URBAN VOIDS: NATURE-BASED SOLUTIONS (NBS) TO REVITALIZE KUALA LUMPUR

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Abstract

Leftover spaces caused by disparate developments have been identified as key factors in the formation of urban voids within Kuala Lumpur. This paper, therefore, attempts to determine the counter measures that can be taken to remedy the issue of urban voids at a more granular level while coherently revitalising the city in a sustainable manner with the aid of nature-based solutions (NBS). To achieve this aim, this paper examines the implementation of nature-based solutions in urban voids through a qualitative approach. This includes reviewing NBS undertaken to revitalise lacklustre regions via urban green spaces (UGS) and gathering focused insights on the issue from urban experts via semi-structured interviews. It has been understood that the lack of comprehensive planning guidelines and a framework to monitor these urban voids has led to the formation of these urban voids. In relation to this, data transparency, bottom-up approach and human-centric planning have been found critical to effectively revitalise these urban voids for a well-rounded resilient solution for the community and city.

Keywords: Framework, Revitalization, Urban Green Spaces (UGS), Urban Void
INTRODUCTION
The urban model of a city plays a central role in shaping the forms, spaces, bodies, and voids of a city. However, despite their significance, the aspects of typology and spatial cohesion have often been overlooked in many of these developments during their formative stages. As a result, many of these cities experienced significant depletion of green spaces and the emergence of unstructured anti-spaces, commonly referred to as "urban voids".

The prolonged existence of urban voids can unfortunately result in discriminatory practices such as redlining, which can lead to the segregation of neighbourhoods and communities, exacerbating societal gaps and cultural decline. While many factors are behind the rupture of urban voids, the boom and bust of the real estate cycle is largely believed to be at the crux of this phenomenon. These urban voids, however, present cities with the infinite probability of adopting sustainably conscious nature or biophilic-based solutions through the reinforcement and integration of spaces within their natural setting in a holistic manner (Kellert, 2015).

While urban renewal remains a key approach to tackling the issue of urban voids, the track record of its successes and failures remains varied and uncertain to this day. It is therefore critical for a comprehensive revitalization framework so that complex cross-sectoral efforts of rescuing distressed cities to improve the local community, environment, and economy can be carried out efficiently and effectively.

The study explores the hidden opportunities and values of urban voids in Kuala Lumpur from a sustainable perspective. This is particularly critical during the recovery phase of Kuala Lumpur following the COVID-19 pandemic. The following are the objectives of this paper, i) To identify the variables of urban voids within the context of cities, ii) To compare selected urban revitalization initiatives within other Asian cities and iii) To propose a viable framework that can be adopted by Kuala Lumpur

LITERATURE REVIEW
Urban Voids
The term 'urban void' is an almost illusive concept associated with the dichotomies of anti-spaces and buffer zones, and are terminologies used to label the oblivion of leftover spaces as a by-product of urban abandonment arising from a kind of obsolescence or loss in the form of economic value, spatial integrity, and urban connectivity (Lopez-Pineiro, 2020). These spaces are typically associated with the lack of lighting, security and waste management, the latter being a prominent cause of flooding problems in Asian cities. However, despite the various extent of studies, the notion of urban void remains ambiguous and unquantifiable, primarily due to its non-scale and non-discipline specific qualities (Lee, 2015).
The long-term consequences of these forlorn spaces, however, can account for more pressing social issues such as dysconnectivity between the social fabric and these places, depletion in local culture due to perceived segregation of neighbourhoods, and eventually resulting in societal gaps. In addition to that, it can also result in a loss in favorability as a tourist destination and have a detrimental influence on cities that rely significantly on tourism for revenue.

Urban Revitalisation

Urban revitalisation is a process by which a part of the city in social, urban or economic crisis undergoes a rehabilitation process in order to reverse its declining trend (Gonçalves, 2016). That is to say, it is a comprehensive intervention effort to redevelop neglected areas that are lacklustre and in the process of decay. As such, urban revitalisation is often seen as the answer to address urban voids. Concerns however always arise as to whether or not these revitalisation efforts are worth pursuing due to the impending costs involved. It is therefore essential to understand the inherent challenges and opportunities these urban voids present to discover the potential they hold (Lee, Hwang, & Lee, 2015).

