



***PERCEPTIONS AND KNOWLEDGE OF SECONDARY SCHOOL
STUDENTS ON BUKIT NANAS FOREST RESERVE AS URBAN FOREST
IN KUALA LUMPUR***

MOHD JAMALUDDIN BIN MARZUKI

FH 2018 120

**PERCEPTIONS AND KNOWLEDGE OF SECONDARY SCHOOL
STUDENTS ON BUKIT NANAS FOREST RESERVE AS URBAN FOREST
IN KUALA LUMPUR**



By

MOHD JAMALUDDIN BIN MARZUKI

**A Project Report Submitted in Partial Fulfilment of the Requirements for
the Degree of Bachelor of Forestry Science in the
Faculty of Forestry
Universiti Putra Malaysia**

2018

DEDICATION

Thanks and Praise to Allah S.W.T for giving me better life and these chances.

Dedicate this thesis to:

My lovely mum,

Hjh. Wan Fatimah Binti Wan Ismail who has always been my priority in life.

My sweetheart,

Dr. Nor Akmar Binti Abdul Aziz for your love and support, which is the main source of my joy and happiness in life.

My lovely angels,

Haziq Jr., Mishka, Syahmi, Haziq Luq., Zahhar and Zavier.

You all are my **WORLD** and my **EVERYTHING**.

Thank you very much.

ABSTRACT

Urbanization is growing more rapidly that the urban expansion has led to land use changes which can adversely impact the environment, economy and social aspects. Urban forest and other green infrastructure in cities can provide numerous benefits to the urban citizens. Bukit Nanas Forest Reserve (BNFR) is a forest reserve strategically located in Kuala Lumpur city. In order to preserve the urban forest the awareness of the urban forest benefits is important especially to younger generation. Therefore, this study assessed the perceptions and knowledge on the urban forest importance and benefits among students surrounding BNFR area. Sekolah Menengah Kebangsaan Convent Bukit Nanas, Sekolah Menengah Kebangsaan St. John and Sekolah Menengah Kebangsaan Confucion were selected as the schools within one kilometer radius from BNFR. Questionnaires were collected from 348 students comprising of male and female students. The finding showed that students were aware of the existence of urban forests in Kuala Lumpur and had knowledge on BNFR importance as urban forests as well as its role in controlling surrounding temperatures. Students' knowledge was also influenced by their perceptions as there was a correlation between knowledge and perceptions. These findings suggest that secondary school students have a positive perception and knowledge of BNFR and this implies that the young generation has potential to support the necessities to conserve the urban forest areas for its benefits. This study will be generally beneficial to urban citizens and provide an information to relevan agencies in order to plan and enhanced the function and services of the BNFR.

ABSTRAK

Kepesatan pembangunan mempengaruhi pengembangan perbandaran dan mendorong kepada perubahan penggunaan tanah yang boleh memberi kesan buruk dalam aspek persekitaran, ekonomi dan sosial. Hutan bandar dan infrastruktur hijau yang lain dapat memberikan banyak faedah kepada penduduk bandar. Hutan Simpan Bukit Nanas (HSBN) terletak di lokasi yang strategik dalam bandaraya Kuala Lumpur. Bagi memelihara hutan bandar, kesedaran mengenai manfaat hutan bandar adalah penting terutama kepada generasi muda. Oleh itu, kajian ini menilai persepsi dan pengetahuan tentang kepentingan dan faedah hutan bandar di kalangan pelajar di sekitar HSBN. Sekolah Menengah Kebangsaan Convent Bukit Nanas, Sekolah Menengah Kebangsaan St. John dan Sekolah Menengah Kebangsaan Confucion dipilih berikutan kedudukannya yang berada dalam lingkungan satu kilometer dari HSBN. Kajian soal selidik telah dijalankan kepada 348 pelajar yang terdiri daripada pelajar lelaki dan perempuan. Penemuan menunjukkan bahawa terdapat hubungan antara persepsi dan pengetahuan pelajar mengenai HSBN terutamanya kepada kewujudan kawasan tersebut sebagai hutan bandar, kepentingannya sebagai hutan bandar dan peranannya dalam mengawal suhu persekitaran. Pengetahuan pelajar dipengaruhi oleh persepsi mereka dan terdapat perkaitan yang jelas elemen tersebut. Penemuan ini menunjukkan bahawa pelajar sekolah menengah mempunyai persepsi dan pengetahuan yang positif terhadap HSBN dan menggambarkan potensi dikalangan generasi muda untuk menyokong pemeliharaan kawasan hutan bandar bagi faedahnya. Kajian ini secara amnya memberi manfaat kepada penduduk bandar dan juga menyalurkan maklumat kepada agensi yang berkaitan untuk merancang dan meningkatkan fungsi dan perkhidmatan HSBN.

ACKNOWLEDGEMENTS

Alhamdulillah and thank to Allah S.W.T with all His Gracious and His Merciful for giving me strength and the ability to accomplish this project successfully. I would like to take this opportunity to express my sincere and gratitude to my supervisor Dr. Ruzana Adibah Binti Mohd Sanusi for her support, patient and excellent advice. For me, she is not only an excellent academician, but also an example of wise person. My sincere is also extended to Dr. Evelyn Lim Ai Lin for her relentless comments, opinions and guidance.

My greatest appreciation also goes to the Ministry of Education and Kuala Lumpur Federal Territory Education Department for the approval to conduct this study. Also to the principal and students of Sekolah Menengah Kebangsaan Convent Bukit Nanas, Sekolah Menengah Kebangsaan St. John and Sekolah Menengah Kebangsaan Confusion that have been directly involved in making this study a success.

Finally, to my wife and kids, special thanks are given to them. Appreciation and gratitude are also expressed to my friends and colleagues for their help and constructive suggestion throughout this study. Last but not least to those whose names are not mentioned, I wish to express my special thanks for their help in one way or another during this project.

APPROVAL SHEET

I certify that this research project report entitled “Secondary School Students Perceptions and Knowledge towards Bukit Nanas Forest Reserve as Urban Forest in Kuala Lumpur” by Mohd Jamaluddin Bin Marzuki has been examined and approved as a partial fulfilment of the requirements for the Degree of Bachelor of Forestry Science in the Faculty of Forestry, Univeristi Putra Malaysia.

