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# Sustainable Environmental Management and Preservation Knowledge among Multi-ethnic Residents

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## ABSTRACT

Studies on management responsibility for the urban environment have usually focused on structures, institutions and agencies. In terms of structure, urban environmental management is described as administrative and legal structures. From institutions point of view, urban environmental management is based on bureaucracy and the executing department. However, regarding agency, urban environmental management is focused on the responsibility of the residents or community referring to the aspects of their humanitarian acts and social union. Sustainable urban environmental management is often discussed in public and academic discourses concerning structural and institutional roles. The role of the community is usually neglected as it is considered as complicated and subjective. Therefore, this study aims to examine the extent to which the sustainable urban environmental management can be realized, based on the role and responsibility of the city residents. Accordingly, this study intends to uncover the roles of residents and community in managing sustainable urban environment based on the survey, consisting of test and questionnaire, conducted on the residents in the Selayang Municipal Council, in Selangor, Malaysia. The sample of the study involves 167 residents of the Selayang Municipal Council areas which were randomly selected as respondents. The result shows that residents are indeed capable of playing their roles as the agents of managing a sustainable urban environment, due to their abilities and knowledge on the importance of improving the environment. It is recommended that the government and the Selayang Municipal Council authority take approaches which are congruent with the cultural values of the ethnic groups.

**Key words:** Environmental management, sustainable cities, role of population, preservation, multi-ethnic society

## INTRODUCTION

Urban environmental management commonly discusses structures, institutions and agencies. On the structural level, urban environmental management focusses on the administrative and legal structures. Institution of urban environmental management commonly refers to its bureaucracy and executing departments. The agency of urban environmental management is about the

responsibility of its residents which refers to humanitarian and social union aspects. Sustainable urban environmental management is often discussed in public and academic discourses commonly in relation to its structural and institutional roles. The role of residents or community is rarely given attention to as it is complicated and subjective. Therefore, this study aims to examine the role of the residents, living in Selayang Municipal Council areas, in realizing and enhancing sustainable urban environmental management.

## ISSUES ON SUSTAINABLE URBAN MANAGEMENT

The role of the residents or community in the environmental movement must be acknowledged and the government should encourage active involvements of people in identifying environmental pollution. Community involvement can also assist in reducing the cost of implementing environmental control. In most cases, local community plays a key role as 'emergency alarm' for the environmental impacts caused by industrial activities, because they are immediate victims affected by pollution and they themselves are expected to change the situation (Palmer, 1998; Van Khoa, 2006). A good communication between state environmental authorities and the community is necessary to encourage the local people to be more sensitive to environmental problems and thus, having great awareness in protecting the environment.

Awareness of environment preservation among the Malaysian population is still low. This is due to the fact that most people are not really knowledgeable or even caring concerning the issue of environmental preservation and they put the burden mainly on the shoulder of the authorities to care for the environment. Public opinions and understanding on the concept of sustainable development need to be reviewed. People should understand and be aware that they can play an active role in protecting the environment (Dzulkifli, 2005). Awareness alone is not sufficient in the absence of action which is needed to be taken to preserve the environment and to ensure the success of measures taken to preserve the environment. Environmental problem solving must have all of the three core preservation essentials which involve awareness, knowledge and practice (Dale, 2001; Olofsson and Ohman, 2006). Awareness alone will not be meaningful without concrete action. People need to have a sense of love for the environment, because a sustainable environment is indeed the basic for a harmonious and sustainable development (Sani, 2007).

Malaysia has a specific national and local law to protect the environment. Environmental Quality Act (1974) and the Local Government Act (171) are adequate to act as a tool used to control environmental pollution. However, legislation alone is inadequate if people do not have the same commitment and responsibility in preserving the environment. Thus, this discussion points out that environmental conservation will be more successful if the society is more aware and care for the environment. In addition, legal provision is served as complementary tool to ensure the safety of our environment.

