Local Government Green Spaces Policy for Social Well-being in Selected Areas of Malaysia

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Abstract: *Malaysia is rich in biodiversity and has tourist attraction sites firmly attached to nature. Incorporating urban green space in the country's developmental policy would successfully conserve its natural resources and promote tourism. This study, therefore, seeks to review the effectiveness of Malaysian policies on urban green spaces supply, using Selangor, the most populous state, as a case study for analysis\ and the measures set toward implementing those policies. The Malaysian Government desires to provide two hectares of green spaces per one thousand urban residents living in Peninsular Malaysia. As indicated by JPBD 2000, the available open space in Malaysia stood at 1.19 hectares per 1000 persons as of December 2009, which marked a deficit of 0.81 hectares to achieve the requirement of the target endorsed by NPPC No. 5/2005. The data collected from the Federal Department of Town and Country Planning and the digitized imagery of 2020 shows considerable variation in the supply of urban green spaces in local authorities within Selangor State. The Patton and Sawicky policy analysis model was used to analyse the strength and weaknesses of the Malaysian policy instrument that guides the provision of urban green spaces in Selangor State. Despite limitations associated with the condition of urban green areas in the majority of the local authorities, the analysis shows tremendous opportunities in incorporating urban green space in the state.*

Keywords: *Dialect, Dialect contact, Dialect change, Language, Phonic.*

Introduction

Green infrastructure refers to the network of multifunctional green spaces provided across a geographical area, urban or rural. It contributes to the high quality of the natural and built environment and is required to deliver liveability of existing and new communities (Grădinaru & Hersperger, 2019). Urban green spaces assist in creating aesthetically pleasing (Assaye et al., 2017), functionally efficient built environment (Gavrilidis et al., 2019), and promote social cohesion in neighborhoods by bringing the community together and establishing a sense of identity (Tan & Teng, 2020). The district would have a high sense of inclusiveness, eliminating disparity. Urban green spaces advocate sustainable living by harmonizing and integrating grey

infrastructure with urban green space. The recognition of the contributions of urban green areas by many countries, especially the E.U. and the USA, promotes the integration of the urban green space in the developmental policies. Malaysia also recognizes the considerable contribution of urban green areas in achieving sustainable urban development with limited financial resources.

The National Landscape Policy (2010) further strengthened Malaysian desire to attain developed nation status by 2020 as envisioned by the National Physical Plan (2010-2015). Malaysia is rich in biodiversity and has tourist attraction sites firmly attached to nature. Thus, integrating urban green space in the country's developmental policy would ensure success in conserving its natural resources and promoting tourism industries. The Malaysian Government desires to provide two hectares of urban green spaces per one thousand urban residents living in Peninsular Malaysia. As indicated by JPBD 2000, the available open space in Malaysia stood at 1.19 hectares of open space per 1000 persons as of December 2009, which revealed a deficit of 0.81 hectares to achieve the requirement of the target endorsed by NPPC No. 5/2005. This study, therefore, aimed at evaluating the effectiveness of Malaysian policies on urban green spaces supply and the measures set toward implementing those policies.

Literature Review

Urban areas, especially those located in developed nations, are significant contributors to greenhouse gas emissions, a sequel to infrastructure provision that alters the biogeochemical cycle, inducing climate change (Doelman et al., 2018). The existing infrastructure in the Selangor state has a significant negative impact on the physical environment, thus, poses a severe impact on the biogeochemical cycle (Nourqolipour et al., 2014). Urban green space is ideal for solving the effects of grey infrastructures (Zuniga-Teran et al., 2020). Abdullah and Nakagoshi (2006) recognize urban expansion as the primary contributor to forest fragmentation in the highly urbanized state of Selangor (Tee et al., 2018).

Accordingly, it is the responsibility of the city planners to guide the growth of the cities and incorporate climatic data to design resilient cities capable of withstanding and adapting to climate change impacts and promoting urban well-being. Failure to integrate sustainable development features paves the way for undesirable haphazard development, making the cities vulnerable to climate change and other social vices. Malaysian National Policy on Environment stresses the need to maintain continuous economic, social, and cultural progress while maintaining the vitality of environmental resources. Lu and Zhou (2012) and Xianbin (2016) relate the waterfront landscape to restoring its image quality and increasing its economic and cultural value. Neema et al. (2013) revealed how green urbanism assists in creating a clean, safe, and healthy environment in the megacity of Dhaka (Bangladesh). Bhuiyan et al. (2013) highlighted the role of tourism industries in improving the economic, social, and environmental quality of Malaysia using development plans. The policy reiterated the conservation of the unique natural resources to promote the well-being of Malaysian society and the cultural heritage designed to achieve through collaborative cooperation by all stakeholders from various walks of life. Azlan et al. (2013) explained how the Malaysian Government contributed toward empowering local

communities toward contributing to social responsibility that fosters sustainable livelihood in Malaysia.

The resources to be conserved are land resources, forestry, water bodies, and biodiversity. All these are attributes of urban green and blue spaces that fall within the purview of green infrastructure. Thus, incorporating urban green space policy into the Malaysian Physical Plan would help stimulate sustainable development as envisioned by the policy (Ahern, 2012). The approach advocated continuous improvement of the quality of the Malaysian physical environment. Larson et al. (2013) argued integrating local communities' values to protect and manage natural resources. Therefore, implementing an urban green space policy into Malaysian physical planning policy would assist in conserving Malaysian natural resources. The 10th Malaysian Plan (2010-2015) harmonizes developmental objectives with environmental concerns. Puppim de Oliveira (2013) observed the suitability of co-benefits policies; thus, implying that policy promoting economic prosperity without significant environmental damages is the preferred option. Sustainability relates to harmonious living that reverses some of the damages done and maintains ecological resources for the future. Meanwhile, economic development should not take place at the expense of the environment (Douglas, 2014). The document recognized creating a green corridor to enhance vitality and increase visitation to the available urban green spaces, as demonstrated by Kullmann (2013).

The Plan has empowered local authorities to prepare and allocate land to provide urban green spaces. Similarly, the Plan elaborated on the desire of the Government to assist the local authorities in providing facilities that would add aesthetic quality and appeal to the urban green spaces to promote visitation. Land resources management as conservation and improvement of natural resources' quality helps promote urban green areas (Lemaire et al., 2014). The calls for improvement in the awareness campaign that can regulate and inculcate attitudinal change toward efficient environmental resource utilization (Oberoi, 2014). Integrating the ecological dimension in decision-making would assist in making robust policies that would ensure sustainable development (Summers et al., 2014). The mission of this policy and the urban green space policy. Therefore, the two policies act in synergy in actualizing the vision of achieving sustainable urban development in the Malaysian context.