Additionally, it is essential that these efforts are carried out in an ethically sustainable manner, and what this means is to achieve the aims of the initiatives without subsequently leading to additional larger problems, especially for future generations (IGI Global, n.d.). NBS entails addressing these concerns with nature in a sustainable manner while also providing socio-economic and environmental benefits (IUCN, n.d.). Case studies from across the world have demonstrated that NBS have the ability to boost a city’s resiliency and liveability not only in a sustainable but also cost-effective manner.

Urban Green Spaces (UGS)

The perceived benefits make it additionally quintessential to revitalise the aforementioned leftover spaces by implementing NBS such as green roofs, pocket parks, and community gardens, and implementing additional measures such as re-routing traffic, and replacing them with green spaces instead (Nieuwenhuijsen, 2021). One of the methods to adopt NBS to tackle urban voids is by implementing urban green spaces (UGS). The World Health Organization (WHO) recommends that everyone have access to green space with no less than 0.5 ha and no more than 300 m in linear distance from every home.

The efficacy of this approach is however dependent on interventions that are complementary and integrated into the total environment, as opposed to isolated or temporary interventions that appear to be more of an afterthought. To implement these initiatives into a designated site context, it is hence crucial to understand the key factors that contribute to the success of its functionality. Some of the criteria used to evaluate the quality of green areas include walkability,
inclusivity, infrastructure, vegetation, accessibility, security, location, and distribution (Herzele & Wiedeman, 2003).

On the other hand, while it can be difficult to precisely quantify the economic and fiscal benefits of these urban parks and open spaces, there has been growing awareness and acceptance towards the value they hold (Aliyu, Bello, Adamu & Singhry, 2016). It has been found that individuals are prepared to spend more on a home that is adjacent to green spaces and parks rather than one that is not. Property values primarily residential properties have also been found to rise by as much as 20% after a redevelopment or new UGS is completed (Aliyu et al., 2016).

RESEARCH METHODOLOGY
Following the significant market slowdown brought upon by the pandemic breakout in early 2020, the real estate market in Malaysia still struggles to see improvement due to reduced property take-up rate as well as unfavourable purchasing conditions (Delmendo, 2023). The consequences brought upon by reduced demand and dampened economic conditions have also subsequently resulted in a critically evident property overhang and a significant decline in property values within the city of Kuala Lumpur (Delmendo, 2023).

Given all these factors, there has been a pressing need for the government to stimulate its real estate sector and economy once again, which makes it all the more compelling as a case for this study purpose. A qualitative approach was adopted to study the revitalisation efforts that can be implemented to revitalise and harness leftover spaces within the city context of the primary case study. This methodology was appropriate for this study, as it required obtaining descriptive data to comprehend how the municipality has addressed voids in the city of Kuala Lumpur thus far.

Case Study Approach
For the purpose of achieving the primary aim of this study, three (3) secondary Asian cities were chosen to serve as a benchmark in developing a viable revitalisation framework for the primary case study. The cities of Shanghai, Seoul and Singapore were selected in particular, for their innovation and cultural proximity to the primary case study, as well as their success in having undertaken specially tailored NBS to revitalise the lacklustre regions of its respective city. To understand the performance and design criteria that took precedence in the aspects of planning and implementing the precedent studies, performance profile wheels (PPW) were used to compare the data that was obtained.

Administration of Interviews
In furtherance to understand how professionals in Kuala Lumpur perceive underutilised spaces, semi-structured interviews were conducted to gather
primary data with key informants who had strong affiliations with the built environment practice as shown in Table 1. The interviews were conducted via Google Meet and the four interviewees participated in the interview.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Position</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Principal Architect &amp; Head Planner at an International Architectural Firm</td>
<td>Architectural design, town planning, and land optimization</td>
</tr>
<tr>
<td>2</td>
<td>Academician &amp; Panel of the Federal Territory of Kuala Lumpur Planning Appeal Board</td>
<td>Urban planning and management, planning law and local governance</td>
</tr>
<tr>
<td>3</td>
<td>Head of Design at a leading Real Estate Developer Firm in Kuala Lumpur</td>
<td>Real estate development and interior architecture</td>
</tr>
<tr>
<td>4</td>
<td>Director at an Architectural Firm in Kuala Lumpur</td>
<td>Architectural and urban issues</td>
</tr>
</tbody>
</table>

**ANALYSIS AND DISCUSSION**  
**Primary Case Study: Kuala Lumpur**  
The rapid urbanisation in Kuala Lumpur today poses a critical problem for urban management, particularly with regard to the comprehension and administration of the spatial and social repercussions of planning policies. Additionally, the transport and land use planning strategies have brought long-term effects on the urban form, in particular on the street network as the city's backbone that affects the flow and pattern of movement. This has affected how individuals navigate and traverse the street network (Bertolini, 2017). The car-centric mobility pattern in KL has led to the subsequent poor integration and inadequacy of other public infrastructures such as walking paths and bicycle lanes, as well as the interconnection of different public transport modes.