Dr. Ruzana Adibah Binti Mohd Sanusi
Faculty of Forestry
Universiti Putra Malaysia
(Supervisor)

Prof. Dr. Mohamed Zakaria Bin Hussin
Dean
Faculty of Forestry
Universiti Putra Malaysia

Date: June 2018

TABLE OF CONTENTS

	Page
DEDICATION	i
ABSTRACT	ii
ABSTRAK	iii
AKNOWLEDGEMENTS	iv
APPROVAL SHEET	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER	
1 INTRODUCTION	
1.1 Background Of Study	1
1.2 Problem Statement	4
1.3 Objectives	8
1.4 Expected Outcome	9
2 LITERATURE REVIEW	
2.1 Urbanization	10
2.1.1 Deforestation	11
2.1.2 Forest Fragmentation	12
2.2 Urban Forest	13
2.3 The Benefits of Urban Forest	14
2.3.1 Environmental Benefits	15
2.3.2 Economics Benefits	17
2.3.3 Social Benefits	18
2.4 Urban Forest in Kuala Lumpur	20
2.5 Perception	23
2.6 Knowledge	25
3 METHODOLOGY	
3.1 Study Area	27
3.2 Study Framework	29
3.3 Survey Instrument	30
3.4 Pilot Study	32
3.5 Sampling Method	33
3.6 Data Collection	34
3.7 Data Analysis	34
4 RESULTS	
4.1 Introduction	36
4.2 Descriptive Analysis of Characteristic Demographic Profile	36
4.3 Student's Visit to BNFR	38
4.4 Knowledge on Urban Forest	39
4.5 Importance of BNFR	41
4.6 Responsible Agency for the Management on BNFR	42

4.7	Development of BNFR	43
4.8	Perception	43
	4.8.1 Perception by Gender	43
	4.8.2 Perception by Races	45
	4.8.3 Perception by Religions	47
	4.8.4 Perception by Age	49
	4.8.5 Perception by School	50
4.9	Knowledge	52
	4.9.1 Knowledge by Gender	52
	4.9.2 Knowledge by Races	53
	4.9.3 Knowledge by Religions	54
	4.9.4 Knowledge by Age	55
	4.9.5 Knowledge by School	57
4.10	Correlation between Perceptions and Knowledge towards BNFR	58
5	DISCUSSION	
	5.1 Use and Visitation	60
	5.2 Experience towards Urban Forest	61
	5.3 Importance of BNFR as Urban Forest	62
	5.4 Knowledge on the Management of BNFR	63
	5.5 Perceptions and Knowledge on BNFR as Urban Forest in Kuala Lumpur	63
	5.6 Association between Perceptions and Knowledge	68
6	CONCLUSION AND RECOMMENDATIONS	69
	REFERENCES	73
	APPENDICES	
	Appendix A	85
	Appendix B	86
	Appendix C	87

LIST OF TABLES

Table	Page
2.1 Economic, Social and Environmental Benefits of Urban Forests	19
4.1 Fraction of Respondents According to School Surrounding BNFR, Kuala Lumpur	36
4.2 Descriptive Analysis of Student's Demographic Background at Three Different Schools of BNFR	37
4.3 Visitation to BNFR of Students from Three Different Schools	38
4.4 Knowledge on the Existence of Urban Forest among Students	40
4.5 Knowledge of Students on the Existence of BNFR Based on Visitation Experience to BNFR	40
4.6 List of the BNFR Importance to the Environment and Surrounding Communities in Kuala Lumpur	41
4.7 School Students Knowledge to the Supervisory Agency of BNFR	42
4.8 Respondents' Opinion on the Importance of Developing BNFR	43
4.9 t-test Analysis on the Students' Perception towards BNFR Important as Urban Forest between Gender	44
4.10 ANOVA Analysis on the Students' Perception towards BNFR as Urban Forest between Races	46
4.11 ANOVA Analysis on the Students' Perception towards BNFR as Urban Forest between Religions	47
4.12 ANOVA Analysis on the Students' Perception towards BNFR as Urban Forest between Age	49
4.13 ANOVA Analysis on the Students' Perception towards BNFR as Urban Forest between School	51
4.14 t-test Analysis on the Students' Knowledge towards BNFR as Urban Forest between Gender	52
4.15 ANOVA Analysis on the Students' Knowledge towards BNFR as Urban Forest between Races	53
4.16 ANOVA Analysis on the Students' Knowledge towards BNFR as Urban Forest between Religions	55
4.17 ANOVA Analysis on the Students' Knowledge towards BNFR as Urban Forest between Age	56
4.18 ANOVA Analysis on the Students' Knowledge towards BNFR as Urban Forest between School	57
4.19 The Correlation between Perception and Knowledge towards BNFR	58
4.20 Perception Statement that Predict Knowledge of Secondary School Students on BNFR as Urban Forest	59

LIST OF FIGURES

Figure		Page
3.1	The location of Bukit Nanas Forest Reserve, Sekolah Menengah Kebangsaan Convent Bukit Nanas, Sekolah Menengah Kebangsaan St. John and Sekolah Menengah Kebangsaan Confucian in Kuala Lumpur	28
3.2	Study Framework of Perceptions and Knowledge of Secondary School Students on Bukit Nanas Forest Reserve as Urban Forest in Kuala Lumpur	30
4.1	Knowledge of Student on the Existence of Urban Forest in Kuala Lumpur	39
4.2	Knowledge of Students on the Importance of BNFR to the Environment and its Surrounding Communities in Kuala Lumpur	41

LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BNFR	Bukit Nanas Forest Reserve
EE	Environmental Education
HSBN	Hutan Simpan Bukit Nanas
FDPM	Forestry Department Peninsular Malaysia
LSD	Least Significant Differences
MOE	Ministry of Education
PM	Particle Matters
PFR	Permanent Forest Reserve
SMKCBN	Sekolah Menengah Kebangsaan Convent Bukit Nanas
SMKSJ	Sekolah Menengah Kebangsaan St. John
SMKC	Sekolah Menengah Kebangsaan Confucian
USDA	United States Department of Agriculture
UHI	Urban Heat Island

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Urbanization is the process of changing a rural area to a city or city that develops into a larger and complex city (Huysen, 2008). Urbanization is characterized by changes from rural to urban areas with possible expansion of the urban zones with time (Chen et al., 2014). Urbanization is the result of social, financial and political improvements that prompt urban focus and development of vast urban communities that can influence their quality of life (Spence et al., 2009). The urbanization concept leads to the increase of number of urban population and expansion of city size with the addition of buildings, business spaces, urban settlement areas, system upgrades and transportation networks, and urban function expansion (Chadchan and Shankar, 2012).

