THE IMPLEMENTATION OF TREE PRESERVATION ORDER IN URBAN ENVIRONMENT: PUBLIC AND LOCAL AUTHORITY PERCEPTION

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ABSTRACT

Trees are natural assets that play a vital role in the environment and living things on earth. Every tree has its own values, importance and benefits that can make a huge impact, especially in terms of enhancing the urban environment. Thus, the Tree Preservation Order (TPO) has been introduced all over the world, including Malaysia, to protect the trees. Although there are numerous studies about the importance of trees in urban areas, there are still not many studies on the TPO in Malaysia. The implementation of TPO in Malaysia is still not sufficient because of the awareness and challenges in implementing the order. This study analyses the perceptions of the public and local authorities in implementing the TPO in the urban environment. The study managed to get fifty (50) respondents from the questionnaire survey conducted, and interview four representatives from the Department of Landscape and Recreation Development and Department of Planning of Kuala Lumpur City Hall (KLCH). The officers were interviewed in order to study the perception of the local authority on implementing the TPO in urban environment. Based on the result obtained, the study found out that the public has awareness, knowledge and proper understanding of the implementation of TPO. However, according to the local authority, the public's awareness and knowledge of TPO is still lacking. The local authority faces several issues and challenges in implementing the TPO because of the lack of the awareness of TPO on the part of the public. Hence, public awareness and knowledge can also help the local authority in the implementation of TPO in the urban environment.

Keywords: Tree Preservation Order (TPO), Town and Country Planning Act 1976 (Act 172), Federal Territory (Planning) Act 1982 (Act 267)

INTRODUCTION

Trees are valuable. They provide many benefits to living things in this world. The rapid increase of urbanization has caused more trees to be cut down to make way for new development. In this regard, the development of a new urban environment is good, as it can improve the quality of people's lives. However, in the midst of greed, people often take the environment for granted. As a result, many natural areas have been cleared for development.

There are many negative consequences involved in recklessly removing natural areas; for instance, some of these tree species are rare and take years to mature. Thus, preserving the trees is essential and crucial in sustaining

the environment, especially in urban areas. According to Duerksen and Richman (1993), tree preservation is one of the topics of concern in local planning and environmental issues. This is shown through the many headlines on newspaper reports and magazine articles related to trees or nature. This proves that people have started to be aware of the importance of trees, and have thus taken steps to protect them. Realizing that more trees need to be cut down to accommodate the rapid growth in development, the government of Malaysia has introduced the Town and Country Planning Act 1976 (Act 172) and Federal Territory (Planning) Act 1982 (Act 267), both of which include the preservation of trees. Based on the literature review conducted, it was found that the TPO in Malaysia has not been fully strengthened due to several factors. Mohd Hashim and Hitchmough (2015) stated that since the establishment of TPO (Act 172), the implementation of the act is still not good enough because of problems such as shortage of staff, lack of funding, and public perception. Therefore, this paper aims to study the perceptions of the public and local authorities on the implementation of the Federal Territory (Planning) Act 1982 (Act 267) (Tree Preservation Order) in an urban environment, specifically in the Kuala Lumpur city area. This paper will also emphasize public awareness and the challenges faced by the local authority in implementing the TPO.

THE VALUES AND IMPORTANCE OF TREES

Trees are valuable to human life, and their presence can increase the quality of life, especially in urban environments. Kilmer (1914), an American poet, stated that *"I think that I shall never see a poem lovely as a tree "*. In this poem, Kilmer expresses his appreciation of the existence and the beauty of trees. The whole content of his poem captures the appreciation and love that most people have for trees. This sentimental quote is especially appropriate for explaining the trees in urban areas because trees are more noticeable and play an important role in enhancing the quality of life in urban environments.