## PHILOSOPHY OF SUSTAINABLE URBAN ENVIRONMENT MANAGEMENT

The study of urban sustainable management has to start with the philosophy of sustainability. The philosophy refers to human's view on nature, knowledge and practice (Fig. 1). The concept of sustainability itself should have the element of environmental outlook for people to realize that nature is created by God but it is mankind's responsibility to enrich it. The human being has been entrusted with the task of taking care of and managing the nature and its contents in the best possible way. On the other hand, environmental sustainability refers to man's relationship with his Creator (JPBD, 2000). This means that all of God's creations in the universe are created with

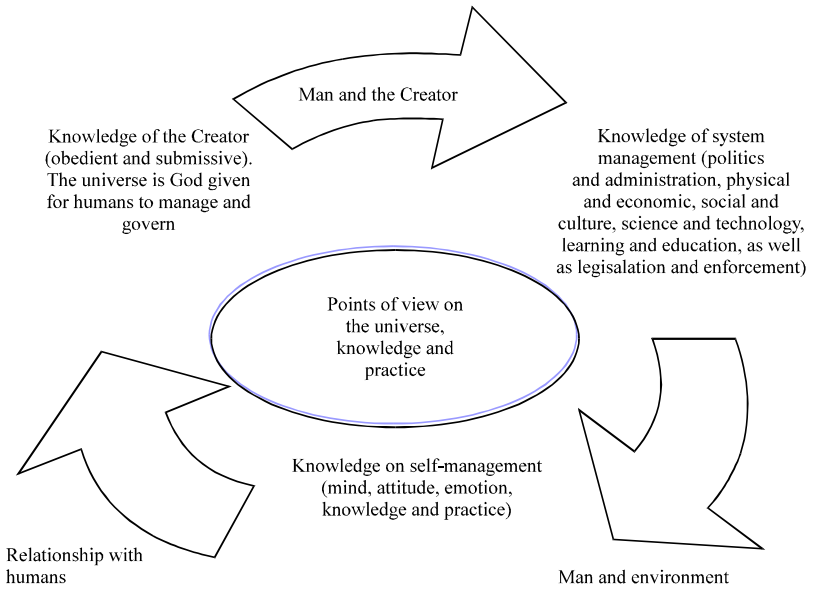


Fig. 1: View of environmental sustainability philosophy, knowledge and practice modified from JPBD (2000), Iqbal (2005), Al-Jayyousi (2012) and Sarkawi and Abdullah (2012)

wisdoms and for the benefits of mankind. Therefore, people have to ensure their sustainability for future generations. The world is actually the field of natural environment from the creator for the heirs. The heirs are not only referred to humans but also inclusive of animals and plants. Sustainability philosophy states that people need to be grateful for the beautiful nature and the quality of a good environment. Peaceful and comfortable living environment is a blessing. In gratitude to the Creator, mankind should jointly safeguard the environment. Hence, care and preservation of the environment should not be shouldered by the government alone (Al-Jayyousi, 2012).

The next sustainability philosophy is knowledge (Fig. 1). Knowledge is associated with wisdom, whereas wisdom and human intelligence are referred to either individual intelligence or society intelligence. Knowledge can be divided into three types, namely knowledge of the Creator, knowledge of self-managment and knowledge of system management. Humans are social creatures that their knowledge is formed either formally or informally. Humans formally acquire knowledge and intelligence through schools and tertiary institutions. On the other hand, they informally gain knowledge and wisdom through experience and insights generated from the concept of natural relationships with the Creator and man's relationship with other human beings. People with better knowledge will relatively have higher ability to preserve the environment. However, knowledge and wisdom of the management of sustainable development are nothing without a balanced relationship between man and his Creator, man-to-man relationship and man's relationship with the environment. Knowledge is collective in nature and beyond normal understanding. That is why the three symbiotic relationships are important for people to be well-versed in all aspects of sustainable development: Politics and administration, physical and economic, social and cultural, scientific and technological, educational and learning, as well as legislation and enforcement (Iqbal, 2005).

The final sustainability philosophy is practice (Fig. 1). Practice hinges on the actions and deeds of men whether on a permanent or on-going work basis. There are also occasional practices which are based on circumstances of time and place. The types of human practice depend on the view of nature and the knowledge they gain. The effectiveness of human practices in persevering the environment depends on self-awareness. Consciousness arises from the view of nature with regards to the Creator and a sense of responsibility as caliphs who are entrusted to be responsible and care for the universe and its nature. The righteousness of humans' actions in taking care of the environment is associated with their knowledge either formally or informally that is derived from experience. Human relationship with one another is also important to generate knowledge which eventually form a unity and community environment to consciously work together to preserve their environment (Sarkawi and Abdullah, 2012).