Apart from that, the new hype over transit-oriented developments (TOD) in the Klang Valley region has led to a substantially large roll-out of properties to be constructed along highways and transit lines. The lack of cap limit over property developments within the city displays poor adherence to the land use zoning plan and building plot ratio in the city of Kuala Lumpur, without tackling the core problems.

Like many other Southeast Asian cities, Kuala Lumpur today primarily struggles to attain a balanced equilibrium between economic growth and the preservation of its lush natural environment. Instead of preserving the natural reserves, it has instead been making way for unrestrained residential, commercial, and industrial developments within its urban fabric (Mohd Noor, Abdullah, & Manzahani, 2013). Following the decline of green spaces in Kuala Lumpur over the decades, the city has also been experiencing detrimental climate problems such as increased land surface temperatures, and a severe decline in natural rain
catchment areas which have led to the rampant occurrence of floods and landslides over the recent years (Noordin, Abdullah, & Shahbudin, 2007).

As a result of the latter, many residential areas have been experiencing a steep decline in value due to the risks it poses and the high number of abandoned properties along with the displacement of a high number of residents which have also accounted for the formation of urban voids. Apart from these instances, the common sight of underutilised rooftops, deteriorated parks, vacant old buildings, as well as the large excess of concrete riverbanks observed in Kuala Lumpur are all equally forlorn spaces that have lost their essence over the course of time, and can be defined as urban voids in this context. The rapid development has left the city lacking in visual and physical coherence (Khalid, Hilal, Nasrudin, & Marzukhi, 2018). Consequently, there has been a decrease in the legibility of the city structure together with a certain loss of historical continuum and sense of identity.

Figure 1: The root problem and consequential issues from inadequate urban planning in Kuala Lumpur
Benchmarking: Shanghai, Seoul, and Singapore

The three cities that were selected for this benchmarking exercise are (i) Houtan Park in Shanghai, (ii) Cheonggyecheon Stream in Seoul, and (iii) Bishan-Ang Mo Kio Park in Singapore.

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Houtan Park</th>
<th>Cheonggyecheon Stream</th>
<th>Bishan-Ang Mo Kio Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Land</td>
<td>Brownfield with natural bank</td>
<td>Stream with artificial bank</td>
<td>Artificial canal with natural bank</td>
</tr>
<tr>
<td>Total Area in Acres</td>
<td>35-acres (14 hectares)</td>
<td>100-acres (40 hectares)</td>
<td>153-acres (62 hectares)</td>
</tr>
<tr>
<td>Initiated By</td>
<td>Shanghai World Expo (Semi-gov.)</td>
<td>Seoul Metropolitan Government</td>
<td>PUB &amp; N Parks (Semi-gov.)</td>
</tr>
<tr>
<td>Approach</td>
<td>Top-Down</td>
<td>Bottom-Up</td>
<td>Bottom-up</td>
</tr>
<tr>
<td>Scale of Impact</td>
<td>City &amp; Regional</td>
<td>Neighbourhood &amp; City</td>
<td>Neighbourhood &amp; City</td>
</tr>
<tr>
<td>Financing Cost</td>
<td>CNY 105 mil. (MYR 70 mil.)</td>
<td>KRW 384 bil.(MYR 1.28 bil.)</td>
<td>SGD 76 mil. (MYR 243 mil.)</td>
</tr>
<tr>
<td>Long-term Cost</td>
<td>-</td>
<td>KRW 200 mil. (MYR 670 500)</td>
<td>SGD 4.45 mil. (MYR 14 mil)</td>
</tr>
<tr>
<td>Issues</td>
<td>Degraded environment Flood control inadequacy Site topography</td>
<td>Safety issue of the elevated highway Air and water pollution Slums within the area Decline of surroundings and old CBD</td>
<td>Flash floods Inadequacy and decline of concrete canals</td>
</tr>
<tr>
<td>Design Features</td>
<td>Regenerative wetland Productive and educational landscape Using recycled materials Increasing the capacity of the park Integration of cultural and natural layers</td>
<td>Urban natural stream Integrating with surrounding environment Ecological education Recycling waste materials Improving water irrigation and quality</td>
<td>Purifying and recycling rainwater Recycling waste materials Designing by trial and error Integrating with surrounding environment Strengthening community participation Design inclusivity</td>
</tr>
<tr>
<td>Value</td>
<td>Immersive learning experience Tranquil city getaway Increase in rental rates Increased site’s biodiversity Sequesters 242 t. of CO₂ annually A tribute to city’s history Revitalized neighbourhood real estate market</td>
<td>Appreciation in property value Stimulated nearby businesses Increased employment rates Reduced surrounding temperature Increased fauna in the area Reduced car traffic Platform for cultural events</td>
<td>Enjoyable outdoor gathering place Foster community participation Increased nearby F&amp;B revenues Influx of tourists Natural flood mitigation Ecological education Bolster water supply</td>
</tr>
<tr>
<td>Significance</td>
<td>Eight (8) patents with 20-30 new projects of similar strategies</td>
<td>Set precedence which led to the demolition of 15 other expressways</td>
<td>Set precedence for similar concrete canals in Singapore to be demolished</td>
</tr>
</tbody>
</table>
In order to understand the performance and design criteria that took precedence in the aspects of planning and implementing the selected cities, this study utilised performance profile wheels (PPW) to compare the efficacy of its implementation based on four respective categories namely, accessibility, design quality, facilities, and health and well-being. While the key scores varied relatively between the three cities from the performance profile wheels, a distinct pattern was observed in their performances. The general key scores that were observed to have been of higher priority among the cities were accessibility and walkability, lighting and shade, genius loci, sensory stimulation, circulation, site visibility, recreational activities, cultural and heritage value, nature integration, design inclusivity and security. Apart from these, a bottom-up approach was preferred, with the importance put forth on human-centric planning as well as data transparency between the planners and the public. There was also increased emphasis placed on the subject of adaptability and resiliency in mitigating climate change effects and maintaining economic robustness.

