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Students Perception on Sustainable in Creating Eco City Living Community: Case Study at Bandar Cassia, Batu Kawan, Penang, Malaysia

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ABSTRACT

Nowadays, the sustainable living is important in urban community to socially interact and to live safely. The community and urban design involves with a vital role in creating environments that support community sustainability by successfully integrating urban spaces into businesses, living and leisure. Besides, the ecological planning approach, that consider the sustainability of natural resources and addresses the interaction between man and the environment, have gained importance. Therefore, ecological neighborhoods and eco cities have started to be designed. This paper study about the Eco-City living concept and principles based on students perceptions on sustainable community living at Bandar Cassia, Batu Kawan, Penang. The research methodology are based on a site survey and using questionnaire by conducted with 50 students as respondents. The importance of this study as a key development in Eco City living strategy to promote sensitive community and urban development that preserves ecological integrity and balance of city living.

Keywords: Eco City; Living; Sustainable; Community; Ecological

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STUDENTS PERCEPTION ON SUSTAINABLE IN CREATING ECO CITY LIVING COMMUNITY: CASE STUDY AT BANDAR CASSIA, BATU KAWAN, PENANG, MALAYSIA

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Abstract

Nowadays, the sustainable living is important in urban community to socially interact and to live safely. The community and urban design involves with a vital role in creating environments that support community sustainability by successfully integrating urban spaces into businesses, living and leisure. Besides, the ecological planning approach, that consider the sustainability of natural resources and addresses the interaction between man and the environment, have gained importance. Therefore, ecological neighborhoods and eco cities have started to be designed. This paper study about the Eco-City living concept and principles based on students perceptions on sustainable community living at Bandar Cassia, Batu Kawan, Penang. The research methodology are based on a site survey and using questionnaire by conducted with 50 students as respondents. The importance of this study as a key development in Eco City living strategy to promote sensitive community and urban development that preserves ecological integrity and balance of city living.

Keywords: *Eco City, Living, Sustainable, Community, Ecological*

1. Introduction

The concept of Eco City living is most popular strategy in sustainable development in urban and cities area. At present in the 20th century, the awareness of eco city is integration in environmental aspects such as biodiversity conservation, mitigation of climatic change, economic growth and as well as livability in cities. Today, the sustainability context, the community sustainability and the community belonging have been affected in the process of globalization (Butterworth Iain, 2000). According to Maureen Williams (2003), the socially sustainable communities have the capacity to deal with the change and to adapt to new situations, attributes that are now becoming increasingly essential in a globalized world.

In 1970 barely a quarter of Malaysia's population lived in cities. Today three out of four Malaysians live in an urban environment, and the proportion continues to increase. Recently, Malaysia is move in

implementation on Eco City Living to create a good and healthy living community. However, the development on Eco City Living is still new and trying to move on established economic and social development. An eco-city is developed as an aid to mainstreaming sustainability in urban development at the neighborhood level (Kulshrestha, 2007). Though early days yet, through its eco-precinct and eco-town planning, Malaysia is seeking to plan to develop more sustainable.

The site study located at Bandar Cassia, Batu Kawan, Penang, Malaysia with 6,326 acre area. It is a new Eco City residents and community living development in Penang. Batu Kawan is the third satellite town of George Town, Penang after Bayan Lepas and Seberang Jaya. With the development concept is a self contained integrated township concept of live, work, learn and play (Penang Development Corporation, January 2016). Bandar Cassia is first design in Penang, Malaysia with using the environmental control by

following of Green building Index (GBI) requirements. The community design at Bandar Cassia is promoting in green development, safety, healthy and also promotes neighborliness.

The objectives of this study are (i) to examine the students' understanding of Eco City living concept, (ii) to determine the students' awareness on sense of environmental and ecological aspects in sustainable community and (iii) to analyze the design implementation of Eco City living development at Bandar Cassia, Batu Kawan, Penang, Malaysia. The papers later discuss detail on the important of sustainability in creating Eco city living at site and Malaysian context. Discussion based on a survey and students' perception.

2. Literature Review

The eco-city concept is part of the criteria of the sustainable communities. The eco-city concept is either "define" by people who deals with eco-city, or "adapt" through existing classification (Fleischer, 2002, p. 8). The eco-city movement started in 1975 when "Richard Register and a few friends founded Urban Ecology [now known as Eco-city Builders], a civil organization" (Fleischer, 2002, p. 8).

