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SUSTAINABILITY ASSESSMENT OF AFFORDABLE HOUSING IN KUALA LUMPUR AND SELANGOR

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Abstract:

Housing is a basic requirement that can improve one's standard of living. By balancing demand and supply, fostering an effective and sustainable housing sector, as well as providing efficient public facilities and services and a safe environment, the government is committed to ensuring access to quality and affordable housing to meet the needs of an increasing population. As a result, collaboration between the government and the private sector is critical in order to develop a competitive and long-term housing industry. The aim of this research is to enhance the spatial framework to measure the sustainability assessment of the affordable housing in Malaysia. The methodology of this study included both GIS and non-GIS analysis. The result of this study based on the spatial indicators nearby the affordable housing and the output of this study is the graph of the sustainability level of the affordable housing.

Keywords:

Affordable Housing, Sustainability, Spatial Indicator

Introduction

Affordable housing is defined as housing which is sufficient in quality and location, and is not so costly that it prevents its occupants from satisfying other basic living needs. In other words, the location, quality and build-up of a house is equally as important as the financial affordability

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of a house. Malaysia faces a similar issue in this regard. A number of reasons encompassing structural, cyclical, institutional and cultural factors, culminating in a mismatch between supply and demand, has contributed towards houses becoming seriously unaffordable in Malaysia in 2016. Consequently, Malaysia faces a shortage of affordable homes for the masses (Cheah Su Ling, 2017).

Affordable housing can reduce the cost of living in urban areas, with lower rental and purchase rates. In addition, to improve the quality of life in the city, one of the key components of housing is the sustainability and balanced living style among social, economic and environmental needs (Bakar and Jusoh, 2017).

Literature Review

There are several issues on the sustainability of affordable housing in Kuala Lumpur and Selangor. The issues are described in this Literature Review section.

Sustainability of Affordable Housing

In 2017, the definition of affordable housing has been redrafted by the State Housing Company Berhad (SPNB) in the form of schedules, such as table 1. This definition is divided into categories, namely low cost houses, medium low cost, and medium high cost. (Table 1)

Table 1: House Type and Price Range in Malaysia (SPNB, 2017)

No.	House Type	Width (m^2)	Peninsular Malaysia	Sabah and Sarawak
1.	Low Cost	700	RM 35,000	RM 50,000
2.	Low Medium Cost	750	RM 50,000	RM 70,000
3.	High Medium Cost	800	RM 80,000	RM 100,000

To ensure sustainable housing development, the Government of Malaysia under the National Housing Department has drafted the National Housing Policy (DRN) to ensure that housing planning in Malaysia can be implemented perfectly and to ensure a sustainable livelihood among Malaysians. (KPKT, 2011). This has been outlined in the Fifth Core of the DRN, which is the Sustainability of the Housing Sector (KPKT, 2011). The fifth thrusts emphasize the development of a balanced development and the use of the development concept and the development of environmentally friendly houses with the use of new technology and innovation, and the implementation of the green Technology concept that helps to preserve the environment in the context of energy and resource efficiency (KPKT, 2011). This will indirectly improve the quality of life while preserving the environment.

Components in Sustainability of Affordable HousingBesides criteria from DRN and MURNInets, one of the indicators that can be used to measure the sustainability of housing is the Malaysian Family Welfare Index (IKKM) developed by LPPKN. The KLCI aims to measure the level of family well-being through the household's assessment of the parents of the well-being of their families (LPPKN, 2016). The index has 7 domains with 23 indicators in

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2011, and has been added to eight domains in 2016, with 23 indicators. This indicator is a Family Relationship Domain, Family Economic Domain, Family Health Domain, Family Safety Domain, Family Domain and Community Involvement, Family Doman, Religious Role and Spiritual Practice, Housing and Family Domain and Family Domain and Communication Technology (Figure 2) (LPPKN, 2016). This IKKM is able to assess the sustainability of housing from social and economic aspects.

In addition, Said (2016) proposes to identify the level of ability to have sustainable housing in Malaysia, particularly in the Klang Valley, there are 32 indicators that can be used as a basis, that is;

1. Home Price
2. Home Quality
3. Type of House
4. Home Packaging
5. Home Design
6. Interior Design
7. Home Position in Layout Plan (Position of the house in layout plan)
8. Size of the built-up area
9. Size of Land Area (size of land area)
10. Built-up area (Built-up area)
11. Age of Home
12. Home Topography
13. Interest Rate
14. Near commercial area
15. Near the Hospital
16. Near the Post Office
17. Near the Entertainment Area
18. Close to Transportation
19. Near the Area of Worship
20. Near the Educational Area
21. Adjacent to the Workplace
22. Environmental Quality
23. Security Level
24. Traffic congestion
25. Population Density
26. Scenes
27. External Conditions
28. Waste management availability
29. Safety level
30. Themes or Drafts
31. Accessibility of Child Care
32. Electricity Supply

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Methodology

Study Approach

Study approach is carried out to outline the workflow of this study. There are several steps that are needed to accomplish this study such as research formulation, data collection, analysis and finally the output of this study. Each phase is shown in Figure 1.