Methodology
The Study Area
Selangor is one of the thirteen States in Malaysia. It is bordered to the north by Perak, south by Negeri Sembilan, east by Pahang, and west by the Strait of Malacca, as shown in (Figure 1). The strategic location of Selangor State at the heart of Peninsular Malaysia makes it a hub for rapid development in the industrial and transportation sector. Selangor State is ranked the most populous in Malaysia, with 5.46 million (Department of Statistics, Malaysia, 2010). Selangor is considered an ideal case study representative of a state in Malaysia that experiences rapid urban green space reduction, a sequel to the population growth (Abdullah, 2014). Population growth is a potential factor in reducing urban green spaces due to the increasing demand for land for

various physical developments (Moghadam & Helbich, 2013). Selangor State generates the highest GDP in Malaysia by contributing more than 24% of the total GDP generated from its thirteen States (NPP, 2010-2015). This remarkable economic potential has resulted from the good physical infrastructure provision to serve the enormous demand of industries in the state (Sarimin & Yigitcanlar, 2013).

Figure 1 Selangor State Local Authorities
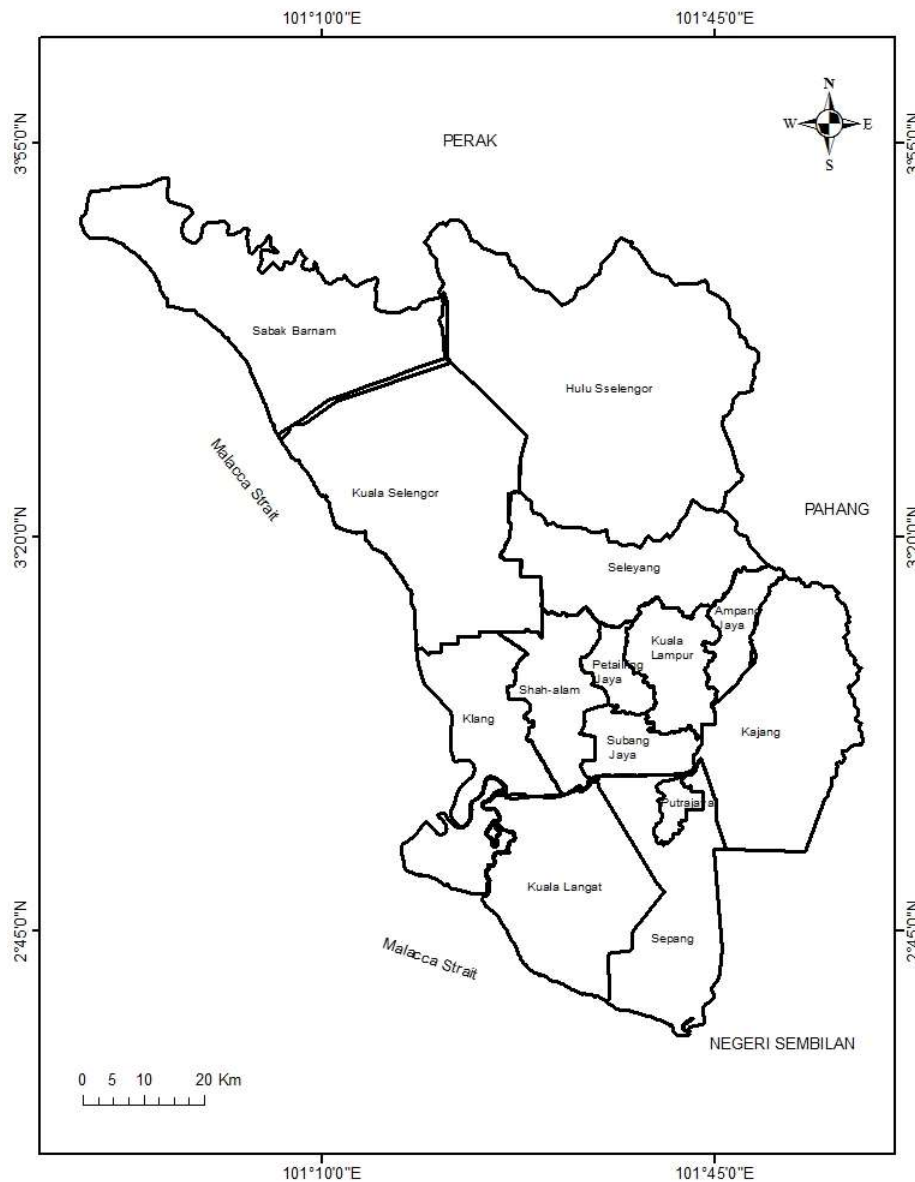
Sources: Google Earth Imagery 2020

Policy Analysis Model

Several models are available for undertaking policy analysis. This research integrated Weiner and Vining's (1989) model with Patton and Sawicki (1986). This approach would ensure the streamlining strength of each model while neutralizing its weaknesses. Weiner and Vining's (1989) model developed two stages: problem analysis and solution analysis. The problem analysis stage consisted of three classes: understanding the problem, choosing the goals and constraints, and the solution method. In the same way, the solution stage consisted of four subclasses: Choosing the evaluation criteria, specifying the alternatives, assessing the other options, and recommending a viable solution.

The model is an ex-ante design that seeks to support policymakers and other stakeholders facing decision-making difficulties (Justen et al., 2014). The analysis provides a step-by-step approach for conducting policy analysis simply and comprehensively (Hillier, 2013). To achieve practical policy analysis of any kind, the definition of a problem is crucial (Flanagan et al., 2011). The model has extensively provided three stages of understanding policy problems systematically, as provided under problem analysis. Also, the model brings a more straightforward approach to assessing the policy solution.

