"Nusantara" (Local) Wisdom for The Better Future of Sustainable Architecture

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"Nusantara" (Local) Wisdom for The Better Future of Sustainable Architecture

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Proceedings
The 12th International Conference on
Sustainable Environment and Architecture (SENVAR XII):
"Nusantara" (Local) Wisdom for the Better Future of Sustainable Architecture

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FOREWORD

It is an honour for Department of Architecture, Faculty of Engineering, University of Brawijaya at Malang, Indonesia; to be the host of Sustainable Environment and Architecture XII. Over the twelve year of the conference, many universities have been the host of the conference with each theme, namely ITS Surabaya, Undip Semarang, Atmajaya Jogjakarta "Digital Architecture Application on Built Environment Design", Trisakti Jakarta "Architecture and the Sun", UTM Malaysia "Making Sense the Tropical Experience", ITB Bandung "Digital Architecture", Petra Surabaya "Sustainability in Sun, Rain, and Wind", Unhas Makassar "Water Friendly Architecture", UiTM Malaysia "Technology and Humanity", Unsrat Manado "Science and Engineering for Better Life", ITS Surabaya "Innovation, Technology and Design of Architecture in Changing Environment" and today, we are all here, meeting and gathering at University of Brawijaya with the theme of "Nusantrara" (Local) Wisdom for the Better Future of Sustainable Architecture". The theme provides papers and presentations on a wide range of topics indicating the scope for both research and practice within the area of built environment and architecture.

These proceedings have been prepared from the papers provides by more than 50 presenters accepted from approximate 170 abstracts and 70 full papers from about 5 countries. We happy that there are enthusiastic response from many experts, students and researchers that come from various region in Indonesia as well as from Asian countries. Their topics presented ranges from the ideas to develop conceptual frameworks to the report of their practical experiences. From the conference we can learn that dialogue, networking, sharing, and cooperation within the multidiscipline approach are the keys to better future of sustainable architecture.

Finally, on behalf of the Department of Architecture, Faculty of Engineering, University of Brawijaya; we want to thank all contributors to the Conference: all sponsors (Semen Gresik, Niro Granite, Pancanaka Property, Kosa Matra Graha, FuturArc Magazine), all presenters and participants, and last but no least to all members of University of Brawijaya for their generous supports. Without them, this conference would not be possible.

Agung Murti Nugroho, ST., MT., Ph.D.
Chief Editor
INTRODUCTION

The concept of "local wisdom" can be seen as a response to the rationality of modernism. As we have seen since the post-World War II, the modernism gives more opportunity to the centers of Global Capital to dominate the value systems, the benchmarks, and the orientations of development in the "South" countries. Being aware of the deadlock of modernism, the local wisdom from Africa, Asia, and Latin America are explored. Various terms are used to formulate the concept of local wisdom as "knowledge". The terms such as indigenous, traditional, folk, ecological, people's science, community, local, non-formal, culture, indigenous technical, traditional ecological are used. Are there any changes then? Not necessarily. The local wisdom with these various predicates, turned out to be just "comparing" the system of knowledge. Even, the concept of local wisdom hardly changed "the body of knowledge". The outline of the paradigm is the same: only put all science from "a non-European" origin and all its praxis as a system of "alternative cognition".

Is it true that "the non-European" have to be marginalized? Naturally, every locality in fact also contains universality. Meanwhile, the Eurocentrism, which dominates the World, also witnessess a chain of disaster, environmental and cultural damages. Our environment is deteriorating and losing its capacity to contain ecosystem and its ability to facilitate mechanisms of self recovery. Architecture cannot remain confined in conventional functions of designing and making good individual buildings here and there. In practice, architects and architect students immediately imitate what they have seen in the architectural media in the modern metropolis and they lose their local identity. In order to face these many challenges, integrated, multidisciplinary and holistic approaches are required. At the end, the expressions and the Aesthetics of future architecture will be based on the unique character of many tropical local wisdom. Local Southeast Asian Archipelago or Nusantara civilization must therefore contain universal values. In fact, every subject on earth, including its architecture, must contain unique local values and universal values that exists in one unit. Therefore, learning together and sharing the results of learning is a necessity.
AIMS AND SCOPE