Urbanization process has led to the changes of land uses in the urban areas to cater for the needs of economic activities, facilities and other related infrastructure (Gupta, 2014). Urban environments typically consist of concentrated built structures-buildings, roads, parking lots-interspersed with planned green areas, such as small parks and yards, as well as spontaneous or unmaintained vegetation. Natural areas such as forest are being developed for urbanization purposes to meet these needs and this

leads to fragmentation of forest areas that creates green coverage gaps in urban areas (Sands, 2013).

Kuala Lumpur is a city in the world experiencing a rapid economic and urbanization process in the Southeast Asian region. Development in Kuala Lumpur makes the forest land within the area has changed into smaller land in size and divided where it creates gaps between forest areas since its inception in 1859 (Sendut, 1972). The effects of such division and separation of the area led the forest to be fragmented into patches. Because of that, the forest reserve area in Kuala Lumpur is currently only composed of small patches and fragmented from each other. From these separate patches, there is an area in the middle of the metropolitan area that is still being conserved as a forest reserve area which is the Bukit Nanas Forest Reserve (BNFR) covering a total area of 9.73 hectares. The density of this area is relatively low compared to the municipal development in Kuala Lumpur. Other than BNFR, there are other forest reserve areas such as Sungai Besi Forest Reserve and Seputeh Forest Reserve however these forests are located on the outskirts of Kuala Lumpur.

Apart from the forest reserve, Kuala Lumpur also has other green areas such as parks and roadside trees that can be classified as urban forests. All of these green elements such as natural forests, parks, street trees and other green infrastructure contribute to green lung in the city and also play

a role in providing the ecosystem balance in the urban area. Green area in the city plays an important role in providing ecosystem services that helps and increases the quality of urban life and environment especially in the developing country such as Malaysia (Nor Akmar, 2012). According to Nowak et al. (2014), urban forest offers an extensive variety of environmental, social and economic benefits such as beautifying nature, aesthetic appeal and visual obstructions, decreased air temperatures, and enhanced water quality.

The ongoing urbanization process in developing country focusing on empowering infrastructure for a more comfortable and modern life while reinforcing the economy necessarily involves the exchange of land use, destruction and deforestation. Hence, forest areas and green areas are explored and condensed to exchange with skyscrapers and other infrastructures without a thorough detailed assessment. BNFR, the only permanent forest reserve (PFR) in the heart of Kuala Lumpur's urban area, is also threatened to be developed in view of its enormous potential for development purposes. This situation not only threatens the environment in the city center area being developed, but also involves the surrounding area. This consequently introduces many environmental issues in big cities including Kuala Lumpur. Some of the environmental issues associated with urban development are rising of air temperatures, heat island effect and destruction of biodiversity. In tropical cities, green spaces are especially important for shading and cooling, and for mitigating the urban heat island

effect and reduction of air pollution (Thaiutsa et al., 2008). Hence, it is important for the forest areas in Kuala Lumpur to be maintained so it can play a role in controlling and balancing the environment and urban ecosystem. According to Lee (2014), urban forestry is an increasingly important field in Malaysia due to the greening efforts made by the government since 1997.

Uneven development and conservation in land use have an impact on the environment. While the emphasis on the concept of sustainable development is applied and implemented, the failure to defend the forested area is still occurring in our country. This concern was also voiced by the Chief Secretary to the Government of Malaysia through his statement stating that threats to the PFR areas become more severe as there were forest areas that have been developed failed to be replaced across the country. However, the Malaysia government is still committed to defending the BNFR area and will not allow any development to the area (“KSN janji pertahan hutan ibu kota,” 2016). Other than that, Malaysian is aware of environmental protection, especially in relation to climate change where it can be mitigated through conservation of forest resources (Wan and Awang, 2012).

1.2 Problem Statement

Rapid development in Kuala Lumpur demands a great sacrifice in the aspect of land use, especially forest areas. Reserved areas for forest purposes have been applied and failed to be replaced in accordance following the regulation

stated in the National Forestry Act, 1984 (Act 313). For instance, a total of 86,000 hectares of permanent reserved forest areas had been taken for development purpose since the 1960s and until now has failed to be replaced by the state and federal governments (“KSN janji pertahan hutan ibu kota,” 2016). The lack of efficient urban planning and lack of implementation of plans are a major cause of many environmental problems and conflicts especially towards forest area in the city. According to Nilsson et al. (2009), goal-oriented Master Plans for city planning do exist, however are not executed because of absence of subsidizing and requirement of zonation or the plans have been excessively static and have been overwhelmed by fast population development.

Nilsson et al. (2009) also stated that the significance of urban greening, up until now, has gotten constrained consideration in numerous poor urban communities and towns as it is frequently seen as being related with beautification ventures, which are viewed as an extravagance profiting just the wealthier piece of the population. However, urban forests and other green areas can provide and benefits urban society with an essential range of goods and services which covering environmental, economic and social sustainability. Hence, urban communities need to be aware of the importance and benefits of urban forests and the green areas surrounding them.

In addition, cultivating awareness of urban forest values in regulating and providing ecosystem services in urban areas should be reinforced to young generations especially secondary school students. Support for urban forest depends enormously on the mindfulness and learning of the advantages of urban forest to a community (Lorenzo et al., 2000). According to Zyadin et al. (2012) education is a vital component and a cornerstone to any country's advancement; it animates logical undertaking, upgrades vocations, and infuses a talented workforce into the resultant current activity job market. Education may likewise impart the adolescent with the essential learning and good duty expected to better comprehend and take care of ecological issues.

Environmental education (EE) offers opportunities for students to become environmentally conscious citizens. In recent year, urban forestry is a very important environmental requirement to increase the quality of life and conserve urban ecosystem. Urban dwellers are increasingly recognizing and articulating the importance of urban forests as a vital component of the urban land-scape, infrastructure and quality of life (Kuchelmeister, 2000). However, awareness of environmental issues especially in urban areas such as climate changes, air pollution, heat island and water resources are not enough to preserve the limited natural resources in cities. Even though more than half of the world's population today lives in cities, attention given to urban ecosystems services literature has yet been relatively modest as compared to other ecosystems like wetlands or forests (Parnell et al., 2013). Young generation particularly secondary school students in urban area must also be

prepared to recognize their environmental responsibilities,expose to the importance of preserving ecosystems in urban areas and how to use it and act upon them. To make this happen and get information about it, an assessment through the investigation of the level of perception and knowledge of this group towards the importance of urban forest surrounding them should be done.