With regards to the discussion on the philosophy of sustainability, environmental management normally emphasizes the importance of the physical and material controls. However, environmental management rarely focuses on human anthropology and sociology aspects. Venn's diagram (Fig. 2) displays the sustainability philosophy concerning the aspect of human anthropology and sociology. It involves environmental, economic and social aspects. In the current study, sustainability philosophy deals with the roles of man in relation to the environment. People need a sustainable, quality and liveable environment. Normal people are always sensitive to the damaging activities which affect their surrounding or living environment. Overcoming pollution is a common universal human action, whether individually or collaboratively. It means that the love for the environment and sustainable development starts from human consciousness of the threatened environment. Hence, they want a viably sustainable environment beyond the scope of materials which include various life aspects such as social, cultural, educational, as well as the aspects of safety and health (Dale, 2001).

When luxury is referred to the economic environment, it means human beings need a viable and dynamic economic environment. People also want sustainability in the economic philosophy which involves economy, justice and fairness. Economic environment and economic development lead to well-being. A sustainable economy generates well-being, regardless of social

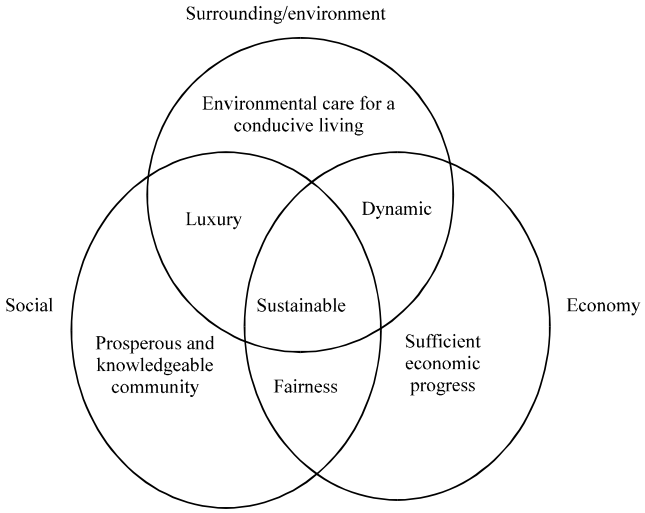


Fig. 2: Sustainability concept adapted and modified from Dale (2001), Esty and Winston (2006) and Hashim (2008)

unsustainability. The strengths and economic progress depend on the maturity regarding nature views, knowledge and practice of the community (Esty and Winston, 2006). It is impossible for the ignorant society to plan, develop and monitor political environment. A part from that, the society needs to administer development factors-economic and physical, social and cultural, scientific and technological, educational and learning, as well as the rules and regulations for continuous sustainability. In conclusion, the philosophy of sustainable development for the well-being of the environment is highly conducive to life quality which must begin from the attitudes, knowledge, practices and actions attributed to the man himself (Hashim, 2008). Attitudes, knowledge, practices and human's actions to protect the environment are referred to as independence sustainability. However, the concept will only work if sustainability of the environment is centred on the human's role, either individually or as a community (Murray, 2011). There are six conditions that lead to self-sustainability among human beings that urge them to preserve the environment individually or as a community. The first condition is the realization that man must have a conscious mind. There are three levels of consciousness. The first level is an awareness to change, the next level is to understand certain matters or issues related to sustainability and the third level is having the sense of self-identity and responsibility to keep a sustainable environment (Fig. 3). The second condition is the motivation to intervene and take action to keep a sustainable environment. Certain changes in attitude, psychology and human thought are the main factors for some people to be independent in taking care of environmental sustainability. Similarly, common and socially acceptable values of sustainability can motivate individuals to maintain and sustain the environment.

The third condition is empowerment. People need to be empowered to have the power and capacity to care for a sustainable environment. Empowerment is divided into two parts, namely material empowerment and human resources. Material empowerment is associated with providing all basic facilities and infrastructures including financial capitals and human capitals to protect the environment to be sustainable. Empowerment of human resources is the enhancement of knowledge, motivation, awareness and experience that man can apply in order to keep a sustainable environment. The fourth condition is the need to increase knowledge as discussed in the philosophy of sustainability. Sophisticated knowledge enables people to plan, implement and monitor sustainable development. The actions taken by educated people are certainly more efficient, mature, organized and effective in managing and protecting the environment to be sustainable. People need to have multidiscipline, inter-disciplines and trans disciplines of knowledge with regard