Trees have many benefits to the urban environment, which can be classified as follows:

- Social and Livability

Trees can make people feel peaceful, calm and tranquil by providing scenic greenery. Studies have also revealed that having green surroundings reduces the stress level in the workplace, cuts down on absenteeism, and improves productivity among workers (Abd Kadir and Othman, 2012). According to Duerksen and Richman (1993), the presence 2of trees can also promote social interaction in a community by providing shade and shelter. Trees can create special places on a micro-scale view, and create an inviting and welcoming sight for people by providing beautiful green streetscapes and canopied area. Trees can create a feeling of seclusion and peace as the presence of trees can divide large spaces. They can create an illusion of a comfortable smaller space.

- Visual and Aesthetics

The presence of trees can contribute to the beauty and the attractiveness of a community. Moreover, trees can make a place look pleasant and increase its aesthetic value. If there are no trees, an area will look very deserted and unpleasant. In term of visual effect, trees can give a soft impact on the urban environment, especially in an area with close tall buildings, parking lots and so on. The hard edges of the buildings and walls can be broken by trees, thereby creating a delightful formal pattern along the streets. Other than that, trees play an important role in "shrinking" the city by reducing the distortions of height and space of big buildings such as offices, apartments and other large structures in urban areas (Duerksen and Richman, 1993). Trees make the scale of large structures more humane, where they obstruct unpleasant views and beautifying the site.

- Health benefits

Research by Bratman et. al (2015) found that people who walk in green areas are more likely to have a positive and better psychological impact than people who walk in areas that have fewer or no trees. This shows that the presence of trees has a significant impact on human health too. Trees can affect the human brain by reducing stress levels and making them healthier. This also can be proven by research conducted by Ulrich (1984), who assigned twenty-three surgical patients to rooms that had a window facing the natural environment. The study found that these patients received fewer

negative comments on their nurse records, and needed fewer painkillers than the other twenty-three surgical patients put in a room facing only a brick wall. Furthermore, research by Adnan and Othman (2012) found that medicinal plants have been profoundly used for therapeutic and health purposes, especially in Malay culture. This shows that trees or plants are deemed as medicines and have benefits to human health.

- Environmental Values

Trees can also benefit the environment. Fazio (2010) indicated that trees could reduce storm water runoff by absorbing the first 30 percent of water

interception through leaves, allowing water to evaporate and transpire back to the atmosphere. Other than that, trees can also increase the air quality by trapping particles of dust from pollutants such as vehicle smoke and filtering it to clean air. Furthermore, trees can moderate the climate temperature, especially in urban areas. The presence of trees can reduce the urban heat island. Burden (2006) noted that trees in urban areas create shaded areas that could make the asphalt or pavement last longer than pavement that is exposed to the sun. This means that trees provide shade to pedestrians and buildings, which can act as a mask from the sun.

- Economical Values

Trees can also increase the economic value of a place. Areas with many trees are more likely to have high value than those with fewer trees. Appraisers and real estate workers have already recognized how the presence of trees can affect the value of property. According to Duerksen and Richman (1993), numerous studies have shown that people are willing to pay more to live in an area with a lot of trees. Hence, planting trees in a residential area will increase the value of that area. This indicates that people have started to become aware of the importance of having trees in their residential areas.

TREE PRESERVATION ORDER IN MALAYSIA

Tree Preservation Order (TPO) is a legislation that was created to protect trees from being destroyed, injured and damaged. TPO has been used by many countries in the world. This legislation is normally implemented by the local authorities of the region. Members of the public who disobey the law can be prosecuted and fined. According to the Department of Communities and Local Government of United Kingdom (2012), TPO is a written order

made by the local authority that preserves and protects trees from topping, being cut down, looping, uprooting, being willfully damaged or removed without permission from the local authority. Nik Mohamed Sukri et. al (2017) stated that it is important for TPO to be enforced where there are trees under threat, which means that this legislation is crucial for protecting and preserving trees that might be rare or almost extinct.