Similarly, another strategy of conducting policy analysis by Patton and Sawicki (1986); the model indicates the direction of flow by each step of the investigation. The research adopted the policy framework (Figure 2). Weiner and Vining (1989) alone could not be adopted in this study because it requires the implementation of the policy, monitoring, and evaluation of the policy outcome. Likewise, the policy model proposed by Macrae and Wilde (1976) also requires an assessment after implementing the proposed procedure (Craft & Howlett, 2013). Additionally, the Quade Policy analysis model (1989) uses a simulation method in predicting uncertain technological policy design (Enserink, Koppenjan, & Mayer, 2013). Such a policy model is not applicable to present research, as many kinds of literature recognize the significant contribution of urban green space policy in enhancing the quality of the built environment (Standish, Hobbs, & Miller, 2012).
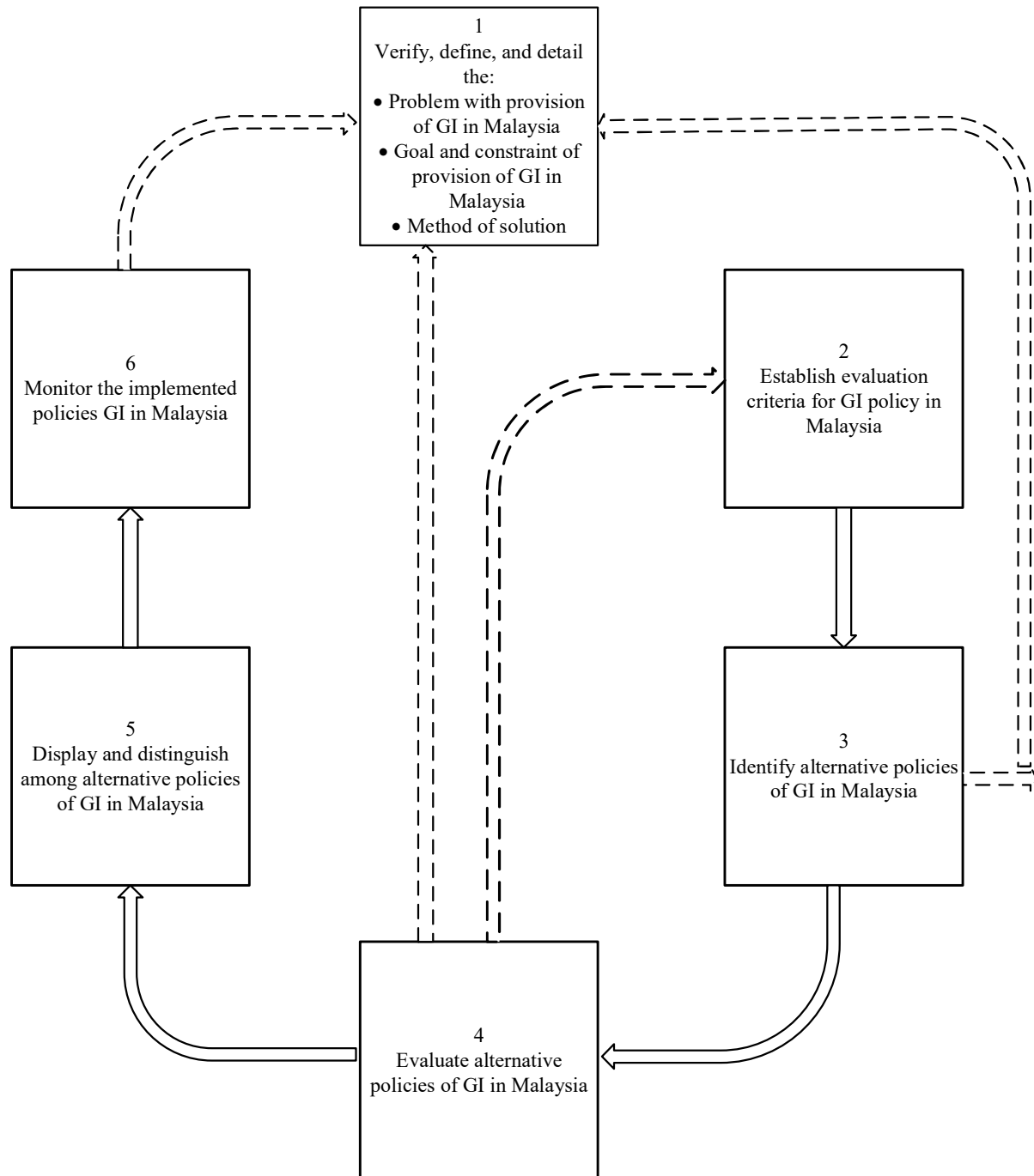
Figure 2 Green Infrastructure Policy Framework (Adapted from Patton and Sawicky, 2002)

Result and Discussion

Assessment of Alternative Policies for G.I. Provision across Selangor State

Table 1 and Table 2 present the supply of urban green open spaces in Selangor State and its local authorities. The collection shows considerable variations, with some local authorities adequately supplying green open spaces that exceed the targeted requirement of 2 hectares of open space

for every 1000 residents of Peninsular Malaysia. The cumulative supply of green open spaces in Selangor State in 2011 was considerably below the targeted requirement, with a variance margin of more than 54%, as presented in Table 1. The state had a total supply of about 5179.35 hectares, with an absolute requirement of 10920 hectares. However, the collection of urban green spaces in Selangor State increased in 2020, as presented in Table 2. As contained in figure 3, the digitized image of Selangor shows about 38924 hectares of urban green space, with a policy requirement of 13140 hectares, which is greater than the policy requirement of about 196.23%.

However, the scenario reveals different perspectives while considering the critical observation of the local authorities. There are eleven local authorities within Selangor State. Two local authorities adequately provide urban green spaces that can be translated as above the minimum standard of the analyzed policies of 2 hectares of green open spaces to every 1000 urban residents as of 2011, as shown in figure 3. This trend has consequently reversed in 2020 (see figure 4), as only two local authorities could not meet policy requirements. The local authorities are Kajang municipal authority, with a supply of about 1734.62 hectares and a total demand of about 1591.04, has an excess collection of approximately 143.58 hectares of open spaces. The digitized satellite imagery of urban green supply in the local authority in 2020 revealed about 2249 hectares. The current policy requirement is 3913.33 hectares, implying a supply deficiency of about 1664.33 hectares. This deficiency would not be unconnected with past urbanization placed at 9% in the local authority.

Ulu Selangor has an excess supply of about 424.67 hectares of urban green spaces as of 2011. It has a total need of approximately 388.77 hectares and a total green space supply of about 813.44 hectares. The digitized satellite imagery of 2020 of urban green in the local authority reveals a reserve of about 2378; that implies an increase of about 1564.56 hectares. The current policy requirement of the local authority stood at 511.38; this indicates excess provision to about 1866.62 hectares. Meanwhile, the remaining nine local authorities within Selangor State lack adequate urban green spaces that meet urban residents' recreational needs and aspirations, as enshrined in the National Urbanization Policy (NUP). However, the digitized satellite imagery reveals the nine local authorities provide an excess supply of urban green spaces in their respective localities.

Shah Alam, the capital city of Selangor State, is a local authority recognized with city council status been a planned city. There is a needs to supply adequate urban green spaces to ensure the sustainability of the city's development. Analysis (Figure 3 above) reveals an insufficient provision of open spaces in 2011. The amount of urban green areas is 233.04 hectares, with a total need of 443.22 hectares to satisfy the requirement of 2 hectares of open space for 1000 urban residents. The provision of urban green areas in Shah Alam indicates a deficit of about 210.18 hectares, amounting to more than 47%. However, the scenario has dramatically changed in 2020, increasing urban green spaces amounting to about 5,330 hectares while policy requirements stood at only 963.31 hectares. The situation indicates an increase in open urban areas of approximately 5,096.96 hectares within nine years.