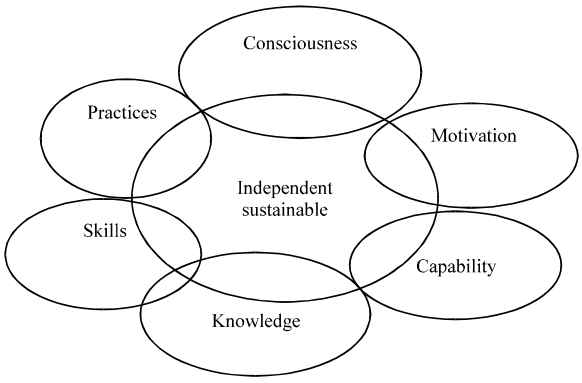


Fig. 3: Independent sustainable (Murray, 2011)

to the issues of sustainable environment. People need to understand that sustainable development involves a collective of various development aspects. Collective development means a sustainable development should take into account several aspects of political and administrative, economic and physical, social and cultural, scientific and technological, educational and learning, as well as regulatory and legislative.

The fifth condition is the skills. Skills refer to the abilities and experience of life. The abilities and experience enable people to be more skilled, mature and capable to act intelligently. They also promote a sense of awareness in managing and maintaining a sustainable environment. The sixth condition is practice which means people need to use their experience and skills available to ensure a sustainable environment. They can practice individually or as a community in managing and maintaining environmental sustainability. Experience and skills are gained through proper practices and continuous activities to protect the environment. When environmental care practices such as recycling programs are done periodically, they will add to the skills and abilities, hence people can continue to protect and sustain the environment.

## RESIDENT-BASED ENVIRONMENTAL MANAGEMENT

Resident-based environmental management evolved from the philosophy of environmental sustainability. It emerged from early human civilization. Indus Valley civilization has left several traces, such as public toilets and public baths. This shows that people living during that period did not defecate and urinate everywhere in order to protect the environment, hence promoted sustainable environment. Aristotle, the Greek civilization philosopher, pioneered the study of environment and destruction caused by humans from an ecological perspective. He identified the need for biological and geological observations. However, he did not formulate or suggest solutions to protect nature. In his opinion, the universe is for humans' consumption and humans' actions which are determined by the nature itself. Therefore, men cannot be blamed for any of their actions and misconduct towards nature (Guthrie, 1997). Sustainable preservation and environmental care show that residents of certain areas use their wisdom or knowledge to intelligently connect with the environment. It is a cornerstone in doing research, finding true sources, process, or determining the origins of certain elements of the environment. Modern approach promoted by western civilization clearly states that civilized people were so proactive in doing scientific study on environmental changes and natural phenomena using logical reasoning and empirical researches. Consequently, a numerous studies on preservation-related themes were conducted relatively on ecosystems, pollution, restoration and other terms which were beyond the works of Islamic scholars from the Andalusian civilization, Baghdad and the Ottomans.

The environment is a valuable treasure of natural resources for human development. Scholars of Western civilization use their knowledge and thinking to exploit the environment for the benefits of human development without associating with our responsibilities to our Creator. This notion is unjustified in creating human awareness to protect the environment. Instead, people should always keep their code of conduct and sustain a harmonious relationship with the environment as it is entrusted by the Creator. In conclusion, the task of preserving and protecting the environment should be shouldered by men with good spirit, consciousness, identity, desire, attitude, responsibility, locus of control and courteous behaviours towards the environment.

**Awareness and desire: Awareness and desire:** Desire is the need to meet the instinct and desires. Desire is defined as: Person location on a subjective probability dimension involving a

relation between himself and some actions (Ajzen and Fishbein, 1980). Desiring behaviour refers to the extent to which a person expresses a conscious plan to show or not to show certain behaviour (Gochman, 1997). Desire is influenced by attitudes, subjective norms and behavioural control and thus, desire determines one's action patterns (Ajzen, 2005). Before one shows a desire to behave towards any environmental issues, the individual must first have awareness in understanding the relevant issues (Hines *et al*., 1987).

