URBAN EX-LANDFILL AS BUILT ENVIRONMENT: COMMUNITY PERCEPTION

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ABSTRACT

The continuous process of urbanism and urban sprawl has resulted 115 numbers of ex-landfill site become a part of the city's image and the urban built environment. The urges to meets the needs of urban society for improve quality of life and adequate urban spaces in tandem with the increase of urban economic and social development become the demanding factor to redevelop ex-landfill site within the urban vicinity. In the context of development in Malaysia, five types of redevelopment of ex-landfill site have been identified; including the redevelopment as a public park. Redevelopment of ex-landfill site as public park is often regards as the most ideal development. The redevelopment is said be able to mitigate the environmental problems that exist due to the effects of ex-landfill contamination and create improvement in the quality of life, recreational and social well-being of urban society. However, questions on what is the main issues of ex-landfill site in accordance with the perception of local community, what type of priority scale on the redevelopment of ex-landfill according to the Malaysian public opinion and is the redevelopment of public park at the ex-landfill site is acceptable to the Malaysian society, arise as problem question. Thus, this paper attempts to answer the questions based on the community perception. By using the respondent perception's data which is community surrounding the ex-landfill site and public park at the ex-landfill site; and also expert's perception, the results indicate the suitability of the redevelopment of the ex-landfill site in the future Malaysia urban development.

Keywords: ex-landfill, redevelopment, community perception, public park, future development

INTRODUCTION

Urbanization is an ongoing process, in line with the growth of the city. Urbanization requires strategic planning as it is not only capable of creating sustainable cities but also creating effects of urban sprawl which leads to environmental, economic and social problems and increase demands to the availability of urban space's and natural resources (Town and Country Planning Department 2011). Urban sprawl is also identified as the cause of ex-landfill areas to be part of the image of the city and the urban built environment. This phenomena occurs as the ex-landfill sites are now located in the range of residential areas within the city area. In the Malaysia context, urban sprawl not only cause the remote areas or rural areas surrounding the city center become part of urban vicinity but also created the existence of the residential area nearby the 115 numbers of ex-landfill areas. The existence of the ex-landfill within the city area and human settlement has raised the negative perception within the urban society and urge to the need of ex-landfill sites to be redevelop. The redevelopment of ex-landfill was stated as the best approach to regenerate the natural resources potential and address the problem of inadequate urban open spaces (Atiyat, 2003, Yasuhiko 2006 and National Landscape Department, 2010). The redevelopment of ex-landfill for the purposed of human benefit is also in line with the theory of '*pengislahan bandar*' which creating better urban built-environment for its resident through the act of repairmen, correction and justice (Wan Mohd Nor 2005).

URBAN EX-LANDFILL AND COMMUNITY PERCEPTION

Ex-landfill as built environment and its relationship with urban society's quality of life

Ex-landfill is defined as 'a non-operating landfills, where waste disposal's activities have been laid off or completed (Ministry of Housing and Local Government 2004 and United States of Environmental Protection Agency 2010). Ex-landfill which also known as brownfield (Yu, 2012), contaminated and disturbed

land (George, 1991) was stated as the cause of prolong negative impact to human life and environment. This is due to the fact that even the landfill has been closed or stopped its operation but still issuing leachate and landfill gases and in unstable soil condition until the decomposing processes is fully completed, which may take a period more than 20 years (Ministry of Housing and Local Government, 2004, Atiyat, 2003, National Landscape Department, 2010 and the United States of Environmental Protection Agency, 2010). If viewed from the perspective of Islam, the former landfill is the result of human activities that lead to human destruction. Therefore, it should be repaired and corrected to function as a new development towards the *hayyatun toyyibah* which could create a good life, peace, suitable to the religious faith and in accordance with human needs and sustainable development (Wan Mohd Nor, 2005).

The association of ex-landfill with built environment can be seen from the statement of UN-HABITAT (2012) stating that the living environment is the foundation of human life and the environment within the residential area regards as the habitat of human life. It due to the facts that human daily activities occur within the surrounding of residential area. Therefore, whatever is felt by individual either inside or outside his house become the indicator of comfort level to his environment. In this study context, the built environment surrounding the residential areas become the key determine factor to the individual living comfort as stated by Noraziah Ali and Fatimah Muhammad, 2001, Porteous, 1977, Yen and Kaplan, 1999 and Lu, 1999. Noraziah strongly believe that residential locality and physical environmental as the main contributor to the outdoor living comfort. Meanwhile, the study of Yen and Kaplan, and Yu proved that a good housing environment has a positive relationship with the level of human health and Porteous proved that the location of the residential area and the physical environment has a close correlation with the level of human's health and risk of death.