Table 1: Urban Green Spaces Provision as of Dec. 2011 in Municipal Council Areas of Selangor State

State and local authorities	Urban Green space provision in of Local Authorities of Selangor State in hectares as of Dec. 2011	Target standard of 2 hectares per 1000 urban residents	Variation between provision of urban green and Policy requirements
Selangor	5179.35	10920.00	-5740.65
MB Shah Alam	233.04	886.44	-653.40
MB Petaling Jaya	849.03	1227.95	-378.92
MP Subang Jaya	728.25	1406.59	-678.34
MP Klang	218.53	1488.12	-1269.59
MP Ampang Jaya	278.95	685.40	-406.45
MP Kajang	1734.62	1591.04	143.58
MP Selayang	134.46	1084.82	-950.36
MP Sepang	68.38	414.71	-346.33
MD Kuala Langat	39.85	440.43	-400.58
MD Hulu Selangor	813.44	388.77	474.67
MD Kuala Selangor	35.47	410.51	-375.04
MD Sebak Bernam	45.36	92.71	-47.35

Source: Federal Department of Town and Country Planning, Peninsular Malaysia (2011).

Table 2: Existing and Targeted Urban Green Spaces Provision as of Dec. 2020 in Municipal Council Areas of Selangor State

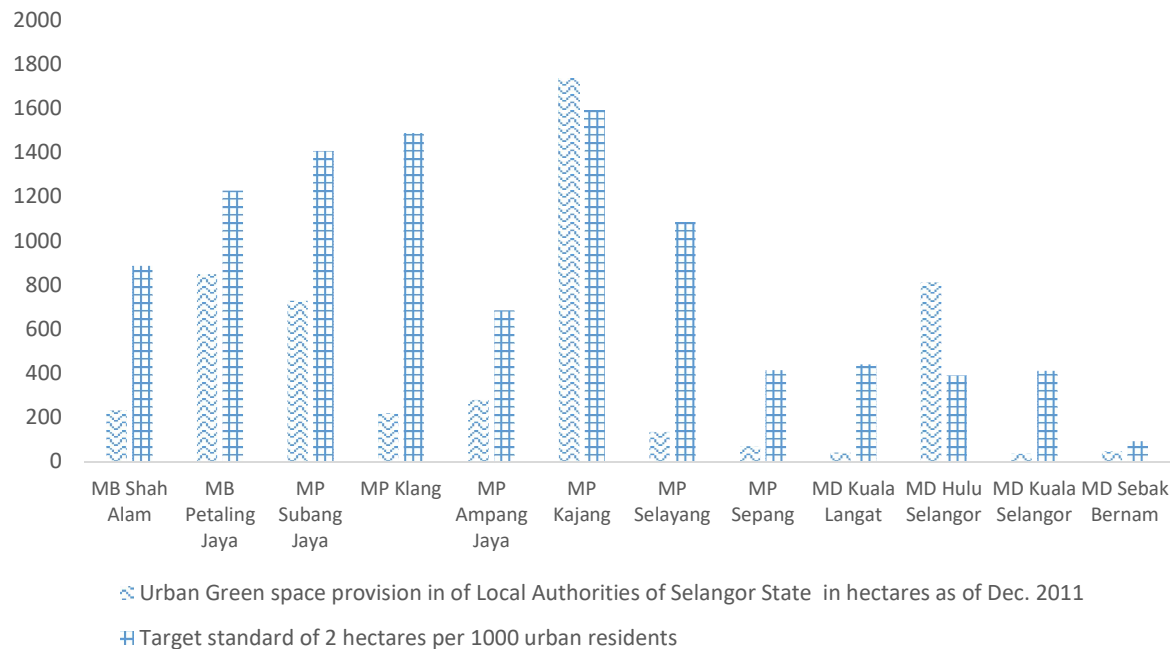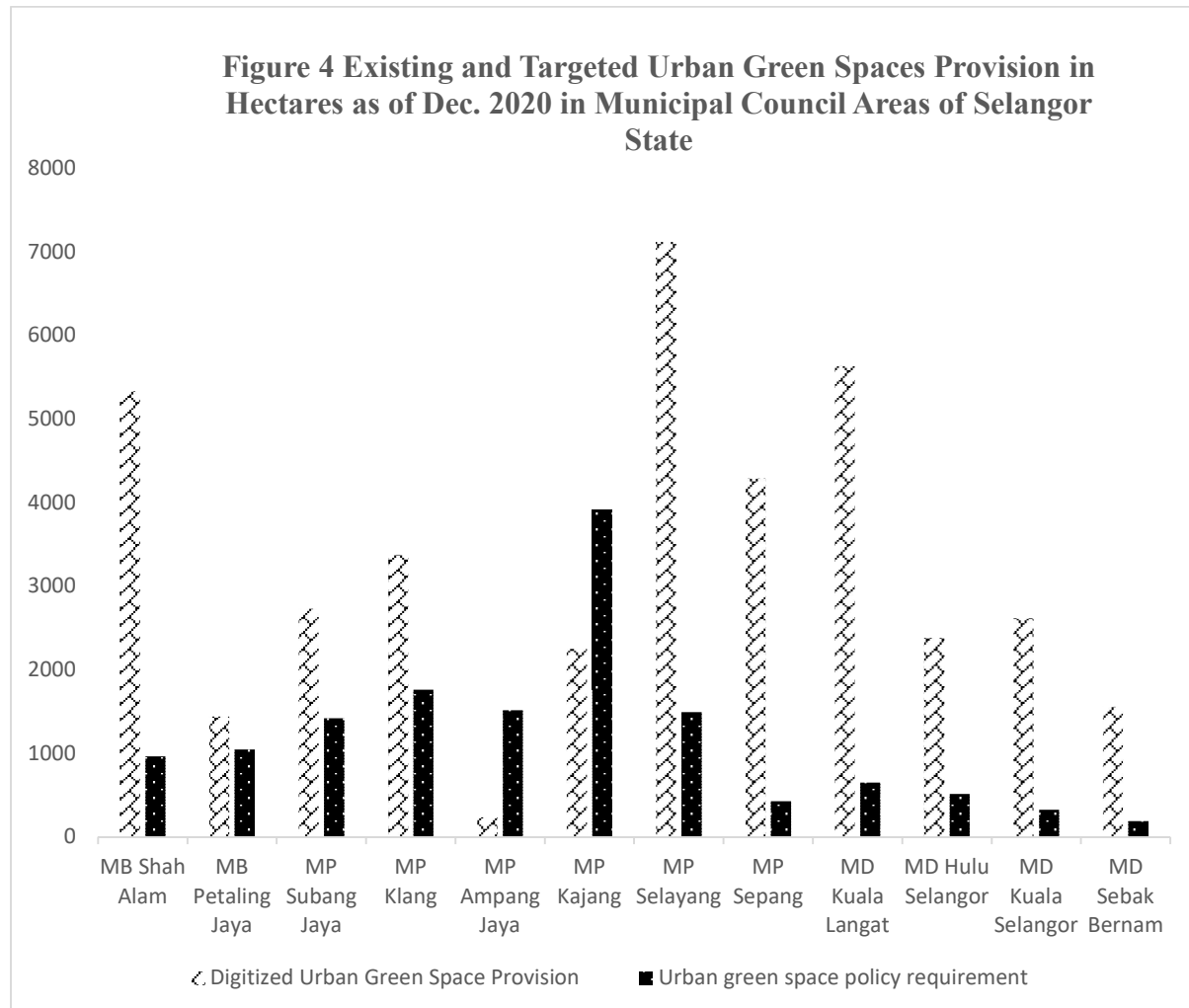| State and local authorities	Digitized Green Provision as of 2020	Urban Space Urban green space policy requirement	Variation between provision of urban green and Policy requirements
Selangor	38,924	13140	25,784
MB Shah Alam	5330	963.31	4366.69
MB Petaling Jaya	1439	1041.40	397.60
MP Subang Jaya	2729	1416.60	1312.40
MP Klang	3372	1759.73	1612.27
MP Ampang Jaya	231	1512.71	-1281.71
MP Kajang	2249	3913.33	-1664.33
MP Selayang	7111	1492.94	5618.06
MP Sepang	4283	424.10	3858.90
MD Kuala Langat	5630	646.80	4983.20
MD Hulu Selangor	2378	511.38	1866.62
MD Kuala Selangor	2615	322.34	2292.66
MD Sebak Bernam	1557	188.55	1368.45