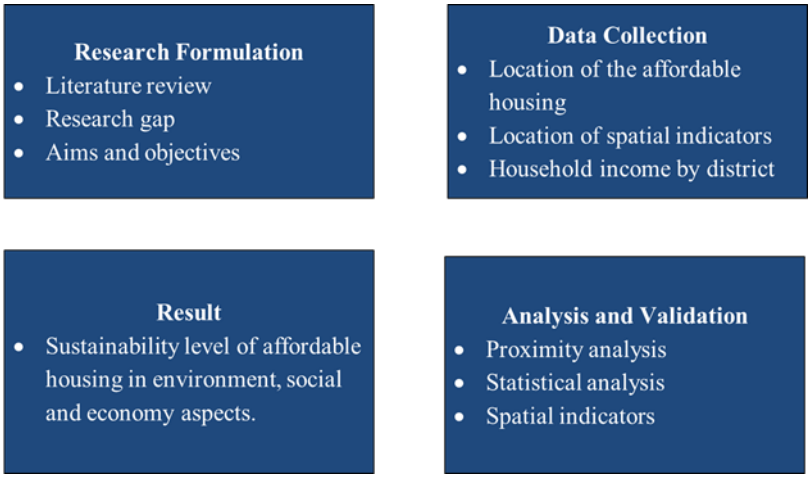

Figure 1: Study Approach

Research Formulation

Research formulation consists of the research gap, aims, objectives, methodology and literature review. This stage is the initial step in this study. In order to obtain the accurate information, sources like journal, articles, thesis and other reliable contents are used in this study. The research gap of this study is aside from quality construction materials, sustainable housing also requires an access for the housing facilities which promotes the social unity and the serenity (Goh Hong Ching, 2014). The aims and objectives of this study are to identify the spatial indicators for measuring the sustainability level of the affordable housing, to analyze the sustainability level of affordable housing in environment, social and economy aspects, and to measure the existing sustainability level of affordable housing in Malaysia and include them into this research. Literature review is the stage of obtaining the details information about affordable and sustainable housing.

Data Collection

The data required for this study is the basemap of the study area which is the shapefile of Kuala Lumpur and Selangor district. The basemap can be obtained from a public website which provides open sources data such as the shapefile of any country by their sub-divisions. The website is called GADM. Next data is the location of the affordable housing in Kuala Lumpur and Selangor, location of the spatial indicators of sustainability of the affordable housing, and the household income in each district to measure the sustainability assessment in economy aspect.

Analysis

The analysis used in this study are proximity analysis, statistical analysis and scoring of each spatial indicators of sustainability assessment of affordable housing. Proximity analysis is the buffer radius from the location of affordable housing to the location of each indicator of the

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sustainability of affordable housing. Statistical analysis is used to calculate the percentage of sustainability assessment of affordable housing. Sustainability level are measured based on the score of each spatial indicator. Spatial indicators are scored according to the certain distance from the housing area to each indicator (Maliene V, 2011). The example of spatial indicators by social aspect are mapped in **Figure 2** and the scoring of each indicator are shown on **Figure 3.**