The relationship of human comfort level and his surrounding area arise the question on how the outdoor comfort felt by the residential nearby the ex-landfill sites and how is the quality of

life of the urban community who lives around the surrounding area of ex-landfill sites?

Those question leads to the basic understanding on the relationship of comfort living environment with the surrounding built environment and community's quality of life. This is due to the facts that community's quality of life is based on the individual satisfaction to the level of well-being and comfort, which determine through his perception on subjective and objective indicators (Murdie 1992, Burnell and Glaster, 1992, Lim, 1999 and Johnston 2000). Based on this view, Burc et al. (2001) concluded that the urban development need to provide a quality urban built environment. A quality urban built environment which consists of economic environment, transportation and communication facilities, social environment and physical environment must be created to provide a good quality of life to the urban residents. Hence the urban environment should eliminated the two main issue that effect the community's quality of life within the surrounding area of ex-landfill, which are the environmental issues and people's concern (Atiyat 2003). Although 272 number of previous studies related to the association of the ex-landfill's existence to the human level of health conclude that ' only low association exists and hard to be proved ' (Lisa, 2003) but the negative perception often become the basis to the community's concerns and difficulties to the acceptance of the existence of ex-landfill sites as part of their living and built environment. Therefore, the question of what is the main issues of ex-landfill site in accordance to the perception on Malaysian community need to be answered in this study.

Ex-landfill and redevelopment policy in Malaysia

A study conducted by the Japan International Cooperation Agency (JICA) and the Ministry of Housing and Local Government in 2004 has identified 147 landfill sites throughout Malaysia. Those landfill sites are located near or within urban settlements with a total areas of 507.8 hectares (Ministry of Housing and Local Government, 2004). The review study found out that 115 of the landfill has been closed. 70% of the sites is located in the residential area and has not been re-developed (Table 1).

Despite the anxiety and concern over the negative impact of contaminated land, ex-landfill site is seen as a renewable resource and alternative approach in dealing with the problem of inadequate public urban spaces that able to bring out the socio-economic improvement to the urban area and society (Town and Country Planning Department, 2000, Japan Institute of City Environmental Issue, 2006, Yusuhiko, 2006, National Landscape Department, 2010 and Mindaugas *et al.*, 2012).

Table 1. Landfill sites in Malaysia

State	*Number of landfill site*	*Status (type and category)*	*Area (hectare)*
Selangor	12	Type: Open site (4), Level 1(4), Level 3 (1), Level 4 (1) Category: Close (11), Operation (1)	178.2
Kuala Lumpur	7	Type: Open site (1), Level 1 (2), Level 2 (4) Category: Close (7)	80.0
Negeri Sembilan	13	Type: Open site (10), Level 1 (3) Category: Close (10), Operation (3)	93.8
Melaka	8	Type: Open site (6), Level 1 (1), Level 2 (1) Category: Close (7), Operation (1)	44.5
Johor	27	Type: Open site (24), Level 1 (2), Level 2 (1) Category: Close (20) , Operation (7)	213.8
Pahang	18	Type: Open site (7), Level 1 (4), Level 2 (4), Level 3 (3) Category: Close (18)	226.2
Terengganu	10	Type: Open site (10) Category: Close (7), Operation (3)	60.2
Kelantan	13	Type: Open site (11), Level 1 (1), Level 2 (1) Category: Close (8), Operation (5)	68.8
Perak	26	Type: Open site (20), Level 1 (5), Level 2 (1) Category: Close (18), Operation (8)	260.3
Pulau Pinang	3	Type: Level 1(1), Level 3 (2) Category: Close (2), Operation (1)	101.0
Kedah	9	Type: Open site (4), Level 1 (2), Level 2 (2), Level 3 (1) Category: Close (6), Operation (3)	173.0
Perlis	1	Type: Level 1 (1) Category: Close (1)	8.0

Source: Adapted from Ministry of Housing and Local Government (2004) and field study (2013)

In Malaysia context, the need to redevelop ex-landfill area was stated in National Urban Policy and National Landscape Policy. Meanwhile, *'Guideline for the safe closure and rehabilitation of municipal solid waste landfill sites*' and the National Physical Planning Council decision form the basis policy for determining the suitable land-use planning and redevelopment of ex-landfill sites.