Sources: Google Earth Imagery 2020

Table 3: Population Distribution in Selangor State

State	The population as of Dec. 2011	The population as of Dec. 2020
Selangor	5,460,000	6,570,000
MB Shah Alam	443,222	481,654
MB Petaling Jaya	613,977	520,698
MP Subang Jaya	703,296	708,296
MP Klang	744,062	879,867
MP Ampang Jaya	342,676	756,353
MP Kajang	795,522	1,956,666
MP Selayang	542,409	746,468
MP Sepang	207,354	212,050
MD Kuala Langat	220,214	323,400
MD Hulu Selangor	194,387	255,689
MD Kuala Selangor	205,257	161,168
MD Sebak Bernam	46,354	94,277

Source: Federal Department of Statistics, Malaysia (2020)

Figure 3 Urban Green Spaces Provision in Hectares as of Dec. 2011 in Municipal Council Areas of Selangor State

Urban Green space provision in of Local Authorities of Selangor State in hectares as of Dec. 2011

Target standard of 2 hectares per 1000 urban residents

Figure 4 Existing and Targeted Urban Green Spaces Provision in Hectares as of Dec. 2020 in Municipal Council Areas of Selangor State

On the other hand, Ampang Jaya, with a total supply of about 278.95 and a policy requirement of 685.40, records a supply deficiency to meet the demand by about 406.45 hectares of open urban green spaces. The supply show decrease in the digitized satellite image of 2020 to 231 hectares. It is signifying a reduction of 47.95 hectares. Despite the observed decline, a considerable increase in population influences additional policy requirements to 1512.71 hectares. Thus, the deficiency in supply amounts to 1281.71 hectares as against a shortfall of 406.45 hectares in 2011.

Petaling Jaya is also deficient in urban green spaces required to meet the target in 2011. The provision stood at 849.03 hectares, with a total policy requirement of about 1227.95 hectares in 2011. This value signifies a deficit of about 31%. As indicated by digitized satellite imagery (figure 5), the present scenario reveals an improvement of supply to about 1439 hectares against the policy requirement of 1041.40 hectares. The result suggests an additional collection of 397.60 hectares, equivalent to 38.18% excess supply.

The urban green space of Subang Jaya shows insufficient supply with the provision standing at 728.25 hectares and the desired policy requirement of about 1406.59 hectares as of 2011, indicating a deficit of 678.34 hectares representing 48%. The existing situation shows an ample supply that amounts to 2729 hectares, as noted in the digitized satellite imagery of 2020. The increase in supply amounts to 2000.75 hectares of green spaces, while policy requirements stood at 1416.60 hectares. The result implies an excess supply of 1312.40 hectares which is equivalent to a 92.64% increase. Similarly, Klang local authorities' open green space provision indicated little concern in 2011. The meager supply of only 218.53 hectares of urban green spaces to serve the population of 744,062 means that Klang's local authorities require about 1488.12 hectares of urban green areas to satisfy the highly urbanized residents the recreational needs. The scenario reveals a deficit of more than 85%. The result indicated that Klang could only provide about 15% of the total requirement as enshrined in the policy analyzed in this work. The situation drastically changed from 2011 to 2020; the supplies for urban green spaces increased to 3372 hectares in 2020, amounting to a 91.62% increase.

Selayang local authority is in critical need of urban green spaces as the supply stood at 134.46 hectares, with a gross lack of about 1084.82 hectares in 2011. The 2020 assessment of open green spaces reveals a different trend of supply that stands at 7111 hectares, making it the most abundant supply in the entire State of Selangor. The policy requirement rose to only 1492.94 hectares, implying an excess of supply amounting to 376.31%. Similarly, Sepang local authority had a limited supply of urban green spaces in 2011, with a collection standing at 68.38 hectares and a policy requirement of 414.71 hectares. The result portrays the local authority's need to increase open green spaces by about 84%. However, the digitized satellite imagery of 2020 indicted an urban green supply of 4283 hectares, while the consequential policy requirement stood at 424.10 hectares. This scenario implies an excess supply of about 3858.90 hectares.

In another development, the provision of urban green spaces in Kuala Langat was inadequate in 2011. There was only 39.85 hectares' provision, with a total need of about 440.43 hectares. The disparity between provision and policy requirement is 400.58 hectares, amounting to a deficiency of about 91%. The digitized imagery of 2020 shows a supply of 5630 hectares, while the corresponding policy requirement stood at 646.80 hectares, implying an excessive collection amounting to 4983.20 hectares.