The aim of the SENVAR 2011 (12th International Conference on Sustainable Environmental Architecture) is to call for participation of researchers, professionals, academia, governments, NGO, developers and others who have interest in the development of environmental sustainability in the tropical region, particularly in Southeast Asian Archipelago or Nusantara. They are expected to overcome those environmental problems and to share and to exchange their knowledge and expertise in handling problems of changing environment; particularly those related to built environment as sub-themes category below. Many innovations and designs are put into practice and new technologies are developed to assist the efforts. Some are extracted from the past by tracing local wisdom, some are developed and prepared for the present by environmental friendly concept and the rest are challenging the future by tropical vision. The main focus of the conference will explore the tropical wisdom, synergizing the available potentials, social, culture and environment in the human built-environment in the tropic, local or specific place and global or universe sustainable development in balance and directed to the people welfare. This international seminar will explore new paradigms, which focus on “Nusantara” (local) wisdom as a basic philosophy of environmental friendly concept for better tropical architecture practice. These points represent as past, present and future sustainable environmental architecture. The study of “Nusantara” (local) wisdom is not only going back in the past time but preparing for better future. Therefore, we do expect the contribution of researchers from other geographical background to jointly develop a beneficial scientific comparative perspective. By integrating the system of knowledge (in cognitive domain) with the system of beliefs (in affective domain), a new vista appears, not only widening and deepening the understanding of self, but also the understanding of other. The scientific-politic-economical game subordinating Nusantara and the other parts of the world to the North (read: Eurocentrism) must be stopped by deconstructing its inner-axis: the science. Then, a second step is to reformulate science for the sake of the human as well as the nature. Otherwise, the suppressions of human being and the over exploitations of nature continue.

The conference discusses and critically examines the Nusantara (Local) Wisdom occurred in Built Environment and Architecture within Southeast Asia countries for Better Future of Sustainable Architecture. Sub themes might be related but not limited, to the following topics:

A. “Nusantara” wisdom as a basic philosophy for sustainable architecture in the Southeast Asian Archipelago context and other comparative context.
   • Sustainable City
   • Government cultural policy or strategy in environmental change and sustainability
   • Harmony with nature in urban-rural environment
   • Human Sustainability and contrasts of economic paradigm in Architecture
   • Role of architecture as science and its education toward sustainable environment
B. Concept and Practice of Sustainable Tropical Architecture in Nusantara and other comparative region.

- The local wisdom of heritage, traditional and vernacular in tropical architecture
- Climate responsive as a basic concept of tropical intelligent building
- Convenience living space and people dimension in architecture development
- Comfort and quality of tropical indoor and outdoor space
- Green and energy efficient architecture
- Integrated design approach for human living in the Southeast Asian archipelago and other comparative region

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Measurement of Kampung Performance as Basic Strategy Towards a Resilient City: Evidence from CASBEE-UD and LEED-ND's Results

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ABSTRACT

Urban kampung is body and soul of Indonesia urban structure and life. It has vital roles for social, economy, and physical strategies, including a resilient city strategy. That is why kampung oriented development (KOD) would be inevitably an underlying model to bring kampung towards sustainable urban development. As an investigation step, it is important to assess their environmental performance conditions, using popular and leading sustainable building and assessment tools to measure the conditions of existing urban kampungs. (Comprehensive Assessment System for Building Environmental Efficiency for Urban Development) and LEED-ND (Leadership in Energy & Environmental Design for Neighborhood Development) are chosen and applied to critically observe the kampung environment conditions comprehensively. Results showed in average that the urban kampungs in term of environmental performance based on both CASBEE-UD and LEED-ND category are still quite far from the ideal criteria. These results significantly steer a road map of strategies related to kampung oriented development (KOD).

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Keywords: compactness, kampung oriented development, CASBEE-UD, LEED-ND

1. Introduction

In Indonesia, kampungs are inevitably an integral part of both urban spatial structure and urban life. They are body and soul, where the cities in Indonesia are growing and at the same time facing many problems in urban developments. Almost all aspects of urban life, whether social, cultural, political, and of course physical environment can be traced using kampung as a basis of analysis. However, up to now urban kampungs are still seen as less strategic to deal with recent urban development. Many people assume that by looking at a macro strategy in advance, all urban problems can be overcome. In fact, this assumption is not easy to realize and often the outcomes are difficult to be traced through the most representative unit of the city, the urban kampungs.

