

SUSTAINABLE DIMENSION PILLARS ADAPTATION IN NEIGHBORHOOD ASSESSMENT CRITERIA OF COMMUNITY PLANNING & DESIGN

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Abstract

This paper presents the study of sustainable dimension pillars (SDP) on neighborhood assessment sub-criteria of community planning & design. The problem of the study is to find out whether the townships assessment tools fully address sustainability or it might be 'green but not sufficient' to be sustainable. The aim of the study is to evaluate the adaptation and balance of SPD in Community, Planning and Design (CPD), which is one of the core-criteria of GBI Township/Neighborhood Assessment Criteria. The objective is to identify and evaluate the adaptation of SPD indicators balance towards sustainable urban development in Malaysia. The expert interview and questionnaires survey approached is used in this study in order to gather experts' opinion regarding the SPD indicators in the CPD sub-criteria. The significant contribution of research is the findings will be used as references/guides for future review and refinement GBI Township/Neighborhood Assessment Criteria.

Keywords: *sustainable pillar dimensions, community, neighborhood development*

1.0 INTRODUCTION

Since the 90s, sustainability assessment systems for building which commonly known as green building index have been used to integrate sustainability into the construction industry, and their inspiration currently at global level. Neighborhood/township are as important as any element in the development of urban system (Choguill, 2008), yet the development of neighborhood/township assessment criteria has just begun to spread (Singh *et al.*, 2009), and at this region, especially in the developing country like Malaysia they are still relatively new. It is crucial to evaluate the existing neighborhood/township assessment systems at this stage of their development, to determine their strengths and weaknesses and the methods to further improve them. There are an increasing focus and demand on the assessment and certification of neighborhoods/township, but studies on neighborhood sustainability

assessment tools and certified project are still inadequate and limited. Recent studies compare neighborhood sustainability assessment tools based on their structure, the methodologies of their application, their performance on case studies (Garde, 2009a; Kyrkou & Karthaus, 2011; Sharifi & Murayama, 2014), and the components they assess (Sharifi & Murayama, 2014), their assessment criteria (Berardi, 2013) and their general characteristics (Haapio, 2012). These studies give a general description of neighborhood sustainability assessment tools, however their scope does not fully cover the details of the assessment systems, and there is no methodology by which rating systems can be objectively evaluated (Garde, 2009a).

Sustainable assessment criteria systems consist of indicators that developed from a thorough literature. Several studies on assessment indicators indicate the purpose definitions and characteristic (Harger & Meyer, 1996; Valentin & Spangenberg, 2000),

development methods of a new indicator groups (Alkan *et al.*, 2009; Dahl, 2012; Mori & Christodoulou, 2012; Niemeijer & Groot, 2008; Repetti & Desthieux, 2006), indicator values baseline (Niemeijer, 2002) and indicators framework (Nations, 2007). Currently there are various rating system methodologies available; hence, it is quite difficult for stakeholders to effectively compare the most comprehensive one. Different sets of requirement, baseline, geographical factors and locality policies render differentiation. At present, sustainable urban development mainly promoted by governmental related guidelines, frameworks, policies, incentives and programs (Shen *et al.*, 2011). Synergize by third party organization such as professional institutions, the development of sustainable urban assessment systems which driven by market approach has gained significance and increasingly adopted by developers.

Sustainability assessment criteria systems and indicator sets have an obvious impact on attempts towards sustainable environment, particularly on sustainable policy development. Sustainability assessment criteria systems and indicator sets provide guides, information and input to development policy making (Reed *et al.*, 2006). Besides, sustainability assessment criteria also influence policy making directly whereby the provision of incentives, monetary aids and grants (Walton *et al.*, 2005), for the application of assessment criteria systems, or their implementation process can be sufficiently abridged (Council, 2006). In some municipalities, cities or countries, assessment criteria systems have even become compulsory for new urban developments (Lee, 2013). However, for non-compulsory market-driven township/neighborhood sustainability assessment criteria systems can also increase the risk of implementing the less sustainable, instead the most cost effective indicator sets in an urban development (Garde, 2009a).

2.0 GBI TOWNSHIP ASSESSMENT CRITERIA IN MALAYSIA

Green Rating tools are conceived to be able to assist architects, planners, designers, builders,

property owners, government bodies, developers and end users to understand the impact of each design choice and solution towards being more environment-friendly. The Malaysian Green Building Index was created to provide the building industry a common and verifiable mechanism to benchmark buildings within the Malaysian context. GBI Township Assessment Criteria and this framework takes it to another level and sets out a vision for sustainability within the built environment and provides guidance that will assist end users to deliver sustainable townships.