The Malaysia capital of Kuala Lumpur can be characterized as a rather green city, with a number of larger parks and forest reserve located within the city limits. BNFR is amongst the PFR that functioning in promotes environmental prosperity and other forest services in the city of Kuala Lumpur. Level of perception and knowledge towards the BNFR amongst Kuala Lumpur residents is likely to be divided into various angles and varies following by their socio demographic. Additionally, it also relies on understanding towards forest among individuals as well as specific groups such as adults, dolescents and children. Socioeconomic factors such as age, education level, economic activity, wildlife and damage and residence distance of respondents from the reserve will affect the attitude and perception of the local community (Shibia, 2010). School students are part of a community that is closely associated to BNFR. Their perception and knowledge of BNFR as urban forest in Kuala Lumpur can be used as a gauge to assess the community's needs towards the area. Other than that, the information also useful to support the preservation of the area in the interests of the municipal ecosystem. This information also, can be the basis to the authorities and

stakeholders of BNFR to prepare an action plan, make a design, implementing and evaluating integrated conservation and development project to improve and sustain this natural resource. In addition, it can also be used as a basis for applying awareness and sensitivity to the environment, understanding to plan and use natural resources and promote active involvement in preserving the forests and environments to the younger generation.

1.3 Objectives

This study investigated the level of perception and knowledge of secondary school students on the importance of urban forest in reference to BNFR in Kuala Lumpur.

Specifically, this study was done to meet the following objectives:

- i. To investigate the perception of secondary school student on the importance of BNFR as urban forest; and
- ii. To examine the level of knowledge of secondary school student towards the importance of BNFR as urban forest.

1.4 Expected outcome

The expected outcome from this study is to:

- i. Obtain information on the level of perceptions and knowledge of secondary school students towards BNFR as urban forest; and
- ii. Provide recommendations to the management and stakeholders to increase sensitivity and sense of responsibility among school students in ensuring continuity of the conservation and protection of urban forest.

REFERENCES

Abdullah, J. (2012). City competitiveness and urban sprawl: Their implications to socio-economic and cultural life in Malaysian cities. *Procedia-Social and Behavioral Sciences*, 50, 20-29.

Abdullah, S. A., & Nakagoshi, N. (2006). Changes in landscape spatial pattern in the highly developing state of Selangor, Peninsular Malaysia. *Landscape and Urban Planning*, 77(3), 263-275.

Aflaki, A., Mirnezhad, M., Ghaffarianhoseini, A., Ghaffarianhoseini, A., Omrany, H., Wang, Z. H., & Akbari, H. (2017). Urban heat island mitigation strategies: A state-of-the-art review on Kuala Lumpur, Singapore and Hong Kong. *Cities*, 62, 131-145.

Ahmad, J. H., Mustafa, H., Hamid, H. A., & Wahab, J. A. (2011). Pengetahuan, Sikap dan Amalan Masyarakat Malaysia terhadap Isu Alam Sekitar (Knowledge, Attitude and Practices of Malaysian Society regarding Environmental Issues). *Akademika*, 81(3).

Alig, R. J., Kline, J. D., & Lichtenstein, M. (2004). Urbanization on the US landscape: looking ahead in the 21st century. *Landscape and Urban Planning*, 69(2-3), 219-234.

Arroyo-Rodríguez, V., Saldana-Vazquez, R. A., Fahrig, L., & Santos, B. A. (2017). Does forest fragmentation cause an increase in forest temperature?. *Ecological Research*, 32(1), 81-88.

Bakar, H. A., Aziz, N. A., Narwawi, N. A. M., Latif, N. A., Ijas, N. M., & Sharaai, A. H. (2011). Kajian Perhubungan Antara Kesedaran Alam Sekitar Dengan Tingkah Laku Mesra Alam Sekitar Dalam Kalangan Pelajar Universiti; Kajian Kes: Pelajar Tahun Satu Universiti Putra Malaysia (UPM). *Tourismos*, 6(1050), 297-305.

Barbosa, O., Tratalos, J. A., Armsworth, P. R., Davies, R. G., Fuller, R. A., Johnson, P., & Gaston, K. J. (2007). Who benefits from access to green space? A case study from Sheffield, UK. *Landscape and Urban Planning*, 83(2-3), 187-195.

Barnes, K. B., Morgan, J., & Roberge, M. (2001). Impervious surfaces and the quality of natural and built environments. *Baltimore: Department of Geography and Environmental Planning, Towson University*.

Barraza, L., & Pineda, J. (2003). How young people see forests in Mexico: a comparison of two rural communities. *UNASYLVA-FAO*, 10-17.

Bauer, N., Wallner, A., & Hunziker, M. (2009). The change of European landscapes: human-nature relationships, public attitudes towards rewilding,

and the implications for landscape management in Switzerland. *Journal of Environmental Management*, 90(9), 2910-2920.

Beckett, K. P., Freer-Smith, P. H., & Taylor, G. (2000). Particulate pollution capture by urban trees: effect of species and windspeed. *Global Change Biology*, 6(8), 995-1003.

Benjamin, K., Bouchard, A., & Domon, G. (2007). Abandoned farmlands as components of rural landscapes: An analysis of perceptions and representations. *Landscape and Urban Planning*, 83(4), 228-244.

Bingley, A., & Milligan, C. (2004). Climbing Trees and Building Dens: Mental health and well-being in young adults and the long-term effects of childhood play experience. Lancaster: Institute for Health Research, Lancaster University.

Brajša-Žganec, A., Merkaš, M., & Šverko, I. (2011). Quality of life and leisure activities: How do leisure activities contribute to subjective well-being?. *Social Indicators Research*, 102(1), 81-91

Burgess, D. J., & Mayer-Smith, J. (2011). Listening to children: Perceptions of nature. *Journal of Natural History Education and Experience*, 5, 27.

Burkhard, B., Petrosillo, I., & Costanza, R. (2010). Ecosystem services—bridging ecology, economy and social sciences. *Ecological Complexity*, 7(3), 527-529.

Cappiella, K., Schueler, T., & Wright, T. (2005). Urban Watershed Forestry Manual Part 1: Methods for Increasing Forest Cover in a Watershed. *United States Department of Agriculture Forest Service Northeastern Area State and Private Forestry NA-TP-04-05*, (Part 1).