Coincided with the importance of sustainability in urban development, indeed the urban kampungs should have a crucial role as a backbone of implementation issues for urban sustainability. Because of its role, undoubtedly any initiation of sustainable urban development in Indonesia should need to think about the kampung as an entry point for the implementation. This fact has really showed the importance of the kampung as basis of the resilience city as well. Of course, traditionally there has been plenty of local knowledge that has been running well in the urban kampung. For example, how harmoniously living in dense residential or mixed-used of space that is lately suggested by the west, has always been present and growing in the kampungs for a long time. Thus, our task now is to try to formulate how actually universal values of sustainable urban development such as high population density, high activity concentration, optimal urban size than can easily control the environment, supported system for a good mobility, and achievement of good welfare, can be integrated in the developments inside the kampungs.

On the other hand, recently the urban kampungs are also experiencing many changes, although urban stakeholders were more understood that urban development in Indonesia should be oriented to the kampung (Kampung Oriented Development). How big potentials and problems of the kampungs in delivering sustainable development in urban areas in Indonesia is still not much revealed. This is due to absence of a comprehensive measurement tool to determine the condition of the actual kampungs.
Therefore, this paper has aim to measure performances of the kampungs by using assessment tools which have been widely used in the world. In this paper, since extensive use of these two assessment tools, CASBEE-UD (Comprehensive Assessment System for Building Environmental Efficiency for Urban Development) and LEED-ND (Leadership in Energy & Environmental Design for Neighborhood Development), will be applied to measure the performance of the kampungs. The results of this measurement are empirically expected to steer the direction of the kampung oriented development (KOD) more focus.

2. Kampung Oriented Development as a Resilient Concept

As considerable beliefs, kampungs in Indonesia really take an important role substantially in the process of urban development. As informal or popular settlement sectors in other developing countries, the urban kampung settlements have provided serviceable and affordable shelter for a majority of Indonesian urban households, more than 80% (McGee, 1996). As some researchers (for example Guiness, 1986; Nas, 1987; Setiawan, 2003) stated, kampung comprehensively represents a dynamic process by which groups of people—mostly the poor—provide their own housing, control their environments, and engage in collective efforts or mutual assistances (gotong royong) to improve their lives. On the contrary, the urban kampungs from perspective of Indonesian government has been neglected as potential resource and confirmed as impermanent solution to cope with recent housing and other development problems.

Kampung Oriented Development (KOD) model has been arranged as an idea of implementation for compactness development in Yogyakarta City (Roychansyah and Diwangkari, 2009). Basically it can be seen from two considerations. Firstly, structurally the urban kampungs as described above have a significant role in broad range of dimensions in the urban structure. The structure of the kampungs in spatial structure of city’s core is also intentionally clear to state that the urban kampung for the urban development model in Indonesia might be a permanent solution, not a temporal solution. Secondly, the urban kampungs have experienced historically with many schemes of development. Although it contains several weaknesses, Kampung Improvement Program (KIP) is widely known as a masterpiece of successful program in the Indonesian kampungs. However, KIP is only focused on an infrastructure upgrading program for the kampung based on the needs of installation and improvement for roads, pathways, water supplies, drainage, and sanitation. Assumption that the idea of improvement of limited housing and infrastructure would also stimulate the improvement of socio-economic conditions in the kampung communities, should be reviewed again.

In Roychanyah (2008), based on the analysis of compactness performances, the urban kampungs conditions have a good tendency for both high population and built environment density, as well as good performance for delivering mixed-use in various urban functions. Traditionally, they have already showed as part of urban physical, socio-economic, and culture entity. They are able to be seen as an entry point for the implementation of resilient city ideas, mainly from their strengths in environmental density and mixed used of the urban space potentials. Based on Newman et al. (2009), a compactness condition of environment will be in line with degree of resilience of the city, especially from perspective of energy use. A resilient city through its compact and mixed-use urban environment, by contrast, is also far more efficient in its demand for municipal services and infrastructure requirements.