Sustainability is central to the long-term viability of our society. Green buildings are a key component of a sustainable society, but the construction of green buildings by themselves will never allow us to effectively address issues that sit outside of the scope of an individual building. Holistic sustainability within the built environment is about the relationship between the environmental, the social and the economic factors, and how the community then uses it. GBI Township Assessment Criteria will allow key stakeholders to take an integrated approach to addressing the environmental, social, and economic and design factors associated with the delivery of a sustainable township. It provides an opportunity for the application of partnership based approach throughout the development process and will assist key stakeholders plan, design, build, manage and operate sustainable communities.

Over the last decade in Malaysia, an interest in 'green', or environmentally preferred, building indexed in green rating has increased dramatically. The Malaysia Green Building Confederation (MGBC) Green Building Index (GBI) certification program reports that from its launch in May 2009 (Figure 1), a staggering total of 50 million square feet of building were 'green' as in May 2013. From Year 1 (May 2009), the number of Registered Project steadily grew, from 55 project to 91 project (Year 2); and to 121 project (Year 3 & Year 4). The Certified Project also increased from one certified project in Year 1; 15 certified project in Year 2; 42 certified project in Year 3 and 68 certified projects in Year 4. However, in order for this positive trend to continue, these buildings need to be evaluated to determine if actual

performance is in line with the predicted outcome. Such evaluations should not only include technical and economic performance, but also the experiences of the users/occupants.

Year	Registered Projects	Certified Projects	Year	Registered Projects	Certified Projects	Year	Registered Projects	Certified Projects	Year	Registered Projects	Certified Projects
2009 Q2	17	0	2010 Q2	14	6	2011 /Q2	27	10	2012 /Q2	27	15
2009 Q3	5	1	2010 Q3	23	1	2011 /Q3	25	13	2012 /Q3	48	22
2009 Q4	12	0	2010 Q4	20	5	2011 /Q4	39	7	2012 /Q4	27	13
2010 Q1	21	0	2011 Q1	34	3	2012 /Q1	30	12	2013 /Q1	22	18
Y1 Total	55	1	Y2 Total	91	15	Y3 Total	121	42	Y4 Total	121	48
	4.16m	4.80m		13.5m	12.80m		18.7m	3.6m		18.6m	5.27m

Figure 1: GBI Project Statistic, May 2009-May 2013

3.0 METHODOLOGY

The research aim is to identify the balanced SDP adaptations in all CPD sub-criteria of GBI Township Assessment Criteria. The research objectives is to evaluate the balanced of SPD adaptations according to pillars of sustainability framework that leads towards a more sustainable urban neighbourhood development. The research questions is to find out the SDP adaptations balance in CPD sub-criteria. In order to achieve this aim, the following research process is as shown in Figure 2. The first process is to do content analysis of GBI Township CPD sub-criteria descriptions. Secondly, these sub-criteria SPD adaptations is evaluated via expert's interview and questionnaires survey. Targeted experts are GBI industry stakeholders; the Councils of MGBC, GBI Facilitator and Assessor. The targeted expert also is extended to the other related stakeholders in GBI, who are the Urban Planners, Architects, Enginners and other similar professionals involved in sustainable neighborhood development projects. The study involved 14 experts from GBI industry stakeholders.

Data from experts was gathered and analyzed using 1 to 10 likert scale where; 1 - no

adaptation of SPD, 2 - extremely very weak, 3 – very weak, 4 – weak, 5 – moderate, 6 – less strong, 7 – slightly strong, 8 – strong, 9 – very strong and 10 – extremely very strong. The analyzed data is representend in the form of radar chart. This was conducted via questionnaires survey and interviewing GBI expert panels. The objective of the interviews is primarily to discuss the perception from the expert on indicating factors for assessment by evaluating the balanced adaptation of SPD in each sub criteria, score weight indicators and implementation.

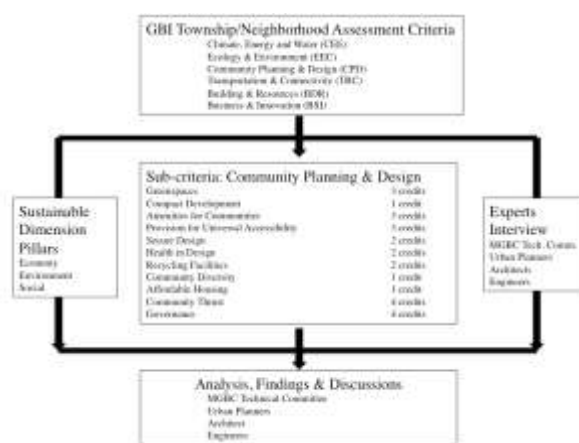
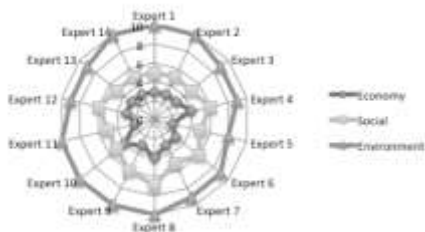