Carter, J. (1995). The Potential of Urban Forestry in Developing Countries: A Concept Paper. Forestry Department. *Food and Agriculture Organization of the United Nations*. 101 p.

Chadchan, J., & Shankar, R. (2012). An analysis of urban growth trends in the post-economic reforms period in India. *International Journal of Sustainable Built Environment*, 1(1), 36-49.

Chakravarty, S., Ghosh, S. K., Suresh, C. P., Dey, A. N., & Shukla, G. (2012). Deforestation: causes, effects and control strategies. In *Global Perspectives on Sustainable Forest Management*.

Chen, M., Zhang, H., Liu, W., & Zhang, W. (2014). The global pattern of urbanization and economic growth: evidence from the last three decades. *Plos One*, 9(8), e103799.

Chen, W. Y., & Jim, C. Y. (2008). Assessment and valuation of the ecosystem services provided by urban forests. In *Ecology, Planning, and Management of Urban Forests* (pp. 53-83).

City Hall Kuala Lumpur. (2018). In KL Structure Plan 2020. Retrieved from: <http://www.dbkl.gov.my/pskl2020/english/index.htm>

Cohen, D. A., McKenzie, T. L., Sehgal, A., Williamson, S., Golinelli, D., & Lurie, N. (2007). Contribution of public parks to physical activity. *American Journal of Public Health, 97*(3), 509-514.

Diane, R. (2009). The Value of Landscaping. Virginia State University. *Virginia Cooperative Extension Publication, 426-721*.

Dillon, J., O'Donnell, L., Reid, A., Rickinson, M., & Scott, W. (2005). Engaging and learning with the outdoors: The final report of the outdoor classroom in a rural context action research project. London: National Foundation for Educational Research in England and Wales.

Donovan, G. H., Butry, D. T., Michael, Y. L., Prestemon, J. P., Liebhold, A. M., Gatzliolis, D., & Mao, M. Y. (2013). The relationship between trees and human health: evidence from the spread of the emerald ash borer. *American Journal of Preventive Medicine, 44*(2), 139-145.

Dwyer, J. F., McPherson, E. G., Schroeder, H. W., & Rowntree, R. A. (1992). Assessing the benefits and costs of the urban forest. *Journal of Arboriculture, 18*, 227-227.

Eagles, P. F., & Demare, R. (1999). Factors influencing children's environmental attitudes. *The Journal of Environmental Education, 30*(4), 33-37.

Edwards, D., Jay, M., Jensen, F. S., Lucas, B., Marzano, M., Montagné, C., Peace, A., & Weiss, G. (2012). Public preferences for structural attributes of forests: Towards a pan-European perspective. *Forest Policy and Economics, 19*, 12-19.

Erdogan, N. (2013). Environmental worldviews in higher education: a case study of Turkish college students. *Procedia-Social and Behavioral Sciences, 106*, 1086-1095.

Erickson, D. L., Ryan, R. L., & De Young, R. (2002). Woodlots in the rural landscape: landowner motivations and management attitudes in a Michigan (USA) case study. *Landscape and Urban Planning, 58*(2-4), 101-112.

Escobedo, F. J., Kroeger, T., & Wagner, J. E. (2011). Urban forests and pollution mitigation: Analyzing ecosystem services and disservices. *Environmental Pollution, 159*(8-9), 2078-2087.

Esposito, S., Galeone, C., Lelii, M., Longhi, B., Ascolese, B., Senatore, L., Prada, E., Montinaro, V., Malerba, S., Patria, M. F. & Principi, N. (2014). Impact of air pollution on respiratory diseases in children with recurrent wheezing or asthma. *BMC Pulmonary Medicine*, 14(1), 130.

Faezah, P., Asmida, I., Khairiyah, M. S., Norrizah, J. S., & Nuraini, C. A. (2013, April). Diversity and tree species community at Bukit Nanas Forest Reserve, Kuala Lumpur. In *Business Engineering and Industrial Applications Colloquium (BEIAC), 2013 IEEE* (pp. 846-850). IEEE.

Forman, R. T., & Godron, M. (1981). Patches and structural components for a landscape ecology. *BioScience*, 31(10), 733-740.

François, D. R., Marius, T., Yan, K., & Paul, V. (2002). Landscaping and house values: an empirical investigation. *Journal of Real Estate Research*, 23(1-2), 139-162.

Gairola, S., & Noresah, M. S. (2010). Emerging trend of urban green space research and the implications for safeguarding biodiversity: a viewpoint. *Nature and Science*, 8(7), 43-49.

Gearin, E., & Kahle, C. (2006). Teen and adult perceptions of urban green space Los Angeles. *Children Youth and Environments*, 16(1), 25-48.

George, D., & Mallery, M. (2003). Using SPSS for Windows step by step: a simple guide and reference. New York. NY: Springer

Georgi, N. J., & Zafiriadis, K. (2006). The impact of park trees on microclimate in urban areas. *Urban Ecosystems*, 9(3), 195-209.

Ghazali, S. (1999). *Socio-economic changes in the peri-urban villages in Penang, Malaysia* (Doctoral dissertation, University of Leeds).

Gill, S. E., Handley, J. F., Ennos, A. R., & Pauleit, S. (2007). Adapting cities for climate change: the role of the green infrastructure. *Built Environment*, 33(1), 115-133.

Goodey, B. (1971). Perception of the Environment. University of Birmingham Center For Urban and Regional Studies. *Occasional Paper*, 17, 1.

Grimm, N. B., Faeth, S. H., Golubiewski, N. E., Redman, C. L., Wu, J., Bai, X., & Briggs, J. M. (2008). Global change and the ecology of cities. *Science*, 319(5864), 756-760.

Gude, P. H., Hansen, A. J., Rasker, R., & Maxwell, B. (2006). Rates and drivers of rural residential development in the Greater Yellowstone. *Landscape and Urban Planning*, 77(1-2), 131-151.

Gupta, R. (2014). The pattern of urban land-use changes: A case study of the Indian cities. *Environment and Urbanization Asia*, 5(1), 83-104.

Haddad, N. M., Brudvig, L. A., Clobert, J., Davies, K. F., Gonzalez, A., Holt, R. D., Thomas E. L., & Cook, W. M. (2015). Habitat fragmentation and its lasting impact on Earth's Ecosystem. *Science Advances*, 1(2), e1500052.

Hamin, E. M., & Gurrán, N. (2009). Urban form and climate change: Balancing adaptation and mitigation in the US and Australia. *Habitat International*, 33(3), 238-245.