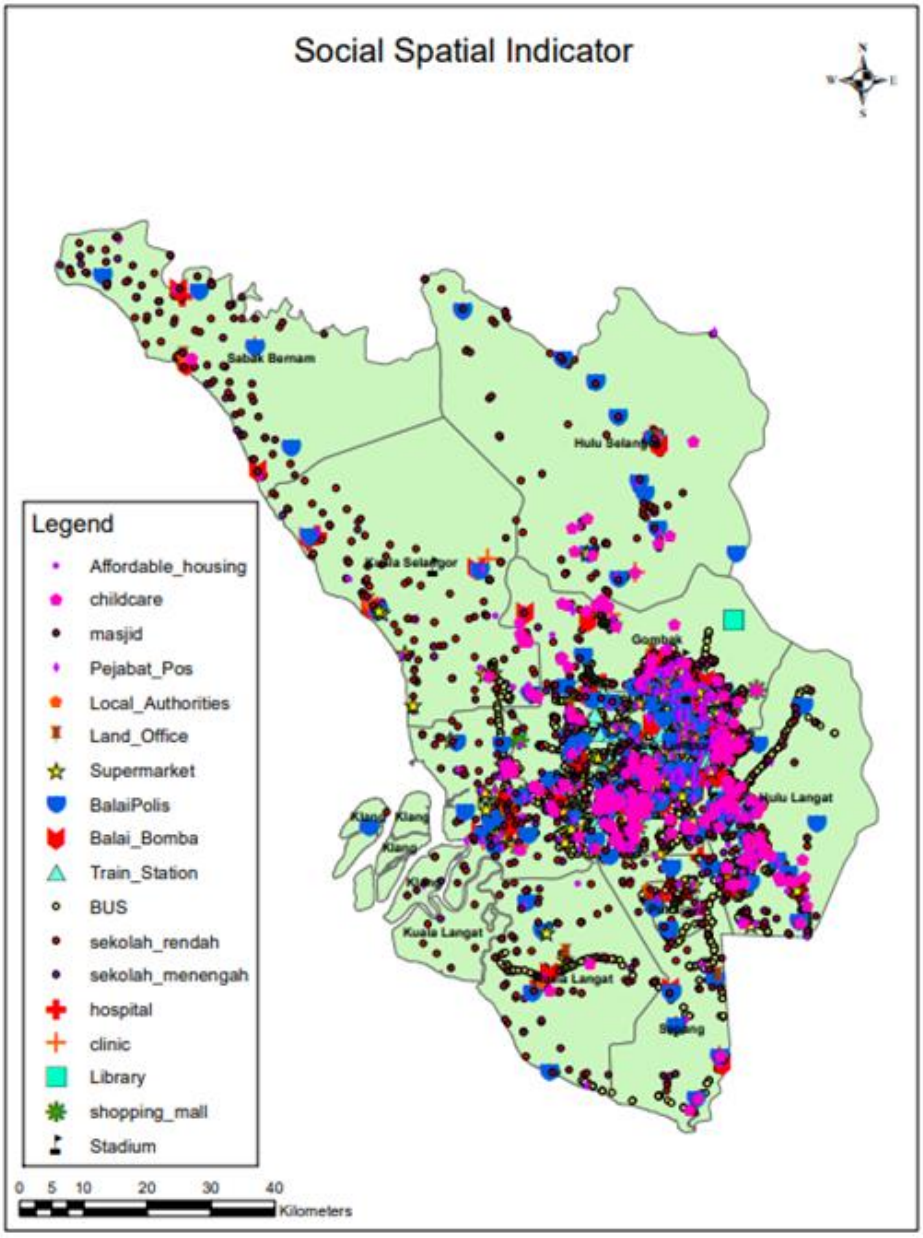

Figure 2: Spatial Indicator by Social Aspect

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Aspect	Indicator	Sub-indicator	Accessibility	Score	Source
Environment	Environmental quality	Heavy industry factories	<300 m	1	Ministry of Natural Resources
			>301 m	2	
		Chemical factories	<500m	1	
			>501m	2	
		Flood area	<500m	0	
			>501m	1	
		Water Features	<30m	0	
			>31m	1	
Social	Facilities	Post Office	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Stadium	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Shops, Shopping complex, market	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Public library	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
	Public administrative	Local Authority	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Land office	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
	Public safety	Police station	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Fire station	0 - 6 km	3	Ministry of Housing and Local Government
			7 km - 10 km	2	
			>11 km	1	
	Health services	Hospital	0 - 25 km	4	
			26 km - 50 km	3	
			51 km - 75 km	2	
			>76 km	1	
		Clinic	0 - 800 m	2	
			>801 m	1	
	Education	High school	0 - 1.6 km	3	
			1.7 km - 3.2 km	2	
			>3.3 km	1	
		Primary school	0 - 800 m	2	
			>801 m	1	
	Public transport	Train station	0 - 400 m	3	
			401 m - 800 m	2	
			>801 m	1	
		Bus terminal	0 - 400 m	3	
			401 m - 800 m	2	
			>801 m	1	
	Role of religion	Mosque	0 - 800 m	2	
			>801 m	1	
	Accessibility of Child Care	Kindergarten, nursery	0 - 400 m	2	
			>401 m	1	
Economy	Income rate	Average income by district	<RM 4850	1	Department of Statistics, Malaysia
			RM 4851 - RM 10959	2	
			>RM 10960	3	

Figure 3: The Score of Indicators of Sustainability Assessment of Affordable Housing

Main Result

Discussion

The results of this study are the sustainability assessment of affordable housing and the graph of the sustainability level of affordable housing in Kuala Lumpur and Selangor. The results are shown in **Figure 5**, **Figure 6** and **Figure 7**, **Figure 8**, **Figure 9** and **Table 2**. The results are categorized into 3 different aspects which are environment, social and economy. **Figure 5** shows the total score of all affordable housing with indicators in 3 different aspects which are environment, social and economy. All of these results are formed based on the statistical analysis that has been performed to calculate the percentage of the sustainability assessment of affordable housing in Kuala Lumpur and Selangor. According to Maliene V (2011), the percentage (%) of the sustainability level of affordable housing is calculated by using the formula in **Figure 4**.

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Table 2, **Figure 6, Figure 7, Figure 8** and **Figure 9** shows the sustainability assessment of affordable housing in 3 different aspects. The sustainability level of affordable housing in Kuala Lumpur and Selangor based on environment aspect ranks the highest which is 94.8% while social aspect reaches 65% and the economy aspect is 91%. **Figure 5** is the graph of the sustainability level of affordable housing on environment aspect while **Figure 6** and **Figure 7** show the sustainability level of affordable housing in Kuala Lumpur and Selangor on social and economy aspect.

$$\text{Sustainability } Level\ (\%) = \frac{Total}{Total\ Max\ Score} \times 100\%$$