One of their main aims is to achieve the eco-city environment. After 15 years, in 1990, they managed to organize the First International Eco-city Conference in Berkeley, California, with several hundreds of papers and speakers" (Fleischer, 2002, p. 8). Since then, the similar conferences were held almost every year in different countries. Richard Register (1984) highlighted "the eco-city functions according to four principles":

- i) **"Small scale – highly qualified:** The issue of optimum or maximum size of an eco city has hardly been broached because most thinking on ecologically healthy alternative communities has

focused on villages and small towns. But at whatever population, the scale of material consumption and waste should be much smaller than in today's cities and villages".

- ii) **"Access by Proximity:** is an important principle of ecological city building which is being popularized in small circles by Urban Ecology, an education/action organization in Berkeley. The idea is to design maximum access right into the city structure."
- iii) **"Small scale recentralization:** From the eco city point of view, cities, towns and even villages should be recentralized physically and decentralized in terms of participation in community life and politics."
- iv) **"Diversity is healthy:** This is perhaps the largest, broadest principle of all. In cities, as in agriculture and most natural ecological areas, diversity is healthy." (Register, 1984, p. 33)

Based on the these principles, Register believed that it will create a happier people in a healthy surrounding (Register, 1984, p. 35). The concept of eco-city began to develop after the introduction of the concept by Register. However, in a real life, practitioners found that this concept is still vague with lack of guidance (Roseland, 1998, p. 200). Thus new terms started to derived from the "neo traditional town planning" and 'pedestrian pockets' to 're urbanization,' 'post-industrial suburbs' and 'sustainable cities' (Roseland, 1998, p. 200).

Even with a various terms applied; the main aim is still the same; to visualize a good eco-city environment especially in a context of 'living'. Eco-city "represents a goal, a direction for community

development - not simply a marketing slogan" (Roseland, 1998, p. 200).

Hence, in a context of living in an eco-city, the relationship between 'eco-city' and

‘sustainable communities’ are importance as they related to each other. The ‘eco-city’ could not stand alone. It needs ‘communities’ to strengthening the concept. Most importantly, it must be interpreted from a local perspective to ensure it could be achieved (Roseland, 1998, p. 201).

In Malaysia, again, this concept is still new. Kuala Lumpur (KL) Eco City is considered to be one of the eco-city project with the “largest integrated mixed commercial and residential developments in Malaysia” (“KL eco city, Kuala Lumpur, Malaysia,” 2016).

Classified as an eco-city project in its master plan, this development aims to gain recognition from the Green Building Index (GBI) and Leadership in Energy and Environmental Design (LEED) from the United States (Ibrahim, 2011). Although this project is build according to the ‘eco-city’ concept, however, the real successful of the project especially on the impact on the local community is still too early to discuss. The result gained from the local communities are importance as they are the “most resilient and able to grow stronger as they endure these changes are those that have clearly articulated visions for where they are headed and that periodically revisit and revise these visions”(Fleischer, 2002, p. 10).

Thus, the eco-city living in this area could only be debated once the project is completed and occupied. This project is aim to complete in 2021.

3. Research Methods

The selected area of study is Bandar Cassia, Batu Kawan, Penang. This selection was made due to the aim of Bandar Cassia, Batu Kawan, Penang is to become a first Eco City Living model at Penang, with concerns for design with environmental control (Penang Development Corporation, January 2016).

The study commenced with a visit to the office of Penang Development Centre (PDC) where to collect all the primary data of Bandar Cassia, Batu Kawan, Penang. The research only focuses only on the student’s perception. 50 students Diploma of Landscape Architecture were selected as respondents. A mixed methodology by combining the qualitative and quantitative methods, with using Bandar Cassia, Batu Kawan, Penang as case study.

The main research techniques include a survey using questionnaire, content analysis of primary and secondary documents and also field observation (site inventory and analysis). The data will analyze by using of SPSS and also Microsoft Excels. The student’s perception is enquired through their understanding (Eco city living and sustainable concepts and principles), recognition, opinion and evaluation of the physical elements (community sense on environmental and ecological aspects) and frequency of what they noticed on application and innovations for sustainability awareness and practices by communities of Bandar Cassia, Batu Kawan, Penang.

