

Environmental Issues in Malaysia: Suggestion to Impose Carbon Tax

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ABSTRACT

Malaysia has a long history of environmental issues. The Malaysian government has implemented deterrent and supportive strategies to reduce the issue by penalising polluters and providing tax incentives to encourage green technology developments. However, these strategies are ineffective since the number of pollution issues keeps increasing, and the Malaysia Environmental Performance Index (EPI) 2020 score has dropped. Many countries have implemented carbon tax to mitigate some environmental issues following the recommendation by the Organization for Economic Co-operation and Development. The carbon tax has proven to be an effective strategy not only to reduce environmental problems but also to increase government revenues. This conceptual paper aims to give a brief review of literature for future studies in implementing a carbon tax policy in Malaysia. It is hoped that the findings will assist the Malaysian government in implementing a carbon tax policy to reduce environmental issues and as a strategy to widen its tax base

Keywords: environmental issues, carbon tax, Malaysia, pollutions, income tax base.

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INTRODUCTION

A lot of countries have been facing environmental degradation. In Malaysia, environmental degradation has become a severe issue as Malaysia has pursued rapid industrialisation since the 1980s. Studies have found a domino effect of economic growth on human health (Rahman, 2018; Tang, 2019). Economic developments require the government to build more factories, residential and administration buildings (Chan, 1998; Hitam & Borhan, 2012). These developments have contributed to climate change, air pollution, water pollution, solid waste management, deforestation, soil erosion and species endangerment. Subsequently, it has significantly impacted the quality of human life and human health (Afroz et al., 2014; Afroz & Rahman, 2017; Hitam & Borhan, 2012; Khalil et al., 2011).

Recently, Malaysia has been facing a critical period in handling environmental issues. The issues appear to be very aggressive due to the increasing number of the population. One of the main contributors to environmental issues is the emission of greenhouse gas (GHG) which includes carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and fluorinated gases. Carbon dioxide emission has increased tremendously due to the increasing number of vehicles on the road. Other environmental issues include water pollution, waste problems, oil pollutants in the sea, and deforestation. Although the Malaysian government has penalised polluters and introduced several tax incentives to promote green technology, the environmental issues have increased and caused death in some cases (Ministry of Health Malaysia, 2016).

The Organization for Economic Co-operation and Development (OECD) has strongly encouraged all countries to implement environmental tax to achieve various economic and sustainable growth. Environmental tax is an effective way to mitigate the wide range of environmental issues (OECD, 2011). This was supported by a study from the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) that examined the rationale for the implementation of the environmental tax in the Asia-Pacific region in achieving Sustainability Development Goals (SDG) (UN, 2017). Many countries, for example the United States of America (UN, 2017), Switzerland (Grieder et al., 2021) and Ireland (Bruin & Yakut, 2018), have successfully changed human behaviour, reduced climate

change issues and increased government revenue through an environmental tax policy, particularly from carbon tax.

In 2018, Malaysia faced difficulty in its economy after abolishing the Goods and Services Tax (GST). The estimated income losses to the government was RM 21 billion, which significantly impacted tax collection (New Straits Times, 2018). Therefore, many economists have suggested that the Malaysian government implements smart taxation by impeding outdated tax incentives and introducing a new tax to raise revenue (Kana, 2019; The Star, 2019).

Adding to the economic issues is the coronavirus disease 2019 (COVID-19) that affected people worldwide, including Malaysia, in early January 2020. Many business activities were halted during the period due to the Movement Control Order (MCO) (Prime Minister's Office of Malaysia, 2020). In the first quarter of 2020, government revenue decreased to RM45,321.50 million from RM69,866 million in the fourth quarter of 2019 (Trading Economics, 2020). It shows that Malaysia needs to have new tax systems that can balance environmental and economic growth. Therefore, Malaysia has a growing concern to implement a carbon tax policy to reduce carbon emissions and increase government revenue.

This study aims to give a brief review of the literature for future studies in implementing a carbon tax policy in Malaysia. In achieving this, the carbon tax policy of the top three countries in the Environmental Performance Index (2020), including Denmark, Switzerland and France, was analysed to explore their experience in developing a carbon tax policy. This paper begins with information on the environmental administration in Malaysia and a review of environmental issues in Malaysia from 2014 to 2021. Information from the Compendium of Environmental Statistics and tax incentives provided by the Malaysian government to support green technology development are also presented. This study will provide suggestions for the Malaysian government in adopting carbon tax policies and add value to the limited number of literatures on carbon tax policy in Malaysia.

LITERATURE REVIEW

Environmental Administration in Malaysia

Environmental management can be regarded as an essential component in practising the policies and laws stated by top management and the government. In Malaysia, the government has passed laws at federal and state levels for managing environmental issues. In achieving sustainable environmental management, the National Development Planning Committee is responsible for formulating, overseeing, implementing, and reviewing all development plans before being approved by the cabinet (Mustafa & Rusli, 2016). The National Policy on the Environment has been established as a guide to achieve economic, social and cultural progress through environmentally sound and sustainable development (Mohammad, 2011).

Environmental administration is conducted under the Ministry of Environment and Water, responsible for managing environmental issues in Malaysia. This ministry, consists of a few departments and agencies, including the Department of Environment (DOE), Department of Irrigation and Drainage, Sewerage Services Department, Malaysian Meteorological Department, Department of Biosafety, National Hydraulic Research Institute of Malaysia (NHRIM), Water Supply Division, National Water Service Commissions, Indah Water Konsortium (IWK), Water Asset Management Company (WAMCO), Malaysian Green Technology and Climate Change Centre (MGTC) and the Sultan Mizan Antarctic Research Foundation (Department of Environment and Water, 2020).

The Environment Quality Act 1974 is a landmark in establishing the DOE by incorporating cross-sectoral concerns into legislation (Mohammad, 2011). The DOE was established in 1975 and is responsible for enhancing sustainable development in the process of national development and ensuring that the environment is clean, healthy, and safe for the people's well-being. The DOE has 13 branches in each state; such as; Bangi, Ayer Keroh, Seremban, Kuala Terengganu, Kota Bahru, Kuala Lumpur, Shah Alam, Johor Bahru, Kuantan, Alor Setar, Ipoh, Kangar and Kepala Batas to manage environmental issues based on its state (Department of Environment and Water, 2020).

Despite the fact that the environmental act has been in place for 48 years, the government continues to be concerned about environmental development and protection. Malaysia has been dealing with a number of environmental concerns, the most serious of which are climate change, air pollution, and water pollution. Mohammad (2011) and Mustafa and Rusli (2016) argued that environmental laws and policies in Malaysia are not adequately implemented and executed due to lack of expertise, lack of resources and lack of commitment.

Environmental Issues in Malaysia

Rapid industrialisation has caused Malaysia to face environmental degradation that resulted from the process of economic growth. In 2020, Malaysia ranked 68th out of 180 countries, compared to 75th in 2018, for the Environment Performance Index (EPI). The EPI ranks countries' performance on high-priority environmental issues in two broad policy areas, including protecting human health and protecting ecosystems. Within these two policy objectives, the EPI scores country performance in nine issues (e.g., air quality, water and sanitation and climate and energy) comprising 20 indicators, including environmental risk exposure, household air quality and unsafe sanitation (EPI, 2020). Although Malaysia's EPI rank climbed in 2020, the EPI scores dropped from 59.22 (2018) to 47.9 (2020).