The Malaysian government introduced TPO in 1996 (Nik Mohamed Sukri et. al, 2017). In Malaysia, there are two types of acts that protect trees. These acts are used across different states in the country. According to the Laws of Malaysia, the Federal Territory states use different enactments from other

states in Peninsular Malaysia, Sabah and Sarawak. For instance, the Federal Territory (Planning) Act 1982 (Act 267) is used by three federal territories in the country, which are Putrajaya, Kuala Lumpur and Labuan, while the Town and Country Planning 1976 (Act 172) is used by the 11 states in Peninsular Malaysia, which are Johor, Kedah, Kelantan, Melaka, Negeri Sembilan, Pahang, Pulau Pinang, Perak, Perlis, Selangor, and Terengganu. These two legislations are used as guidelines in the town and country planning of the region. However, the content is somewhat similar, but slightly different. In the Federal Territory (Planning) Act 1982 (Act 267), TPO is mentioned under Part V (Preservation and Planting of Trees), Section 35 (Tree Preservation Order), while for the Town and Country Planning Act 1976 (Act 172), TPO is under Part VA, Section 35A (Tree Preservation Order). Both Acts outline the laws and regulations for tree protection in Malaysia.

It should be noted that TPO in Malaysia protects certain types of trees. In all, the National Landscape Department of Malaysia (NLD) has outlined seven categories of protected trees, which are rare, endemic, endangered species, historical value, aesthetical value, protocol trees and trees in the preservation area. TPO was introduced to prevent big and matured trees from being recklessly demolished and damaged by the public and developers. The local authority is the one responsible for implementing the TPO by regularly maintaining and monitoring matured and old trees. According to Mat Isa and Othman (2012), matured trees need to have proper management and maintenance so that they do not create a potential hazard to public safety. Matured trees might be in a bad state, although not under the immediate threat of dying; hence, the implementation of TPO can be useful in preventing trees from falling down.

In this regard, TPO is a responsibility of the local authority, but there is still a lack of public awareness and interest in the planning and implementation aspect (Peerapun, 2012). The TPO that has been implemented in Malaysia is still weak, and the Acts need to be revised so that it can be relevant to the present situation (Nik Mohamed Sukri et. al, 2017). It is argued that although TPO was introduced in Malaysia many years ago, there has not been much of an improvement made in its enforcement and implementation. On top of that, a study conducted by Hasan et. al (2016) highlighted that there are no proper guidelines for tree preservation in Malaysia, and this shows that the implementation of TPO is still not sufficiently effective in Malaysia.

DIFFERENCES BETWEEN TPO (Act 172) AND TPO (Act 267)

As stated before, the Town and Country Planning Act 1976 (Act 172) is used by all states in Peninsular Malaysia, while the Federal Territory (Planning) Act 1982 (Act 267) is used in three federal territories, namely Putrajaya, Kuala Lumpur and Labuan. It was found that the content in both acts and the conditions highlighted therein share the similar aspects to those of the TPO. The only slight difference found is in the issuance of a fine imposed by the local authority for Act 172, whereas for Act 267, it is the rights of the Commissioner to impose a fine for any incompliance with TPO. Other than that, the amounts of the fines imposed in both Acts are also different. For Act 172, the amount of the fine imposed does not exceed RM100,000, while for Act 267, the amount of the fine does not exceed RM5000 for any offence committed, as stated in the TPO. Another difference is the measurement of the girth of the trees. In Act 172, any tree which exceeds 0.8 meters is automatically protected under the TPO, while for Act 267, the girth of the tree shall exceed 1 meter.

The differences in the TPO of Act 172 and Act 267 are summarized as follows (Tab.1).

Tab.1: The differences between TPO (Act 172) and TPO (Act 267)

	TPO (Act 172)	**TPO (Act 267)**
Rights of issuance of TPO and list of offences	The Local Authority	The Commissioner
Girth of trees	Exceeding 0.8 meters	Exceeding 1 meters
Rights of issuance of fine	Not more than RM100,000 or imprisonment not more than six months or both	Not more than RM5000 or imprisonment not more than three months or both

Other than the differences highlighted in Table 1, most of the guidelines of the law are similar in terms of the act of damaging trees, and the replacement of trees because of removal the trees and appealing for permission.