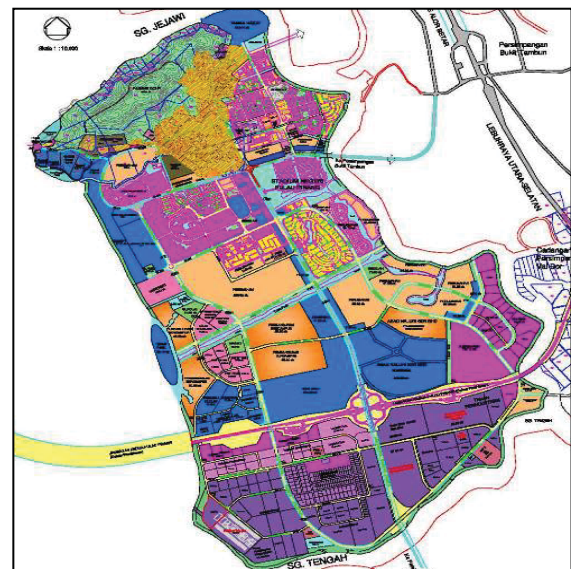


Figure 1. Master plan of Bandar Cassia, Batu Kawan, Penang, Malaysia

Source: (Penang Development Corporation, January 2016)

4. Data Analysis and Findings

The findings from the survey reveal that 90% student's age is 18 to 20 years and of the 50 respondents, 54% is male students and 46% is female students.

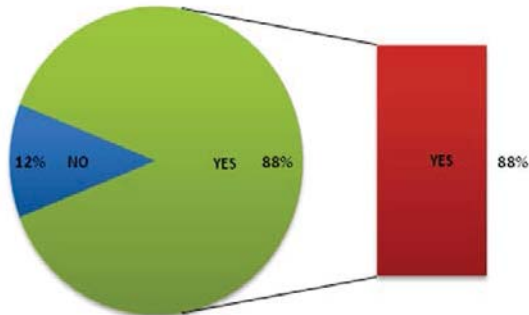


Figure 2.(a): Students understanding on Eco City Living and Sustainable

According examined students' perception on sustainable and Eco city living, the findings reveal that the majority of the respondents are understand the concept and principles of Eco City Living and Sustainable Concept (88%). The data was supported by frequency of 54% students' agreed that Bandar Cassia, Batu Kawan, Penang is implement on sustainable concept in their natural resources. While only (2%) is four students than 50 students are not really understand with the application of Eco City Living and Sustainable Concept at site study.

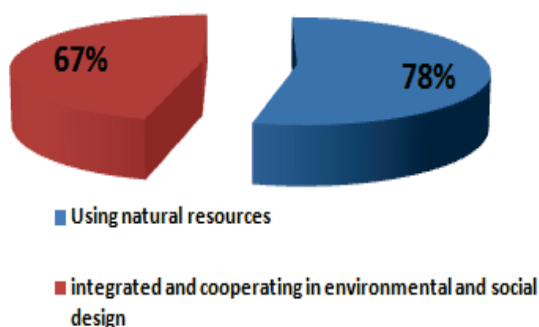


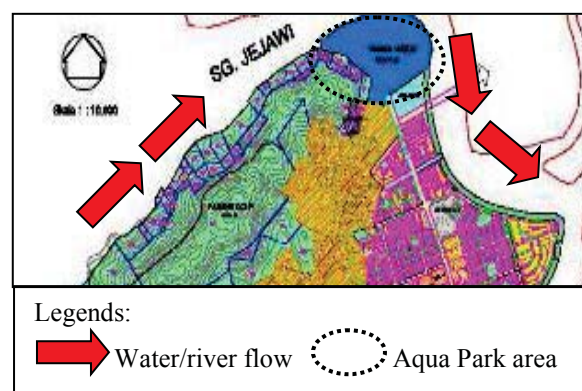
Figure 2.(b): Students Evaluation on Community Sense in Environmental and Ecological Aspects

The students' level evaluation on community sense in environmental and ecological aspects also was examined. The findings show that 78% students' of the total respondents satisfied and agreed with

the overall development of Bandar Cassia, Batu Kawan, Penang is using a natural resources as main attraction in their sustainable and Eco City living concept. According to Anil Laul, (2002), the respect of the natural elements is important in creating the 'living with nature' in sustainable community. It was control and created integrated development with the social and environmental design in well-regarded in its cultural, social a local context (Glasbergen P. and Blowers A, 1996).

As to supported this finding, the correlation data shows that 67% student's were satisfied and give high priority agreed that Bandar Cassia was integrated and cooperating in environmental and social design. Which were protected their natural resources and ecosystems. The main river of Sungai Jejawi and Aqua Park were protected as greenery and reserved area.