Malaysia has been dealing with a number of environmental concerns in recent years, the most serious of which being climate change, air pollution, and water pollution. As a result, there is an increasing need to understand Malaysia's current environmental situation in order to give recommendations to the government on how to apply environmental tax policies. Nevertheless, it's critical to first comprehend Malaysia's major environmental challenges before offering recommendations.

Climate Change

In the 21st century, the world has faced the worst environmental threat. Global warming creates climate change, and the annual temperature has swung up by several degrees Celsius over the past million years (Rahman, 2009). Thus, the United Nations Framework Convention on Climate Change (UNFCCC) was established in 1992 to combat climate change issues.

In September 2002, Malaysia ratified the Kyoto Protocol as a participant in the UNFCCC (UNFCCC, 2020b). The Kyoto Protocol is an agreement between nations to commit to limiting and reducing GHG emissions according to the agreed target by each country. Currently, 192 countries have ratified the Kyoto Protocol. A few years later, Malaysia participated in the Paris Agreement in 2016, which aimed to reduce GHG and combat global warming (UNFCCC, 2020a). The Paris Agreement gathered all nations, including developing countries, to combat climate change and take ambitious efforts to keep the global temperature rise in this century below 2°C and to limit the temperature increase even further to 1.5 °C (UNFCCC, 2020a).

However, Malaysia showed poor performance in the 2021 Climate Change Performance Index (CCPI). CCPI components include GHG emission, renewable energy development, energy use level, and climate policy implementation. Malaysia ranked as a ‘*very low*’ country index, at the 56th position from 61 countries, with an overall score of 27.78. Malaysia was rated as a ‘*very low*’ category for GHG emission and renewable energy and the ‘*medium*’ category for energy use and climate policy (CCPI, 2021). Malaysia contributed 0.52% of carbon emissions globally and has become the fourth-largest emitter of GHG emissions in ASEAN (Rahman, 2018). This has had a direct impact on the environment where the extreme environmental events and disasters occurred in Malaysia, such as fire (Baharin, 2019), heat waves (Astro Awani, 2015), severe flood (Tahir, 2015) and landslides (Akter et al., 2019). Many people get affected by these environmental issues, which has indirectly increased the number of deaths due to unhealthy air pollution, respiratory diseases, fire accidents, and many more (Department of Statistics Malaysia, 2019). Therefore, mitigating climate change is vital to reduce the global mean surface temperature and reduce extreme events.

According to the Ministry Of Energy, Science, Technology, Environment and Climate Change (MESTECC, 2018), the CO₂ has contributed the most of GHG in the air from 2005 to 2014 (Figure 1). This issue occurred because most daily activities are related to energy consumption, contributing to much carbon emissions in the air. Therefore, it is essential to focus on decarbonising the number of carbon emissions because the high number of carbon emissions can increase global warming and impact human health.

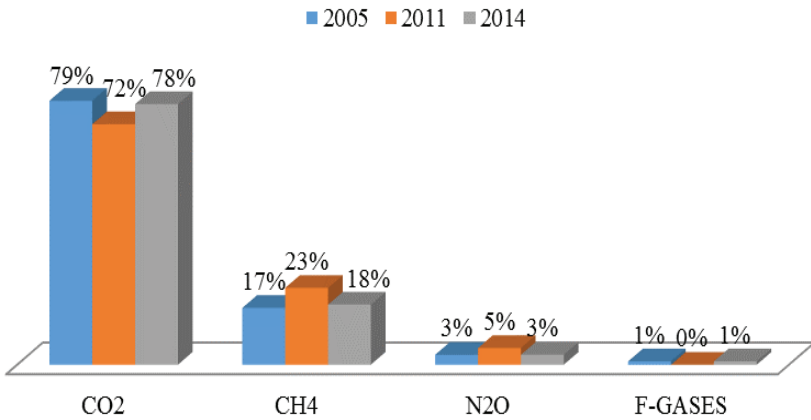


Figure 1: Comparison of GHG Emissions by Gas between 2005, 2011 and 2014
 (Sources: MESTECC, 2018)

Air Pollution

Air pollution occurs when air is contaminated with natural and anthropogenic pollutants. The primary sources of air pollution are emissions from motor vehicles, power plants and industry, from stationery sources and open burning activities (Department of Statistics Malaysia, 2019). Emissions from motor vehicles are the main contributor to air pollution and are the top concern of environmentalists. Anthropogenic pollutants are contaminants associated with human activities, including polluting residuals from consumption and production activity (Callan & Thomas, 2009; Razak et al., 2013).

In 2019, more than 31.2 million units of motor vehicles were registered in Malaysia. The number of vehicles increased annually by 1.23 million (Lim, 2020). As shown in Figure 2, air pollution from motor vehicles was the highest in 2018, and it was estimated that 2.2 million tons of carbon monoxide (CO), 889,890 tons of nitrogen dioxide (NO₂), 257,457 tons of sulphur dioxide (SO₂), and 26,789 tons of particulate matter (PM₁₀) were released by motor vehicles. People who live in the city are exposed to air pollution compared to those in rural areas. In particular, Kuala Lumpur is exposed to the highest amount of CO, NO₂, SO₂ and PM₁₀ due to the high number of vehicles on the road every day.

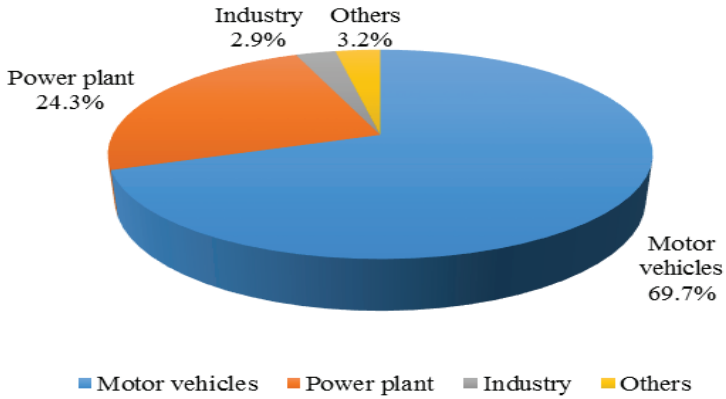


Figure 2: Sources Emission of Pollutants to the Atmosphere in 2018
(Sources: Department of Statistics Malaysia, 2019)

Figure 3 shows the gradual increment of carbon emission in Malaysia from 2014 to 2018, which has led to climate change. According to Razak et al. (2013), heat waves are expected to occur more frequently in the future. The urban population, in particular, will suffer adverse health effects with the combination of poor air quality and high temperatures.

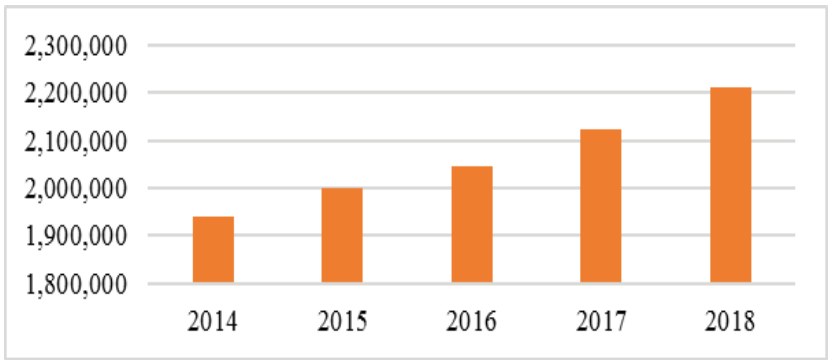


Figure 3: Trend of Carbon Emission in Malaysia from 2014 to 2018
(Sources: Department of Statistics Malaysia, 2015, 2016, 2017, 2018, 2019)

Another source of air pollution is haze from open burning, solid wastes, and forest fire (Afroz et al., 2003). Malaysia is experiencing waste management problems primarily in urban areas (Salim et al., 1994). The types of solid wastes produced have become more complex and diverse as the population and manufacturing companies grow (Hassan et al., 2000).

