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## Environmental Awareness and Behaviour Index for Malaysia

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### Abstract

National Environmental Performance Index (EPI) is evaluated every two years to examine the environmental performance in Malaysia concerning different indicators such as climate change and water quality. Considering the causes of environmental degradation are mainly due to anthropogenic activities, this study aims to explore the need of indicating the social-psychological factors among Malaysians in qualifying the level of public environmental awareness and behaviour. A nationwide study has been conducted to examine environmental awareness and behaviour from 13 States and three Federal Territories. The result demonstrated current level of environmental awareness and behaviour among Malaysians, as according to the four categories; water pollution, air pollution, waste management and climate change

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*Keywords:* Environmental performance index; environmental awareness; environmental behaviour; Malaysians

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### 1. Introduction

Rapid urbanization and pursuing of better quality of life has caused Malaysia to shift towards environmental degradation resulting from the series of challenges from environmental issues. Harmful waste secretions, climate

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change, environmental pollution and ecosystem breakdown, to name a few, are the environmental catastrophes that are accustomed by the general public. These have been long articulated by a significant amount of researchers from varied scientific disciplines (Dominick et al., 2012; Asmuni, Khalili&Zain, 2012). The centre of the root leading causes to these occurrences is triggered by satisfying human needs through aggressive economic activities.

Environmental indicators are increasingly gaining their place in levelling and presenting the environmental conditions in quantitative contents. Environmental indicators can serve as a useful instrument for a nation to preserving the quality of life. In a global level, the Global Environmental Performance Index (EPI) has been established which encloses comprehensive indicators on measuring and tracking a country environmental performance under two major objectives, which are Environmental Public Health and Ecosystem Vitality performance. Since 2006, the Environment Performance Index (EPI) has quantified and ranked the environmental performance regionally including both environmental health and ecosystem vitality of 133 countries. The listed countries with EPI were up to 178 in 2014. EPI is developed by the Yale Centre for Environmental Law and Policy and the Centre for International Earth Science Information Network of Columbia University. The Global EPI vocalises two (2) major objectives of Environmental Public Health and Ecosystem Vitality performances. Based on the performances of these objectives, Malaysia ranked 9th position in 2006, 26th in 2008, 54th in 2010, 25th in 2012 and 51st in 2014 in the context of global EPI. The dropping of Malaysia's performance in global EPI has raised attention and concerns from the government and authorities.

For that reason, Malaysia has constructed its own signature of EPI known as Malaysia EPI, which consists of an additional objective of Socioeconomic Sustainability for national self-assessment purpose instead of global ranking. Somehow, this additional major objective of Socioeconomic Sustainability could be significant as it manifests the indicators in Malaysia EPI that help the both the government and non-government organizations in better decision-making, especially in policy implementation and management.

Malaysia EPI is regularly published every two (2) years whereas the last assessment is the year of 2012. Hence, there is a need to reform and reassess the existing indicators periodically to meet the socioeconomic changes (Malaysia EPI, 2012). Preceding studies pertaining to socioeconomic sustainability indicators have been proposed for bioenergy (Dale et al., 2013) and fishery (Seung& Zhang, 2011). Meanwhile, this study reviewed socioeconomic sustainability indicators in measuring environmental performance for the purpose of Malaysia EPI. As the civilization of the city runs down in the nation, people get attached to the environmental issues that greatly incur as the development rises up (Asmuni, Khalili&Zain, 2012). Individual environmental awareness and concern towards environmental issues are varied at different levels.

The dominant aim of Malaysia EPI is to present a comprehensive environmental performance profiling of the States within the nation for ranking purposes. Hence, it measures and highlights the inter-states' environmental performance through a quantitative methodology to identify best pedagogy and environmental policies which diminish the gap of socioeconomic development and environmental issues (Malaysia EPI, 2012). However, previous Malaysia EPI is lacking comprehensive methods of presenting the environmental awareness and behaviour performance in four (4) major environmental issues categories which are water pollution, air pollution, waste management and climate change. These are the four (4) categories that serve as grounded environmental problems that construct Malaysia EPI.