Figure 4: Formula of Percentage of Sustainability Level of Affordable Housing

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			ENVIRONMENT				SOCIAL																				ECONOMY		
ID	DISTRICT	HOUSING	Heavy industry Factories	ChemicalFactories	Flood	WaterFeature	Mosque	PostOffice	Authority	LandOffice	Market	Police	FireStat	Train	Bus	Childcare	PrimarySchool	HighSchool	Hospital	Clinic	Library	Mall	Stadium	incomeRate	Total Score	Sustainability (%)
1	KLANG	KEMUNING IDAMAN	2	2	0	1	1	1	1	1	3	1	2	1	3	1	1	2	4	1	1	1	1	2	33	57.9
2	KUALA LUMPUR	RESIDENSI JALILMAS	2	2	0	1	1	2	1	1	2	3	3	1	2	1	2	3	4	1	2	1	1	3	39	68.4
3	KUALA LUMPUR	VISTA OUG	2	2	0	1	1	3	1	1	3	3	3	1	2	1	2	3	4	1	3	1	2	3	43	75.4
4	KUALA LUMPUR	CASA GREEN	2	2	0	1	1	2	1	1	2	3	3	1	2	1	2	3	4	1	3	1	2	3	41	71.9
5	KUALA LUMPUR	RESIDENSI PUCHONGMAS	2	2	0	1	1	3	1	1	3	2	3	1	3	1	1	2	4	1	2	1	2	3	40	70.2
6	KUALA LUMPUR	RESIDENSI SURIA PANTAI	2	2	0	1	1	3	2	1	3	3	3	1	3	1	1	3	4	1	3	3	2	3	46	80.7
7	KUALA LUMPUR	RESIDENSI KUCHAIMAS	2	2	0	1	1	3	1	1	3	3	3	1	3	1	2	3	4	1	2	2	1	3	43	75.4
8	GOMBAK	PPR JELATEK	2	2	0	1	1	3	1	1	2	2	3	3	3	1	2	3	4	1	3	2	1	3	44	77.2
9	KUALA LUMPUR	RESIDENSI GURNEYMAS	2	2	0	1	1	3	1	1	2	3	3	1	3	1	1	3	4	1	3	2	1	3	42	73.7
10	KUALA LUMPUR	RICA RESIDENCE	2	2	0	1	1	3	1	1	2	3	3	1	3	1	2	3	4	1	2	3	2	3	44	77.2
11	KUALA LUMPUR	RESIDENSI ENESTA KEPONG	2	2	0	1	1	3	1	1	3	3	3	1	2	1	1	3	4	1	1	1	1	3	39	68.4
12	GOMBAK	LAMAN ADONIS	2	2	0	1	1	1	1	1	1	1	3	1	1	1	2	4	1	1	1	1	1	3	31	54.4
13	GOMBAK	PPR PALMA APARTMENT	2	2	0	1	1	3	1	1	1	1	3	1	1	1	1	3	4	1	1	1	1	3	34	59.6
14	KUALA SELANGOR	TAMAN SUNGAI YU INDAH	2	2	0	0	2	1	1	1	1	1	3	1	1	1	1	2	4	1	0	1	1	2	29	50.9
15	SEPANG	DAHLIA IMPIANA	2	2	1	0	1	3	1	2	1	2	2	1	3	1	2	3	4	1	1	1	1	3	38	66.7
16	HULU LANGAT	PR1MA BANDAR BUKIT MAHKOTA	2	2	1	0	1	3	1	1	3	1	2	1	3	1	1	3	4	1	1	1	1	2	36	63.2
17	HULU LANGAT	PANGSAPURI ACACIA	2	2	1	1	1	3	1	1	2	1	3	1	3	1	2	3	4	1	1	1	1	2	38	66.7
18	HULU LANGAT	S1 TOWNHOUSE	2	2	1	1	1	1	1	1	2	1	3	1	1	1	1	3	4	1	1	1	1	2	33	57.9
19	HULU LANGAT	TIARA SOUTH SEMENYIH	2	2	1	1	2	2	1	1	3	2	3	1	1	1	2	2	4	1	1	1	1	2	37	64.9
20	KUALA LANGAT	BANDAR RIMBAYU	2	2	1	1	1	1	1	1	1	1	3	1	1	1	1	1	4	1	1	1	1	2	28	49.1
21	SEPANG	SERI WARISAN @ SELANGORKU	2	2	1	1	2	2	1	2	3	2	3	1	2	1	1	3	4	1	1	1	1	3	40	70.2
22	HULU LANGAT	SALAK MERCU @ PANGSAPURI ANGGUN SELANGORKU	2	2	1	1	1	3	1	2	2	2	3	1	3	1	2	3	4	1	1	1	1	2	40	70.2
23	HULU LANGAT	PR1MA KAJANG UTAMA	2	2	1	1	1	3	2	1	1	2	3	1	3	2	2	3	4	1	1	1	1	2	40	70.2
24	SEPANG	PANGSAPURI ALPINIA	2	2	1	1	1	2	1	1	3	2	2	1	1	1	1	2	4	1	1	1	1	3	35	61.4
25	KUALA LUMPUR	PANGSAPURI HARMONI L PUTRA HEIGHTS	2	2	1	1	1	3	1	1	3	3	2	1	3	1	1	2	4	1	1	1	1	3	39	68.4
26	KUALA LUMPUR	TAMAN PUCHONG UTAMA	2	2	1	1	1	3	1	1	3	3	3	1	3	1	2	3	4	1	1	1	1	3	42	73.7
27	HULU LANGAT	JADE HILLS	2	2	1	0	1	1	1	1	2	2	3	1	1	1	1	3	4	1	1	1	1	2	33	57.9