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (Vol. 663). Houghton Mifflin College Division.

Huang, L., Zhao, D., Wang, J., Zhu, J., & Li, J. (2008). Scale impacts of land cover and vegetation corridors on urban thermal behavior in Nanjing, China. *Theoretical and Applied Climatology*, 94(3-4), 241-257.

Huysen, A. (Ed.). (2008). *Other cities, other worlds: Urban imaginaries in a globalizing age*. Duke University Press.

Islas, P. V., & Vergara, D. G. (2012). Perceived visual landscape changes in a fire prone environment: A multi-method approach. *Journal of Environmental Psychology*, 32(2), 144-157.

Jim, C. Y., & Chen, S. S. (2003). Comprehensive greenspace planning based on landscape ecology principles in compact Nanjing city, China. *Landscape and Urban Planning*, 65(3), 95-116.

Jones, L. R., Duke-Sylvester, S. M., Leberg, P. L., & Johnson, D. M. (2017). Closing the gaps for animal seed dispersal: Separating the effects of habitat loss on dispersal distances and seed aggregation. *Ecology and Evolution*, 7(14), 5410-5425.

Kaltenborn, B. P., & Bjerke, T. (2002). Associations between environmental value orientations and landscape preferences. *Landscape and Urban Planning*, 59(1), 1-11.

Kanniah, K. D. (2017). Quantifying green cover change for sustainable urban planning: A case of Kuala Lumpur, Malaysia. *Urban Forestry & Urban Greening*, 27, 287-304.

Karpudewan, M., Roth, W. M., & Abdullah, M. N. S. B. (2015). Enhancing primary school students' knowledge about global warming and environmental attitude using climate change activities. *International Journal of Science Education*, 37(1), 31-54.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental Education Research*, 8(3), 239-260.

Konijnendijk, C. C., Ricard, R. M., Kenney, A., & Randrup, T. B. (2006). Defining urban forestry—A comparative perspective of North America and Europe. *Urban Forestry & Urban Greening*, 4(3), 93-103.

KSN janji pertahan hutan ibu kota (2016, May 3), *Berita Harian*. Retrieved from <https://www1.bharian.com.my/node/149696>.

Kubota, T., Chyee, D. T. H., & Ahmad, S. (2009). The effects of night ventilation technique on indoor thermal environment for residential buildings in hot-humid climate of Malaysia. *Energy and Buildings*, 41(8), 829-839.

Kuchelmeister, G. (2000). Trees for the urban millennium: Urban forestry update. *UNASYLVA-FAO*. 51. 49-55.

Kuchelmeister, G., & Initiative, T. C. (1999, June). Urbanization in Developing Countries-Time for Action for National Forest Programs and International Development Cooperation for the Urban Millennium. *In Forest policy research forum: the role of national forest programs to ensure sustainable forest management* (pp. 14-17).

Kuo, F. E. (2003). Social aspects of urban forestry: the role of arboriculture in a healthy social ecology. *Journal of Arboriculture*, 29(3), 148 - 155

Kuo, F. E., and Sullivan, W. C. (2001). Environment and crime in the inner city: Does vegetation reduce crime?. *Environment and Behavior*, 33(3), 343-367.

Kupfer, J. A. (2006). National assessments of forest fragmentation in the US. *Global Environmental Change*, 16(1), 73-82.

Lal, R. (2004). Soil carbon sequestration to mitigate climate change. *Geoderma*, 123(1-2), 1-22.

Lam T. N. T., Wan K. K. W., Wong S. L., & Lam J. C. (2010). Impact of climate change on commercial sector air conditioning energy consumption in subtropical Hong Kong. *Applied Energy*, 87(7), 2321–2327.

Latiff, A. (2010). Bukit Nanas Forest Reserve green lung of Kuala Lumpur. Petaling Jaya. Forestry Department Peninsular Malaysia.

Laurance, W. F., and Bierregaard, R. O. (Eds.) (1997). Tropical forest remnants: ecology, management, and conservation of fragmented communities. Chicago. University of Chicago Press.

Lee, C. Y. (2014). Urban forest insect pests and their management in Malaysia. *Formosan Entomologi*, 33, 207-214.

Lenart, M. (2017). Trees and local temperature. <<http://articles.extension.org/pages/58136/trees-and-local-temperature>> (Last Accessed, 11 September 2017).

Li, D., and Sullivan, W. C. (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape and Urban Planning*, 148, 149-158.

Liu, Z., He, C., & Wu, J. (2016). The relationship between habitat loss and fragmentation during urbanization: an empirical evaluation from 16 world cities. *Plos One*, 11(4), e0154613.

Livesley, S. J., Escobedo, F. J., & Morgenroth, J. (2016). The Biodiversity of Urban and Peri-Urban Forests and the Diverse Ecosystem Services They Provide as Socio-Ecological Systems. *Forest*, 7(12), 291

Lo, A. Y. (2012). The encroachment of value pragmatism on pluralism: The practice of the valuation of urban green space using stated-preference approaches. *International Journal of Urban and Regional Research*, 36, 121–135.

Lorenzo, A. B., Blanche, C. A., Qi, Y., & Guidry, M. M. (2000). Assessing Residents' Willingness to Pay to Preserve the Community Urban. *Journal of Arboriculture and Urban Forestry*, 26(6):319-325

Lssozi, B. (2010). Values and participation: The role of culture in nature preservation and environmental education among the Baganda. *Journal of Sustainability Education*, 63 (2), 210- 224.

Luber, G., & McGeehin, M. (2008). Climate change and extreme heat events. *American Journal of Preventive Medicine*, 35(5), 429-435.

Luck, G. W., & Smallbone, L. T. (2010). Species diversity and urbanisation: patterns, drivers and implications. *Urban Ecology*, 2010, 88-119.

MacDonald, K., & Rudel, T. K. (2005). Sprawl and forest cover: what is the relationship?. *Applied Geography*, 25(1), 67-79.

Matsuoka, R. H. (2010). Student performance and high school landscapes: Examining the links. *Landscape and Urban Planning*, 97(4), 273-282.

McPherson, E. G., Nowak, D. J., & Rowntree, R. A. (1994). *Chicago's urban forest ecosystem: results of the Chicago Urban Forest Climate Project* (No. 634.928 C3). Radnor, PA: US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Miller, J. D., Kim, H., Kjeldsen, T. R., Packman, J., Grebby, S., & Dearden, R. (2014). Assessing the impact of urbanization on storm runoff in a peri-urban catchment using historical change in impervious cover. *Journal of Hydrology*, 515, 59-70.