STUDY AREA

The site of this research is the surrounding area of the Dataran Merdeka and Sultan Abdul Samad building in the heart of Kuala Lumpur. The site was chosen because of its historical value and its location in the urban area. On August 31, 1957, Malaya's first prime minister of Malaysia, Tunku Abdul

Rahman Putra Al-Haj declared independence of Malaya to signify the end of British colonization. This area has many iconic historical buildings that are famous among tourists and local people. The site study has several big and matured trees that were planted over 100 years ago. All of the matured trees are taken care of and maintained by the Kuala Lumpur City Hall (KLCH).
The study area covers the area surrounding Dataran Merdeka and Sultan Abdul Samad building (Fig. 1).

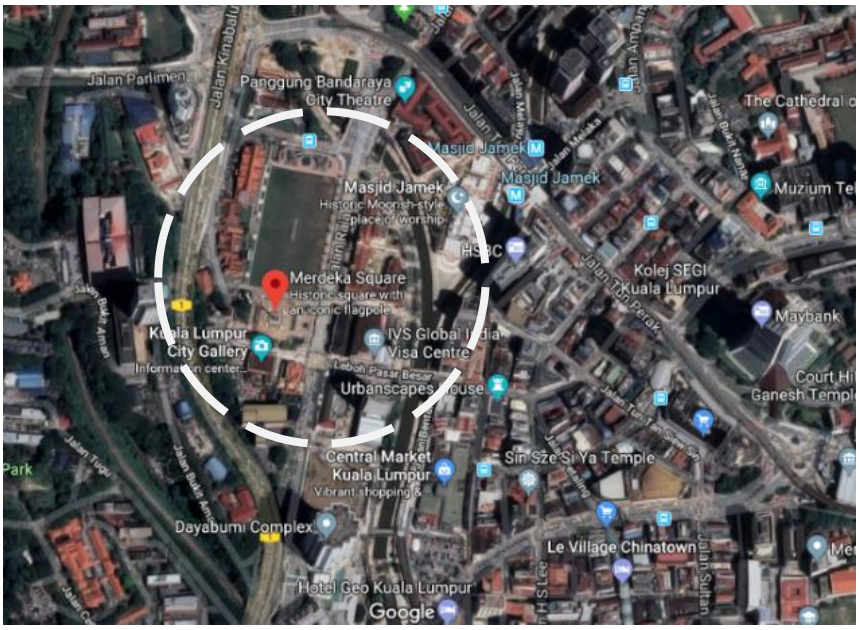

Fig.1: Showing the location of the study area at Dataran Merdeka and Sultan Abdul Samad building
(Source: www.googlemap.com)

RESEARCH METHODOLOGY

This research adopts the mixed method approach, where the quantitative method is supported with the qualitative method for the data collection. The respondents were categorized into two groups of respondents from the local public and local authority. Quantitative data was collected through survey questionnaires. The printed questionnaire was distributed to the respondents and the study managed to gather one hundred and fifty (150) respondents from the public around the study area. The survey questionnaire was divided into three sections, namely Demographic (Section A), Awareness and Knowledge about TPO (Section B) and Perception about TPO (Section C). The data collected from the questionnaire survey was analyzed using Statistical Package for Social Sciences (SPSS). Data was also collected through a series of in-depth interviews with four representatives from the Department of Landscape and Recreational Development and Department of Planning of Kuala Lumpur City Hall (KLCH). The interview sessions were conducted to identify the issues and challenges of the local authority in

implementing the TPO. The collected data from the in-depth interview was transcribed verbatim and analyzed using content analysis.

DISCUSSIONS

The findings from this research show that the male respondents (66%) are more than the female respondents (34%) who took part in this research. The majority of the respondents are between the ages of 20 and 29 (74%). This occurs probably many people in this age group usually spend their time in this area. Further, the area is a public urban square that people normally use to gather and relax. Most of the respondents involved in this study are tourists and the local public.

Public Awareness and Knowledge on TPO

In analysing the public knowledge and awareness of TPO, the demographic profile was analysed through cross-tabulation and chi-square test. The descriptive statistics are summarized in Tab. 2, 3 and 4.

