion

This is a rigorous evaluation of the literature on the influence of appropriate regulation for urban real estate development to achieve sustainable development. Four research questions were established in this study, and six primary themes and 37 subthemes arose which effectively answered all the research questions. The study also discovered a link between urban real estate development legislation and sustainable development. This is because, in order to accomplish sustainable urban real estate development, comprehensive legislation must be in place. As a result, while the elements of sustainable development are the foundation for urban development (Kauko, 2019), research has revealed that they are the result of various treaties and conventions known as “international agendas” which have to be developed, signed, and ratified by member states to be appreciated and pursued. These include the SDGs, the 17 goals, SDGII, NUA, UN-Habitat5, and the IG-UTP, all of which have been signed and ratified by member states as working papers for ensuring sustainable urban real estate development. Although, as noted by Christensen and Gabe (2018), these international agendas are non-binding regulations, and their status as legal instruments signed and ratified by member states gives them the force of law. As a result, the different features and requirements in municipal legislation have been reflected in operations on urban real estate sustainable development around the world. This is evidenced by many cities throughout the world in their desire for a “green” metropolis, smart growth, TOD, open buildings, open space, mixed-use buildings, and the like. Similarly, the focus of urban sustainable development has shifted toward ecological and environmental dimensions, social and cultural dimensions, and economic and financial elements. That is, while development is achieved to improve the environment and create economic value or gains for both the developer and the government and community at large, the ecological features must be conserved (Nahrin, 2020; Zhang et al., 2021). Only by conserving the ecological features by minimising the negative effects of development, such as reducing carbon emissions to near zero, can both human and environmental health be improved.

The importance of legislation in guaranteeing the long-term viability of urban real estate development cannot be overstated. This review revealed that the government has used several

toolboxes to achieve urban real estate development for sustainability, including stakeholder participation, climate action, spatial inclusion, alignment to international agendas, certification such as LEEDS, NABERS, EnergyStar, BREEAM (Bond & Devine, 2016; Christensen & Gabe, 2018; Thanh Le & Warren-Myers, 2019) for carbon emission reduction and financial cost assessment. To accomplish the intended result, these toolboxes must coexist and be used effectively. No matter how important such a planning policy is, if a government has a plan for real estate development that incorporates the requirements of sustainability based on international agendas and having a spatial inclusion policy with a measure to reduce climate-change effects, it must do so in consultation with stakeholders for such a plan to be successful (Christensen & Gabe, 2018; Thanh Le & Warren-Myers, 2019). In doing so, it must consider all costs to ensure that it has the necessary resources to carry out such a development plan or how to create wealth for society through the same strategy. As a result, various studies reviewed in this study demonstrated that planning strategies, whether strategic planning, land management planning, sectoral planning, or neighbourhood planning, must be supported by a robust legal framework in addition to being comprehensive (Rodríguez-Rodríguez & Martínez-Vega, 2018). Consequently, there is a need for proactive management and execution using effective and enforceable legislation. For example, while negotiating with developers, policymakers must guarantee that development agreements include all elements of sustainable development unique to the region (Nahrin, 2020). Legislation must limit land development officers' discretion in approving or rejecting development agreements (Volker et al., 2019) and in supervising them. Because doing so will compel these officers to ensure that development agreements are fully implemented, and that long-term development is realised.

The pursuit of urban real estate development is not without challenges. Certain challenges have been identified as the cause of the slow pace in achieving sustainable development in urban real estate. These challenges include sprawl caused by ineffective planning, diversification caused by a lack of innovations in urban real estate development for multiple purposes, and urban real estate being forced out of the market. Others include conflicting planning policies that result in no planning policy, rigid planning to conserve environmentally sensitive areas or protected areas without considering the negative effects on development; poor government policy, management, and implementation that results in environmental hazards that are harmful to humans and the living environment; and poor resource utilisation that results in sub-standard structures.

This study found that international agendas through non-binding legislation affected not only debate but also advancements in urban real estate toward attaining sustainable development in most countries worldwide. These developments expanded beyond "green" to include smart cities, smart growth, transit-oriented developments, open buildings, and mixed buildings that reflected zoning and subdivisions through the use of algorithms (Lima et al., 2016; Meentemeyer et al., 2013; Suzuki H, 2013). Others include advanced sponge city planning to manage erosion and floods, open space (Timalsina & Subedi, 2022) to address disasters as a rescue site in hazardous situations, and the use of timber for high-rise structures and skyscrapers to reduce carbon emissions and conserve energy by 65 per cent (Goubran, S., Masson.& Caycedo, 2019; Skullestad, Bohne, & Lohne, 2016; Stocchero, Seadon, Falshaw, & Edwards, 2016) as well as technology policies on building materials (Mazzucato, 2016) which can lead to market creation through carbon tax.

In conclusion, urban real estate sustainable development should be adapted to the contemporary necessity of climate-resistant urban environments, such as spatial planning that supports biological diversity and human health based on cultural heritage conservation. As a

result, the key to attaining global sustainability in urban real estate development is a legal framework that is constructive, comprehensive, unified, flexible, and enforceable.

**Policy and Practice:** Legislation is critical to accomplishing long-term goals. Because sustainability encompasses all-inclusive growth, redevelopment through re-use of historic/heritage buildings, structuring a sustainable urban “green” community, strategic spatial planning, effective zoning, and effective use of land for mixed use to address the problem of sprawl and achieve sustainable urban real estate development. As a result, governments must work toward a complete legal framework that is comprehensive and must set up mechanisms for supervision and enforcements of development agreements with a checklist of negotiable and non-negotiable developer agreements that satisfy the criteria for a sustainable city. **Table 3** below is a good example like Candel, (2022) suggested.

**Limitation:** This review is limited to urban real estate development for sustainability. Other areas like technology, architectural designs and the likes were not discussed extensively because it is outside the scope of this review.

**Table (3):** Developer Obligations.

Public value dimension	NDO Categories	NDO Features
Ecological	Sustainable transportation	Bicycle parking, charging stations, mobility plan/index, limited parking for cars
	Waste management and recycling	Reduced waste during construction, recycling systems
Social and cultural	Energy efficiency and clean energy	Recycling heat from greywater, solar panels, sustainable and locally produced energy, insulation
	Sustainable and safe materials	Sustainable LCA, recycled materials, regulating harmful chemicals
	Green areas/vegetation	Green area factor, green roofs, biodiversity
	Resilience and safe construction	Storm water management, assembly methods, material choices
Political	Environmental certification	Certify buildings using a recognized certification system (such as LEED, BREEAM, ESTAR, Svanen etc.)
	Mixed neighbourhoods (equality in access to housing, integration)	Mixed housing forms (e.g., tenant-ownership apartments, rental apartments, student housing, elderly homes), affordable housing
	Shared green space	Courtyards, Shared spaces for urban cultivation
Economic	Vibrant/active streets and access to services	Flexible bottom floor premises
	Individual and community well-being	Lighting, daylight, quality of indoor environment (e.g., noise, harmful chemicals), safety considerations
Political	Design	Mixed façade designs, shared design aspects, type and quality of materials, art and decoration
	Stakeholder dialogues	Engage in dialogues with various stakeholders
Economic	Stimulate and attract sustainable business and support small businesses	Flexible bottom floor premises

**Source:** Candel, 2022 (NDO): Negotiated Developer Obligations.

## Acknowledgment

Appreciation to the Ministry of Higher Education (Malaysia), Universiti Kebangsaan Malaysia (UKM), Janabadra University, Indonesia for the awarding of research funds FRGS/1/2022/SSI0/UKM/02/12 and UU-2021-014.

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