Also, in Kuala Selangor local authority, the supply of urban green spaces in 2011 was the smallest. The provision was 35.47 hectares, with a total policy requirement of about 410.51 hectares. The result shows a disparity of 375.04 hectares, indicating a more than 91% deficit. The digitized imagery of 2020 reveals an increase in the supply amounting to 2615 hectares, with a consequential policy requirement of 322.34 hectares. The result suggests an excess of supply that stood at 2292.66 hectares.

On the other hand, Sabak Bernam falls short of fulfilling the desired policy requirement as of 2011. It has a supply of 45.36 hectares, with the desired policy requirement extending to about

92.71 hectares. The supply and policy requirement disparity is 47.35 hectares, amounting to a deficiency of about 51%. However, the digitized satellite imagery data of 2020 have shown an increase in open green spaces supplied to about 1557 hectares, with a policy requirement of approximately 188.55 hectares, indicating an excess of 1368.45 hectares.

Meanwhile, of the eleven (11) local authorities under the jurisdiction of Selangor State, only two are sufficiently provided with urban green spaces that exceed the policy requirement of two hectares per thousand urban residents in Peninsular Malaysia. These are M.P. Kajang, with municipal council status, and M.D. Ulu Selangor, with district council status. This finding reveals that no local authority within Selangor State that attained city council status met policy requirements. The result shows intense competition on land resources in local authorities' that achieved the city council's position. Similarly, local authorities with city council status are highly urbanized, making the land more competitive.

Urbanization is an agent that can serve as a militating factor in providing urban green spaces. Nonetheless, Kajang municipal authority, despite being the most populous local authority in Selangor State with a population of 795,522, and situated within Klang Valley conurbation. Meanwhile, urbanization alone cannot be viewed as a barrier to the provision of urban green spaces, as shown by Kajang municipal authority in the year 2011. In contrast, Ulu Selangor had the most significant urban green spaces in Selangor State in 2011. However, the nine local authorities that fell short in the supply of urban green areas in 2011 have overturned the situation in 2020. Of the eleven local authorities in the state, nine could provide sufficient urban green spaces.

Moreover, the two local authorities that could not achieve the expected policy requirements in 2020 are Ampang Jaya that maintained the status quo of the 2011 scenario, and Kajang. These two local authorities are within the Klang Valley, the most urbanizing region in the Selangor State. Ampang Jaya and Kajang municipal authorities are the most urbanizing local authority in the entire state, with a growth rate of 12 % and 9%, respectively.

Figure 5 Digitized Imagery of Urban Green Spaces in Selengor Local Government Authorities
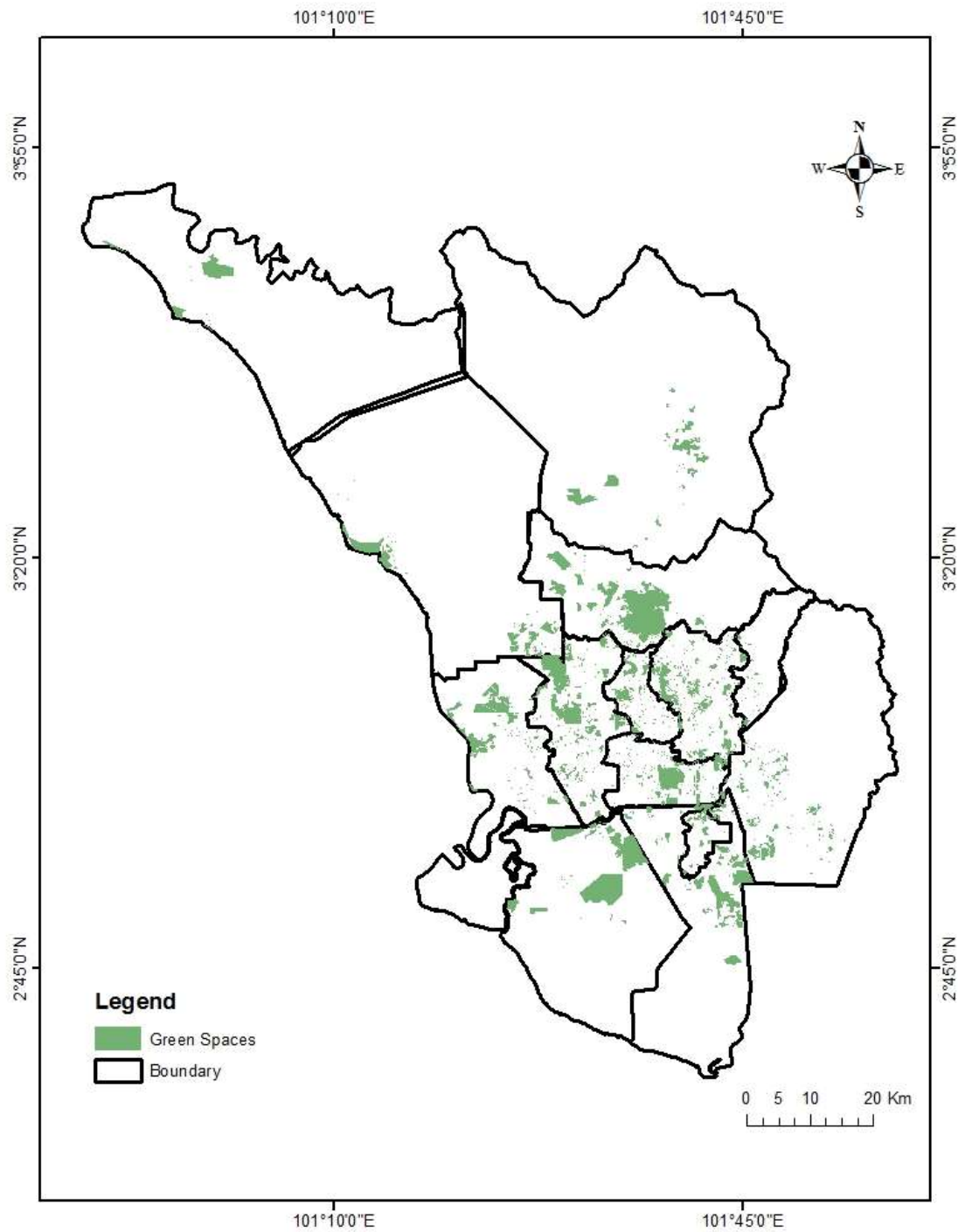
Sources: Google Earth Imagery 2020