Figure 2: Theoretical Framework of Research Process

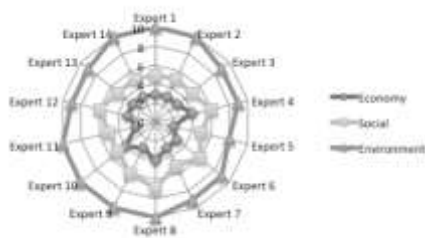
4.0 FINDINGS: ANALYSIS AND DISCUSSION

The contribution of this research is to evaluate and the balanced adaptation of SPD in each of sub-criteria Community Planning & Design in GBI Township/Neighborhood Assessment Criteria. The overall idea is measure the expert's opinion of SPD in CPD sub-criteria in order to find out a balanced sustainable indicator. This evaluation scalable study is for effective sustainable neighborhood development that addresses the gaps and the limitations of the existing assessment criteria. It takes into the account the core issues of neighborhood sustainable development which including environmental, social, and economic against GBI neighborhood assessment CPD criteria. The

core of SPD has three dimensions, which must be integrated in order to achieve the goal of this study.



Sub-criteria 1: Greenscapes



Sub-criteria 2: Compact Development

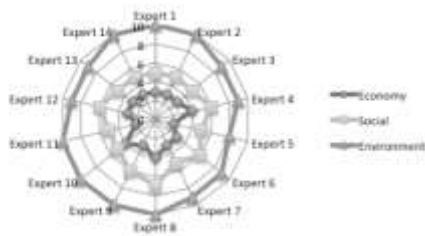


Chart 3. Sub-criteria 3: Amenities for Community

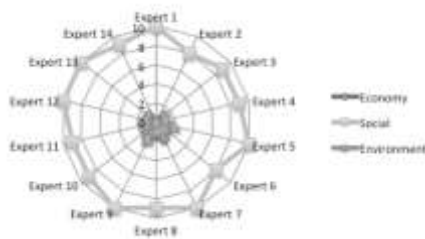


Chart 4. Sub-criteria 4: Provision Universal Accessibility

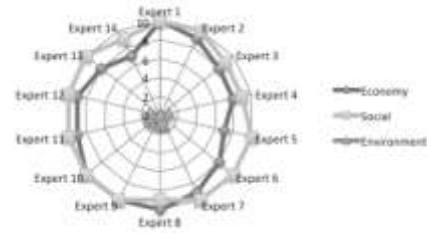


Chart 5. Sub-criteria 5: Secure Design

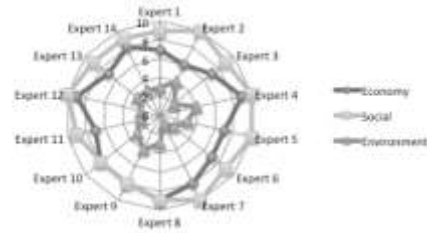


Chart 6. Sub-criteria 6: Health in Design

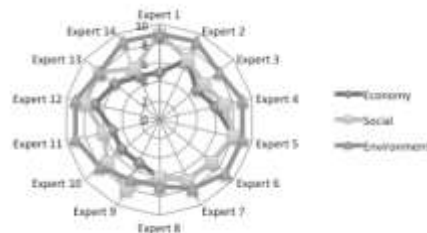


Chart 7. Sub-criteria 7: Recycling Facilities

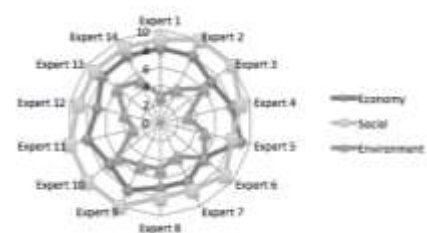


Chart 8. Sub-criteria 8: Community Diversity

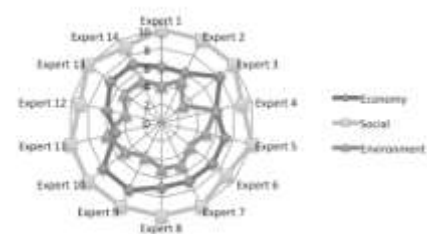


Chart 9. Sub-criteria 9: Affordable Housing

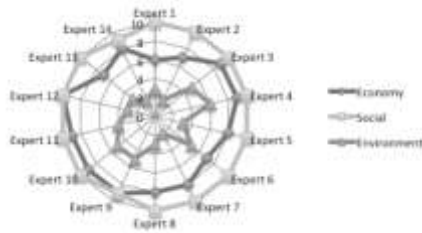


Chart 10. Sub-criteria 10: Community Thrust

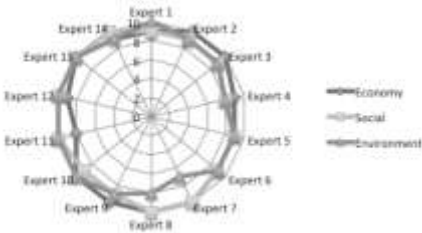


Chart 11. Sub-criteria 11: Governance

The study suggested there is all sustainable weightage in all 11 sub-criteria (S-C) in CPD. However, the weightage values of each indicator are varies. Based on study the degrees of values from 1 – no adaptation of SPD to 10 – extremely very strong adaptation of SPD all sub-criteria shown somehow an adaptation except sub-criteria 4: Provision for Universal Design has a 0 value or very less score for economy dimension pillar and sub-criteria 5: Secure Design has the lowest score and 0 values for the environment pillar.

S-C 1: Greenscapes resultant high scoring values for environment pillar, followed by moderated score for social pillar and less value score in economy. S-C 2: Compact Development scoring values opposite the S-C 1, high scoring values in economy pillar, slightly more than moderate in social pillar and low score in environment pillar. S-C 3: Amenities for Communities high score for social pillar; average 9-10, environment pillar average 1-3 score and economy pillar average at 3-5 score. S-C 6: Health in Design, social pillar average at 8-10, economy pillar 7-8 score and environment pillar average at 2-3 score. S-C 7: Recycling Facilities, environment pillar average at 8-9, social pillar average at 7-8 and economy pillar average at 6-7. S-C 8: Community Diversity, environment pillar average at 4-5, social pillar