Every year, the government spends a substantial amount of money on the collection and disposal of waste. Although the cost of waste disposals is increasing, but the best solutions to overcome this issue have yet to be found (Badgie et al., 2012). Waste disposal in the landfill has contributed to uncontrollable dumping issues, and many disposal sites are poorly managed, where 50% of landfills are open dumps.

Malaysia also experienced a severe air pollution issue from illegal plastic waste recycling in 2018 and 2019. In 2017, Malaysia decided to import plastic wastes for the recycling process after China announced a ban on import of plastic as the country had introduced a new environmental policy (Brooks et al., 2018). China was once one of the top importers of plastic waste in the world from 1992 to 2016. The number of importations of plastic waste in Malaysia increased significantly from January to June 2018, resulting in 830,000 tons of plastic waste. However, some of the imported plastic waste could not be recycled and this became an opportunity to develop many illegal plastic waste recycling factories in Jenjarom, Selangor. The illegal open burning scarp released noxious fumes that caused human health problems such as heart failure, headaches, nausea, and chronic asthma (Bendix, 2019).

Realising the critical issue of pollution caused by the importation of plastic waste, Malaysia sent back a total of 3,737 metric tonnes that equalled to 150 containers of illegal plastic waste to the exporting countries such as France (43 containers), United Kingdom (42 containers), United States of America (17 containers) and Canada (11 containers) (Bostock, 2020). Even though recycling plastic-based products is a profitable industry, many companies failed to comply with the government's health and environmental protection law. According to the investigation by the national authority, only eight factories complied with the laws while the other 114 legal factories failed to comply (Bendix, 2019).

Air pollution from forest fires in Indonesia has been a significant issue in Malaysia for more than two decades. Indonesia emits a transboundary smoke haze that causes deterioration in air quality (Mahmud, 2013; Othman et al., 2014). In 2019, the air pollution index (API) reached the most unhealthy air pollution, measure at 412 (Department of Environment, 2019). It was the first time Malaysia reached the maximum level of unhealthy air index since 1997.

If the government does not resolve this issue, public health will be affected, affecting population development and economic growth. Effective action needs to be taken to mitigate environmental problems. Mokhtar and Murad (2010) proposed that one of the strategies is to install air quality trackers in various places, for example, residential, industrial, and roadside areas. Other than that, strict enforcement of the environmental law should be applied; polluters must be heavily penalised as a lesson to polluters and encourage others to abide by the law.

Water Pollution Problems

Water pollution is also a fundamental environmental issue in Malaysia, which negatively impacts the sustainability of water resources (Afroz et al., 2014). There are two sources of water pollution – point and non-point; point sources are sewage treatment plants, manufacturing, agro-based industries, and animal farms, while non-point sources are agricultural activities and surface runoffs (Pang & Abdullah, 2013). As shown in Figure 4, the status of clean river water polluted by NH_3-N is still at a low level. The source of pollution from NH_3-N includes the livestock industry, domestic wastewater and civil engineering works. While the manufacturing industry and agriculture-based industries, for example, natural rubber and palm oil production, contributed to BOD_5 . Land cultivation is also blamed for the water pollution issue.

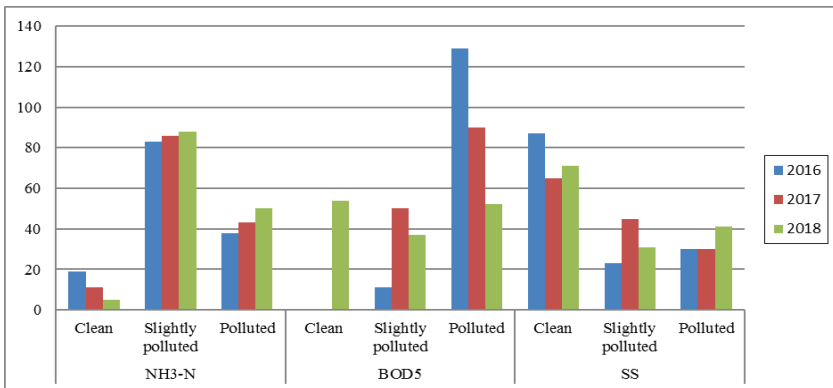


Figure 4: Status of River Water Quality Status Based on Main Pollutants, Malaysia, 2016-2018

(Sources: Department of Statistics Malaysia, 2017, 2018, 2019)

To determine the quality status of water, the DOE used the water quality index (WQI). The department make uses a computer system calculation based on six primary pollutants comprising of Ammoniacal Nitrogen (NH₃-N), Biochemical Oxygen Demand (BOD₅), Suspended Solids (SS), Chemical Oxygen Demand (COD), pH value and Dissolved Oxygen (DO). In March 2019, Malaysia had a disgraceful incident with illegal chemical waste dumping in Sungai Kim Kim, Pasir Gudang, Johor Bahru that affected thousands of people in Johor. More than 5,800 people were given hospital treatment for breathing difficulties, more than 900 were hospitalised, and 25 victims were treated in intensive care units (ICU) (Bernama, 2019a). After investigations and the source of pollution identified, the cleaning up operation was conducted in Sungai Kim Kim. Unfortunately, after three months, people in Pasir Gudang faced the same issue, and the government took immediate action by closing all schools and academic institutions in Pasir Gudang. The investigations found that the recurrent water pollution issue in Pasir Gudang occurred because the cleaning-up process conducted in March was incomplete. The Johor State Government had to pay RM6.4 million for another round of the cleaning process (Chu, 2019). Three company directors became the main suspects in the case. They were charged under Section 34B(1)(a) of the Environmental Quality Act 1974, punishable under Section 34(B)(3) of the same Act and read together with Section 42 of the same Act, which also carries a maximum jail term of five years and a fine of RM500,000 (Bernama, 2019b).

Other than rivers, the sea is another major source of water pollution in Malaysia. Khalit (2006) found that faecal bacteria *Escherichia coli* (*E.coli*) is a dominant sea pollutant. The *E.coli* is discharged from poorly treated domestic sewage. His study was supported by Hossain (2014). The study used water quality modelling to assess water quality, and they found that industrial effluents also contain *E.coli* which is harmful to humans. Besides industrial wastes, the public's poor attitude in protecting the environment also contributes to water pollution (Chin et al., 2019; Lai et al., 2017).

Other Environmental Pollution Problems

Other than air and water pollution, Malaysia is also facing deforestation and soil erosion issues. Illegal logging activity is not a new issue in Malaysia due to weak enforcement by the authorities. In 2018, the Terengganu

government lost millions of ringgit from illegal logging forests by few syndicated activities (Nizam, 2018). This activity is harmful to the ecosystem and human safety. There were many fatalities due to landslides and floods caused by illegal logging activities. Other than that, deforestation has resulted in the loss of biodiversity and destroyed the ecosystem. These environmental issues are interrelated, and without government enforcement, this issue will be more severe and affect people’s health and the extinction of plant and animal species. One of the strategies to rectify the effect of illegal logging is through forest rehabilitation programs.