Integrating Qualitative Content Analysis in Policy Analysis
A1: Problems with the Provision of G.I. in Malaysia
Green open spaces are not sufficient to serve the growing population of Peninsular
Malaysia. As indicated by JPBD 2000, the available open space in Malaysia stood at 1.19 hectares of open space per 1000 persons as of December 2009, which suggests a deficiency of
0.81 hectares to achieve the target requirement indorsed by NPPC No. 5/2005. The National Physical Plan Council (NPPC) is the body recognized to control the implementation of all development activities provided by Act 172. The National Urbanization Policy provides for the supply of sufficient urban green spaces in Peninsular Malaysia to meet the needs of the growing population for efficient and sustainable development. However, the policy does not stipulate approaches in contributing 10% of land toward the provision of urban green spaces. Though it recognizes the benefit of its requirement in promoting urban quality. Similarly, the Federal Department of Town and Country Planning allows for 10% open space for any intended development to commence in Peninsular Malaysia (JBPD 7/2000). The policy requirement is comprehensive, irrespective of the calculated physical development project types. Every developer is to surrender 10% of their total land area to the local planning authority responsible for designing, implementing, and managing public open spaces. However, concerning the requirement of 10% provision of public open space, prospective developers perceive this policy requirement as an additional liability that adds to the total cost of the development project. It results in piecemeal development of fewer than 2 hectares by prospective developers, which does not demand any percentage of land from a prospective developer whose total land area is less than 2 hectares (JBPD 7/2000).

In consideration of the limitation of the land supply available for development projects NPP2 (2010-2015), the procedures followed before converting agricultural land and other lands into residential areas require several processes that discourage developers from complying with the rigorous requirement of Act 172 (Ahmad et al., 2009). The local planning procedure involves both a statutory and a non-statutory approval process (Mohd et al., 2009). The statutory process requires compliance with the provision of the local planning document that guides developmental activities within the jurisdiction of local authorities. At the same time, the non-statutory approval of land development is not legally binding, as opposed to the local statutory plans regarded as a crucial document. Therefore, non-statutory support is flexible, changing without giving prior public notice (Mohd et al., 2009).

Although Act 172 allocates 10% of land to open space in any residential, industrial, or commercial development project. It had at the same time empowered every state in Peninsular Malaysia to produce a suitable strategy for achieving the required open space provision (Ibrahim & Yusoff, 2013). This section permits the States within Peninsular Malaysia to design approaches to achieve the urban green space provision. So far, only Negeri Sembilan has implemented the 10% open space provision in all its developmental activities. At the same time, Pulau Pinang provides only 4 square meters (4 m^2) per residence, which was presumed to provide for the needs of any person against the national requirement of 20 square meters (20 m^2) per individual head (Ibrahim &

Yusoff, 2013). Terengganu, Perlis, Pahang, Melaka, Perak, Johor, and Selangor agree with the 10% open space provision but with varied conditions to suit their individual state's requirements (Ibrahim & Yusoff, 2013). The conditions provided by the state governments make it almost impossible to realize the objective of Act 172. The state of Selangor, which is the area of concern of this work, also makes the realization of 10% open space for every physical development within the state virtually impossible (Omar, 2009).

Selangor State requires the developer to develop above 10 hectares to surrender 10% of his total land as a public open space. Developments from 5 hectares to 10 hectares are available for the prospective developer to decide either to provide the required 10% open space or to pay RM 50000 in the area within Klang Valley or RM 35000 in the area outside it. These inconsistencies with the national planning guideline make it challenging to achieve the required 10% open space in Peninsular Malaysia in general and in Selangor State specifically. It is noteworthy that land and land resources, including land, water resources, and forestry, are subject to Peninsular Malaysia by the state government, following the federal constitution (Khalid et al., 2013). On a similar note, the same body also empowers the Federal Government to enact laws on issues related to land-based resources to achieve uniformity in the administration of policies (Ibrahim & Yusoff, 2013). These pieces of legislation designed by various federal agencies are subject to ratification by the individual state government to take effect (Khalid et al., 2013).

A2: Opportunities and Limitations of the Provision of G.I. in Malaysia

There is a unique opportunity to achieve the desired provision of green open space in Peninsular. Malaysia supports urban green areas as the national environmental policy and the Tenth Malaysian Plan. The climatic condition of Malaysia, located at the heart of the tropical rainforest, also makes the supply of green spaces possible with limited costs. Thus, it is regarded as an effective instrument to curb the menace of climate change impacts. Meanwhile, the achievement of 10% open space is not without some constraints, as highlighted by the complexities of the problem.

A3: A solution to the Problems of the Provision of G.I. in Peninsular Malaysia

An integrated approach is required to complete a sound policy with sustainability as a core principle in achieving the desired goal of providing efficient public green spaces for sustainable urban development. The Federal and State Governments ought to work together to enhance urban quality of life by formulating a policy mix to guide development. The achievement of a sustainability policy in general, and a policy guide for the provision of urban green spaces in particular, could only be realistic if the affected citizens are involved in the design and implementation of the policy. Policies formulated with public participation are recognized as more acceptable and replicable to create sustainable development, as advocated by Agenda 21.

The provision of 10% of land for any development activities in Peninsular Malaysia could be made by private developers, as required by Act 172. There is a need for an efficient awareness campaign to enlighten private developers about the benefits derivable from surrendering 10% of

their land to local authorities, which include, among others: adding market value to their properties, creating an attractive built environment, promoting social cohesion in the neighborhood, promoting the health status of their tenants, and promoting liveable cities. Furthermore, as a result of the lack of awareness shown by housing developers on the advantages attached to giving the required 10% of land as open spaces and sustainable practice in their development projects, they view the policy as an additional liability instead of an investment (Zainul Abidin, 2010). Similarly, the local authorities' over-reliance on private developers for public open spaces (JBPD 7/2000) is erroneous because the provision of public facilities must be considered a shared responsibility of the local authorities and private developers. Local authorities ought to provide parks, local area open spaces, neighborhood open spaces, and connecting green corridors. At the same time, private developers should complement their effort by giving communities playgrounds and spaces for household gardens.

B. Solution Analysis
B1: Evaluation of Criteria for G.I. Provision in Peninsular Malaysia
*Effectiveness***:**
The advocates of new urbanism view incorporating the local population into the design and implementation of a developmental project as the best approach to sustainable urban development, further strengthened by Agenda 21. Creating a policy to provide urban green corridors would further enhance the quality of the public open spaces provided (Tian et al., 2014). Fredrick Law Olmsted advocates promoting greenways as linking corridors and opines that public open spaces connected with green corridors could offer essential services (Ignatieva, Stewart, & Meurk, 2010). Meanwhile, the provision of landscape along the street helps add an aesthetic quality to the neighbourhood and the urban centre in general. Apart from promoting scenic quality, creating a street landscape provides shade that is pleasant to pedestrians and promotes walking and jogging.