Supporting this argument, the condition of many kampungs is getting worsened today, passing their optimum capacity of their environments, if viewed from their standard of quality of life (dominantly indicated with uncontrolled population density, lack of open space, environmental degradation, emerging many slum areas, and so forth). An urgency to redevelop the urban kampungs as further step in the re-improvement of the kampung condition becomes a realistic and an arguable idea towards a concept of resilient city. Kampung oriented development (KOD) as shown in Figure 1 systematically is a strategic attempt through a comprehensive policy using the urban kampungs as focus area of development that encompasses several intensive developments based on characteristics of kampungs as integral part of urban structure (in this case based on Yogyakarta City’s condition, Indonesia), like transit oriented development, people oriented development, access oriented development, and activity oriented development. All of these developments are fundamentally framed sustainable oriented development principles. Every single theme of development is dedicated to a specific characteristic of the kampung.

To deal with a resilient concept, this paper is aimed to investigate the urban kampung performances empirically based on a standardized assessment tools. In this case CASBEE-UD and LEED-ND is used together to comprehensively observe and consistently assess the conditions. CASBEE-UD (Comprehensive Assessment System for Building Environmental Efficiency for Urban Development) and LEED-ND (Leadership in Energy and Environmental Design for Neighborhood Development) both are environmental assessment systems that provide a methodology for scoring or rating an environmental effects, energy-resource consumption, and health impacts, similar to other tools popularly used in the world. Despite all of these tools have quite same goals, but in general clearly these assessments can be a very complicated process because each of these effects has different units of measurements and affects different physical areas (Kawazu et al., 2005). CASBEE-UD has been developed in Japan, while LEED-ND was initially launched in the end of 2007 (IBEC, 2007; USGBC, 2011). Both have been developed from the initial program that is more focused on single building measurement.

CASBEE for Urban Development is an environmental performance assessment tool for whole groups of buildings (urban scale), focusing on the phenomena that can accompany the conglomeration of buildings, and the outdoor spaces around the buildings. It is also a standalone system, independent of the previous building-scale CASBEE. CASBEE-UD excludes the interior of buildings from assessment (although there are exceptions in some assessment items), therefore the configuration makes it possible to evaluate an area of development as a whole within designated area. It considers and calculates QUD (environmental quality in urban development) and LRUD (load reduction in urban development). QUD completely covers natural environment (microclimates and ecosystems), service functions for the designated area, and contribution to the local community (history, culture, scenery, and revitalization), while LRUD accommodates environmental impact (on microclimates, facade and landscape), social infrastructure, and management of the local environment. As results of CASBEE-UD assessments are ranked in five grades: Excellent (S), Very Good (A), Good (B+), Fairy Poor (B-) and Poor (C) (IBEC, 2007).

<table>
<thead>
<tr>
<th>No</th>
<th>Aspect</th>
<th>Kampung A</th>
<th>Kampung B</th>
<th>Kampung C</th>
<th>Kampung D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name</td>
<td>Kampung Terban Utara</td>
<td>Kampung Ledok Terban</td>
<td>Kampung Cokrodirjan</td>
<td>Kampung Prawirodirjan</td>
</tr>
<tr>
<td></td>
<td>Administrative</td>
<td>Kelurahan Kecamatan Gondokusuman</td>
<td>Kelurahan Kecamatan Gondokusuman</td>
<td>Kelurahan Suryatma, Kecamatan Danarejan</td>
<td>Kelurahan Prawirodirjan, Kecamatan Gondomanan</td>
</tr>
<tr>
<td>2</td>
<td>Location</td>
<td>Central city, around 500 m east of Tugu Yogyakarta.</td>
<td>Central city, around 500 m east of Tugu Yogyakarta.</td>
<td>Central city, around 500 m east of Malioboro Street Yogyakarta.</td>
<td>Central city, around 500 m east of Kraton Yogyakarta</td>
</tr>
<tr>
<td>3</td>
<td>HH number</td>
<td>58 HHs (1 RT)</td>
<td>60 HHs (1 RT)</td>
<td>82 HHs (2 RT)</td>
<td>76 HHs (3 RT)</td>
</tr>
<tr>
<td>4</td>
<td>Characteristics</td>
<td>It represents best practice of kampung development.</td>
<td>It represents a natural type of kampung without any</td>
<td>It represents a kampung that has been changed by</td>
<td>It also represents a natural type kampung without</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Established by renowned architect, Romo Mangun, and still well-maintained environment today. It is located at the northern riverbank of the Code River of Yogyakarta City with easy access to surroundings area. It becomes a tourism destination in the city.

improvement programs yet. The condition tends to be a slum. It is located at the northern riverbank of the Code River of Yogyakarta City, just over the best practice location, but with less access to surrounding environment. This kampung can also describe the situation of best practice before interaction with Romo Mangun.

improvement program (vertical public housing). Some residents have moved to vertical leased housing built in this area. It is located at central riverbank of Code River of Yogyakarta City. The mix of residents between native and newcomer is relatively big compared to the other location.

any improvement program yet. The difference between the second kampung's condition is in easier access to be connected to surrounding environments and geographically not in a too steep riverbank. This kampung also has more mix condition of residents background.

