

A STUDY ON HOME BASED ENTERPRISES IN KAMPOENG PANDEAN AS SUPPORTING SUSTAINABLE ARCHITECTURE

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ABSTRACT

Home Based Enterprises (HBEs) provide an enormous impact on the lives of the citizens and the environment. The impacts include: increase income and welfare of the family, provide job opportunities, improve the quality of homes and the environment, and ensure life sustainability. The existence of the business leads changes to the house. Those changes that made to the house are often ignore the comfort of home space and the environment as living space. This study aims to look at the development of HBEs performed by community in *Kampoeng* Pandean. The measurement items used are architectural sustainability factors, ie economical sustainability, social sustainability, and enviromental sustainability. The study is located in *Kampoeng* Pandean Sidoarjo. The method used is a combination of qualitative and quantitative method. The results show that HBEs in *Kampoeng* Pandean have not fully supported the sustainable architecture. Environmental sustainability has not been met, due to the density of the environment, the high percentage of building area to land area, and the construction of business space does not consider the comfort factor.

Keywords: Home Based Enterprises, house changes, sustainable architecture, *Kampoeng* Pandean.

INTRODUCTION

House has a multi-dimensional function. It is a place for foster in home, individual development, social activities facilities, for earning money, and others. Laquian (1993) stated that in the lives of slum, squatter communities, and even if the house is not only for domestic life course, a house is a place for production, marketing, entertainment centers, financial institutions, and also a place for solitude. Houses with household activities that is also as a place to work as a home-based business are called Home Based Enterprises (HBEs). HBEs are growing rapidly in developed countries, developing countries and the poor countries. HBEs are able to provide a source of income, increases revenues and ensure the sustainability of living. In Indonesia, HBEs have existed for a long time, both in rural and urban areas. HBEs are growing in formal housing as well as in the slums. HBEs has a very big contribution to improving people's lives. HBEs in the city of Lagos, according to Lawanson (2012) were able to be the main source of income. HBEs were able to guarantee the sustainability of community living and able to support sustainable development. This is due to HBEs ability to provide income, increase income, provide opportunities and employment, improve family welfare, improve housing and the neighborhood, contribute to economic development and social progress (Lawanson & Olanrewaju, 2012; Safeyah, 2015).

The presence of business in residential area will be taken by the occupants in various ways. Such as accommodating work into the house, and changing the house in order to accommodate the jobs. Turner (1976) revealed that there were two works done by the occupants to their house, that are housing adjustment and housing adaption. In the lower middle class society, they often made the changes without considering the comfort factor, either in the comfort of home and the environment (Safeyah, 2015).

At the moment, environmental support is getting more limited. Therefore, the application of sustainable

architecture becomes very important. Sustainable architecture is the architecture that meets the needs of the present without compromising the ability of future generations to meet their own needs, and those needs are best derived from related communities. Sustainable architecture includes environmental sustainability, social sustainability, and economical sustainability. Environmental sustainability is the development that takes natural resources into account in order to last longer, and establish integration between the ecosystems. Environmental sustainability is related to the age of the vital potential of natural resources and human ecological environment, such as climate, biodiversity, and industrial. The expectation of exploitation minimization of natural resources of the earth is that the earth will not lose its potential to support human life. Social sustainability is a development that is able to maintain the character or culture, and improve the social quality of the local community, while the economical sustainability is a productive development in quantity and quality, as well as to provide employment opportunities and other benefits for all of society. The principles of sustainable building design includes site, completion of the building that maximizes ventilation, cooling system and natural lighting, the efficiency of use of natural resources and energy, health and comfort of the interior, sewage treatment, transportation efficiency and habitat restoration (Iyengar, 2015; Bay & Ong, 2006; Al-Hagla, 2008; Cairns Regional Council of Australia, 2011).