28	KLANG	APARTMENT TRIFOLIS	2	2	1	0	1	3	1	1	3	3	3	1	1	1	1	3	4	1	1	1	1	2	37	64.9
29	HULU LANGAT	PR1 RESIDENSI JAYA	2	2	1	1	2	3	1	1	2	3	3	1	3	1	1	3	4	1	1	1	1	2	40	70.2
30	HULU LANGAT	SURIAN TROPIKA APARTMENT @ PANGSAPURI SELANGORKU BUKIT SURIA	2	2	1	1	1	2	1	1	2	3	3	1	1	1	2	2	4	1	1	1	1	2	36	63.2
31	KLANG	PANGSAPURI KARYA	2	2	1	1	1	2	2	2	2	2	3	1	1	1	2	3	4	1	1	1	1	2	38	66.7
32	HULU LANGAT	SUTERA BAYU	2	2	1	1	2	3	1	1	3	3	3	1	2	1	2	3	4	1	1	1	1	2	41	71.9
33	KUALA LUMPUR	RESIDENSI LANAI BUKIT JALIL	2	2	1	1	1	2	1	1	3	2	3	1	3	1	1	3	4	1	2	1	2	3	41	71.9
34	HULU LANGAT	PANGSAPURI TAMING MUTIARA	2	2	1	1	1	1	1	1	1	2	2	1	2	1	1	3	4	1	1	1	1	2	33	57.9
35	KUALA LUMPUR	RESIDENSI RIMBUNAN PETALING	2	2	1	1	1	2	1	1	3	3	3	1	3	1	1	3	4	1	3	1	2	3	43	75.4
36	KUALA LUMPUR	RESIDENSI HIJAUAN LUMAYAN	2	2	1	1	1	2	1	1	3	3	3	1	3	1	2	3	4	1	2	1	2	3	43	75.4
37	KUALA LUMPUR	RESIDENSI TASIKMAS	2	2	1	0	1	3	1	1	3	2	3	1	3	1	1	3	4	1	2	1	2	3	41	71.9
38	KUALA LUMPUR	SELESA APARTMENT	2	2	1	1	1	3	1	1	3	2	3	1	3	1	1	3	4	1	2	2	2	3	43	75.4
39	KUALA LUMPUR	PANGSAPURI NURI DESA PETALING	2	2	1	0	1	3	1	1	3	3	3	1	3	1	2	3	4	1	1	1	2	3	42	73.7
40	KUALA LUMPUR	RITZ COMMUNITIES	2	2	1	1	1	2	1	1	3	3	3	1	3	1	2	2	4	1	2	1	2	3	42	73.7
41	KUALA LUMPUR	RESIDENSI GEMBIRA 737	2	2	1	1	1	3	1	1	3	3	3	1	3	1	1	3	4	1	2	2	1	3	43	75.4
42	KUALA LUMPUR	RESIDENSI RAZAKMAS 2	2	2	1	1	1	3	1	1	2	2	3	1	3	1	1	3	4	1	3	1	1	3	41	71.9
43	KLANG	BANDAR BUKIT RAJA FASA 17A	2	2	1	1	1	2	1	1	2	1	3	1	2	1	2	2	4	1	1	1	1	2	35	61.4
44	KUALA LUMPUR	APARTMENT LILI PETALING	2	2	1	1	1	3	1	1	3	3	3	1	3	1	1	3	4	1	2	2	1	3	43	75.4
45	KUALA LUMPUR	RESIDENSI DESA SATUMAS	2	2	1	1	1	3	1	1	2	3	3	1	2	1	1	3	4	1	2	2	1	3	41	71.9
46	KUALA LUMPUR	RESIDENSI DESAMAS	2	2	1	0	1	3	1	1	2	3	3	1	3	1	2	3	4	1	2	2	1	3	42	73.7
47	KLANG	SUNGAI KAPAR INDAH	2	2	1	1	1	1	1	1	1	1	2	1	1	1	2	3	4	1	1	1	1	2	32	56.1
48	KUALA LUMPUR	RESIDENSI AKASIA PERMAISURI	2	2	1	1	1	3	1	1	2	2	3	1	3	1	1	3	4	1	2	3	1	3	42	73.7
49	KUALA LUMPUR	DE CENDANA, SETIA ALAM	2	2	1	1	1	1	1	1	1	2	2	1	1	1	1	2	4	1	1	3	1	3	34	59.6
50	KUALA LUMPUR	RESIDENSI PANDANMAS 2	2	2	1	1	1	3	2	1	3	2	3	1	3	1	2	3	4	1	1	3	1	3	44	77.2
51	KUALA LUMPUR	RESIDENSI PANDANMAS	2	2	1	1	1	3	2	1	3	2	3	1	3	1	2	3	4	1	1	2	1	3	43	75.4
52	HULU LANGAT	RSKU @ PUNCAK INDAH	2	2	1	1	1	3	1	1	3	2	3	1	3	1	1	3	4	1	1	1	1	2	39	68.4
53	KUALA LUMPUR	PPR HILIRAN AMPANG	2	2	1	1	2	3	2	1	3	3	3	1	3	2	1	3	4	1	2	2	1	3	46	80.7
54	KUALA LUMPUR	KONDOMINIUM KIARA KASIH	2	2	1	1	1	3	1	1	2	2	3	1	3	1	1	3	4	1	1	1	1	3	39	68.4
55	KUALA LUMPUR	RESIDENSI SEMARAK PLATINUM	2	2	1	1	1	3	1	1	2	2	3	1	2	1	2	3	4	1	3	2	1	3	42	73.7
56	KUALA LUMPUR	SKYAWANI 3 RESIDENCE	2	2	1	1	1	3	1	1	3	2	3	1	3	1	2	3	4	1	2	1	1	3	42	73.7
57	KUALA LUMPUR	RESIDENSI MINEST	2	2	1	1	1	3	1	1	2	3	3	1	3	1	2	3	4	1	3	2	1	3	44	77.2
58	KUALA LUMPUR	RESIDENSI RAMPAI 2	2	2	1	1	1	2	1	1	3	3	3	1	3	1	1	3	4	1	3	1	1	3	42	73.7