Table 2: The Cross tabulation and Chi-square test result between gender and the knowledge of TPO

	Yes		**No**		**Total**	
Gender	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
Male	20	60.60	13	39.39	33	66
Female	9	52.94	8	47.05	17	34
Total	29	58.0	21	42.0	50	100

Statistical result: p = 0.603, test is not significant at the 0.05 level

Table 3: The Cross tabulation and Chi-square test result between age and the knowledge of TPO

	Yes		**No**		**Total**	
Age	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
20-29	22	59.45	15	40.54	37	74.0
30-39	-	-	5	100	5	10.0
40-49	6	85.71	1	14.28	7	14.0
50-59	-	-	-	-	-	-
60 and above	1	100	-	-	1	2.0
Total	29	58.0	21	42.0	50	100

Statistical result: p = 0.020, test is significant at the 0.05 level.

As shown in (Tab.3), Age has a significant relationship between the knowledge about TPO among the respondents, with a p-value of 0.02 due to the distribution of respondents is not equally the same. This means that probably only one group will dominate the respond compare to others. The study managed to get 74% of the respondents in the age group between 20 and 29, while only 10% are between the ages of 30 and 39, with 14% of them between the ages of 40 and 49.

Table 4: The Cross tabulation and Chi-square test result between the level of education and the knowledge of TPO

	Yes		**No**		**Total**	
Level of Education	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
Sijil Pelajaran Malaysia (SPM)	8	66.66	4	33.33	12	24.0
Sijil Kemahiran Malaysia (SKM)	4	66.66	2	33.33	6	12.0
Diploma	5	50.0	5	50.0	10	20.0
Degree	10	55.55	8	44.44	18	36.0
Master	2	50.0	2	50.0	4	8.0
PhD	-	-	-	-	-	-
Total	29	58.0	21	42.0	50	100

Statistical result: p = 0.915, test is not significant at the 0.05 level.

On the other hand, as shown in (Tab.2 and Tab.4), gender (p = 0.603) and education level (p = 0.915) do not have any significant relationship with the respondents' knowledge about TPO. This shows that Gender and Education Level do not influence public awareness and knowledge about TPO.

Fig.2 shows the result of awareness level and knowledge about TPO among the public. The majority of the respondents have shown a high awareness level of the TPO (68%), and have some knowledge about the TPO (58%), while (32%) of the respondents are not aware of the existence of TPO, and 42% of them do not have any knowledge with regards to TPO, respectively.

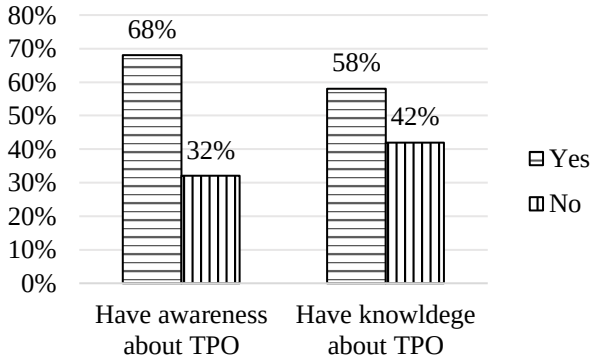

Fig.2: Knowledge and awareness about TPO

Based on the survey conducted, the finding shows that the public has sufficient awareness and knowledge about TPO. This could be due to the recent incident as reported by Bernama (2018) where a matured tree aged more than 130 years old fell and injured two motorists in Jalan Ampang, Kuala Lumpur. This increases the public's awareness of and knowledge about the TPO. On top of that, advanced technologies nowadays have made news spread faster by the mass media on the internet, and people can easily search for issues and information related to the incident.

Importance and Benefits of TPO

Furthermore, this study investigates public perception on the role of TPO in an urban environment and the implementation of TPO by the local authority. Based on the questionnaire survey conducted, 100% of the respondents agreed that TPO is important and needs to be implemented in the urban environment. On top of that, as shown in Figure (3), the findings show that

the majority of the respondents agreed on the importance of TPO being implemented in urban environment is that trees can help to reduce the temperature of the urban surroundings (80%).