Figure 2: Performance Profile Wheels (PPW) of Secondary Case Studies

Source: BlueHealth
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Qualitative Analysis: Interview

Real Estate Market Outlook
The global spread of COVID-19 had numerous consequences on the real estate sector in Malaysia and critically in Kuala Lumpur. One of the key issues has been the considerably slow recovery of the real estate market following its shift towards recovery where substantial depreciation in value, low take-up rates and overhang have been observed.

“The pandemic has indeed created a lot of artificial values about the actual market value of properties due to speculations. The real estate market in Kuala Lumpur is on a free-market basis where there is no significant board to control the real estate pricing such as the likes of Singapore.” - Interviewee 1

“It is hard to predict at the moment but there is a great need for comprehensive study on this subject matter to be carried out by government to freeze developments in areas that have a visibly high overhang or particular types of properties.” - Interviewee 1

Due to the unexpected outbreak of COVID-19, it is presently not possible to quantify and forecast future consequences and implications on the market. It is however critical to ensure market studies are conducted at shorter intervals, and that government authorities employ stringent controls to monitor and curb post-pandemic induced market oversupply. During this substantial period of recovery, it is additionally important that city councils and developers alike, examine and understand the restorative efforts that can instead be implemented to revive the economy and create value for the community in a sustainable manner.

City Planning
The problem of urban voids within the city of Kuala Lumpur however, eventually trickles down to the lack of comprehensive planning and framework to address
the problem. As it was observed, in comparison to cities like Shanghai and Singapore, Kuala Lumpur falls short in its up-to-date policy planning and guidelines, which leaves room for a lot of uncertainties, and subsequently makes it harder to enforce them due to the very malleable nature of it.

“The guidelines in KL are notably very far behind its Asian peers, in regard to addressing sustainable developments in a comprehensive manner...” - Interviewee 1

“The system is not adaptive and receptive to changes that occur periodically and plans become quickly obsolete. There is also a predominant resistance to change that is not accepting of new strategies and planning systems.” - Interviewee 2

Despite sharing similar historical origins to Singapore, Kuala Lumpur is still very much influenced by the Old British planning system which has its pros and cons. The pro is that the system has a long historical tradition that has been brought forth from the 1920s. The difference however is that while the British system itself has evolved and undergone multiple significant changes to its system since, the city of Kuala Lumpur on the other hand still very much maintains the pre-dated old system that is no longer as relevant as it used to be due to the considerable shifts the city and country has underwent across the past decades due to urbanization.