59	KUALA LUMPUR	RESIDENSI WANGSAMAS	2	2	1	0	1	3	1	1	3	3	3	3	3	1	1	3	4	1	3	1	1	3	44	77.2
60	KUALA LUMPUR	THE PARC TOWER	2	2	1	0	1	3	1	1	3	3	3	2	3	1	1	3	4	1	3	1	1	3	43	75.4
61	KUALA LUMPUR	VISTA LANGKAWI	2	2	1	1	1	3	1	1	3	3	3	1	3	1	2	3	4	1	2	1	1	3	43	75.4
62	KUALA LUMPUR	RESIDENSI WANGSA MERANTI	2	2	1	1	1	3	1	1	3	3	3	1	3	1	2	3	4	1	2	1	1	3	43	75.4
63	KUALA LUMPUR	RESIDENSI SKYAWANI	2	2	1	1	1	3	1	1	2	3	3	1	3	1	1	3	4	1	2	1	1	3	41	71.9
64	KUALA LUMPUR	RESIDENSI INSPIRIA	2	2	1	1	1	3	1	1	2	3	3	1	3	1	2	3	4	1	2	1	1	3	42	73.7
65	KUALA LUMPUR	RESIDENSI HEKTAR	2	2	1	1	1	3	1	1	3	3	3	1	3	1	1	2	3	4	1	2	1	3	43	75.4
66	KUALA LUMPUR	RESIDENSI SERI WAHYU	2	2	1	1	1	3	1	1	3	3	3	1	2	1	2	3	4	1	1	1	1	3	41	71.9
67	KUALA LUMPUR	RESIDENSI SKYAWANI 2	2	2	1	1	1	3	1	1	2	3	3	1	3	1	1	3	4	1	2	1	1	3	41	71.9
68	KUALA LUMPUR	RESIDENSI KEPONGMAS 2	2	2	1	1	1	3	1	1	3	3	3	1	2	1	1	3	4	1	1	1	1	3	41	71.9
69	KUALA SELANGOR	ERISTANA (TOWNHOUSE 3 TINGKAT JENIS D)	2	2	1	1	1	1	1	1	2	3	2	1	1	1	2	3	4	1	1	1	2	3	35	61.4
70	KUALA SELANGOR	RESIDENSI PINANG, HILLPARK	2	2	1	1	1	1	1	1	1	2	1	1	2	1	1	2	4	1	1	1	1	2	31	54.4
71	KUALA LUMPUR	RESIDENSI VISTA WIRAJAYA	2	2	1	1	1	2	1	1	3	2	3	2	3	1	1	3	4	1	2	1	1	3	41	71.9
72	KUALA LUMPUR	PPR GOMBAK SETIA	2	2	1	1	1	3	1	1	3	3	3	3	3	1	1	3	4	1	2	1	1	3	44	77.2
73	KUALA SELANGOR	SAUJANA PERDANA	2	2	1	1	1	1	1	1	2	3	2	1	1	1	2	3	4	1	1	1	1	2	35	61.4
74	KUALA LUMPUR	VISTA WIRAJAYA 2	2	2	1	1	1	2	1	1	3	2	3	3	3	1	1	3	4	1	2	1	1	3	42	73.7
75	KUALA LUMPUR	RESIDENSI METRO KEPONG	2	2	1	1	1	3	1	1	3	3	3	1	2	1	1	3	4	1	1	1	1	3	40	70.2
76	KUALA LUMPUR	RESIDENSI KEPONGMAS	2	2	1	1	1	3	1	1	3	3	3	1	2	2	2	3	4	1	1	1	1	3	43	75.4
77	GOMBAK	DANAU RIA	2	2	1	1	2	3	1	1	3	2	3	1	3	2	1	3	4	1	1	1	2	3	43	75.4
78	KUALA LUMPUR	FIONA APARTMENT	2	2	1	1	1	3	1	1	3	2	3	1	2	1	2	3	4	1	1	1	2	3	41	71.9
79	KUALA LUMPUR	RESIDENSI LAMAN SARI	2	2	1	1	1	3	2	1	3	3	3	1	2	1	2	3	4	1	1	1	1	3	42	73.7
80	GOMBAK	PANGSAPURI TAMAN SAMUDERA	2	2	1	1	2	3	1	1	3	2	3	1	3	1	2	3	4	1	1	1	2	3	43	75.4
81	KUALA LUMPUR	RESIDENSI PUTRA BAIDURI	2	2	1	0	2	3	2	2	2	2	3	1	1	1	1	3	4	1	1	1	1	3	39	68.4
82	KUALA LUMPUR	RESIDENSI SELAYANG DAMAI	2	2	1	1	2	3	2	2	2	3	3	1	2	1	1	3	4	1	1	1	1	3	42	73.7
83	GOMBAK	PANGSAPURI RIA	2	2	1	1	2	3	2	1	2	3	3	1	3	2	2	3	4	1	1	1	2	3	45	78.9
84	KUALA SELANGOR	TAMAN ALAM SURIA	2	2	1	0	1	1	1	1	3	1	1	1	1	1	2	4	1	1	1	1	2	3	30	52.6
85	GOMBAK	PANGSAPURI LAKSAMANA JAYA	2	2	1	1	2	3	2	1	2	2	3	1	3	1	1	3	4	1	1	1	2	3	42	73.7
86	GOMBAK	PANGSAPURI CEMPAKA	2	2	1	1	2	2	1	1	2	2	3	1	3	1	1	3	4	1	1	1	3	3	41	71.9
87	GOMBAK	APARTMENT SELAYANG MULIA	2	2	1	0	1	1	2	2	1	1	3	1	2	1	1	2	4	1	1	1	2	3	35	61.4
88	GOMBAK	PANGSAPURI TAMAN SETIA	2	2	1	1	2	3	1	1	3	1	3	1	2	1	1	3	4	2	1	1	1	3	40	70.2
89	KUALA SELANGOR	RMM KOTA PUTERI	2	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	4	1	1	1	1	2	29	50.9
		TOTAL MAX SCORE	2	2	1	1	2	3	3	3	3	3	3	3	3	2	2	3	4	2	3	3	3	3	57	