This study aims to discuss the contribution and importance of environmental awareness and behaviourlevelling in policy making decisions. In this study, it also demonstrates the environmental awareness and behaviour performance in terms of four (4) categories in Malaysia EPI. It also examines the performance level of environmental awareness and behaviour among Malaysians as the outcome of a nationwide survey.

## **2. Environmental awareness and behaviour evaluation in policy making decisions**

Knowing the significance of exploring environmental awareness of Malaysians, it is essential to understand the context of environmental awareness. According to Hassan, Noordin and Sulaiman(2010), environmental awareness has three (3) concepts that include emotional, attitude and practice of sustainability awareness. With the motivating of psychological factors and emotional forces, the intention to conduct the series of environmentally friendly actions is driven. Based on the study accomplished by Altin et al. (2014), environmental awareness is referred as awareness to the environmental issues and active involvement in environmental organizations. In spite of that, environmental

awareness is a trigger to nurture positive attitudes and affection towards positive environmental behaviour (Karatekin, 2014). Hence, the awareness and concern of environmental issues and the causes and adverse impacts are necessary to be measured in an environmental awareness context (Karatekin, 2014). The higher individual cognitive level to environmental issues and the cause-effect schemes, the higher the intentional environmental behaviour.

Deficiency of environmental awareness to overwhelming environmental problems, urbanizations, industrialization, deforestation, rising global temperature and degradation biodiversity impedes the achievements of policy makers' efforts to encounter the environmental stresses (Keles, 2012). As a result, it prompts the quality of life to be out of the track (Keles, 2012). Quality of life can be multi-faceted from the view of economic, ecology, social and human aspects (Marans, 2012; Keles, 2012). Eventually, the concept of quality of life has always linked to environmental studies; henceforth, it captures complete attentions from policy makers in planning and management of our living environment (Marans, 2012). Policy makers are concerned about the quality of life and, therefore, gauging the environmental awareness among Malaysians is considerably significant to the efficiency of policy planning. The designing of policy can cause the environmental protection programme to be far from expected outcomes without the intervention of public environmental awareness consideration.

Environmental behaviour is a prerequisite at countering the environmental disasters (Klößner, 2013), in particular addressing the key determinant in which moulding human behaviour towards environmentalism. Ostman and Parker (1987) explained environmental behaviour as 'overt and observable actions taken by a person in response to comprehension of environmental issues to which he or she has had an emotional reaction'. Environmental behaviour is not solely established but predicted by environmental awareness and values that considered might influence the specific behaviour or commitment.

Apparently, the fact that poor environmental behaviour can degrade environmental quality has increasingly gained attention among researchers and policy makers (Klößner, 2013). Therefore, environmental behaviour and the affecting predictors that influence environmental behaviour should be evaluated considering behavioural patterns can significantly affect the environmental quality and the effectiveness of environmental strategies (Singhirunnusorn et al., 2012). Understanding or predicting the environmental behaviour aid in mitigating the environmental perils in social and political contexts considers that environmental issues have been globally existing (Harth, Leach & Kessler, 2013). In other words, for policy makers, detecting the changes in attitude and behaviour among the general public enables them to recognise what they are doing to improve public environmental behaviour (Owens & Driffill, 2008). This attempt is important to be notified when it comes to policy making of environmental laws and guidelines. Change in attitude can induce the change in behaviour to be more likely rather than the other way around. Therefore, for an environmental policy to be operative and efficient the government should understand how and what is the motive for the public to perform environmental behaviour. This exertion has supported the needs to develop and improve the existing indicators under the policy category of environmental awareness and behaviour in the context of Malaysia EPI.

### **3. Research design**

For the purpose of reflecting the performance of environmental awareness and behaviour to the current localized environmental issues in Malaysia, literature regarding the causes, consequences and remedy on the four (4) categories which are water pollution, air pollution, waste management and climate change were reviewed. Subsequently, the research instrument which is the self-administered 5-point Likert Scale questionnaire was developed according to the literature reviewed. For environmental awareness questions, the scaling ranged from strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. Meanwhile the scaling categories for environmental behaviour questions were never, rarely, sometimes, often and very often. However, 'not applicable' was provided for those who might not consider conducting that particular behaviour.

A focus group and pilot study were executed for verification and validation purposes. Notably, the questionnaire was designed in three languages, referring to Malay, English and Mandarin versions. Later, face-to-face distribution of the paper questionnaire was prosecuted from August to November of the year 2014.