Miller, R. W., Hauer, R. J., & Werner, L. P. (2015). *Urban forestry: planning and managing urban greenspaces*. Illinios. Waveland press.

Netusil, N. R., Chattopadhyay, S., & Kovacs, K. F. (2010). Estimating the demand for tree canopy: a second-stage hedonic price analysis in Portland, Oregon. *Land Economics*, 86(2), 281-293.

Nichol, J., & Wong, M. S. (2005). Modeling urban environmental quality in a tropical city. *Landscape and Urban Planning*, 73(1), 49-58.

Nilsson, K., Åkerlund, U., Konijnendijk, C. C., Alekseev, A., Caspersen, O. H., Guldager, S., Kuznetsov, E., Mezenko, A. & Selikhovkin, A. (2007). Implementing urban greening aid projects—The case of St. Petersburg, Russia. *Urban Forestry & Urban Greening*, 6(2), 93-101.

Nilsson, K., Gaultier, M., Rodbell, P., & Escobedo, F. (2009). Forest and trees for healthy cities improving livelihoods and environment. *Proceeding of the urban forestry conference 2009: Lessons for sustainable development* (pp. 14-20). Kuching, Sarawak.

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2011). Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *Journal of Happiness Studies*, 12(2), 303-322.

Nor Akmar, A. A. (2012). Green space use and management in Malaysia. *Forest & Landscape Research No. 51-2012*. Forest & Landscape Denmark, Frederiksberg. 127 pp.

Nordin, A. R. (1997). Managing the garden city. *Ke Arah Negara Taman. Wawasan dan Cabaran. Persidangan Landskap Kebangsaan Dewan Perdana, Hotel Radisson, Shah Alam Selangor*, 4-5.

Norton, B. A., Coutts, A. M., Livesley, S. J., Harris, R. J., Hunter, A. M., & Williams, N. S. (2015). Planning for cooler cities: A framework to prioritise green infrastructure to mitigate high temperatures in urban landscapes. *Landscape and Urban Planning*, 134, 127-138.

Nowak, D. J., Crane, D. E., & Stevens, J. C. (2006). Air pollution removal by urban trees and shrubs in the United States. *Urban Forestry & Urban Greening*, 4(3), 115-123.

Nowak, D. J., Crane, D. E., Stevens, J. C., & Ibarra, M. (2002). Brooklyn's urban forest. *Gen. Tech. Rep. NE-290. Newtown Square, PA: US Department of Agriculture, Forest Service, Northeastern Research Station*, 194-199.

Nowak, D. J., Hirabayashi, S., Bodine, A., & Greenfield, E. (2014). Tree and forest effects on air quality and human health in the United States. *Environmental Pollution*, 193, 119-129

O'Brien, L. (2009). Learning outdoors: The Forest School Approach. *Education 3-13*, 37(1), 45-60.

Othman, N., Mohamed, N., & Ariffin, M. H. (2015). Landscape aesthetic values and visiting performance in natural outdoor environment. *Procedia-Social and Behavioral Sciences*, 202, 330-339.

Owen, J. (1992). *The Ecology of a Garden*. Cambridge: Cambridge University Press.

Pandit, R., Polyakov, M., & Sadler, R. (2012). The importance of tree cover and neighbourhood parks in determining urban property values. In *2012 Conference (56th)*, 7-10.

Parnell, S., Schewenius, M., Sendstad, M., Seto, K. C., & Wilkinson, C. (2013). *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities*. New York: Springer

Pauleit, S., & Duhme, F. (2000). Assessing the environmental performance of land cover types for urban planning. *Landscape and Urban Planning*, 52(1), 1-20.

Peters, K., Elands, B., & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion?. *Urban Forestry & Urban Greening*, 9(2), 93-100.

Popek, R., Gawrońska, H., Wrochna, M., Gawroński, S. W., & Sæbø, A. (2013). Particulate matter on foliage of 13 woody species: deposition on surfaces and phytostabilisation in waxes—a 3-year study. *International Journal of Phytoremediation*, 15(3), 245-256.

Popoola, L., & Ajewole, O. (2001). Public perceptions of urban forests in Ibadan, Nigeria: implications for environmental conservation. *Arboricultural Journal*, 25(1), 1-22.

Qiu, G. Y., Zou, Z., Li, X., Li, H., Guo, Q., Yan, C., & Tan, S. (2017). Experimental studies on the effects of green space and evapotranspiration on urban heat island in a subtropical megacity in China. *Habitat International*, 68, 30-42.

Ries, A. V., Voorhees, C. C., Roche, K. M., Gittelsohn, J., Yan, A. F., & Astone, N. M. (2009). A quantitative examination of park characteristics related to park use and physical activity among urban youth. *Journal of Adolescent Health*, 45(3), S64-S70.

Sæbø, A., Popek, R., Nawrot, B., Hanslin, H. M., Gawronska, H., & Gawronski, S. W. (2012). Plant species differences in particulate matter accumulation on leaf surfaces. *Science of the Total Environment*, 427, 347-354.

Sander, H., Polasky, S., & Haight, R. G. (2010). The value of urban tree cover: A hedonic property price model in Ramsey and Dakota Counties, Minnesota, USA. *Ecological Economics*, 69(8), 1646-1656.

Sands, R. (Ed.). (2013). *Forestry in a global context*. CABI. Malta: Guttenberg Press

Santamouris, M. (2013). Heat island research in Europe: the state of the art. In *Advances in building energy research*. 1(2007). 123-150.

Sanusi, R., Johnstone, D., May, P., & Livesley, S. J. (2016). Street orientation and side of the street greatly influence the microclimatic benefits street trees can provide in summer. *Journal of Environmental Quality*, 45(1), 167-174.

Scharenbroch, B. C., Morgenroth, J., & Maule, B. (2016). Tree species suitability to bioswales and impact on the urban water budget. *Journal of Environmental Quality*, 45(1), 199-206.

Schipperijn, J., Bentsen, P., Troelsen, J., Toftager, M., & Stigsdotter, U. K. (2013). Associations between physical activity and characteristics of urban green space. *Urban Forestry & Urban Greening*, 12(1), 109-116.

Scolozzi, R., & Geneletti, D. (2012). A multi-scale qualitative approach to assess the impact of urbanization on natural habitats and their connectivity. *Environmental Impact Assessment Review*, 36, 9-22.