There are seven parts to achieve sustainable neighborhood: government, transportation and connectivity, services, environment, economy, housing and the built environment, sociology and culture. Open space has the potential to deliver social benefits, economic benefits, either directly or indirectly. Definition of open space is a place that can hold certain activities of community activities individually or in groups. Examined from the events that occurre, open space is divided into active open space and passive open space. Active open space contains the elements of the activities in it, while the

passive open space contains no human activity. Open space can serve as a place of relaxations, recreations, park or play area, social relationship, green open space, sports facilities, historical landscapes, wildlife habitats, track circulation, physical and mental health improvements, welfare and other improvements. The percentage of openness on the land, yard and open space, is an important factor in the home and the environment comforts. (Al-Hagla, 2008; Hamouche, 2008; Tardin, 2010; Khan, 2014; Chiesura, 2004).

Kampoeng is a typical form of settlements in rural or urban areas of Indonesia. *Kampoeng* Pandean is part of the village of Ngingas located in the district of Waru, Sidoarjo, East Java province. *Kampoeng* Pandean is known as *Kampoeng Logam* (metal village). Most community in *Kampoeng* Pandean work as metalworkers, which is a hereditary occupation. Metal craft work is done inside and around the house. Considering the great potential of HBEs, ways of house development due to business, and the importance of the application of sustainability architecture, thus the study is aimed to explore how the factors of sustainable architecture in *Kampoeng* Pandean is conducted. Issues to be resolved are to investigate the characteristics of HBEs in *Kampoeng* Pandean is and the potential and obstacles exist in the implementation of sustainable architecture in *Kampoeng* Pandean. The study results are expected to be used as a development of HBEs in accordance with sustainable architecture, particularly in *Kampoeng* Pandean.

METHODOLOGY

The approach used in this study is descriptive qualitative. It is an approach that emphasizes the understanding of the problems of social life under the conditions of reality, or natural settings that are holistic, complex and detailed and a focus on the interpretation of meaning (Groat and Wang, 2002). The method used is a combination of qualitative and quantitative methods, quantitative research method is used to facilitate qualitative research (Brannen, 1992). Data collection is done by means of interviews, questionnaires and observation system. Structured and open-ended interviews are done in order to obtain a more detailed explanation. Open questionnaire is done to get a clear picture of conditions in the field. Observation is carried out by shooting, sketches, and observations of activities (Leedy, 2002). Data analysis is conducted on the quantitative and qualitative data. Qualitative data is processed and analyzed according to its contents by using interpretation. Quantitative data is described qualitatively based on percentage level.

Data exploration in this study is obtained from various sources. Primary data is obtained from metalworkers in *kampoeng* Pandean, as well as from the wives and children of the respondents. Primary data that is not listed in the questionnaire is obtained from the village officer, such as chairman of youth organization, elders of the *Kampoeng*, and others. Secondary data is traced through literature, books, journals, internet and research document. The number however metalworkers in Pandean are around 56 people. The number of respondents that is used as the object of study are 25 people.

The collected demographic data is as follows: 1) Profile of the respondents, which is the general data of the

respondents, include; age, education, number of occupants, number of families in a single house, ethnicity, religion. 2) a business profile, that is characteristic data of metal handicraft business, among others; business status, length of effort, motivation of business, type of business, the characteristics of employees, revenues, business constraints. 3) Home and businesses profile, such as; building area, the number of repair, home improvement motivation, home space completeness, the look of the house. 4) The opinion of respondents on the environmental conditions, namely; the standpoint of occupants on the potentials and constraints they have during their settlement as well as the hope of the inhabitants for the environment.