**Practices and attitudes:** Attitudes are internal factors within an individual resulted from thinking and behavioural changes in response to an issue or certain environmental condition. An instinct is to show concern or otherwise which is influenced by the thoughts and consciousness of a person. Usually, it depends on one's attitude and the way of his thinking. Negative attitudes appear if someone neither moves nor has desperate motive to change. An attitude is also influenced by personal and social values. On the other hand, values and attitudes will usually affect one's behaviour and actions. Attitude is a condition in which a person can easily be influenced by the environment which then forms certain ideas and insights. Attitude is also an emotional reaction of a person involving the cognitive aspects related to knowledge, facts or information (Rashid, 1993). Attitude is defined as mental and neuro-willingness which is developed through experience. It then works as a dynamic influence of individual response. An attitude involves three main features. The first feature is a state of willingness which causes one to see other people or objects around him in a certain way. The second characteristic is inherited attitudes, rather they are imitated from others and they reflect values of the environment. The third feature is developed and compiled through experience and it is dynamic as well as ever changing in nature. There are three influential factors which form the three features of attitudes. The first factor is due to a direct experience with environmental situations. The second factor is an explicit and implicit learning result gained from others, whereas the third factor is based on one's personality development (Elias and Yaakob, 2006). However, practice depends on positive or negative attitudes which are expressed through manners, habits, behaviour, temperament, needs and demands, as well as the surrounding area (Husin, 1997; Ajzen, 2005; Yahaya, 2005).

**Self-responsibility:** It is defined as independent personal responsibility. Individual with self-responsibility acts or takes action similar to the others and responds appropriately, based on the social and community norms. Norms are divided into three types. The first type is consistent, normal and common behaviours of all people in certain situations. The second type is the social expectations of others in certain situation. These expectations will determine how a person should exhibit normal behaviour in such situations. The third type is the combination of knowledge and behaviour that is shown by the individual when he faces certain situations (Rashid, 1993). Personal norms are individual beliefs and other social factors that are responsible to reduce environmental problems. This proves that the personal norms which are personal independent responsibility can influence certain environmental behaviours (Stern, 2000). Hence, personal norms are important dependent variables in the behavioural aspects of environmental responsibility. In conclusion, the relationship between personal responsibilities with personal norms is that they both show a strong belief held by an individual with a conscious mind on how they should behave or perform an action. When individuals act according to the norms, they will have very strong and proud passions. On the other hand, if the norm is not followed, the individual is experiencing feelings of guilt (Hines *et al*., 1987; Do Valle *et al*., 2005).

**Experience and locus of control:** Locus of control refers to the extent to which a person believes that s/he can control the effects of their behaviours. Locus of control can be divided into two types, such as external locus of control and internal locus of control (Palmer, 1998). Figure 4 shows the factors of the locus of control. External locus of control means a passive approach or belief that an occurrence is controlled by external influences that are free from individual's personal action. Internal locus of control is the belief that an event can be influenced by one's personal behaviour. People believe that certain actions can relatively cause changes in the environment. A person has an internal or external locus of control depending on how they observe an event or occurrence. An individual with internal locus of control is a person who sees himself as having the ability to control the events that happen in his/her life. Individual with external locus of control is less powerful in influencing events in his life as those events are depending on luck and external influences (Palmer, 1998; Elias and Yaakob, 2006).

According to Palmer (1998), locus of control is a factor related to the individual's perception of whether certain behaviour will produce an expected outcome or just a reinforcement to repeat the action. Individuals with internal locus of control will likely take action on environmental issues, because they feel that this will assist in solving environmental issues.

**Motivation and behaviour:** Individual's behaviour reflects the values which form the basis of his conduct. This means that the values and knowledge significantly cause changes and work as a motivation in shaping the behaviour of individuals and society. Through the good values and knowledge of a certain matter, one can behave rationally and wisely to address the problem. Certain actions bring certain impacts on people, thus, people usually take implicit or explicit consideration based on the action to behave in a sane state using the experience and knowledge acquired from the actions (Rashid, 1993; Ajzen, 2005). Individual behaviour or reaction towards the environment is divided into four categories (Stern, 2005). The first category is active commitment of a committed activist in the organizations either to support government policies or to go against the policy on environmental protection. The second category is non-activist group that supports government policies regarding environmental protection in the form of contributing energy, finance and material. Both categories of behaviours indirectly affect the environment and influence public policy. These bring significant impacts because public policies can change people's behaviours, organizations and society. The third type is the involvement of any other individuals who influence other parties to have certain reaction on the environment, for instance, to influence organizations that advocate the issues of environmental conservation. World Environment Protection (WPO) is an example of an organization that has always been a place for people to

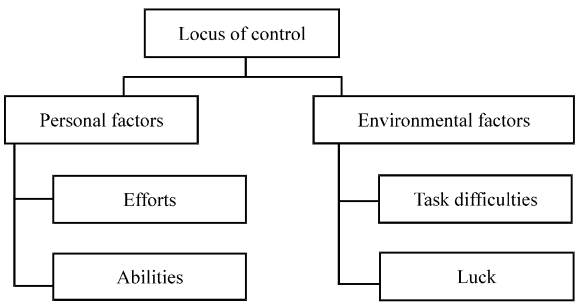


Fig. 4: Locus of control (Palmer, 1998)

provide complaints about the destruction of the global environment. Complaints to the WPO can provide a great environmental impact. This is because the WPO is very influential in the fight for environmental sustainability. The fourth type is the individual's personal behaviour. These include the decisions taken in purchasing and disposal practices of products or used products that have an impact on the environment.