average at 9-10 and economy pillar average at 7-8. S-C 9: Affordable Housing, environment pillar average at 4-5, social pillar average at 9-10 and economy pillar average at 7-8. S-C 10: Community Thrust, environment pillar average at 3-5, social pillar average at 10 and economy pillar average at 8-9. S-C 11: Governance, environment pillar average at 8-9, social pillar average at 9-10 and economy pillar average at 10.

The analysis suggested the method and gaps in green building and environmental development in addressing the sustainable dimensions within CPD sub criteria. The approached used in this study gather experts' opinion on CPD for sustainable neighborhood development for Malaysia. The conclusion is GBI Township/Neighborhood Assessment Criteria under CPD sub-criteria adapted SPD; however there is certain sub-criteria is not well balanced in addressing SPD. Hence, sustainable development may not be developed as envisaged. S-C 4 and S-C 5 shown highly imbalance scoring values on those indicators, recommendation from this study can be used as reference for future review. From research point of view, this study can be further elaborated to other core criteria of GBI Township/Neighborhood Assessment Criteria.

5.0 CONCLUSION AND RECOMMENDATION

This research seeks to develop an economically, socially and environmentally balance and responsive approach to GBI neighborhood assessment criteria, by which the principles and strategies of assessing and benchmarking are positioned to facilitate holistic pillars of sustainability concept through incremental improvements in sustainable neighborhood indexing. From the analysis and findings there is a gap in SDP adaptation in CPD sub-criteria, thus, addressing the research problems. Sub-criteria 4: Provision for Universal Design need to improved it's adaptation in economic dimension pillar. Lack of economic dimension suggested imbalance SDP. The highly imbalance adaptations also found in sub-criteria 5: Secure Design which has lowest score in environment

dimension. The conclusion suggested there is a venue for review and improvement towards a more balance SDP adaptation in CPD sub-criteria.

The study implicates the unbalanced SDP adaptations in CPD sub-criteria, this findings can be addressed in GBI Township Assessment Criteria future revision and improvisation. This study is also important and timely as more new 'green' township is under development in the country and awareness in urban society towards sustainable neighborhood. However, the limitations of this study is the number of the expert's involved and subjective opinion by the experts. Each experts might have different backgrounds, experiences and schools of thought. For further research, it could also be expanded to study each sub-criteria score weightage and descriptions. Implications for future research is to study all other core-criteria in GBI Township Assessment Criteria. The study could also be extended in longitudinal and comparative ways.

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