RESULTS AND DISCUSSION

Kampoeng Pandean is a unique form of settlement. Almost 100% of its inhabitants are Pandean indigenous people who are Javanese. The socio economic status of Pandean inhabitants are averagely categorized as medium. As the characteristic of another *Kampoeng*, the kinship among inhabitants of *Kampoeng* Pandean is very close and very strong. *Kampoeng* Pandean can be referred to as a productive *Kampoeng* (*Kampoeng* Based Enterprises), which is a *Kampoeng* dominated by metal craft business activities carried out within or around the house. Most households have a job that is homo-geneous, ie as a metal craftsman. Existing metal craft business types in the *kampoeng* Pandean include agricultural tools, building tools, electrical components, telecommunication components, factory machinery parts, automobile parts, appropriate machinery, household appliances, and others fit the customer's order.

Metal craft business is a main job, it is based on the opinions of 24 respondents (96%). HBEs in *Kampoeng* Pandean have been running for long enough, with the details of over 45 years of three respondents (12%), 35-45 years 20%, 12% 25-35 years, 15-25 years 20%, 5-15 years and 5 respondents (20 %), and less than 5 years only by 4 respondents (16%). The motivation rank in opening a metal craft business is as follows, the first motivation is the desire to earn money, stated by 12 respondents (48%), second is to continue their parents' business, stated by 8 respondents (32%), and the rest is due to the business opportunity they see. Metal crafts in *Kampoeng* Pandean is able to provide enough average income. Respondents who earn 2-4 million Rupiahs per month are 11 respondents (44%), those who earn 1-2 million Rupiahs are seven respondents (28%), 4-10 million Rupiahs or more are 6 respondents (24%), one respondent stated that his income is uncertain, it is highly dependent on the orders obtained. Monthly business turnover is quite high due to the quite expensive price of iron as base material. Monthly turnover of 2-5 million per month by 11 respondents (44%), 5-10 million five respondents (20%), 10-20 million third of respondents (12%), 20-30 million four respondents (16%), and 30-60 million two respondents (8%). These metal craft is capable to provide employment. This can be seen from as many as 20 respondents have employees. Craftsmen who have employees 4-6 employees dominate by 10 respondents (40%), the Craftsmen who have employees 1-3 people are 7 respondents (28%), the Craftsman who have employees 7-9 people is 1 respondent (4%), and Craftsmen who have

more than 9 employees are 2 respondents (8%). This is in accordance with the opinion of Lawanson (2012), Lawanson & Olanrewaju (2012) and Safeyah (2015), that the house is able to be the main source of income, able to provide an income earning, provide opportunities and employment.

Out of ± 350 residential houses, there are ± 56 HBEs (16%), houses those are used for household activity as well as for metal craft business. In conducting metal crafts business activities, there are household spaces that are used as a terrace or a room in the house, and there is also a special space built in the courtyard of the respondents. Respondents who conduct their business activities on the terrace are 4 respondents (16%), who conduct inside the house are 3 respondents (12%), and who conduct in the yard (front, side or rear) are 15 respondents (60%), see Figure 1. A total of three respondents (12%) run their business in other places, such as rental house or yard, his own land separated by the road or together with the their parents in law's business place. The presence of business addressed by the occupants with housing adjustment and housing adaptation (Turner, 1976). When there is a possibility to developed the house, they performed house adjustment, and when there is no possibility to changes the house to accomodate the bussines activities, then the housing adaption is carried out.



Figure-1. Business activites are conducted (a) at terrace, (b) inside the house, (c) at courtyard.

The people of Pandean are very religious in their daily activities. Starting from children, teenagers, up to fathers and mothers have related activities to religion. Almost every week people of Pandean conduct this social religious activity. Activities for children and teens conducted through associations “Jamiyah”. “Yasinta” and “Manaqib” is the association for the fathers. There are several religious associations for the mothers of Pandean, such as, Muslimat, Fatayat, Qodmil Qur'an, Jamiyah, Burdah and Sewelasan. Other than Manaqiban that is held in mosques, all religious activities are done in turns from house to house. However, if host owner has an obstruction, the activity can be done in the mosque. Spaces that are used are the living room, terrace, yard or street of the *kampoeng*. Social activities in the field of religion is a

factor that supports social sustainability (Chiesura, 2004; Iyengar, 2015).