Incentives to Resolve Environmental Issues

The Malaysian government has implemented various instruments to elevate the issues related to environmental degradation. Green energy has been adopted as it is regarded as one of the best potential solution to deal with climate change. The government has also given various green technology incentives for various sectors and industries to reduce carbon emissions by 45% in 2030 (Hong, 2014; Abdullah, 2017). Table 1 shows the list of tax incentives provided by the government for green projects to mitigate climate change issues.

Table 1: Tax Incentives for Green Project in Malaysia

Environmental Issues	Green Project	Tax incentives and initiatives
Climate change	The promotion on using renewable energy in the form of biomass	In budget 2004, Malaysia first introduced few incentives to encourage green technology in the production of oil palm biomass: <ul style="list-style-type: none"> • Pioneer status will be given to companies participating in a promoted activity or producing a promoted product • An exemption of 70% (100% for value-added products and promoted areas) increased statutory income for five years for any manufacturing company, which reinvests in machinery utilizing oil palm biomass. • Investment tax allowance <ul style="list-style-type: none"> • Tax exemption up to 70% of statutory income for each year of assessment from ITA computed at 60% of additional qualifying capital expenditure incurred within five years for any manufacturing company, which reinvests in the machinery by utilizing oil palm biomass. • The industry related to the promoted area can also qualify for higher tax exemption or allowance if the activities take place in “promoted area.”

Climate change	Green-technology transport	<ul style="list-style-type: none"> • In budget 2009, 100% exemption on import duty and 50% exemption on excise duty on newly built unit (CBU) hybrid cars given to the franchise holder. • In 2011, Malaysia's budget was fully exempt from import and excise duties on hybrid and electric cars and motorcycles. • The government has also provided a soft loan facility of RM 3 billion under the Public Transportation Fund to finance the acquisition of buses and rail companies.
Climate change	Green building	<ul style="list-style-type: none"> • In budget 2010, the first owner with Green Building Index certificates is entitled to tax exemption of 100% of additional capital expenditure and exemption from stamp duties. Therefore, Malaysia had introduced the Malaysia Building Integrated Photovoltaic Technology Application (MBIPV) (2005-2010) to promote increased use of photovoltaic (PV) technology to tap solar energy and generate electricity for buildings. This project aims to lower technology unit costs and increased the BPIV capacity.
Climate change	Forest plantation project	<ul style="list-style-type: none"> • Companies that undertake an approved new forest plantation project <ul style="list-style-type: none"> • They are exempted from payment of income tax for five years. • Companies that undertake an expansion forest plantation project <ul style="list-style-type: none"> • They are exempted from payment of income tax for ten years.
Climate change	Green services	<ul style="list-style-type: none"> • Companies that provide green services that support investments in green projects <ul style="list-style-type: none"> • Income tax exemption of 100% of statutory income from the year of assessment where MIDA's date of application until the year of assessment 2020.
Climate change and waste management	Banned on the issuance of plastic bags	<ul style="list-style-type: none"> • Since 2009, in Penang, the state government has taken action on retailers not providing plastic bags every Monday, then slowly up to Thursday. Two years later, the Penang State started to ban the issuance of plastic bags; instead, the customer will be charged 20 cents per bag if they want to use plastic bags. • In 2010, Selangor also started to stop providing plastic bags every Saturday and charged 20 cents per bag. • In 2011, the Federal Government had seen these actions as one way to promote a green environment; thus, they encouraged to stop the issuance of plastic bags every Saturday nationwide.

(Source: Hong, 2014)

Despite the incentives and exemptions given, the number of GHG emissions is still increasing. It was found that only a limited number of companies are eligible to take the incentives mainly due to money and expertise constraints (Saad & Ariffin, 2019). Thus, the incentives given seem to be ineffective and need to be revised in the future to achieve comprehensive strategies for sustainable environmental control. Furthermore, although many non-profit organisations restlessly put their best efforts to promote environmental awareness and protection to the public, environmental issues remain a significant issue in Malaysia due to various internal and external factors.

In summary, climate change and air pollution are interrelated. Both have contributed to an increase in carbon emissions. It can be seen that the government has become more concerned about the issues of climate change. This is because the impact of climate change is enormous, primarily on human health. Even though the government has made a lot of effort, public awareness of climate change is still low and has become a severe issue (Mei et al., 2016). This negative relationship needs to be overcome to ensure that the mitigation action and public responses are correlated. Thus, effective enforcement needs to be undertaken to reduce carbon emissions to achieve future environmental sustainability development. Implementing a carbon tax will become one of the most effective solutions to mitigate climate change issues. In addition, the rationale behind this is to increase the polluter pay-principle where each individual would be responsible for the pollution created by them.

As stated in *Rancangan Malaysia ke-12 (RMK-12)*, Malaysia is considering implementing a carbon tax to reduce carbon emissions. However, there is no detail on the carbon tax formulation for future sustainable development. Carbon tax is one of the environmental tax policies suggested by the OECD. Many countries that have implemented a carbon tax have proven that it is an excellent strategy to reduce environmental issues. Malaysia should learn from countries that have successfully implemented a carbon tax, for example, Switzerland, France and Denmark. These countries achieved the top three highest scores (between 80.51 to 87.42) in the Environmental Performance Index 2018 (Environmental Performance Index, 2018). This paper aims to give a brief review of literature for future studies in implementing a carbon tax policy in Malaysia by exploring the carbon tax policy and experiences from the three countries that the Malaysian government could adapt and learn.

DISCUSSION

Many countries around the world have taken action on how to mitigate environmental problems. Most countries have become more concerned about reducing the emission of carbon dioxide (World Bank Group, 2019). Thus, they have included a carbon tax into their tax system. Denmark, Switzerland and France are the countries that have imposed a carbon

tax. These countries are the top three in the Environmental Performance Index 2020 (EPI, 2020), with scores of between 80.00 and 82.50 (Table 2). The high scores demonstrate the countries' vital initiatives to establish environmental policy goals and best practices for environmental protection and a strong commitment to resolving environmental issues in protecting human health and ecosystems (Environmental Performance Index, 2018).

Table 2: EPI Score

Countries	EPI Score
Denmark	82.50
Switzerland	81.50
France	80.00

(Sources: Environmental Performance Index, 2020)

Several studies found a positive relationship between a carbon tax and gross domestic product (GDP) and green growth (Klenert & Mattauch, 2016; Oueslati, 2014). The carbon tax has proven to have a positive long-run causal effect on GDP due to the variables considered and used to demonstrate the influence on achieving the sustainable development criteria in an emergent economy (Andrei et al., 2016). Countries with higher revenues from carbon taxes performed better in green growth, including lower emissions (e.g., CO₂ and PM₁₀ levels), decreased water pollutants and reduced energy consumption and production, mainly from fossil fuel sources (Miller & Vela, 2013). The carbon tax is proven to have multiple effects on the countries – it promotes green growth, enhances long-term economic efficiency and contributes to the government's revenue.

Denmark, Switzerland and France are some of the countries that have imposed a carbon tax to mitigate environmental issues, particularly in reducing carbon dioxide emissions. According to EPI (2020), Denmark ranked first with a strong performance in mitigating air quality and climate protection issues. In second place was Switzerland, then followed by France.

Carbon Tax in Denmark

Denmark implemented the carbon tax in 1992 to fulfil the Kyoto obligation in reducing the rate of carbon emissions. By implementing this tax, Denmark aims to use the revenue to provide more subsidies for energy efficiency improvement. This tax also aims to encourage human behaviour

to reduce their energy usage. The carbon tax was imposed on coal, oil, gas and electricity with the initial tax rate at USD16.91 per tCO₂e. The tax was paid by the downstream user and collected by distributors. The gradually increased tax rate (Table 3) has resulted in the reduction of labour tax.