## AREAS OF STUDY-SELAYANG MUNICIPAL COUNCIL, MALAYSIA

Selayang Municipal Council is a local authority in the state of Selangor. Selayang Municipal Council was established on January 1, 1997 which previously was known as Gombak District Council. Its administrative areas cover the parishes of Rawang, Batu and parts of Setapak with a total area of 549.33 km$^2$. There are nine major cities in the Selayang Municipal Council which includes Bandar Baru Rawang, Bandar Baru Selayang, Bandar Baru Batu Arang, Taman Seri Gombak, Bandar Tasik Puteri, Bandar Baru Kundang, Selayang Baru, Batu Caves and Country Homes (Fig. 5).

Selayang Municipal Council has branch offices at Batu Arang, Rawang and Seri Gombak. The main goals of the Selayang Municipal Council are to provide a comfortable city life, safe and conducive environment and affordable living. In this regard, the Selayang Municipal Council has stated its vision, mission, objectives and its own client charter as a holding and guidance in implementing its work drives and to determine the direction of the city development plan. Selayang Municipal Council's vision is: 'To develop and promote Selayang municipal areas in accordance with the vision of the federal government and the Selangor State Government.' The total population of Selayang Municipal Council is 410.315 which consists of three main sub-districts of Rawang, Batu and Selayang. Based on the year 2000 census, the total population in the Selayang Municipal Council was 410.315 people (Table 1). The total population by races are shown in Table 2. Selayang Municipal Council's mission is to provide efficient, fast and high quality services. The services are


Fig. 5: Selayang Municipal Council Local authority areas

Table 1: Total population by counties

| County | Immensity (ha) | Population |
|---|---|---|
| Rawang | 26, 314 | 88, 836 |
| Batu | 15, 462 | 285,100 |
| Setapak | 12,764 | 36, 379 |
| Total population | 410, 315 | |

Table 2: Total population by ethnicity

| Ethnicity | Population | Percentage |
|---|---|---|
| Malay | 215,801 | 52.58 |
| Chinese | 114,218 | 27.84 |
| Indian | 62,057 | 15.12 |
| others | 7,188 | 1.75 |
| Total population | 410,315 | |
| Total of non-citizen population | 11,051 | |

to be implemented in a fair, friendly and tolerant manners based on its slogan 'Selayangku Sayang'. According to its goals and purposes, the objectives to be achieved in the governance are to provide municipal services in accordance with the Local Government Act (Act 171) requirements and the Town and Country Planning Act (Act 172). As a local authority, Selayang Municipal Council is the agency for physical, economic and social development. Selayang Municipal Council has a customer charter to provide competent and efficient services and has the credibility to always keep the environment sustainable.

Selayang Municipal Council has well-kept green designated reserves. Therefore, it is very important for the people to work along with the council to protect the environment. The green reserve areas are the Templer Park wildlife sanctuary Reserve and Commonwealth Park, water intake points at Sungai Gombak, Batu River and Grass River, recreational areas at Templer Park, Commonwealth Forest Park, Mimaland, Kanching Forest Park and Batu Caves, virgin reserve forest areas of Lagong Hill Forest reserve and Hulu Gombak Forest Reserve, dam areas like Mile dam, Klang Gate dam and Gombak Mini hydro, old Forest Reserve as Rantau Panjang Forest Reserve, Rawang Forest reserve, Serendah Forest reserve and Kanching Forest reserve, monumental sites such as freshwater ponds in Bukit Lagong and Batu Arang and agricultural areas.

The purpose of this study is to examine the perspectives of the residents in Selayang Municipal Council in Malaysia regarding environmental knowledge, values in environmental preservation and the needs to preserve the environment. In addition, the study aims to make a comparison about the constructs, based on ethnic groups.