Source: (Author, 2011)

Furthermore, LEED for Neighborhood Development is a rating system that integrates the principles of smart growth, sustainable urbanism, and green building for neighborhood design. Since LEED for Neighborhood Development certifies projects that may have significantly longer construction periods than single buildings, LEED-ND differs from other commercial and residential LEED rating systems as it has three stages of certification, which relate to the phases of the real estate development process (stage 1 as conditionally approved plan, stage 2 as pre-certified plan, and stage 3 as certified plan in a completed project). LEED-ND rating point system is similar to the other previous LEED family such as certified, silver, gold, and platinum ranks. Major credit categories of LEED-ND comprise smart location and linkages, neighborhood pattern and designs, green infrastructure and buildings, and additional consideration on innovation and design process (USGBC, 2011). However, unlike CASBEE-UD that tries to put social related performance into consideration system, LEED-ND seems more focused on physical performance and environmental design.

Regarding the case of measurement, Yogyakarta City located in Central Java is undertaken as object to show some significance potentials in delivering a kampung oriented development (KOD). The city itself was founded in 1756 and its kampungs have traditionally clustered together as important part of community settlements in the urban structure. Based on 2010 data, population of Yogyakarta City is about 390 thousand, while the population density is about 120 persons/ha (Biro Statistik Yogyakarta, 2010). It is distributed differently in 14 wards (kecamatan). There is a ward with 100 persons/ha, contrary there is also a ward with more than 200 persons/ha. This population density is more than enough as main consideration of population densification of compactness attributes. Consequently, this condition also brings high density in built urban areas, with very dense space settlements, lack of open space, and dominated by irregular patterns of buildings and pathways.

This paper will show some empirical considerations taken into account to carry out KOD through kampung environment efficiency performance. The CASBEE-UD and LEED-ND measurements have been conducted in 4 types of kampungs along the Code River, located in the city center as described in Table 1. The riverbanks of these areas are usually used to informally reside with high density population. Dominantly they work as informal sector workers in Yogyakarta City and surrounding areas. Today, in these riverbanks of Code River there are 3 vertical leased public housings (rusunawa) namely Jogoyuda, Cokrodijian, and Juminahan public housing. There are no initiatively follow-up programs tried to be combined with relocating kampung residents into those new vertical housings such as public space or engagement space for economic activities. How environment performance really expresses kampungs condition, people only judge without any valid assessment procedure. From this point of view, the primarily step would be very reasonable to understand measurement results based on a standardized assessment tool. Then, the results would be beneficial for further steps of improvements toward objective of KOD itself.

Technically, all of these kampungs are drawn in GIS basemap format to ease data overlays, including physical data of the kampungs, such as site area, building coverage, floor ratio, etc. The next step is to analysis the condition of the kampungs characteristics related to environmental performance criteria developed in CASBEE-UD and LEED-ND within a standard version. Completely, all the data are elaborated in CASBEE-UD and LEED-ND sheets to result clear presentation of the characteristics of environmental considerations in the designated areas. As shown by Roychansyah (2009), the initial use of CASBEE-UD for measuring kampung performance could produce a thorough analysis to help formulating a suitable
strategy in the kampung oriented development. In this paper, additional analysis of the use of LEED-ND is expected to be increasingly able to give a detail consideration for future policy priorities for the concept of KOD.