Table 3: Tax Rate in Denmark

Year	1992 – 2000	2005	2008	2015
Tax rate (per tCO ₂ e)	USD16.91	USD16.48	USD24.82	USD27.72

(Sources: Partnership for Market Readiness, 2017)

Companies that voluntarily participate in industrial energy efficiency agreements are entitled to tax rebates. However, these companies need to report annually on their projects and achieve the targeted level to avoid abolishing the agreements. They are also responsible for installing, maintain and ensure the accuracy of meters; electricity meters and gas and oil meters between fuel for production processes and space heating. The Central Customs and Tax Administrations (CCTA) collects the tax and makes refunds for companies that participate in voluntary agreements and issue rebates. The government has decentralised environmental governance among municipalities, thus creating cooperation between political parties and the government and between business and civil society. In decoupling the growth of carbon emission, Denmark has provided several green technology projects as shown in Table 4.

Table 4: Green Technology Project in Denmark

Green Project	Incentives / Initiatives
Green price signal	<ul style="list-style-type: none"> All energy-related CO₂ emission is subjected to price signal. The vehicles were taxed based on vehicle fuel consumption, and it was tax through the registration tax. Petrol fuel is tax higher than diesel.
Green investment	<ul style="list-style-type: none"> Implement green energy by using more renewable technologies such as replacing coal with bioenergy and wind power generation. This is one of the most important renewable energy sources in Denmark. Moreover, Denmark has become the first country to implement green energy and trust investors and support renewable over the last decade.
Eco-innovation	<ul style="list-style-type: none"> Denmark plans to develop low-carbon technology in agriculture and carbon sequestration to reduce GHG emissions by 70% and achieve carbon neutrality in 2050.

(Source: OECD, 2019)

The export of green technology in Denmark has become the fastest-growing, making this country a front runner in green solutions. Denmark has become the world leader in green growth and environmental policy instruments such as taxation, investment, research, and innovation (OECD, 2019). Within 12 years (from 2005 to 2017), Denmark managed to reduce 27.7% of direct and indirect GHG emissions, a significant achievement in protecting the environment.

Carbon Tax in Switzerland

Switzerland is one of the countries that has always made progress towards a green economy. In 2008, a carbon tax was implemented on all hydrocarbon fuels such as coal, oil and natural gas. This tax is meant to achieve the targeted goals of reducing the number of carbon and enhancing voluntary action in energy efficiency and the use of renewables. In 2008, the carbon tax rate was set at a price ceiling on compliance cost at USD10.68 per tCO₂e and significantly increased in 2016 and 2018 (Table 5). The reasons for the increased tax rate were to overcome carbon leakage and promote cost containment. The downstream approach is used to collect tax by taxing consumers on fuel consumptions. An upstream approach is also adopted by charging mineral oil tax from importers at the border crossing or distribution from the warehouse (Partnership for Market Readiness, 2017).

Table 5: Carbon tax rate in Switzerland

Year	2008	2016	2018
Tax rate (per tCO ₂ e)	USD10.68	USD87	USD125

(Sources: Partnership for Market Readiness, 2017)

The Federal Customs Administration (FCA) is the governing body that collects the carbon tax and refunds of tax paid by exempted entities that have already adopted the Emission Trading Scheme. The FCA is allowed to fine individuals or businesses who fail to register, do not keep accurate payment records, make false statements regarding levy payments and attempt to evade the levy. The Federal Office for the Environment works together with FCA, responsible for granting exemptions to companies and monitoring their progress.

To further greening the economy, the government had adopted a well-defined Green Economy Action Plan (GEAP) in 2013 to achieve a

higher greening economy. the country had planned to phase out nuclear energy by 2024, fearing its damage to the country like in Fukushima, Japan (Böhringer & Müller, 2014). Thus, they started utilising renewable energy sources and fully embrace energy efficiency solutions. The Swiss government endorsed several policies that expanded the CO₂ tax base and incentive-based taxation. They also taxed diesel fuel at a higher rate than petrol because the government wants to increase the use of rail to transport heavy goods, which will reduce the emission of CO₂. The carbon tax policy in Switzerland is bundled with several green project incentives to encourage companies to reduce carbon emissions. The types of tax incentives for green technology in Switzerland are shown in Table 6.

Table 6: Green technology Project in Switzerland

Green Project	Incentives / Initiatives
Emission Trade Scheme	<ul style="list-style-type: none"> • Companies that voluntarily commit to reduce CO₂ emissions are exempted from paying tax by participating in a Swiss cap-and-trade emissions trading scheme. • Under this scheme, a free emission allowance can get if the companies commit to reducing CO₂. But for every year, they need to report the emission made by their company; then, the company will be able to offset the total free emission allowance from the first monitoring year. • Any companies that fail to disclose the correct allowance amount will be liable to pay CO₂ tax for each tone of CO₂ emitted. • In the year 2009, 400 companies agreed to take part in this program. The report in 2009 showed that companies emitted only 2.6 million tonnes of CO₂, which is below the permissible quantity of 3.1 million tonnes.
Feed-in-tariffs (FITs)	<ul style="list-style-type: none"> • Feed-in-tariffs is applied among electricity consumers, and consumer was given subsidies through this renewable development.
Energy efficiency in buildings	<ul style="list-style-type: none"> • A joint federal-cantonal program for energy efficiency in buildings was launched in 2010.

(Source: OECD, 2017)

Switzerland had shown a strong commitment to greening the economy. The green tax policy has driven individual and company behaviour in protecting the environment.

Carbon Tax in France

France is the largest country in the European Union and the fifth largest economy among the OECD countries. In France, carbon tax was adopted in 2013, and it was taxed on carbon emission which included natural gas, heating oil, coal, and transport fuels not covered by the European Union

Emission Trading Systems (EU ETS) on households and businesses. The main objective of adopting a carbon tax was to achieve the targeted level of reducing the government's GHG emissions.

The carbon tax was charged at the midstream, which means the supplier paid the tax upon delivery to the consumer. The Ministry of Finance and Public Accounts collects carbon tax revenues and imposes penalties on individuals or businesses that fail to comply with tax payments (World Bank Group, 2019). Over time, the carbon tax policy improved by increasing the tax rate to reflect the individual and industries' growing damage. However, the yearly increment in the carbon tax rate (Table 7) caused society's economic instability; thus, this caused a public outcry. As a result, the carbon tax rate remained similar in 2019 (World Bank Group, 2019).

Table 7: Tax Rate in France

Year	2014	2015	2016	2017	2018	2019
Tax rate (per tCO₂e)	USD8	USD17.50	USD24	USD32.15	USD50	USD50

(Sources: Partnership for Market Readiness, 2017)

Bundled with the increase of the carbon tax rate is a reduction in the corporate income tax rate, labour tax and other types of taxes to maintain the public's tax expenses and ensure political stability. Besides reducing the corporate income tax rate, the government also provided energy efficiency tax incentives for low-income households and all sectors covered by EU ETS. Companies can get a partial or complete exemption from paying carbon tax (Partnership for Market Readiness, 2017). Few incentives were also provided to encourage companies to invest in sustainable transport, thermal retrofits, and clean technologies as shown in Table 8.