## METHODOLOGY

A systematic sampling method and random sample selection of respondents were used to determine the number of samples which aimed at the heads of the families living in the Selayang Municipal Council management area. Based on the Selayang Municipal Council population and the sampling schedule by Krejcie and Morgan (1970), the minimum number of samples was 384 inhabitants. The number of samples is based on the 95% confidence level and a standard deviation of 5%. The type of sampling used was intended simple random sampling. The selected respondents to answer the questionnaire were the heads of the family. A total of 384 questionnaires

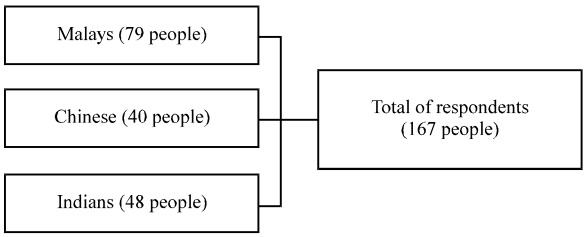


Fig. 6: Total of respondents

were distributed to the selected and volunteered respondents. It was optional for the respondents to either answer the questionnaire or not. In this case, researchers cannot force the respondents to answer the questionnaire. Thus, the questionnaires were later distributed to the volunteers by the Community Committee (JKP) in the areas of Bandar Baru Selayang, Rawang, Selayang Baru and Batu Caves. Accordingly, 167 forms were completed and answered by 167 heads of the Malays, Chinese and Indians families (Fig. 6). The number of respondents was adequate for the survey. According to Yamane (1973), a minimum of 100 respondents is adequate to carry out a survey consisting of test and questionnaire. Thus, the 167 respondents were sufficient for this case study.

The analysis of this study focuses on responsibility, behaviours and self-reliance of the multiracial community in taking care of the environment. This study also investigated the level of awareness concerning the care and preservation of the environment. This study also examined responsibility to preserve and protect the environment by various Selayang Municipal Council ethnic groups in terms of their perceptions and attitudes towards the environment, locus of control and personal responsibility toward the environment. Analytical methods used are measurement of the mean scores and standard deviation. The mean range is from low to high levels accounted on the mean range values ranging from 1.00-5.00. Standard deviation measure was designed to measure the variability or spread of the mean score. The standard deviation is the extent of different scores around the mean. Normally, it is stated that the smaller the standard deviations, the smaller the distribution of mean scores. This means that the data is close to each other (i.e., homogeneous). On the other hand, if the standard deviation is large, there will be a greater spread of the mean scores distribution. This means that there is a huge data distribution between each other (heterogeneous).

## RESULTS AND DISCUSSION

Table 3 shows that the mean scores of all the constructs are intermediate high (i.e., they are between 3.25 and 3.90), except for 'the need for preservation' which is high. This means that the residents of Selayang Municipal Council area are aware of the importance of environmental preservation. The result of this study is consistent with the findings of a study conducted by Dzulkifli (2005). The awareness of the people in Malaysia are quite satisfactory specifically in urban areas, because there they appreciate a lot of facilities provided by the government and Selayang Municipal Council authority contributing to their knowledge and positive attitude towards the issue of environmental preservation.

The ability and capacity of the people under the Selayang Municipal Council authority and their actions in protecting the environment based on races are shown in Table 4. The result was evaluated based on the mean and standard deviation of each component of environmental

Table 3: Residents' perspectives towards environmental preservation

| Constructs (n = 167) | Mean scores | Standard deviation | Interpretation |
|---|---|---|---|
| Environmental knowledge | 3.90 | 0.45 | Intermediate high |
| Values in environmental preservation | 3.87 | 0.47 | Intermediate high |
| Needs to preserve the environment | 4.10 | 0.36 | High |
| Actions taken to preserve the environment | 3.25 | 0.64 | Intermediate high |
| Average | 3.78 | 0.48 | Intermediate high |

Table 4: Environmental protection ability and action in preserving the environment, by ethnicity

| Components and ethnicity | n | Mean |
|---|---|---|
| **Environmental knowledge** | | |
| Malay | 117 | 3.908 |
| Chinese | 38 | 3.910 |
| Indian | 12 | 3.826 |
| **Values in environmental preservation** | | |
| Malay | 117 | 3.912 |
| Chinese | 38 | 3.770 |
| Indian | 12 | 3.845 |
| **Needs to preserve the environment** | | |
| Malay | 117 | 4.169 |
| Chinese | 38 | 3.934 |
| Indian | 12 | 3.978 |
| **Actions taken to preserve the environment** | | |
| Malay | 117 | 3.271 |
| Chinese | 38 | 3.214 |
| Indian | 12 | 3.159 |