“There needs to be higher public involvement in the decision-making process and less emphasis on bureaucracy within the city council. The current system is also still very much traditional and does not put precedence on scientifically based data and factors them into their planning.” - Interviewee 2

Apart from that, while the City Council of Kuala Lumpur may have made initiatives to listen to the opinions of the public, the bottom-down approach still lacks effective implementation, unlike its Asian peers.

“The city planning guidelines in KL are subject to higher abuse by stakeholders such as developers and even politicians. There is a high political interference as well as businessmen who have deep pockets that result in poor adherence to the initial guidelines.” - Interviewee 1

This is particularly due to the lack of data transparency and mutual trust between the public and authorities. The absence of real-time data is also a predominant factor that influences this.
“For instance, in cities like Singapore, anyone can easily access data from the city council website in regard to land suitability for specific developments, duration and submission requirements... Our planning and data gaps are too wide and data reliability is extremely low, which is approximately only 30 to 40%.” – Interviewee 2

There is also a strong resistance to change that is not accepting of new strategies and planning systems. Hence, there is a strong need for real-time data made accessible to the public as data should be public domain. Doing so will not only aid in increasing the efficacy of planning especially by non-governmental sectors but also curb the problem of power abuse and dishonesty.

Additionally, very poor emphasis has been put forth on green open spaces. While there are still large parks in KL, most of them are not immediately accessible and are quite a travel distance. There has also been an increase in motorised transport dependency to get to these places due to the overall poor walkability and accessibility around the city.

“There is no significant order in regard to planning development where you will at times find random structures and disconnected buildings scattered across the city. There is also incoherence within certain policies. But above all, the land use plan does not seem to be respected thus far and the city council appears to bend easily.” – Interviewee 4

“There is an issue of walkability, the lack of trees in the city and other multidimensional problems. Then there is also the increased frequency of environmental issues that have been inadequately addressed over the years, and as a result have become more severe.” – Interviewee 3

The disconnection of these spaces has additionally given rise to the occurrence of urban voids. Cities like Seoul and Singapore the on the other have been making rigorous efforts to reduce motor traffic and bridge city gaps. This was evident in the revitalisation projects of Cheonggyecheon Stream in Seoul, and the Bishan-Ang Mo Kio Park in Singapore whereby concrete structures were torn down to instead make way for green spaces and improve city-wide pedestrian connectivity.

**Urban Voids**

There is generally a strong mindset among developers in Malaysia, that the product they offer will be unique, without the forethought on the displacement aftereffect of their property supply and attaining an equilibrium.
“There has been an unfortunate number of large development activities in an unsustainable manner without taking into account the project’s long-term feasibility.” - Interviewee 4

This is largely due to the lack of comprehensive planning guidelines and monitoring by the city council in managing the cap limit on the type of developments depending on the area, density, and population. As a result, we have a high concentration of similar developments that do not integrate due to the very jarring design language with the intention of being solely unique. These products such as shopping malls and luxurious residential developments also tend to be concentrated only in particular nodes, solely based on the assumption that there will be a market for them, subsequently resulting in an imbalance in the urban fabric and the coherent rupture of urban voids.

“There needs to be a holistic platform to document data on urban voids, ownerships, geographical information as well as identify the potential of these sites...” - Interviewee 2

In Singapore, authorities utilize dynamic data to not only manage the supply of properties but also actively monitor the status of vacant lands and their revitalisation processes in efforts to green their city. It is hence imperative that local city councils follow the lead of their Asian counterparts in exercising authority as a critical call for action especially in cities experiencing land scarcity, by addressing the urban voids and their notorious impacts in a holistic manner.

“Everything eventually boils down to the city council as they are the ones who are responsible and have the authority over the shifts that occur within a city.” - Interviewee 3

Hence, city councils need to exercise their authority to address these cracks within the city given its notorious impact on the city. This is because these urban voids are a critical call for action especially in cities experiencing land scarcity. To date, most of the initiatives that have been taken and implemented in KL have largely been initiated by private sectors or non-governmental organisations.

**Revitalisation**

Urban voids are hence valuable key connections that can help bridge the city in a sustainable manner. In the face of rapid urbanization and the rapid decline of green spaces within the city of Kuala Lumpur, the implementation of NBS such as UGS has thus been regarded as a holistic solution to tackling these urban voids as they open up a myriad of possibilities. This is because, these spaces hold the
potential to create value for the community and city, boost the growth of the real estate market sector within the city and subsequently increase the chances for business revenue.