Kampoeng Pandean has an area of ± 1.3 ha which is home to about 370 heads of household. *Kampoeng* has very high density of 1,500 people/ha. Existing open spaces are in the form of narrow streets, fields, and some of the home yards with a limited area. The percentage of open space to the existing area is ± 15%. The quantity proportion of existing open spaces do not meet the minimum standards of green open space requirements, ie minimum 20%. This is not in accordance with the opinion of Khan (2014) and Al-Hagla (2008) that for comfort, openness percentage factor on the field is important. Similarly in quality, it has not met the minimum eligibility standards. *Kampoeng* Pandean main road has a width of ± 3 m, a width of supporting road between ± 1-2 m. Existing road conditions are less supported by adequate infrastructure, such as sewers. *Kampoeng* roads have multiple functions, namely as the circulation of vehicles and pedestrians, children's playground, a place to trade, and a wide range of social activities; such as recitals, celebration of Independence Day, celebration of Islam holidays, and so on, see Figure 2.

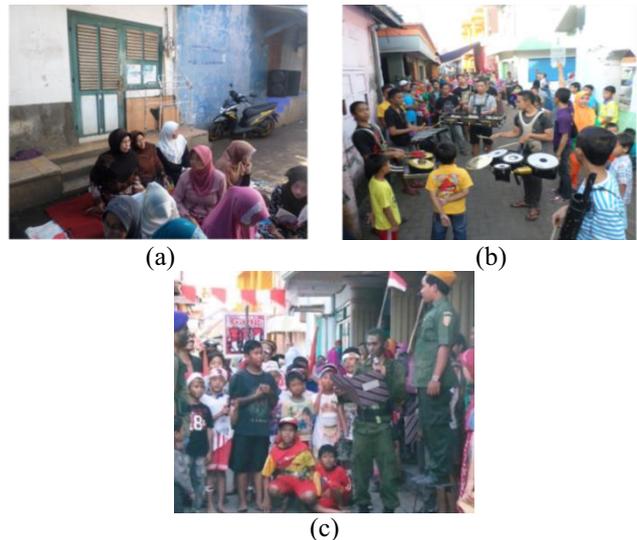


Figure-2. Various kinds of use of the road in *Kampoeng*: (a) as a place of recitals, (b) as a place of celebration of Islam holidays, (c) as a place of celebration of Independence Day.

Open space in the form of a field in *Kampoeng* Pandean serves as a place to exercise, play game, do refreshing, and a place to socialize. Every afternoon, *Kampoeng* Pandean society, especially men, ranging from children to fathers take advantage of this field in turns. On the anniversary of the independence day, the courts functions as a place to play game/competition. The existing field is bordered by houses on the three sides, with less greening conditions. The social function of the field is very prominent compared to the environmental function.

The presence of metal handicraft business in residences, results in a change in the residences. Residential spaces have additional space to conduct business activities. Five respondents (20%) lose their yard spaces as it is used for business activities. This shows that the house yard has a very high economic function. Completeness of

residential space owned by the respondent does not change much after the business starts. 15 respondents (60%) used to have complete space for habitable activities before the business started, such as yard (front, side, back), terrace, living room, bedroom, kitchen and bathroom. Five respondents (20%) have a complete residential space with an additional living room or dining room, while 1 respondent (4%) has additional study room, and 4 respondents (16%) have a prayer room, see Table 1. Ways that made respondents to change the home less attention to the comfort factor.