Table 8: Green technology Project in France

Green Project	Incentives / Initiatives
Green taxes	<ul style="list-style-type: none"> • Increase the rate of a general tax on polluting activities. • Reduce the number of vehicle fuels that use diesel by taxing more on diesel fuel. • It has abolished some of the subsidies that resulted in environmental costs, such as the domestic tax on coal, natural gases and biofuels. • Reduce the rate of VAT on fertilizers and hygiene products. • In 2020, France decided to impose eco-tax on airlines flying from its airport to support the environment.
The Bonus-Malus Car Scheme	<ul style="list-style-type: none"> • This scheme was set up in 2008, which is subsidies to purchase new low-emission private vehicles and tax the acquisition of the most energy-intensive vehicles. • But then, in 2015, few changes were set up to reduce the use of diesel fuels. It only applies for electric and hybrid vehicles emitting not more than 110g CO₂/km to be eligible for the bonus.
Agroecology: A New Model for Agriculture	<ul style="list-style-type: none"> • Since 2009, Dephy Network has undergone few experiments to find out the best practice in reducing plant protection products. Thus, in 2014, 1900 farms managed to reduce plant protection products by maintaining excellent productivity levels. • This new practice aims to educate agricultural science and ecology and financial support for farmers to switch to agroecological practices.

(Source: OECD, 2016)

France has made progress on its green tax in controlling carbon emissions. The rate of carbon emissions is decreasing, which demonstrates its effectiveness. France also has successfully improved its economic structure through carbon tax collection (Figure 5). France’s carbon tax collection contributes to more than one-third of global carbon tax revenue (World Bank Group, 2019).

Carbon Tax Collection and Disbursement in Denmark, Switzerland and France

The carbon tax inculcates environmental protection behaviour by reducing the usage of products that contribute to environmental problems. In terms of tax collection, Figure 5 shows revenue collection from carbon taxes in Denmark, Switzerland and France for the year 2017. France had the highest collection of carbon tax revenue and contributions to GDP, followed by Switzerland and Denmark. The implementation of the carbon tax in the three countries is very successful in reducing environmental issues and increasing tax collection for economic and social development.

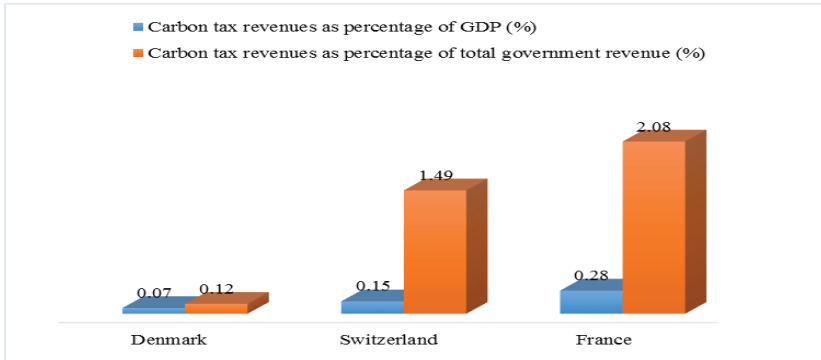


Figure 5: Carbon Tax Revenues as a Percentage of Gross Domestic Product (GDP) and Total Government Revenue

(Source: Yunis & Aliakbari, 2020)

Table 9 presents findings from the analysis on implementing carbon tax in Denmark, Switzerland and France. Denmark has the longest history of carbon tax policy. The use of revenue collection from carbon tax can be divided into two categories: social protection scheme and environmental incentives. Social protection scheme includes providing insurance, pension and compensation. Environmental incentives mean the allocation of money to develop technological innovations in renewable energy, energy efficiency, and improved use of natural resources.

Table 9: The Implementation of Carbon Tax in Denmark, Switzerland and France

Countries	Year of implementation	Reduced other tax	Use of Tax Revenues		Reduced number of emissions
			Social protection scheme	Environmental incentives	
Denmark	1992	Yes	Yes	Yes	Yes
Switzerland	2008	No	Yes	Yes	Yes
France	2013	Yes	No	Yes	Yes

In Denmark, approximately 60% is returned to society through the reduction of social insurance, the increment of pension contribution and compensation of administrative expenses for small businesses with limited payrolls and the remaining 40% of the carbon tax collection is allocated for green project incentives (Partnership for Market Readiness, 2017).

Switzerland distributed a large portion of the carbon tax collection to society. Nearly 60% of the tax collected is given back to the residents through health insurance and a deduction on their insurance premium. The remaining 40% of the revenue collection were allocated for green project incentives to implement the 10-year building program for climate-friendly building renovations (Partnership for Market Readiness, 2017). In France, revenue distribution was given only to low-income groups by providing energy fees assistance (Partnership for Market Readiness, 2017).

CONCLUSION

Environmental issues in Malaysia are at a troubling stage. Although the government provides green technology incentives, if strict enforcement and new policies are not implemented, Malaysia will continue facing various social and economic issues. One of the most efficient and effective ways to promote green growth is implementing a carbon tax. The OECD encourages all countries to implement the tax policy because it has multiple benefits including protecting the environment and economic development. The policy also influences human behaviour in protecting the environment and as a source of income.

Denmark, Switzerland and France are some of the countries that have successfully implemented the carbon tax. All the countries have bundled policies, including reducing other types of taxation, such as labour tax and corporate tax. This will balance the economic structure, and people will be more acceptable of the new policy. Carbon tax collections of the three countries increased every year, proving that the tax policy is a good source of income and improved GDPs. Revenues from carbon tax collection were used by investing in energy efficiency and distributed to society in terms of social protection schemes such as health insurance, pension, and incentives. Malaysia could learn from the three countries' experiences in carbon tax. The government should now be prepared for the development and changes of the tax system. Some Asian countries like China and Vietnam made the environmental tax reform in their tax system by imposing an environmental tax on several products and reducing labour tax. Indonesia and Thailand are currently exploring an extensive research phase to have environmental tax reform. A proper design of environmental tax policy needs to be implemented

not only to ensure that both objectives – reduce pollution and increase tax collection – are met. Furthermore, with an unstable economic position due to various reasons, including the COVID-19 pandemic, Malaysia is at the right time to expand its tax bases.

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REFERENCES

- Abdullah, S. M. (2017). Care for the environment through green initiatives. Retrieved May 23, 2020, from News Strait Times website: <https://www.nst.com.my/opinion/columnist/2017/04/223891/care-environment-through-green-initiatives>
- Afroz, R., Hassan, M. N., & Ibrahim, N. A. (2003). Review of air pollution and health impacts in Malaysia. *Environmental Research*, 92(2), 71–77. [https://doi.org/10.1016/S0013-9351\(02\)00059-2](https://doi.org/10.1016/S0013-9351(02)00059-2)
- Afroz, R., Masud, M. M., Akhtar, R., & Duasa, J. (2014). Water pollution: Challenges and future direction for water resource management policies in Malaysia. *Environment and Urbanization ASIA*, 5(1), 63–81. <https://doi.org/10.1177/0975425314521544>
- Afroz, R., & Rahman, A. (2017). Health impact of river water pollution in Malaysia. *International Journal of Advanced and Applied Sciences*, 4(5), 78–85.
- Akter, A., Noor, M. J. M. M., Goto, M., Khanam, S., Parvez, A., & Rasheduzzaman, M. (2019). Landslide disaster in Malaysia: An overview. *International Journal of Innovative Research and Development*, 8(6), 292–302. <https://doi.org/10.24940/ijird/2019/v8/i6/jun19058>