4. Result and Discussion

Comprehensively, the assessment results sheet of CASBEE-UD presents the results for QUD (environmental quality in urban development), LRUD (outdoor environmental loads in urban development) and BEEUD (building environmental efficiency in urban development), both numerically and graphically. Related information on the designated project is summarized and presented on one sheet, so that it is easy to identify CASBEE for Urban Development assessment results at a glance. To give more complete descriptions, comparatively important points of the results can be seen at Table 2. Based on CASBEE criterion, all kampungs can not exceed medium level of each category of QUD and LRUD (3 of 5). Generally, from these results, environment efficiency performances of case studied kampungs are low. There are no significant differences of BEE result between kampungs with small piece of administrative areas (Kampung Terban Utara and Kampung Ledok Terban with less than 1 ha of area) with kampungs which have bigger piece of administrative areas (Kampung Prawirodirjan with about 9 ha and Kampung Cokrodirjan with about 3 ha). All reached BEE-UDs are no more than 1 or classified into B- which means fairly poor condition. Based on eco efficiency concept (Murakami, 2008), these results classify into less sustainable condition.

Furthermore, regarding QUD that comprises QUD-1 natural environment, QUD-2 service functions for the designated area and QUD-3 contribution to the local community, all case studies show under normal boundary of good result target (3). Among these QUD, QUD-3 can significantly strengthen an important role of kampung to the local communities. Likewise, for LRUD that embraces LRUD-1 environmental impact on microclimates, facade and landscape, LRUD-2 social infrastructure and LRUD-3 management of the local environment, in average they have produced unsatisfactory results. For instance, they have very bad condition (no measures taken or no coordination) of transport planning or traffic load to quite good of initial activities in garbage treatment.

Table 2: Comparison of CASBEE Assessment Results among the Measured Kampungs

<table>
<thead>
<tr>
<th>Category</th>
<th>Kampung A</th>
<th>Kampung B</th>
<th>Kampung C</th>
<th>Kampung D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score of QL 1</td>
<td>2.9</td>
<td>2.5</td>
<td>2.6</td>
<td>2.1</td>
</tr>
<tr>
<td>Score of QL 2</td>
<td>2.6</td>
<td>2.9</td>
<td>2.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Score of QL 3</td>
<td>4.2</td>
<td>3.0</td>
<td>3.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Total Score of QL</td>
<td>13.7</td>
<td>12.9</td>
<td>12.0</td>
<td>12.4</td>
</tr>
<tr>
<td>Score of LR 1</td>
<td>2.8</td>
<td>2.9</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Score of LR 2</td>
<td>2.6</td>
<td>2.6</td>
<td>2.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Score of LR 3</td>
<td>2.6</td>
<td>2.6</td>
<td>2.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Total Score of LR</td>
<td>7.0</td>
<td>7.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Total BEE score</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>BEE Rank</td>
<td>B-</td>
<td>B-</td>
<td>B-</td>
<td>B-</td>
</tr>
</tbody>
</table>

Source: (Author, 2011)

With some careful considerations when entering justification of each data sheet, all assessment results are able to be analyzed and evaluated. In QUD, some problems depicted some traditional condition of kampungs, such as lack of formation the built environment of kampungs, less number of open space and vegetation, less water conservation, lack of standard of building, pathway, and other infrastructure, as well as lack condition of environment physic brought some limitation of QUD-1 score. In QUD-2, all items emerge to be a standard level or in a low level of quality management/technique, except transportation system that really cannot be measured within standard category. Among environment quality, QUD-3 results the highest average. In contrast, in LRUD for kampungs, LR-1 totally gets higher score than other LRs, since the other LRs (LR-2 and LR-3) contain transport and traffic criteria that always results minimum standard. All of these analyses clearly explained through the radar chart in each figure of the results.

The measurement results with the LEED-ND primarily covers 3 major aspects of smart location and linkage (SLL), neighborhood pattern and design (NPD), and green infrastructure and buildings (GIB), as well as an additional aspect of innovation in design process (IDP) in case that there additional measurement may not be addressed by a LEED-ND rating system. In general, as presented in Table 3 we can see that the kampungs are able to reach big enough points from SLL aspect, because of their prime
location in the city center is very beneficial for communities to perform daily activities. NDP part is actually also quite promising, especially indicators related to the density and mix-used activities. And as expected, on GIB aspect, the traditional kampung seems still very low in using the latest innovations in line with some efforts towards a green environment. From the results of LEED-ND, the measured kampungs in Yogyakarta City yield points range between 46 (Kampung B) to 59 (Kampung D). These ranges show that the basic conditions of the kampungs have strong and suitable characteristics for some adjustments of sustainable development. Kampung Prawirodirjan (Kampung D) as a standard of existing kampungs in Yogyakarta City can be a benchmark and will be able to explain a fairly good quality standards from most of the kampung conditions in the city (in LEED-ND it reached almost gold). These conditions would be very possible to obtain a higher point, if there are various means related to the sustainable path that appropriately direct the development of kampungs based on more powerful sustainable strategies.