Table-1. Type of room before and after the business starts

No.	Type Space	Before the Business Starts (%)	After the Business Starts (%)
1.	Yard, terrace, living room, bedroom, kitchen, bathroom	60	36
2.	Yard, terrace, living room, bedroom, kitchen, dining room, bathroom	20	20
3.	Yard, terrace, living room, bedroom, kitchen, dining room, study room, bathroom	4	4
4.	Yard, terrace, living room, bedroom, kitchen, dining room, bathroom	16	20
5.	Terrace, living room, bedroom, business room	0	20

Initial building areas with the width under 61 m² are owned by the 8 respondents (32%), whereas the initial building areas with the width above 120 m² are only owned by 3 respondents. The average areas of the initial building owned by the respondents are ranged from 61-120 m². The details of the initial area ownership are as follows: initial building areas with the width of 61-80 m² are owned by 6 respondents (24%), the width of 81-100 m² are owned by 4 respondents, and 101-120 m² are also owned by 4 respondents. With the business activities and increase the number of occupants, the building area is currently experiencing an increase. The number of respondents who have a building area below 61 m² are only 3 respondents (12%), while those with a building area over 120 m² are 8 respondents (32%). Respondents who have building areas between 81-100 m² are 4 respondents (16%), those who have building areas between 101-120 m² are 5 respondents, and those who have building areas between 61-80 m² are five respondents, see Table 2. Total floors of the initial house increases after the start of their business activities. There were 22 respondents (88%) who had one storey initial houses before the start of the business, and there are 16 respondents (64%) at the moment who have one storey initial houses after the start of the business. There were 3 respondents (12%) who had 2-storey houses, and after the start of the business, there are now 8 respondents (32%) who have 2-storey houses, and only 1 respondent (4%) who has a 3-storey house. It appears that the presence of business is addressed by the occupants with changes in their houses (Turner, 1976). Land density is higher than before the business starts. Environmental sustainability is not met.

Table-2. Building area before and after the start of the business

No.	Building Area (m ²)	Before the Business (%)	After the Business (%)
1.	< 61	32	12
2.	61 – 80	24	20
3.	81 – 100	16	16
4.	101 – 120	16	20
5.	121 – 140	4	12
6.	> 140	8	20

Ways that are performed by the respondent in conducting additional business space or living space, mostly done without consideration to the factors of space and environmental comfort. The percentage of open space becomes smaller due to a yard that is used for business space is a closed by roof. This causes less light in the residential spaces. Likewise, the ventilation in the house is not optimal since there is no air circulation. Vegetation in *Kampoeng* Pandean is still limited to a few houses that have a yard, and there is no vegetation at all on the *Kampoeng* streets. It appears that the handling of the climate associated with solar radiation, wind direction, precipitation and temperature have not been handled properly. It appears that the handling of the climate associated with solar radiation, wind direction, precipitation and temperature have not been handled properly, not in accordance with the opinion of Iyengar (2015) and Hamouche (2008).

Noise occurs due to production process. Metal craft businesses that use machine for shaping or cutting metals, as well as the use of tools such as hammers bat, are causing noises. Basically, occupants are disturbed by these conditions, but this does not become a problem, because they are used to the condition. 11 respondents/occupants (44%) are disturbed by business activities, 12 respondents (48%) state that there is no interruption and do not answer, and there are 2 respondents (8%) state that they are disturbed by the inadequate environmental conditions. 14 respondents/occupants are not annoyed by business activities because they are already accustomed to it, and 11 respondents /occupants (44%) do not feel disturbed and do not answer. To increase the comfort of living, the noise that occurs should be minimized (Cairns Regional Council of Australia, 2011)

CONCLUSIONS

A study on Home Based Enterprises in *Kampoeng* Pandean as Supporting Sustainable Architecture has been conducted. The result showed that HBEs in *Kampoeng* Pandean generally helped to strengthen economic activities. Metal craft HBEs was capable of being the main source of income, providing adequate earnings, and offering employment. The open space has very high economic and social benefits. The economic benefits were derived from metal craft business, while the social ones were from the high frequency of social activities carried out in *Kampoeng* Pandean. Hence, the criteria for sustainable architecture in *Kampung* Pandean was obtained from economic and social sustainability. Meanwhile, environmental sustainability has not yet been met.

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