### 3.1. Nationwide survey

A nationwide survey was conducted for the purpose of determining the level of environmental awareness and behaviour among Malaysians. All 13 States, including Perlis, Perak, Kedah, Pulau Pinang, Pahang, Kelantan, Terengganu, Selangor, Negeri Sembilan, Melaka, Johor, Sabah, Sarawak, and three Federal Territories, including Putrajaya, Kuala Lumpur and Labuan, were covered.

The nationwide survey covers a large portion of regions in Malaysia. Hence, the sampling method used in this study is multistage and stratified sampling. Initially, multistage sampling was adopted for narrowing down the large pieces of Malaysia regions into smaller portions, stages by stages systematically until the sampling units have been reached. Gradually, from the smaller portions of regions, only several selected ultimate sampling units (administrative districts) were examined and tested in this study. After that, the stratified sampling was integrated where the respondents at the each of the selected regions were approached randomly but according to each of the stratified categories. The stratified categories of respondents in this study were based on demographic factors (i.e., gender, living areas such as urban and rural areas and age group). In other words, there was a required number of respondents in each of the stratified categories in terms of demographic factors according to the Malaysian census data in order to ascertain the equal and balanced coverage of the Malaysian public.

The sample size of each state and Federal Territories was calculated by using Slovin's formula, which discloses that 400 respondents per States or Federal Territories were needed for this study. The sample size is calculated accordingly to the Malaysian census data provided from the Department of Statistics, Malaysia. Consequently, the 400 respondents were assessed randomly yet accordingly to fit the required respondents' number of each stratified categories of demographic factors.

## 4. Findings and discussion

In this study, there were Sections A and B for Environmental Awareness and Behaviour simultaneously. Meanwhile, demography questions on gender, age and living areas (urban and rural areas) were in the last section of the questionnaire. For the environmental awareness section, the segmentation of questions sum up for 21 questions in which four (4) questions were on water pollution, six (6) questions were on air pollution, four (4) questions were on waste management and seven (7) questions were on climate change. Meanwhile, environmental behaviour related questions consisted of the total of 25 questions in which: four (4) questions were on water pollution; five (5) questions were on air pollution; nine (9) questions were on waste management and seven (7) questions were on climate change. There were a total of 6,400 questionnaires gathered.

### 4.1. Environmental awareness on water pollution, air pollution, waste management and climate change

Figure 1 shows the environmental awareness level among Malaysians. Based on the results, the mean score for environmental awareness towards water pollution is 4.43, which is the highest score among the other measured criteria. Malaysian awareness towards air pollution and solid management is almost a similar score, which is 4.35 and 4.34, respectively. The least score is climate change (4.22). Most Malaysians are well aware of the factors and consequences of water degradation. Water pollution is ranging from lakes, river, drains, oceans and groundwater. Due to fast economic growth and increase of population density, the water environment condition has deteriorated year by year (Othman & Mohamed, 2012). The situation has been made gradually evident by such things as clean water shortage and eventually residents have sensed the worseness easily. On that account, people are more affected by what they frequently notice and observe (Karatekin, 2014). On the other hand, climate change gains less attention among Malaysians, for most of them do not realize the causes and negative effects of extreme weather. One of the possible explanations is that Malaysia embraces tropical rainforest climate throughout the years. Hence, the effects of climate change such as flood and scorching weather are indirect and difficult for respondents relate to their life as Malaysians experience consistent hot and humid weather in most of the days. Accordingly, the existence of climate change is less likely disputable as the rest of the environmental issues.

Air quality issues and waste management are intermediately well aware by Malaysians compared to water quality conservation and climate change. From this study, Malaysians are equally aware and concern about air pollution and

waste such as solid, liquid and hazardous waste, especially from industry. Air pollution happening in Malaysia is primarily caused by the emissions from motor vehicles, aircraft, industries and area of high population density (Moreno et al., 2009; Dominick et al., 2012). Out of all, traffic is the most contributing source of urban air pollution in developing countries including Malaysia (Afroz, Hassan & Ibrahim, 2003; Azmi et al., 2010). Therefore, with the increasing number of car users on the road due to the growing national car manufacturing and imported car tax reduction, Malaysian awareness towards air quality deterioration and haze hindrance is affirmed. This scenario has contributed to serious health and respiratory sickness to the public as well. For the waste disposal system in Malaysia, the illegal garbage dumping and waste disposal out of convenience rather than obligation are manifest. These have created absolute attention and worry among Malaysians for its imperfection towards environment and quality of life.