In detail, the results of LEED-ND have almost similar achievement with CASBEE-UD, especially in showing the basic conditions of the kampung settlement where dominantly still shows some limitations in the environmental performances. In addition to the kampung locations in the city center that are very profitable for the activities of communities inside, the kampung actually has significant strength in presenting a rigid and compact development which is very typical in terms of neighborhood design. However, this condition is not yet supported by a adequate network of mobility set out in a TDM (transport demand management) that consists of transport system, street condition, and other relevant facilities. The kampungs in LEED-ND's results also produce maximum points in term of community involvement in the existing development. Once again, this shows that the advantage of the kampung in social interaction aspect is high and promising as sosial capital in future development. It is also very significant aspect to facilitate an achievement target for more socially sustainable condition. Meanwhile, related to the GIB aspect, the kampungs really need a touch of innovation in management of their physical environments. This can be seen in Kampung Terban Utara (kampung A), where some innovations and development approaches that have introduced and delivered by Romo Mangun were able to be accommodated in the design and process innovation category, thus helping raise the obtained points.

<table>
<thead>
<tr>
<th>Category</th>
<th>Kampung A</th>
<th>Kampung B</th>
<th>Kampung C</th>
<th>Kampung D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Location and Linkage (SLL)</td>
<td>20/27</td>
<td>20/27</td>
<td>18/27</td>
<td>22/27</td>
</tr>
<tr>
<td>Neighborhood Pattern and Design (NPD)</td>
<td>11/44</td>
<td>11/44</td>
<td>15/44</td>
<td>17/44</td>
</tr>
<tr>
<td>Innovation and Design Process (IDP)</td>
<td>5/6</td>
<td>0/6</td>
<td>0/6</td>
<td>0/6</td>
</tr>
<tr>
<td>LEED Points</td>
<td>52/110</td>
<td>46/110</td>
<td>57/110</td>
<td>59/110</td>
</tr>
<tr>
<td>Certification</td>
<td>Silver</td>
<td>Certified</td>
<td>Silver</td>
<td>Silver</td>
</tr>
</tbody>
</table>

Note: Points category: Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+ points

Source: (Author, 2011)

Finally, from both CASBEE-UD and LEED-ND result's point of view, the paper has once more underlined that the urban kampung conditions in one hand offer some potentials and challenges, such as strategic location in the city center that can raise a convenience level of delivering daily life that as represented by distance to community center, daily life facilities, medical, and school. Indeed, it is traditionally influenced by higher density of physical environment of the urban kampungs with a compact social community interaction, and supported by the existence of mixed use between dwelling and non-dwelling land. In the other hand, many aspects should be considered and involved if a sustainable urban development may be really introduced, such as transport intensification planning, scenario to strengthen socio-economic of the community by some related development approaches, and other relevant strategies. The other important aspect is an introduction of some innovations of green environment activities. Standards of environmental green performance of environment, including its infrastructure and buildings, which is increasing demand of global development can also be immediately tested. Nevertheless, some efforts need to be tailored to the local wisdom of the kampungs that has deep roots and are proven to be advantageous in daily life of the urban kampungs. Moreover towards a further applicable measurement, it is necessary to firstly combine these results with detailed compactness indicators in the kampungs to clearly describe some relevant strategies for resilient city concept through a kampung oriented development (KOD).
Minutes report

Day & Date : Friday, November 11th 2011
Session : Parallel Session 4
Time : 13.38-13.52
Room : A (Bari House)
Speaker : Muhammad Sani Roychansyah
Speech/Paper Title : Measurement of Kampong Performance as Basic Strategy Towards a Resilient City: Evidence from CASBEE-UD and LEED-ND's Result

GENERAL NOTES

DISCUSSION

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why should we use the standard, CASBEE and LEED evaluation system? Is CASBEE compatible to be used in Indonesia?</td>
<td>Collaboration with Fukuoka University, who implemented CASBEE to major Kampong in Yogya, gave out an objective result. Another reason is because both system can give us the description of how is the sustainability condition of those kampongs.</td>
</tr>
</tbody>
</table>

CONCLUSION