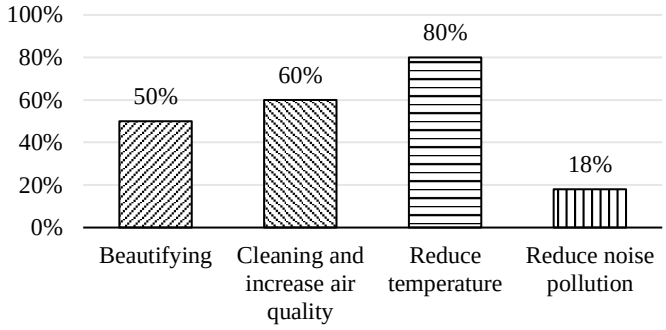

Fig.3: The importance of TPO enhancing the urban environment

This is because, scientifically, the dense foliage of a tree can help to reduce the urban heat temperature. Meanwhile, 60% of the respondents believe that trees can provide clean air and improve the air quality of the urban environment. This is because trees can help to trap and filter particles of air and dust from pollutants, especially from vehicle emissions.

Tab.5 indicated all respondents agreed that TPO be implemented in the city of Kuala Lumpur. This is probably because the public knows the importance and benefits of TPO for the preservation of trees in urban areas. The majority of them agreed that the KLCH has done a good job of implementing TPO in their areas of jurisdiction. Only 24% of the respondents have a different point of view regarding the efficiency of the implementation.

Table 5: The perception of public on TPO implemented by the Kuala Lumpur City Hall

	Yes		**No**	
	Frequency	**%**	**Frequency**	**%**
TPO implemented by KLCH	50	100	-	-
TPO had been implemented efficiently by KLCH	38	76.0	12	24.0
TPO need to be revised	48	96.0	2	4.0

Other than that, 96% of the respondents agreed that the implementation of TPO needs to be revised, and only 2% of the respondents disagreed on it.

This shows that the TPO needs to be revised not only in the context of legal regulations, but also the management and the maintenance of the trees that had been enforced under TPO. In general, the results of the local public perception show that the majority of the respondents agreed that the TPO needs to be implemented in the urban environment. The respondents also know that the importance of preserving the trees can enhance the quality of the urban environment by agreeing that the TPO can reduce the urban heat island and clean the air for better air quality.

Issues and Challenges in Implementing TPO by the Local Authority

A series of in-depth interviews with the local authorities was conducted by interviewing four representatives or officers from KLCH. The in-depth interviews were conducted to identify the issues and challenges faced by the local authority on the implementation of TPO in Kuala Lumpur. The following are the issues highlighted during the in-depth interview.

A) Bureaucracy

Based on the in-depth interview, most of the officers agreed that the bureaucracy and political issues contribute to the challenges in the implementation of the TPO in Malaysia. There are many rules and procedures that the developers need to follow before the construction of any proposed development. This includes the removal of natural assets including protected trees at the proposed development site. However, some of the developers think that the procedure is time consuming and costly. Due to the lengthy procedure, they often choose to cut down the trees without permission from the local authorities. The officers interviewed highlighted what happened in 2016, where the contractor of MRT's project cut down 16 rain trees in Jalan Cochrane without any written permission. Consequently, the contractor was required to pay a RM300,000 penalties. This issue was extensively reported by the local news on (BERNAMA, 2016). Other than that, since the TPO was established more than two decades ago, these acts had never been amended and revised over time. The officers mentioned that the amount of the imposed fine needed to be revised due to current economic conditions. This shows that bureaucracy can make the implementation of TPO quite challenging.