According to (Penang Development Corporation, January 2016), this area was significant to Batu Kawan as a bird's migration and as a main attraction site in creating ecological tourism. As well as maintained as neighborliness of green development concept.



Plan 2.(c): The zoom in area of Aqua Park and Sungai Jejawi (Jejawi River) at Bandar Cassia, Batu Kawan, Penang, Malaysia

Source: (Penang Development Corporation, January 2016)

Table 1. Application and Innovations in Smart Transport Systems

Transport System	Disagreed	Not Satisfied	Suggested
Systematic & easy accessibility	72%	50%	14%
Provided bikeways and walking tracks			

Besides focusing on the part of ecological and natural resources, this study also survey on the conducive mobility between living quarters and work place by using cycling and walking track and appropriate public transport.

Eco city Builders (2012), mentioned that good linkages of walk able city or community need to support with the efficient of public transport systems and provided with mix of uses and services. However, the data showed seventy two percent (72%) of the students' felt and approved that the components of sustainable in public transport at Bandar Cassia, Batu Kawan, Penang is worst and not easy to access as well as lacking of systematic connection between each others.

The correlation of data reveal that 50% students' suggest that proper and friendly linkage of pedestrian and vehicle needs to segregation and need to provide safety of bikeways and walking path at Bandar Cassia, Batu Kawan, Penang. Designing great places for the comfort and enjoyment of the pedestrian is one of the most important aspects in Eco city living (United Nation, 2007).

Among the small numbers, 14% respondents were not sure and not satisfied with the overall of application and innovations of sustainability and Eco city living at Bandar Cassia, Batu Kawan. They cited that, the overall application and innovation was not done properly, there is

limited cycling and bicycle tracks, not users friendly and not support local services and facilities.

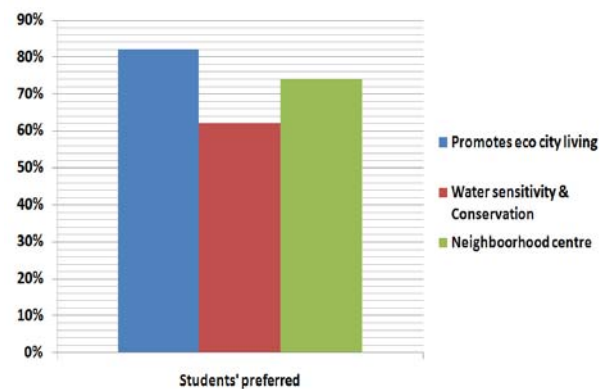


Figure 2.0(d): The Important of Sustainability in Eco City Living

As displayed in figure 2.0(d), the study focuses on the important of sustainability in Eco city living that students' preferred in the development at Bandar Cassia, Batu Kawan. The findings reveal the most of the respondents (82%) cited Bandar Cassia is promotes of eco city living by respect the indigenous people were inhabitant in land. Besides, is also creating a '*sense of welcoming*' in ecological environment and is live ability for well being.

The findings show that the community at Bandar Cassia, Batu Kawan, Penang is drive ecological development. The water sensitivity and conservation was preferred next (62%) followed by the 74% respondents supported Bandar Cassia is neighborhood centre accessibility. The location of Bandar Cassia are provided of CBD (Centre Business District), manufacturing, institutional and education and also nearest with the second bridge of Penang, Malaysia (Penang Development Corporation, January 2016).

5. Discussion and Conclusion

The research has shown that Bandar Cassia, Batu Kawan, Penang is lacking on integrated of the facilities and social needs. The findings indicate the important of sustainable concept in creating on Eco City

community not just for focusing on environment but for the whole of the social, cultural and economic development. Eco city concepts should meet local economic, social and cultural priorities and involve with stakeholders at levels: local community, private and state sectors (Gehl, J, 2012).

This study concludes that most of the respondents understand the concept of Eco City Living. Therefore, most of the respondents are able to evaluate the development of Bandar Cassia. Majority of the respondents agreed that the overall development of Bandar Cassia meets the characteristics of Eco City living concept where the natural resources is highlighted as main attraction, environmental and social aspects are considered in the overall design, local community is respected and water is conserved in the development. However, the respondents are mostly unsatisfied with the public transportation, pedestrian system and cycling tracks which is lack of connectivity and safety. These perceptions of respondents are parallel with author's observation on site. As Bandar Cassia claims to implement the concept of Eco-City Living, it is hoped that the development would have considered holistic planning which includes adequate public transportation service and highly connected and conducive pedestrian and bicycle system.