protection and action to preserve the environment. Regarding the environmental knowledge component, the mean values for the Malays, Chinese and Indians were 3.90, 3.91 and 3.82, respectively. There is very little difference between ethnic groups based on mean scores. This is because in Malaysia as a multi-racial country, all ethnic groups have gone through the same educational system by national schools. This is also supported by Hashim (2008). As they have gone through the same education system, consequently their knowledge and attitudes would not differ significantly. Since, knowledge and attitudes are associated with the issue of environmental management. However, although they are not much different in terms of knowledge and attitude, the government and Selayang Municipal Council should take different approaches through the value of their cultures to increase their awareness, knowledge and sensitivity to the issue of environmental protection.

The results showed a very positive attitude in which the mean value for the Malays is 3.912, the mean value for the Chinese is 3.770 and the mean value for the Indians is 3.845. This finding means that the values and attitudes of the Selayang Municipal Council residents in preserving the environment are very positive and the people have been supporting all the efforts taken by the Council to address pollution problems such as hygiene and recycling. As the knowledge is positive, therefore the need to continuously preserve the environment is also high. This finding is proven based on the mean scores of 4.166, 3.934 and 3.978 for the Malays, the Chinese and the Indians, respectively. The Malays have a slightly higher mean value when compared with the Chinese and the Indians.

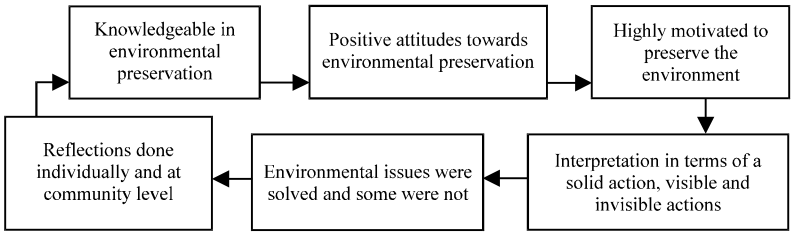


Fig. 7: Environmental preservation chain

However, the study findings show that the practices in preserving the environment have moderately decreased. Although, they have sound knowledge on environmental preservation, people have positive values and attitudes and are highly motivated to preserve the environment but when translated into action it is still modest. Results found that the mean score for the Malays is only 3.271, for the Chinese is 3.214 and for the Indians is 3.159. This finding might be due to the fact that the residents are still thinking that most of the actions to protect the environment should be shouldered by the authority (Selayang Municipal Council). Recycling programs are still a new culture to the Selayang Municipal Council residents. Thus, the response to the recycling programs is still not-well received. The analysis clearly shows a chain of environmental preservation among the residents (Fig. 7).

Referring to Fig. 6, it is proven that the philosophy of environmental sustainability, knowledge and practices are essential in realising human's action, care and control of environmental sustainability. Knowledge is the key to enhance awareness, capacity and capability of the Selayang Municipal Council residents to be more responsible in maintaining their environment to ensure its sustainability (Fig. 1). These findings also indicate that the multi-racial residents have adequate sustainable characteristics. The characteristics are characterized by peaceful and knowledgeable society, the society with rich socio-economic cultures, fair, viable and environment-conscious (sustainability) as well as a high liveability feature (Fig. 2). The implication is that the multi-racial residents have six characteristics proven to be able to preserve the quality of the environment known as independent sustainability (Fig. 3).

## IMPLICATION AND SUGGESTIONS

The implication of this study is that the residents still are not very sensitive to the issue of environmental preservation. In fact, this issue is common among all races in Malaysia. These findings show that the Selayang Municipal Council residents do have values, information, programs and campaigns for environmental preservation, as well as environment cleanliness. Furthermore, the Selayang Municipal Council authority should not only reinforce the rule but also educate people informalluy through establishing campaigns, holding forums with the residents and providing the latest technology. Moreover, they should maintain and upgrade the facilities to facilitate the residents' contributions to environmental preservation.

## CONCLUSION

The sustainable management of the urban environment based on the role of the residents is the main factor to determine the effectiveness of conservation programs in the city. This shows that the degree of effectiveness in taking care of the environment is not depending solely on the role of the government institutions such as the Selayang Municipal Council but it needs a full support

from the community. The community needs to realize the view on nature, knowledge and practices to become responsible and capable citizens, thus, taking care of the urban environment themselves.

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