Figure 5: Sustainability Assessment of Affordable Housing with the Total Score of Each Indicators on Environment, Social and Economy Aspect

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Table 2: Sustainability Assessment of Affordable Housing in 3 Different Aspects

ASPECT	SUSTAINABILITY (%)
Environment	94.8
Social	65
Economy	91

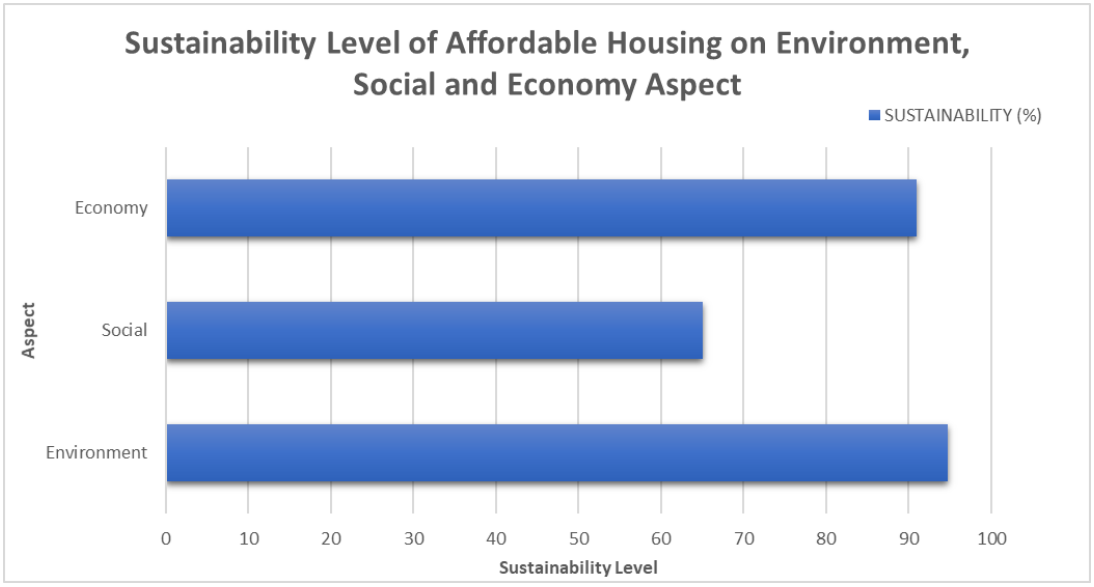

Figure 6: Graph of Sustainability Level of Affordable Housing in Kuala Lumpur and Selangor on Environment, Social and Economy Aspect