According to Leadership in Energy Efficient Design 2009 for Neighborhood Development, part of the requirements to be qualified as a Green Neighborhood are to be situated at transit oriented locations, to have walk able streets and to reduce automobile dependence by strategically placing land use and facilities, to provide pedestrian-friendly and bicycle-friendly design, reducing parking footprint, and providing tree-lined and shaded streets. Nevertheless, these requirements are found lacking in Bandar Cassia.

This study contributes to a better understanding of the importance of planning and implementing the Eco-City Living concept in a holistic way. It also contributes to the need to educate and train future landscape architects about Eco-City Living concept in order for them to implement it in the future. The study already shows that landscape architecture students' perceptions are reliable as they have basic knowledge in Eco-City Living concept. As landscape architecture students seem to be more sensitive to environmental issues, they are good respondents to assess Eco-City Living in Bandar Cassia.

In the future, further study on perceptions of different educational levels of landscape architecture students can be studied to see the difference of perceptions between them and how their understanding has evolved.

6. References

- [1] Anil Laul. (2002). Agenda 21 sustainable urban design revisited: Some brief notes of ecological notions in creating liveable city, <http://urban-research.blogspot.com/200/03/sustainable-urban-design-revisited-some.html>
- [2] Bent, Elliott, Forinash, Chris, McKay, Henry, Perry, Debra, & Webber, Rebecca. (2015). Better plans for better places: How the sustainable communities initiative changed the way the country plans for a prosperous future. Washington: Institute for Sustainable Communities.
- [3] Butterworth, Ian. (2000). The relationship between the built environment and wellbeing: Victorian.
- [4] Camagni, Roberto, Capello, Roberto, & Nijkamp, Peter. (1998). Towards sustainability city policy: An economy-environment technology nexus. *Ecological Economics*, 24(1).
- [5] Cities in Conflict: Studies in the planning and management of Asian Cities.

(1985). In J. P. Lea & J. M. Courtney (Eds.). Washington: The World Bank.

[6] Economic Planning Unit. (2015). Eleventh Malaysia Plan 2016 - 2020: Anchoring growth on people. Putrajaya: Economic Planning Unit.

[7] Eco-city Builders. (2012). Eco city emerging, Newsletter September 2012; <http://archive.Constatntcontact.com/fs072/1100594362471/archive/1110850802703.html>

[8] Fleischer, Tamas. (2002). Prospects of an eco-city development in the central and eastern European urban areas. *Institute for World Economic of the Hungarian Academy of Sciences*(June).

[9] Glasbergen P. and Blowers A. (1996). Environmental policy in an international context, Prospects for enviornmental change. Elsevier Butterworth- Heinemann, Oxford, MA.

[10] Gehl,J. (2012). <http://gehlcitiesforpeople.dk/>.

[11] Ibrahim, Azman. (2011). KL Eco City mesra alam: Bakal dibangunkan oleh SP Setia, *Utusan Malaysia*.

[12] Kulshrestha, S. K. (2007). Eco-city in making: Working together for sustainable development, 43rd ISOCARP Congress.

[13] KL eco city, Kuala Lumpur, Malaysia.(2016).from http://www.tylin.com/en/projects/kl_eco_city

[14] Maureen. (2003). Sustainable development and social sustainability. Hull, QC: Strategic Research and Analysis, Department of Canadian Heritage. Reference: SRA-724. Office of Safety, Energy and the Environment. (2015). PSC 2015 Priorities. from <https://www.sustainablecommunities.gov/mission/about-us>

[15] Penang Development Corporation. (2016). Development of Bandar Cassia, Batu Kawan, Penang, Malaysia. PDC.

[16] Ravets, Joe. (2000). Integrated assessment for sustainability apparisal in cities and regions. *Environmental Impact Assessment Review*, 20(1).

[17] Register, Richard. (1984). EcoCities: Making cities sustainable is a crucial challenge. *In Context: A Quarterly of Humane Sustainable Culture*, 8.

[18] Roseland, Mark. (1998). Dimensions of the eco-city. *Cities*, 14(4), 197-202.

[19] United Nations. (2007). Indicators of sustainable development: Guidelines and methodologies; United Nations publication, New York.

[20] Yang, Zhifeng. (2013). *Eco-cities: A planning guide* (Z. Yang Ed.). Florida: CRC Press.