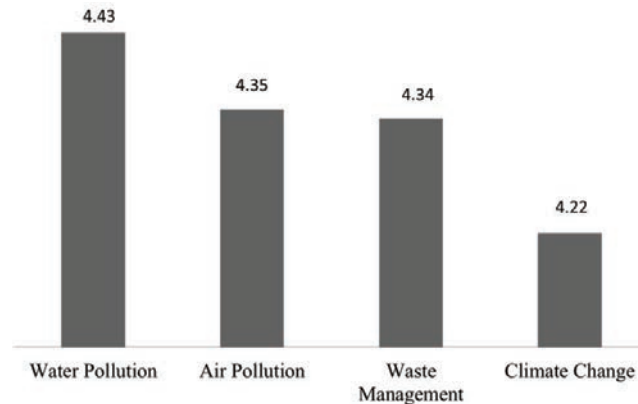


Fig.1. Environmental awareness level of Malaysians

#### 4.2. Environmental behaviour on water pollution, air pollution, waste management and climate change

The environmental behaviour level for Malaysians is shown in Figure 2. Most Malaysian environmentally friendly actions towards nature preservation on water quality conservation and climate change are approximately the identical score, which are 3.66 and 3.65, concurrently. Following is the waste management with environmental behaviour score at 3.51. As for air quality preservation, the score is 3.43, which is the lowest performance among Malaysians. From the result in the analysis, water quality preservation and climate change prevention are the most popular environmental friendly actions among Malaysians. For instance, Malaysians ardent in this have strongly related to how far they want to cut cost on water and electricity usage. To further elaborate, saving water quality from declining trend can be through maintaining the clean water sources. Hence, Malaysian respiration to cut water usage so as to reduce the water bill inevitably decreases the used water that is to be treated, thereby helping to conserve the water quality. For climate change relevant pro-environmental behaviour, it is concerned about extreme weather and global warming that are due to the overwhelmed emissions of greenhouse gases. Over and above, the prior key to inhibiting climate change is by reducing excessive and unnecessary electric usage. Due to all the rationales disputed above, Malaysians are prone to adopt environmental friendly or green products such as energy saving appliances (i.e., washing machines and air-conditioners), together with daily water and electric saving habits such as reusing water, switching off electricity when not in use etc. Directly, this occurrence has drifted Malaysians to be efficient in water and climate change conservation.

Malaysians react with less concern to maintain the balance of air quality than waste management. Spilling over of waste, especially solid waste, impairs the visual aesthetic quality of the neighbourhood (Chung et al., 2012). As a result, poor waste management becomes more appealing and noticeable to Malaysians. Visual pollution makes an easy impact on human (Karatekin, 2014). It is also worth mentioning that waste management always has been connected with recycling behaviour (Latif& Omar, 2012; Latif et al., 2013). This concept has been promoted by

government departments and public campaigns. For that reason, Malaysians are considerably familiar with the 3R concept. Furthermore, the on-going ‘No Plastic Bag’ every Saturday in hypermarkets seems to encourage them to replace plastic bags with reusable shopping bags. Gradually, these tidbits of endeavors lead to Malaysian motivation to efficient waste management behaviour. Opposite, to enhance air quality Malaysians have to deduct the main source of air pollution, which is emission from motor vehicles. The remedy to it most probably would be car-pooling or car sharing with private car users, in which it lessens the fuel consumptions, thus reducing the car emissions (Seyedabrishami et al., 2012). Due to the individual convenience, the hectic lifestyle does not blend in accordance with most Malaysians to practise car-pooling or public transport when traveling to workplaces, schools and other destinations. On that account, Malaysians hardly could perform well in this category. However, air pollution degrades the quality of life and hinders economic growth as it weakens the health condition of Malaysians eventually (Borhan, Ahmed &Hitam, 2013). Therefore, this result is an alert to the authorities.