"... it will add value to the properties within its immediate effect and benefit the city on the long run ... opportunity for business revenue such as food carts, cafes, event venues and even alternative meeting spots for friends and clients." - Interviewee 3

Efforts of revitalising the lack-lustre voids within the city is however a multi-faceted approach that requires the effort of many to make it a success and it is equally important that no parties or groups work in isolation. Without the government’s initiative on the matter, projects can only be taken on small scales and in a piece-meal manner, rather than a comprehensive and cohesive approach towards it.

"The city council should form a coalition body of multiple disciplines with private sectors such as architects, town planners, infrastructure & traffic engineers, property development consultants, land surveyors, social scientists, and financial consultants." - Interviewee 1

However, while a comprehensive framework is critical to the effective implementation of revitalisation projects, this alone does not ensure its success. There are other critical factors that are equally crucial for a proposed framework to work effectively and coherently unlock its full capacity. For example, in the case of the Cheonggyecheon Stream’s restoration, the idea to tear down the concrete structures covering the stream was largely made possible thanks to the broad visions of the then Mayor of Seoul. Had the highway restoration happened as per initial plans, it would have come at the cost of compromising the socio-economic and environmental qualities of the stream’s immediate vicinity which was already in a deplorable condition at that time.

"While the proposed framework is sufficient, good political leadership and vision is important to determine the success... Strict adherence and monitoring over, as well as benchmarking the right projects are extremely important as well." - Interviewee 1

**Revitalisation Strategy Framework**

While cities like Singapore and Seoul may be at the forefront of urban revitalisation projects in Asia, many other Asian cities to date have also excelled in implementing world-class standard urban green spaces (UGS) as part of their revitalisation efforts such as the likes of Bangkok, Taipei and Hong Kong. As for
Kuala Lumpur, although there have been some attempts made in the matter of restorations and adaptive reuse of historical structures, there have been no specific attempts by the government sector on the matter of urban green spaces let alone a customizable strategized framework to aid in the process.

As the formation of urban voids synonymously proved to be an inevitable phenomenon as cities continue to be developed, the ability and foresight to see beyond conventional solutions are therefore imperative to stimulating innovational growth and promoting social cohesion and inter-cultural dialogue in a holistic and sustainable manner. A five-phased revitalisation strategy framework that was developed during the course of this study with reference to existing case studies and frameworks, has been proposed to help the city council and respective stakeholders in addressing the rupture of urban voids and coherently harness them to be of value both on the short and long term.

However, to ensure the efficacy and inclusivity of the revitalisation strategies implemented, it is crucial that the framework adopts a bottom-up approach and streamlines the plans and strategies in a horizontal rather than a vertical engagement with stakeholders to devise more well-rounded solutions for the community and city. As such, this method does not centre on a single overarching concept and does not presume anything about the requirements or capabilities of underdeveloped regions. To effectively take into account the human factors when designing a solution, the design-thinking process involves empathising, listening, and understanding experiences through research, behavioural observations and repeated efficacy testing before implementation.
Figure 3: Proposed revitalisation strategy framework
CONCLUSION
This paper examined the implementation of urban green spaces to revitalize lacklustre regions within the context of other Asian cities, and the pathway to drafting a strategic revitalisation framework for its prospective implementation within the primary case study of Kuala Lumpur. The study proposes a five-phase structured framework in order to rehabilitate and revitalise these lost spaces methodically and holistically with the aid of nature-based solutions.

While the presence of urban green spaces may be viewed as a luxury rather than a necessity, these spaces are in fact of critical essence to building resilient cities and communities. The city of Kuala Lumpur, however, is in dire need of revolutionary mindsets and ideas to transform and revitalise the city in a sustainable manner so that the many deep-rooted problems and effects of urban voids do not further aggravate the equilibrium of the city. To subsequently implement effective solutions within the primary case study of Kuala Lumpur, it is however equally critical to understand the historical junctures and thoughts that have led to the implementation of successful revitalisation projects by other Asian cities to devise tailor-made strategies that befit the condition and environment of the city.

Although the formation of urban voids is an inevitable phenomenon of industrialisation, the contribution of this study is hoped to shed light on the possibilities of harnessing these urban voids, and the importance of undertaking NBS, as well as a more time and culturally relevant approach in its urban initiatives pertaining Kuala Lumpur. Early adopters of sustainably conscious real estate development practises are now reaping the rewards of what has become fiscal gains in recent years. The addressing of the urban void problem is therefore hoped to benefit the city both on the short-term and long-term perspective by not only generating revenue for the city but also creating value for its users, as well as helping the city establish an identity and legacy for the future.

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