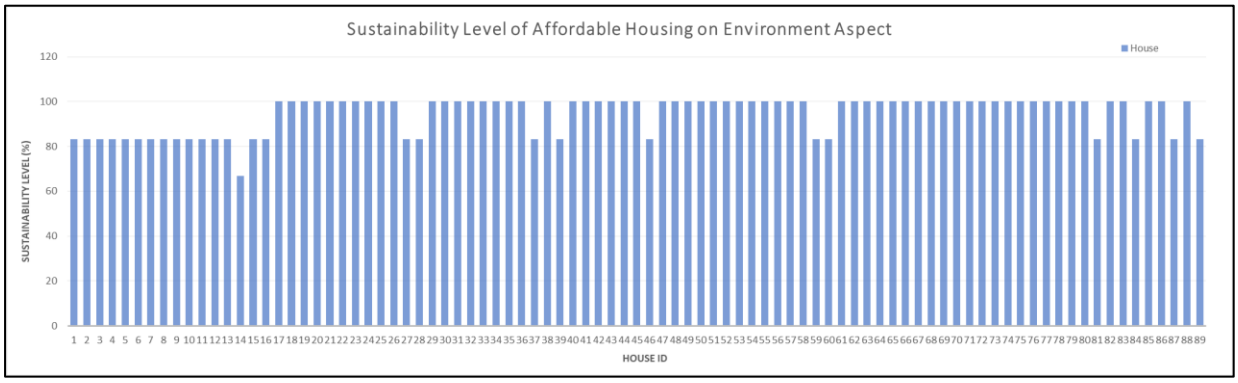

Figure 7: Graph of Sustainability Level of Affordable Housing on Environment Aspect

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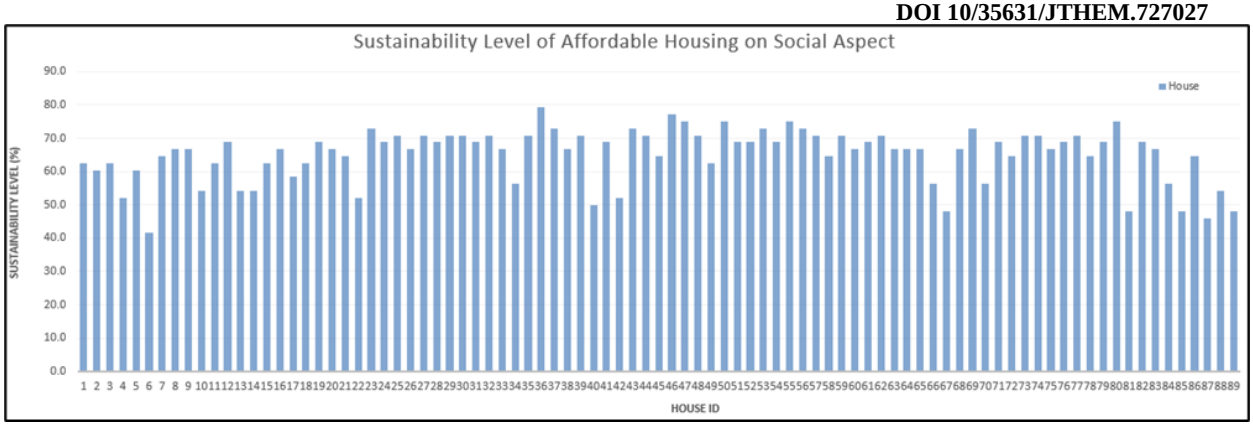

Figure 8: Graph of Sustainability Level of Affordable Housing on Social Aspect

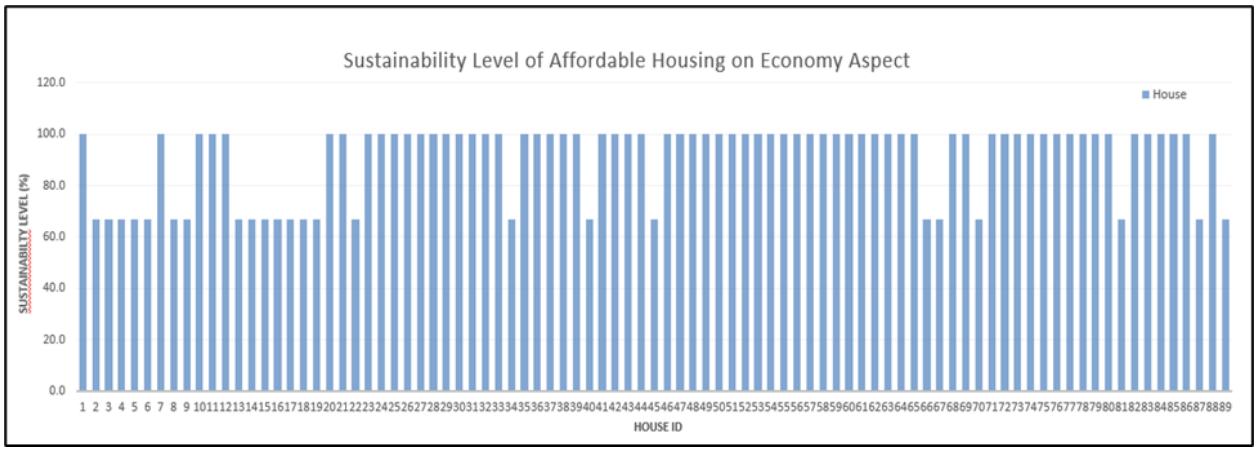

Figure 9: Graph of Sustainability Level of Affordable Housing on Economy Aspect

Conclusion

Overall, this study is conducted to determine the sustainability level of affordable housing in Kuala Lumpur and Selangor. This research might help the Ministry of Housing and Local Government (KPKT) to take an action towards achieving the goals of providing sustainable housing for Malaysian people.

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