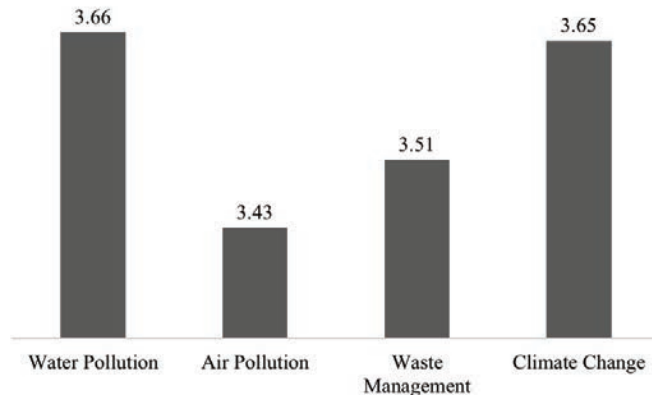


Fig.2. Environmental behaviour level of Malaysians

## 5. Conclusion

As part of Vision 2020 of Malaysia, the government has launched and promoted a series of environmental awareness programmes through different relevant ministries and agencies throughout the year. The examples of national environmental awareness programmes are ‘Towards Smart Energy Culture’ by Energy Commission Malaysia, ‘One State One River Programme’ by Ministry of Agriculture, ‘Recycle for Nature’ by Malaysian Nature Society and so on. Nevertheless, as explained in ‘Information Deficit Model’, most politicians design environmental campaigns and education that convey environmentally friendly messages to the general public. However, it is not only awareness of environmental issues and policies that leads to environmental action (McKenzie-Mohr, 2000). Nevertheless, the result from this study is crucial to pinpoint the current level of environmental awareness and behaviour among Malaysians, as according to the four (4) environmental issues which are water pollution, air pollution, waste management and climate change. The result also serves as an information base and reference for both the non-profit and government organizations in decision-making, especially in environmental strategies implementation and management. As a nationwide study, the accuracy of the information is considered high as a large scale of Malaysians is covered (Latif & Omar, 2012). Policy makers can draw effective environmental guidelines and regulations based on the information provided in this study.

Environmental awareness and behaviour do not seem positively correlated in this study. This result denotes that a strong environmental awareness level does not indicate greater environmental behaviour level. Environmental awareness alone is not strong enough to predict the behaviour performance towards the preservation of the environment (Hungerford & Volk, 1990; Klöckner, 2013). It is said that not all people who are aware and sensitive about the environmental issues around them are also motivated to practise and behave in an environmentally-friendly way (Krajhanzl, 2010). People are aware and know what to do for the best of the environment but that does



not imply that they have the intention to conduct the action. Consequently, there are many other possible intervening factors such as social-psychological reasons that affect the environmental intentional behaviour of Malaysians.

From this study, it can be concluded that for the four (4) categories of environmental issues, Malaysians have the highest awareness towards water pollution and reflect the highest intention to conduct conservative action simultaneously. However, it is notable to mention that the result showed the opposite for climate change. Thus, the intervening factor that comes across is cost saving for water and energy. The environmental behaviour that reflected by Malaysians is caused by cost saving rather than their environmental awareness. Also, waste management and air quality protection failed to achieve the score as high as their environmental awareness level concurrently had suggested an intervening factor of convenience (Singhirunnusorn et al., 2012). The convenience implied in this context is referred to as practicing positive environmental behaviour out of convenience. For example, illegal dumping and open burning are easier than disposing of rubbish in a proper way (i.e., segregate and pack rubbish to dispose at waste disposal facilities), which in the end leads to air pollution and poor waste management. To further elaborate, due to the inconvenience of public transport, Malaysians more willing to have personal drive, which contribute to excessive emissions from vehicles and poor air quality.

It is aspired that this study can trigger the importance of manifesting environmental awareness and behaviour performance among Malaysians to the authorities from the governmental and non-governmental institutions. These concerns improve the policy making considerations by blending the environmental awareness and behaviour performance to Malaysian culture. In the future, more facets of environmental issues such as biodiversity, forestry and wildlife restoration, and soil conservation should be addressed in the study. In this manner, environmental awareness and behaviour performance among Malaysians can be measured in a more holistic course.

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