B) Lack of Equipment and Data

One of the officers also mentioned that the KLCH has no access to advanced equipment such as *Picus Sonic Tomograph*, which determines the internal condition of individual trees. This equipment could determine the health and condition of the trees by assessing the decaying process in trees, such as in woody stem trees. Based on the interview conducted, the officers from KLCH made it known that there are currently only two *Picus Sonic Tomograph* devices available in Malaysia, which are owned by University Putra Malaysia (UPM) and the Forest Research Institute Malaysia (FRIM). The respondents added that, KLCH has requested for the device and is currently waiting for an approval to purchase this equipment, as it is too expensive. Although the equipment is expensive, the officer, who is an arborist, believes that the application would be approved, as it can prevent another incident of a fallen tree at Jalan Ampang. Other than that, one of the officers mentioned that there is also a lack of data on the trees protected by TPO, such as trees mapping using Geographic Information System (GIS) as the GIS map is only available on the trees planted by the KLCH. This equipment and data are important for KLCH, who are responsible for the trees' condition and public safety.

C) Awareness and Compliance

The study found that challenges occur due to the lack of compliance with TPO. In this regard, the officers of KLCH also mentioned that some developers chose to disobey the TPO and pay the fine instead. This issue is also related to bureaucracy. The officer said that the developers have a time frame to follow, and if the procedure to obtain permission to cut down the trees is taking too much time, they will just cut down the trees to ease the construction process. Although the consequences from disobeying the rules will lead to fines, the developer thinks that the cost of changing the plan for the construction process is higher than the fine imposed by KLCH, as stated in the TPO (Act 267). Other than that, the officers said that nowadays, the public tend to use tricks to cut down and damage the trees without the need for written permission. As an example, the officer mentioned that there is a shop owner in Kuala Lumpur who hired a 'tree's killer'. Based on the information, the 'tree's killer' will pour poison or damage the trees secretly to kill the trees slowly. Over time, KLCH will receive some reports from the public saying that there are dying trees that need to be removed. This occurs due to the public's ignorance of the importance of the preservation of trees and the TPO. This case is like other cases, where some branches or tree

trunks were cut down without the permission of KLCH, as they were blocking the view. Such actions reflect the public's ignorance and the lack of public awareness of the importance of TPO, and this contributes to one of the issues faced by the KLCH.

DISCUSSION

The findings proved that the assumptions or expectations of the public knowledge of TPO being at a low level are incorrect. This is because based on the results, there are many respondents among the local public that are aware of and have knowledge about the TPO. However, there are contradicting statements by the local authorities when they say that public knowledge and awareness of TPO is still at a low level. This contradicting finding could be caused by the fallen trees incident at Jalan Ampang recently that might create awareness and increase the knowledge of the local public about the TPO. Other than that, most of the issues and challenges faced by the local authorities are also related to the local public awareness of TPO. As stated before, although the percentage of the respondents who know and are aware of TPO is at a high level, it contradicts the perception of the local authority. In this regard, the issues and challenges faced by the local authority might occur because of lack of awareness of the compliance towards the TPO. Although most of the local public are aware of and have knowledge about the TPO, they may be ignorant in terms of obeying the rules for reasons related to personal or financial profit; examples of such individuals might be developers and shop owners. Nik Mohamed Sukri et. el (2017) mentioned that the TPO needed to be reviewed and improved. This statement is supported by the in-depth interview conducted with the local authority. According to them, the TPO needs to be improved or revised, and the local public also agreed that the TPO needs to be improved for better enforcement.

CONCLUSIONS

The implementation of TPO is essential in creating a sustainable environment and can have a huge positive impact on the quality of an urban environment. However, the implementation of TPO needs to be improved and revised, as the Section 35A, Town and Country Planning Act 1976 (Act 172) (Tree Preservation Order) and Section 35, Federal Territory (Planning) Act 1982 (Act 267) (Tree Preservation Order) have never been revised since they were established in Malaysia. From the finding, the study suggest that the amount

of fines needs to be increased at a suitable rate as the currency keeps changing. The amount of fines in both of the acts is insufficient to