Seamans, G. S. (2013). Mainstreaming the environmental benefits of street trees. *Urban Forestry & Urban Greening*, 12(1), 2-11.

Seitz, J., & Escobedo, F. (2011). Urban forests in Florida: Trees control stormwater runoff and improve water quality. *City*, 393(6),

Sendut, H. (1972). "The Structure of Kuala Lumpur, Malaysia's Capital City," In *The City in Newly Developing Countries*, Breese, G. (ed), London: Prentice-Hall International, Inc., 461-473.

Seto, K. C., & Fragkias, M. (2005). Quantifying spatiotemporal patterns of urban land-use change in four cities of China with time series landscape metrics. *Landscape Ecology*, 20(7), 871-888.

Shibia, M. G. (2010). Determinants of attitudes and perceptions on resource use and management of Marsabit National Reserve, Kenya. *Journal of Human Ecology*, 30(1), 55-62.

Sieghardt, M., Mursch-Radlgruber, E., Paoletti, E., Couenberg, E., Dimitrakopoulos, A., Rego, F., Hatzistathis & Randrup, T. B. (2005). The abiotic urban environment: impact of urban growing conditions on urban vegetation. *Urban Forests and Trees*. Berlin: Springer, 281-323.

Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K. B., Tignor, M., & Miller, H. L. (2007). Contribution of working group I to the fourth assessment report of the intergovernmental panel on climate change, 2007. New York: Cambridge University Press.

Spence, M., Annez, P. C., & Buckley, R. M. (2009). *Urbanization and growth: commission on growth and development*. Washington: The World Bank.

Sreetheran, M., Philip, E., Adnan, M., & Siti Zakiah, M. (2006). A historical perspective of urban tree planting in Malaysia. Kuala Lumpur: *Unasyilva (FAO)*.

Su, J. G., Jerrett, M., McConnell, R., Berhane, K., Dunton, G., Shankardass, K., Reynolds, K., Chang, R., & Wolch, J. (2013). Factors influencing whether children walk to school. *Health & Place*, 22, 153-161.

Swenson, J. J., & Franklin, J. (2000). The effects of future urban development on habitat fragmentation in the Santa Monica Mountains. *Landscape Ecology*, 15(8), 713-730.

Terzaghi, E., Wild, E., Zacchello, G., Cerabolini, B. E., Jones, K. C., & Di Guardo, A. (2013). Forest filter effect: role of leaves in capturing/releasing air particulate matter and its associated PAHs. *Atmospheric Environment*, 74, 378-384.

Thaiutsa, B., Puangchit, L., Kjelgren, R., & Arunpraparut, W. (2008). Urban green space, street tree and heritage large tree assessment in Bangkok, Thailand. *Urban Forestry & Urban Greening*, 7(3), 219-229.

Tikka, P. M., Kuitunen, M. T., & Tynys, S. M. (2000). Effects of educational background on students' attitudes, activity levels, and knowledge concerning the environment. *The Journal of Environmental Education*, 31(3), 12-19.

Toftager, M., Ekholm, O., Schipperijn, J., Stigsdotter, U., Bentsen, P., Grønbaek, M., Randrup, T.B., & Kamper-Jørgensen, F. (2011). Distance to green space and physical activity: a Danish national representative survey. *Journal of Physical Activity and Health*, 8(6), 741-749.

Tyrväinen, L., Pauleit, S., Seeland, K., & de Vries, S. (2005). Benefits and uses of urban forests and trees. In *Urban forests and Trees* (pp. 81-114). Berlin, Heidelberg: Springer.

USDA FOREST SERVICE. 1990. *Urban Forestry Five-Year Plan: 1900 through 1994*. Northeastern Area. New York: State and Private Forestry.

Van den Bosch, C. C. K. (2014). From government to governance: Contribution to the political ecology of urban forestry. In *Urban Forests, Trees, and Greenspace: A political Ecology Perspective* (pp 35-46). New York: Routledge.

Van Kooten, G. C., & Bulte, E. H. (2000). *The economics of nature: managing biological assets*. Cheltenham: Blackwell Publishers.

Veitch, J., Bagley, S., Ball, K., & Salmon, J. (2006). Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free-play. *Health & Place*, 12(4), 383-393.

Vesely, É. T. (2007). Green for green: The perceived value of a quantitative change in the urban tree estate of New Zealand. *Ecological Economics*, 63(2), 605-615.

Villeneuve, P. J., Jerrett, M., Su, J. G., Burnett, R. T., Chen, H., Wheeler, A. J., & Goldberg, M. S. (2012). A cohort study relating urban green space with mortality in Ontario, Canada. *Environmental Research*, 115, 51-58.

Wan, R., & Awang, N. (2012). Climate change and biodiversity: research and policy issues in sustainable forestry in Malaysia. *Malaysian Forester*, 75(2), 103-118.

Wolf, I. D., & Wohlfart, T. (2014). Walking, hiking and running in parks: A multidisciplinary assessment of health and well-being benefits. *Landscape and Urban Planning*, 130, 89-103.

Wong, T. H. (2006). Water sensitive urban design-the journey thus far. *Australasian Journal of Water Resources*, 10(3), 213-222.

Yamane, Taro. (1967). *Statistics: An Introductory Analysis*, 2nd Edition, New York: Harper and Row.

Yang, J., McBride, J., Zhou, J., & Sun, Z. (2005). The urban forest in Beijing and its role in air pollution reduction. *Urban Forestry & Urban Greening*, 3(2), 65-78.

Yilmaz, S., Zengin, M., & Yildiz, N. D. (2007). Determination of user profile at city parks: A sample from Turkey. *Building and Environment*, 42(6), 2325-2332.

Zagzebski, L. (1999). *What is knowledge?* (pp. 92-116). The Blackwell Guide to Epistemology. Victoria 3053, Australia: Blackwell Publishing Ltd.

Zhao, Q., Yang, J., Wang, Z. H., & Wentz, E. A. (2018). Assessing the Cooling Benefits of Tree Shade by an Outdoor Urban Physical Scale Model at Tempe, AZ. *Urban Science*, 2(1), 4-16.

Zyadin, A., Puhakka, A., Ahponen, P., Cronberg, T., & Pelkonen, P. (2012). School students' knowledge, perceptions, and attitudes toward renewable energy in Jordan. *Renewable Energy*, 45, 78-85.