- Andrei, J., Mieila, M., Popescu, G. H., Nica, E., & Cristina, M. (2016). The impact and determinants of environmental taxation on economic growth communities in Romania. *Energies*, 9(11), 902. <https://doi.org/10.3390/en9110902>
- Astro Awani. (2015). El Nino: “Cuaca panas sehebat 1997, dijangka berlarutan hingga Mac 2016” | Astro Awani. Retrieved August 27, 2021, from Astro Awani website: <https://www.astroawani.com/berita-malaysia/el-nino-cuaca-panas-sehebat-1997-dijangka-berlarutan-hingga-mac-2016-64550>
- Badgie, D., Armi, M., Samah, A., Manaf, L. A., & Muda, A. B. (2012). Assessment of municipal solid waste composition in Malaysia: Management, practice, and challenges. *Political Journal Environment Study*, 21(3), 539–547.
- Baharin, H. B. (2019). Kebakaran belukar akibat cuaca panas. Retrieved August 27, 2021, from Berita Harian website: <https://www.bharian.com.my/berita/wilayah/2019/03/537351/kebakaran-belukar-akibat-cuaca-panas>
- Bendix, A. (2019). Malaysian town covered in 19,000 tons of plastic waste: photos - Business Insider. Retrieved January 15, 2021, from Business Insider website: <https://www.businessinsider.com/malaysia-town-plastic-waste-china-photos-2019-2>
- Bernama. (2019a). 5,848 victims of chemical pollution treated since March 8. Retrieved May 25, 2020, from The Sun Daily website: <https://www.bernama.com/en/general/news.php?id=1707401>
- Bernama. (2019b). Sungai Kim Kim case: Judge visits used tyre processing factory site. Retrieved May 25, 2020, from Malay Mail website: <https://www.bernama.com/en/news.php?id=1796298>
- Böhringer, C., & Müller, A. (2014). Environmental tax reforms in Switzerland a computable general equilibrium impact Analysis. *Swiss Journal of Economics and Statistics*, 150(1), 1–21.

- Bostock, B. (2020). Malaysia returns 4,120 tons of plastic trash to US, France, Canada, UK - Business Insider. Retrieved January 29, 2021, from Business Insider website: <https://www.businessinsider.com/malaysia-return-plastic-trash-rich-countries-us-france-canada-uk-2020-1>
- Brooks, A. L., Wang, S., & Jambeck, J. R. (2018). The Chinese import ban and its impact on global plastic waste trade. *Science Advances*, 4(6), 1–7.
- Bruin, K. C. De, & Yakut, A. M. (2018). The economic and environmental impacts of increasing the Irish carbon tax. In *Economic & Social Research Institute*.
- Callan, S. J., & Thomas, J. M. (2009). Environmental Economic and Management: Theory, Policy and Applications. In *South-Western Cengage Learning* (Fifth Edit, p. 64). Joe Sabatino.
- Chan, N. W. (1998). Responding to landslide hazards in rapidly developing Malaysia : A case of economics versus environmental protection. *Disaster Prevention and Management*, 7(1), 14–27.
- Chin, Y. S. J., De Pretto, L., Thuppil, V., & Ashfold, M. J. (2019). Public awareness and support for environmental protection-A focus on air pollution in peninsular Malaysia. *PLoS ONE*, 14(3), 1–21. <https://doi.org/10.1371/journal.pone.0212206>
- Chu, M. M. (2019). Yeo: Sg Kim Kim clean-up to cost RM6.4mil | The Star. Retrieved May 23, 2020, from The Star website: <https://www.thestar.com.my/news/nation/2019/03/21/yeo-sg-kim-kim-cleanup-to-cost-rm65bil/#:~:text=KUALA LUMPUR%3A Cleaning up pollutants,would be more than RM10mil.>
- Climate Change Performance Index (CCPI). (2021). Climate change performance index 2021. In *Climate Action Network International*. Retrieved from <https://www.germanwatch.org/en/CCPI>
- Department of Environment. (2019). Laporan status kualiti udara dan jerebu dalam negara. In *Department of Environment*.

- Department of Environment and Water. (2020). States and branches. Retrieved February 26, 2021, from Department of Environment and Water website: <https://www.doe.gov.my/portalv1/en/tentang-jas/struktur-organisasi/negeri-cawangan-2>
- Department of Statistics Malaysia. (2015). Compendium of Environment Statistics Malaysia 2015. In *Department of Statistics Malaysia*. Department of Statistics Malaysia.
- Department of Statistics Malaysia. (2016). Compendium of Environment Statistics 2016. In *Department of Statistics Malaysia*. Department of Statistics Malaysia.
- Department of Statistics Malaysia. (2017). Compendium of Environment Statistics 2017. In *Department of Statistics Malaysia*. Department of Statistics Malaysia.
- Department of Statistics Malaysia. (2018). Compendium of Environment Statistics 2018. In *Department of Statistics Malaysia*. Department of Statistics Malaysia. <https://doi.org/10.5860/choice.29-3644>
- Department of Statistics Malaysia. (2019). Compendium of Environment Statistics 2019. In *Department of Statistics Malaysia*. Department of Statistics Malaysia. <https://doi.org/10.1017/CBO9781107415324.004>
- Environmental Performance Index. (2020). Environmental Performance Index 2020. In *Yale Center for Environmental Law and Policy*. <https://doi.org/10.1002/9781118445112.stat03789.pub2>
- Environmental Performance Index. (2018). 2018 Environmental Performance Index (EPI). In *Yale Center for Environmental Law and Policy*. <https://doi.org/10.13140/RG.2.2.34995.12328>
- Griender, M., Bärenbold, R., Schmitz, J., & Schubert, R. (2021). The behavioral effects of carbon taxes – Experimental evidence. *SSRN Electronic Journal*, 1–32. <https://doi.org/10.2139/ssrn.3628516>

- Hassan, M. N., Rahman, R. A., Chong, T. L., Zakaria, Z., & Awang, M. (2000). Waste recycling in Malaysia : Problems and prospects. *Waste Management and Research*, 18(4), 320–328.
- Hitam, M. Bin, & Borhan, H. B. (2012). FDI, growth and the environment: Impact on quality of life in Malaysia. *Procedia - Social and Behavioral Sciences*, 50, 333–342. Elsevier B.V. <https://doi.org/10.1016/j.sbspro.2012.08.038>
- Hong, L. C. (2014). Environmental tax laws in Malaysia today. *National Conference on Natural Resources*, 1(2), 7–9.
- Hossain, M. A. (2014). *Assessment of industrial pollution and water quality index of Tunggak River at Gebeng Pahang, Malaysia*. Universiti Malaysia Pahang.
- Kana, G. (2019). Malaysia needs ‘smart taxation’.’ Retrieved August 25, 2021, from The Star website: <https://www.thestar.com.my/business/business-news/2019/09/26/malaysia-needs-smart-taxation>
- Khalil, N., Husin, H. N., Mahat, N., & Nasir, N. (2011). Sustainable environment : Issues and solutions from the perspective of facility managers. *Procedia Engineering*, 20, 458–465. <https://doi.org/10.1016/j.proeng.2011.11.188>
- Khalit, A. R. (2006). Current state of water environment in Malaysia. In *Water Environment Partnership in Asia*.
- Klenert, D., & Mattauch, L. (2016). How to make a carbon tax reform progressive: The role of subsistence consumption. *Economics Letters*, 138, 100–103. <https://doi.org/10.1016/j.econlet.2015.11.019>
- Lai, C. H., Chan, N. W., & Roy, R. (2017). Understanding public perception of and participation in non-revenue water management in Malaysia to support urban water policy. *Water (Switzerland)*, 9(1). <https://doi.org/10.3390/w9010026>