cover the cost of replanting the trees damaged by the offenders. Then, other than emphasizing the girth of a tree, there is a need to employ certified arborists to ensure the condition of the tree's health. This is to make sure that the protection and preservation of trees are effective so as to prevent unfortunate incidents in the future. Other than that, the local authority also needs to establish systematic data of trees protected by TPO by using advanced technologies such as GIS (trees mapping) to ease the process of monitoring and maintaining the trees. Moreover, the local authority needs to use suitable advanced equipment, specifically *Picus Sonic Tomograph,* to determine and examine the inner trees' condition and health to prevent unwanted incidents. In relation to public perception and awareness, the local authority needs to organize campaigns on the importance and the implications of demolishing trees without permission and its consequences on the environment. This can be done across different platforms to increase public engagement. One example is the use of a mobile phone app that can directly inform or report about trees to the local authorities. The app could also have a QR code generator that could generate codes linked to different trees. From the QR code generator, the public could assess and know more about the trees that are labeled and enforced under TPO by stating the botanical and common name, the age, the benefits and importance of the trees and others. The public can also participate in tree-mapping activities as part of the TPO to improve the data on the trees protected by the TPO. Hence, this paper concludes that public awareness and knowledge also play significant roles for a better implementation of the TPO by the local authorities.

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REFERENCES

Abdul Kadir, M., A., and Othman, N., (2012). Towards a better tomorrow: Street trees and their values in urban areas, *Procedia - Social and Behavioral Sciences*, Vol. 35, pp. 267-274.

Adnan, N., and Othman, N. (2012), The relationship between plants and the Malay culture, *Procedia - Social and Behavioral Sciences*, Vol. 42, pp. 231-241

BERNAMA, (2016, March 28). Fined RM300,000 for felling rain trees, *The Star Online*, Retrieved from: www.thestar.com.my

BERNAMA, (2018, March 5). Fallen tree had decaying roots, says DBKL, *Malay Mail*, Retrieved from: www.themalaymailonline.com

Bratman, G., N., Daily, G., C., Levy, B., J., and Gross, J., J. (2015). The benefits of nature experience: Improved affect and cognition, *Landscape and Urban Planning*, Vol. 138, pp. 41-50

Burden, D. (2006). *Urban street trees: 22 benefits specific application*, Retrieved from: www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf

Department for Communities and Local Government United Kingdom, (2012). *A Guide to Tree Preservation Procedures, London*, United Kingdom

Duerksen, J.C., and Richman, S. (1993). *Tree Conservation Ordinances, Planning Advisory Report Service*, Washington, D.C.

Fazio, J., R. (2010). Trees can retain storm water runoff, tree city usa bulletin, *Friend of The Tree City USA, Arbor Day Foundation*, Issues No. 55, pp. 1-8.

Hasan, R., Othman, N., and Ahmad, R., (2016). Tree preservation order and its role in enhancing the quality of life, *Procedia - Social and Behavioral Sciences*, Vol. 222, pp. 493 – 501.

Kilmer, J. (1914). *Trees: And Other Poems*. New York: George. H. Doran Company

Mat Isa, M. and Othman, N. (2012). Using geographic information system for trees assessment at public park, *Procedia - Social and Behavioral Sciences*, Vol. 242, pp. 248-258.

Mohd Hashim, N., H., and Hitchmough, J., D., (2015), The comparison of perceptions among landscape professionals on tree retention and legislation. *International Academic Research Journal of Social Science,* 1(2), 164-176

Nik Mohamed Sukri, N. A., Othman, N., and Wan Ariffin, W.T. (2017). A review on the needs to improve Malaysia tree preservation order (TPO) (Act 172), *Planning Malaysia: Journal of Malaysian Institute of Planners*, Vol. 15, Issue No. 4, pp.105-114.

Peerapun, W., (2012). Participatory planning in urban conservation and regeneration: A case study of Amphawa community, *Procedia - Social and Behavioral Sciences*, Vol. 36, pp. 243-252.

Ulrich, R., S. (1984). View through a window may influence recovery from surgery. *Science*, 224 (4647): 420-421.

(1976). Local Government Act, Act 171. International Law Book Services, Malaysia.

(1982). Federal Territory (Planning), Act 267. International Law Book Services, Malaysia.