'Guideline for the safe closure and rehabilitation of Municipal solid waste landfill sites' (Ministry of Housing and Local Government, 2004) recommended that the redevelopment of the ex-landfill should be limited to five types of development, which are:

i. Agricultural areas
ii. Public parks
iii. Parking areas and roads
iv. Low rises housing areas
v. Commercial or industrial areas

The limited development recommendations for ex-landfills redevelopment has been discussed and detailed in the meeting of the National Physical Planning Council (NPPC) in 2004. As the main government body in determining the direction of planning and physical development in Malaysia, NPPC has decided that redevelopment of ex-landfill as a public park should be given as the main priority. Meanwhile, redevelopment of ex-landfill as a residential and industry areas need to be studied in detail upon approval because of 'un-stable soil structure, easy to flood as well as public safety and health ' reasons (NPPC, 2004). This decision become the main guide for implementing agencies and administrators in Malaysia in determine the most appropriate and suitable redevelopment for ex-landfill sites. It's indirectly justify the needs to redevelop ex-landfill as public park in the context of Malaysia's urban planning.

Public perception and acceptance as a basis for determining the suitability of redevelopment of ex-landfills

Perception is a reflection of human behavior which influences by attitudes, emotions and cognitive arising from previous knowledge, insight and perception (Zimbardo and Ebbesen, 1970). It is also regards as the basis assessment of human's quality of life (Murdie et al., 1992) due to the fact that perception and quality of life could be felt through the notion of an individual social well-being experience (Johnston 2000). Therefore, perception is often used by researchers to measure quality of life because it could be used as a tools to explain the level of quality of life being felt and required by each individual or community (Matlin 1999, Ibrahim Yahya, 1995 and Haryati, 2003). Perception study in the other hands is regards as the best method to prove the relevance and acceptance of the relationship between humans and its environment (Abd Rahim, 1996). In this study, perception is used to study the level of acceptance towards the redevelopment of ex-landfill as suggested by the government through the questions of what type of priority scale for the ex-landfill's redevelopment and is the redevelopment of public park at the ex-landfill site is acceptable to the Malaysian society. The findings of this perception study could indicate the views and needs of the community in determining the suitable redevelopment of ex-landfills in the future.

METHODOLOGY

The study was conducted to evaluate community perception in determine the most suitable type of ex-landfill redevelopment based on the limited redevelopment types suggested by the government and the acceptance of the community to the proposed redevelopment of the ex-landfill as a public park. Therefore, questionnaires with 'multiple choice' scale were used as the study method. Respondents who are the residents of the housing area within the 1.0 kilometer radius of the Jinjang Utara ex-landfill area (ex-landfill that has not been rebuilt) and Worldwide

Recreation Park (ex-landfill that has been redeveloped as a public park) were randomly selected.

The selection of two different study area were made to see whether there is a difference in perception among the respondents. Meanwhile, the setting of 1.0 kilometer radius as the study area is in accordance with United States of Environmental Protection Agency method's in monitoring the impacts of ex-landfill sites. 1.0 kilometer radius is the standards range of area for collecting observational data. The justification setting the radius of this study also refers to the view of Lisa (2003) and Robert (2000), whose argues the need to study the impact of landfill to the human health and safety should dedicated to the residents in the area surrounding 1.0 kilometer radius within the landfill sites in order to produce accurate data. Subsequently, the data obtained from respondents' perceptions will be made cross-checking to the expert's perception data. Expert respondents for this study is comprised of individual profesional and experts in the planning and redevelopment of ex-landfills specializing in landscape architecture, urban planning and the environment field that is recognized by an accredited bodies. The actual sample size taken will referring to the Krejcie and Morgan table of sample size (1970), which based on the actual number of houses that represent the number of population within the study area. However due to this research is still at a pilot survey level, the size of the samples taken are low with 30 respondents for each study area and 30 respondents for the expert's opinion.

DATA ANALYSIS

Results of data analysis are shown in Table 2.

Table 2: Respondent's perceptions analysis

Data / Respondent	Percentage of perception		
	Respondents within 1.0 kilometer radius of Jinjang Utara ex-landfill (ex-landfill sites that has not been redevelop)	Respondent within 1.0 kilometer radius of Worldwide Recreation Park (ex-landfill sites that been redevelop as public park)	Expert respondent
Issues of ex-landfill sites			