- Lim, A. (2020). Vehicles registrations in Malaysia reach 31.2 million units as of 2019. Retrieved January 16, 2021, from Paultan.Org website: <https://paultan.org/2020/04/02/vehicles-registrations-in-malaysia-31-2-mil-as-of-2019/>
- Mahmud, M. (2013). Assessment of atmospheric impacts of biomass open burning in Kalimantan, Borneo during 2004. *Atmospheric Environment*, 78, 242–249. <https://doi.org/10.1016/j.atmosenv.2012.03.019>
- Mei, N. S., Wai, C. W., & Ahamad, R. (2016). Environmental awareness and behaviour index for Malaysia. *Procedia - Social and Behavioral Sciences*, 222(07), 668–675. The Author(s). <https://doi.org/10.1016/j.sbspro.2016.05.223>
- MESTECC. (2018). Malaysia third National Communication and second Biennial Update Report to the United Nations Framework Convention on Climate Change. In *Ministry Of Energy, Science, Technology, Environment And Climate Change*. Retrieved from https://www.mestecc.gov.my/web/documents/jqhRxaP3ff20SNzCaBfiyqiOdsLhuBa9Jyz5D0C_gQ0
- Miller, S. J., & Vela, M. A. (2013). Are environmentally related taxes effective? In *Inter-American Development Bank*.
- Ministry of Health Malaysia. (2016). Malaysia health systems research report. In *Ministry of Health Malaysia*.
- Mohammad, N. (2011). Environmental law and policy practices in Malaysia : An empirical study. *Australian Journal of Basic and Applied Sciences*, 5(9), 1248–1260.
- Mokhtar, M., & Murad, M. W. (2010). Issues and framework of environmental health in Malaysia. *Journal of Environmental Health*, 72(8), 24–29.
- Mustafa, M., & Rusli, M. H. M. (2016). The position of environmental law in Malaysia in dealing with domestic and regional air pollution problems. *Jurnal Sultan Alauddin Sulaiman Shah*, 3(2), 155–165.

- New Straits Times. (2018). How the gov't can meet GST revenue shortfall from SST reintroduction. Retrieved July 2, 2021, from New Straits Time website: <https://www.nst.com.my/business/2018/05/369421/how-govt-can-meet-gst-revenue-shortfall-sst-reintroduction>
- Nizam, F. (2018). Terengganu loses millions to illegal logging. Retrieved May 26, 2020, from News Strait Times website: <https://www.nst.com.my/news/exclusive/2018/08/398094/exclusive-terengganu-loses-millions-illegal-logging#:~:text=KUALA TERENGGANU%3A The Terengganu government,timber with a high value.>
- OECD. (2011). Taxation, innovation and the environment. Environmental Taxation : A Guide for Policy Makers. In *OECD*. <https://doi.org/10.1093/law/9780198790952.003.0040>
- OECD. (2016). OECD Environmental Performance Reviews France 2016. In *OECD*. France: OECD Publishing.
- OECD. (2017). OECD Environmental Performance Reviews Switzerland 2017. In *OECD*. Paris: OECD Publishing.
- OECD. (2019). OECD Environmental Performance Reviews Denmark 2019. In *OECD*. Denmark: OECD Publishing.
- Othman, J., Sahani, M., Mahmud, M., & Sheikh, K. (2014). Transboundary smoke haze pollution in Malaysia : Inpatient health impacts and economic valuation. *Environmental Pollution*, 189, 194–201. <https://doi.org/10.1016/j.envpol.2014.03.010>
- Oueslati, W. (2014). Environmental tax reform: Short-term versus long-term macroeconomic effects. *Journal of Macroeconomics*, 40, 190–201. <https://doi.org/10.1016/j.jmacro.2014.02.004>
- Pang, Y. L., & Abdullah, A. Z. (2013). Current status of textile industry wastewater management and research progress in Malaysia: A review. *Clean Soil Air Water*, 41, 751–764. <https://doi.org/10.1002/clen.201000318>

- Partnership for Market Readiness. (2017). Carbon tax guide: A hand book for policy makers. In *World Bank Group*. Wanshington: World Bank.
- Prime Minister's Office of Malaysia. (2020). Kenyataan media MKN: Perincian perintah kawalan pergerakan. Retrieved August 25, 2021, from Prime Minister's Office of Malaysia website: <https://www.pmo.gov.my/2020/03/kenyatan-media-mkn-18-mac-2020/>
- Rahman, H. A. (2009). Global climate change and its effects on human habitat and environment in Malaysia. *Malaysian Journal of Environmental Management*, 10(2), 17–32.
- Rahman, H. A. (2018). Climate change scenarios in Malaysia: Engaging the public. *International Journal of Malay-Nusantara Studies*, 1(2), 55–77.
- Razak, M. I. M., Ahmad, I., Bujang, I., Talib, A. H., & Ibrahim, Z. (2013). Economics of air pollution in Malaysia. *International Journal of Humanities and Social Science Economics*, 3(13), 173–177.
- Saad, N., & Ariffin, Z. Z. (2019). Implementation of green tax in Malaysia: An exploratory study. *Growth*, 6(1), 12–19. <https://doi.org/10.20448/journal.511.2019.61.12.19>
- Salim, M. R., Othman, D. F., & Marzuky, A. P. S. (1994). Problems and challenges of solid waste management: A case study in South Johor, Malaysia. *Jurnal Kejuruteraan Awam*, 7(1), 1–8.
- Tahir, W. (2015). Banjir kuning bagai tsunami ancam Kelantan. Retrieved August 27, 2021, from Berita Harian website: <https://www.bharian.com.my/taxonomy/term/61/2015/01/29743/banjir-kuning-bagai-tsunami-ancam-kelantan>
- Tang, K. H. D. (2019). Climate change in Malaysia: Trends, contributors, impacts, mitigation and adaptations. *Science of the Total Environment*, 650, 1858–1871. <https://doi.org/10.1016/j.scitotenv.2018.09.316>
- The Star. (2019). Govt needs to widen tax base. Retrieved August 25, 2021, from The Star website: <https://www.thestar.com.my/news/nation/2019/09/30/govt-needs-to-widen-tax-base>

- Trading Economics. (2020). Malaysia government revenues. Retrieved January 17, 2021, from Trading Economics website: <https://tradingeconomics.com/malaysia/government-revenues>
- UN. (2017). Environmental tax reform in Asia and the Pacific. In *United Nation ESCAP*. Retrieved from https://www.unescap.org/sites/default/files/S2_Environmental-Tax-Reform.pdf
- UNFCCC. (2020a). Paris Agreement. Retrieved February 10, 2021, from United National Framework Convention on Climate Change (UNFCCC) website: https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
- UNFCCC. (2020b). What is the Kyoto Protocol? Retrieved February 10, 2021, from United National Framework Convention on Climate Change (UNFCCC) website: https://unfccc.int/kyoto_protocol
- World Bank Group. (2019). State and trends of carbon pricing 2019. In *State and Trends of Carbon Pricing*. Washington, D.C. Retrieved from <https://openknowledge.worldbank.org/handle/10986/31755>
- Yunis, J., & Aliakbari, E. (2020). Carbon pricing in high-income OECD countries. In *Fraser Institute*. Fraser Institution. Retrieved from Fraser Institution website: Carbon Pricing in High-Income OECD Countries