*Cost***:**
Despite its wide popularity and acceptability in many nations, the green infrastructure involves minimal cost compared with the grey infrastructure (Seeliger & Turok, 2013). The green infrastructure uses natural solutions to tackle environmental issues (Artita & Rajan, 2012), thereby being economically efficient and environmentally friendly. The application of the G.I. differs based on countries' needs and potentials, but Malaysia has all the necessary attributes to facilitate and exploit the benefits of the G.I. at a limited cost.

The USA uses the G.I. to convert the adverse effects of flash flooding and the cost attached to the provision of drainage facilities with a constant need for rehabilitation and upgrading the system (Keeley et al., 2013). This colossal cost and inefficiency of the grey infrastructure influenced the USA policymakers to diversify their approach to tackling surface run-off, which usually results in massive flooding that causes millions of losses, sometimes extending to the loss of lives (Webster-mannison, 2013). The inability of the grey infrastructure to convert the effects of surface run-off can be seen in Kuala Lumpur, the most populous city in Malaysia. The town

needs an efficient drainage system at the confluence of two rivers, the Gombak River and the Klang River.

This study pointed out that; drainage facilities provided to solve environmental issues using an engineered approach were inadequate. Malaysia can adopt G.I. techniques to solve stormwater and surface run-off; a large amount of money could be saved, with more tremendous advantages, as portrayed by the case of the USA. In adopting the G.I. policy pioneered by Natura 2000, it aims to expand the percentage of forest areas across the United Kingdom (Wright, 2011); the policy also concentrates on linking the fragmented forest reserves (Llausàs & Roe, 2012). The policy intends to restore the lost forest and rehabilitate biodiversity conservation for ecological services (Adams et al., 2014). Beyond this, the U.K. policy on G.I. also capitalizes on improving public open spaces to promote active living through participation in recreational activities (Elizabeth et al., 2010).

Ecological service values are beyond the interest of this work, as a large amount of literature is available. The annual matters of inactivity in the U.K. stood at about £8.2 billion (Davis et al., 2014); the urban green spaces facilitate active living (Moseley et al., 2013), thereby helping to reduce the cost of inactivity. Inactivity can influence many urban populations to be unfit for productive and healthy living (Jackson et al., 2013). Malaysia is not immune to inactivity syndrome, as reported by several studies on sedentary life, obesity, and heart disease (Kaur et al., 2014). Well-designed and attractive public urban green spaces can enhance active living. If well-designed and efficiently managed, these spaces and recreational facilities would improve the scenic quality of the built environment and thereby promote liveability, which would add economic value to the housing stock. Furthermore, the local authorities could recover their cost of providing urban parks and essential recreational facilities from the annual tax generated by the neighborhood housing.

Ease of Implementation:
The green infrastructure is multifunctional in its service providers; therefore, its implementation requires interagency collaboration. The National Physical Planning Council is the supreme planning body responsible for the overall development activities in Peninsular Malaysia. The council should make it mandatory for every planning authority to comply with the national standard of providing 10% open space for any development activities irrespective of the area or size of the development. With the implementation of the G.I. policy in Malaysia, the machinery could be put in place more quickly because the service providers are unskilled workers who attract little remuneration (Ali, 2014). However, the activities of implementing the green infrastructure policy must be monitored by landscape architects as provided by National Landscape Policy (2010). Or botanists specialize in selecting suitable local plant species that would improve the scenic quality of the location and the environmental conservation of the area (La Rosa & Martinico, 2013).

Alternative Policies for G.I. Provision in Malaysia
1. Enforcing the current requirement of Act 172 for the mandatory provision of 10% open space instead of the current optional condition by respective local authorities.
2. Maintenance of the provided public urban green spaces by local authorities to meet the recreational needs of the Malaysian urban population.
3. The local authorities should complement the effort of private developers in providing, designing, implementing, and maintaining urban parks and connecting the facilities with green corridors or urban trails as provided by the Local Government Act.
4. The local authorities should design a plan and target to reconnect all urban public open spaces for efficient use and service delivery to urban societies.
5. The local authorities should promote the street landscape in their respective local authorities.
6. Local authorities should expand green infrastructure provision to incorporate storm water management, as practiced in the USA, the promotion of biodiversity conservation, the rise of active living, and enhancing the health status of the urban population.

Recommendation for Achieving the Desirable Amount of Urban Green Open Spaces
The majority of the Local Authorities of Selangor State have performed beyond expectation in providing urban green spaces. The commitment of nine of the state's local authorities provided more than their share of policy requirements. The only local authorities that are lagging are Ampang Jaya and Kajang, which fail to meet the policy requirement of providing two hectares to every one thousand residents of Peninsular Malaysia. However, these two local authorities share similar characteristics of being influenced by a wave of fast urbanization trends that increased their policy requirement. Kajang Municipal Council has shown a remarkable effort to provide its growing population with adequate urban green spaces (Ahmad et al., 2014). Despite its inability to meet policy requirements to maintain its 2011 record. Such could be attributed to the apparent desire to become a pioneer in the sustainable agenda promoted by Peninsular Malaysia. as advocated by Murninet under the auspices of the Federal Department of Town and Country Planning, Malaysia Ministry of Housing, and Local Government (Shamsaini & Abdul Rashid, 2013). Contrary to Kajang, Ampang Jaya has not shown any commitment towards improving the supply of urban green spaces from 2011 through 2020, even though the area is urbanizing faster than any other local authority in the state. Such can only be an opportunity to create a responsive design to enhance the local authority's liveability that can be facilitated by providing urban green spaces.

Conclusion
The policy analysis conducted in understanding urban green space provision in the Selangor state of Malaysia revealed that the amount of urban green spaces in the state as of 2011 stood at 5179.35 hectares (47.43%), with a total policy requirement of about 10920.00 hectares which indicated a deficit of 5740.65 hectares (52.57%). This result agrees with the national data which indicates a deficiency in supplying urban green spaces. However, the situation has changed in 2020 as shown in table 3 that revealed the provision of urban green in the state standing at 38,924 hectares with a corresponding policy requirement standing at 13140, and consequent

excess provision reaching 25784 hectares. This great milestone achieved within nine years is a source of concern in consideration of the rapid turnaround of the situation. Although the achievement calls for celebration, in reality, it is technically a pointer highlighting a breach of Town and Country Planning Law (Act 172) that situate stringent policy of converting forest and agricultural land to residential buildings. Such feat by the majority of the local authorities could only be realized through the abuse of such policy. Meanwhile, the provided urban green spaces even though are enormously provided are not connected with green corridors as shown in the digitized map in figure 2 to facilitate biodiversity conservation and other essential benefits offered by urban green spaces. Conclusively, efforts need to be centered on connecting the available green to ensure optimum benefit attached to urban green space provision.

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