• Bad odors produced by the ex-landfill	24.89%	25.11%	12.30%
• Fire and explosion of methane gas at the site and surrounding area	21.79%	24.67%	24.61%
• Rubble and soil subsidence on the ex-landfill sites and surrounding area	21.78%	19.05%	19.02%
• Water pollution caused by leachate	16.88%	14.71%	18.80%
• Health and safety risk to the people around the surrounding area	14.66%	16.45%	25.27%
Acceptance to the government proposal for ex-landfill's redevelopment			
• Agree	80.00%	86.66%	96.66%
• Not agree	20.00%	13.33%	3.33%
Types of redevelopment suitable for ex-landfill located in the vicinity of residential area			
• Parking area and roads	26.64%		25.44%
• Agricultural areas	25.77%		15.11%
• Public parks	25.33%		29.49%
• Commercial or industrial area	12.66%		16.07%
• Residential areas	9.60%		13.39%
Level of approval for the redevelopment of ex-landfill site as a public park			
• Strongly agree		20.00%	36.66%
• Agree		33.33%	50.00%
• Not sure		6.66%	10.00%
• Not agree		26.66%	6.66%
• Strongly not agree		0.00%	0.00%

Data analysis on ex-landfill issues indicate the existence of different perceptions between respondents who represent the

community in the area surrounding the ex-landfill with the expert respondents. Community within the surrounding ex-landfill area ranks bad odors produced by the ex-landfill as the main issue of people concern, while risks of public health and safety as a very less important. It is contrary to the perceptions of experts that indicate the risk of safety and public health as a major issue while the bad odor as very less important issue. The different perception create a question either the community perception is based on micro-environment with a less knowledge of the ex-landfill issues or the expert perception foreseen the community issue in identifying the main issue of ex-landfill area. Therefore, further study should be done to look on the relationship between community perception and the existing issue of ex-landfill area.

Meanwhile, data analysis on the respondent perception towards government proposal's to redevelopment the ex-landfill sites showed high approval percentage, exceeding 80%. This perception is consistent with the high acceptation rate given by the expert. From this analysis it could be concluded that the Malaysian community give a consent of acceptance to the redevelopment of ex-landfill as proposed by the government.

As to determine the types of suitability for ex-landfill redevelopment in accordance with the Malaysian community's point of view, data perception of respondents surrounding the Jinjang Utara ex-landfill's area and expert perceptions are taken as an indicator. The data obtained shows the ranking of redevelopment types based on community preferences. Respondents in the vicinity of the ex-landfill area prefer development of roads and parking lots as the main priority, while the expert respondents prefer public parks as the main priority for the redevelopment of ex-landfills. From both data, the priority ranking of the ex-landfill redevelopment is as shown below:

Priority 1: Public parks (27.4%)
Priority 2: Parking area and roads (26.04%)
Priority 3: Agricultural areas (20.44%)
Priority 4: Commercial / industry areas (13.89%)
Priority 5: Residential areas (11.50%)

This priority ranking reflects the preferences towards the suitability types of ex-landfill's redevelopment in accordance with the community's perception of Malaysia. The analysis result indicated that in principle, Malaysians is agree with the decision of the National Physical Planning Council to give priority of ex-landfill redevelopment as public park. However, the percentage of disapproval that exceeds the perception of "strongly agree" with the value of 6.66% among respondents in the vicinity of the Park Worldwide Park create cause for concern that the redevelopment of ex-landfill as public park might not fully accepted by the locals. This issue is compatible with the perception of respondents in Jinjang Utara ex-landfill sites that prefer the development of roads and parking as the main priority type for redevelopment.

CONCLUSION AND RECOMMENDATION

Redevelopment of ex-landfills, particularly ex-landfill located within the vicinity of urban settlement area is a necessity to the existence of sustainable human habitat. The redevelopment could increase the urban society's quality of life and should be regards as the best methods to create equilibrium of urban built environment and human needs through the act of repairmen and correction of contaminated land for the better land use for the benefits of *ummah*.

In conclusion, it can be stated that the existence of the ex-landfill as built environment creates the perception of differences between the public and the expert. Although there is a difference perception on the ranking of ex-landfill issues but both agree that the ex-landfill site should be redeveloped and the redevelopment must comply with the policies set by the government. In principle, the redevelopment of the ex-landfill as a public park as suggested by the government is accepted by the people of Malaysia. However as a preliminary study designed to evaluate the suitability of the redevelopment of ex-landfill based on the community perception, this study need a lot of other detail data to support its justification. Specific studies relating to the impact of the development of the ex-landfill in terms of community's acceptance and quality of life, public health and safety and the suitability of built environment and nature needs to be done to

strengthen the study. 'On-site study' and 'lab experiment' also suggested to be done as complement to this study. Hence, the study will give a complete result and strong justification to redevelop the ex-landfill sites that could give benefits to the Malaysian community and creating a livable urban environment to live-in.

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