


Sustainable petrol subsidy program in Malaysia



 Yuen Yee Yen^{1*}
Lai Jing Wen²
Suganthi Ramasamy³
Muhammad Farooq⁴

^{1,2,3,4}Faculty of Business, Jalan Ayer Keroh Lama, 75450 Bukit Beruang, Melaka, Malaysia.

¹Email: yyuen@mmu.edu.my

²Email: laijingw@gmail.com

³Email: suganthi.ramasamy@mmu.edu.my

⁴Email: farooq.buzdar2@gmail.com



(+ Corresponding author)

ABSTRACT

Article History

Received: 30 August 2023

Revised: 17 November 2023

Accepted: 15 December 2023

Published: 22 December 2023

Keywords

B40

M40

Malaysia

Petrol subsidy program

Sustainability

Welfare.

The purpose of this research is to propose a sustainable petrol subsidy program to enhance the effectiveness of the Malaysian government in subsidizing petrol to B40 and M40 households. B40 and M40 households, which suffered from poverty due to the COVID-19 pandemic. However, at the present moment, there is very limited study on the sustainable petrol subsidy program for B40 and M40 households. This research adopts a quantitative research method. One hundred and fifty questionnaires were disseminated to Malaysian B40 and M40 households. Sixty households responded to the questionnaire. This paper utilized cross-sectional design to test hypotheses that contribute to the sustainability of the petrol subsidy program in Malaysia post-COVID-19 pandemic. This paper has unique and important findings: household welfare, fiscal and macroeconomic issues, and environmental pollution are the most important factors that contribute to the sustainability of petrol subsidies in Malaysia. This research is the pioneering research in Malaysia that provides comprehensive insights on sustainable petrol subsidy, leading to a significant implication on the socio-economic wellbeing of the B40 and M40 households. It provides unique contributions to the government petrol subsidy in Malaysia, as it is one of the very limited studies in Malaysia post-COVID-19 pandemic.

Contribution/ Originality: This study is one of the pioneers to propose a sustainable petrol subsidy program that will benefit the Malaysian government, policymakers, and practitioners. There is an urgent need to enhance the effectiveness of the Malaysian government in subsidizing petrol for B40 and M40 households. Hence, this study was conducted.

1. INTRODUCTION

According to the latest Budget 2024 announcement by Prime Minister Malaysia, a new petrol subsidy program is in the pipeline for the low-income (B40) and middle-income (M40) households (Ministry of Finance Malaysia, 2023). The government plans to rationalize petrol subsidy for B40 and M40 households to ensure that petrol subsidies are targeted at the needy (Ministry of Finance Malaysia, 2023). Under this latest Petrol Subsidy Plan, the petrol prices for RON 95 and diesel are set at RM 2.05 and RM 2.15 per litre (Ministry of Finance Malaysia, 2023). The government supports subsidizing petrol prices of about 30 cents per litre (Ministry of Finance Malaysia, 2023).

Over the past 10 years, inadequate petrol subsidies have been causing an overflowing fiscal deficit and increasing national debt, primarily in Malaysia (Ministry of Finance Malaysia, 2023). The number of government expenditures went to a tremendous petrol subsidy, which is about RM 24.2 billion out of RM 241.02 billion of the

expenditure allocated on petrol (Gabhane & Gabhane, 2021; Ministry of Finance Malaysia, 2023). The subsidy cost increased when the Organization of the Petroleum Exporting Countries (OPEC) cut down on petrol production, pushing global petrol prices to be extraordinarily high (Liu & Xu, 2022). However, as of today, there is a lack of research that proposes a sustainable petrol subsidy program from the perspective of petrol subsidy beneficiaries.

This paper starts with an introduction of government petrol subsidy initiatives, followed by a comprehensive literature review to identify crucial research gaps. Research methodology and approach used for data collection are explained before the results are displayed and discussed. This paper ends by discussing research implications and providing practical recommendations to the Malaysian government, policymakers, and practitioners.

2. LITERATURE REVIEW

On a global scale, fossil fuel consumption subsidies doubled from the previous year to an all-time high of USD 1 trillion in 2022 (Elliott, Bernstein, & Hoffmann, 2022). In Malaysia, the government is expected to spend an additional Ringgit Malaysia 4.22 billion this year on the petrol subsidy due to increasing global oil prices. The subsidy is used to maintain ceiling prices for petrol (Ministry of Finance Malaysia, 2023).

Malaysia's petrol subsidy system has traditionally been generalized, with all citizens benefiting equally from lower petrol prices. This approach has been criticized for disproportionately benefiting higher-income individuals. Low-income (B40) and middle-income (M40) households are struggling with the rising petrol price post-COVID-19 pandemic (Ministry of Finance Malaysia, 2023). When petrol prices rise, the prices of goods and services in the country will go up following the rise in transportation and delivery costs (Federation of Malaysian Consumer Associations (FOMCA), 2022). When petrol prices rise by 100%, B40 households in Malaysia who have an average monthly living cost of Ringgit Malaysia 931 will lose Ringgit Malaysia 65.2 or 20% of their real income (Loo & Harun, 2019). Rising petrol prices will adversely reduce the purchasing power of B40 and M40 households. With regards to the Kad95 petrol subsidy payment system mentioned in Budget 2020, this payment system is not standardized for B40 and M40 households, making it hard to ensure that the petrol subsidy reaches the targeted households (Petrol Dealers Association of Malaysia, 2022). Furthermore, the petrol industry in Malaysia also faces difficulty in integrating the Kad95 petrol subsidy system into the existing payment terminals at petrol stations, which is likely to make room for manipulation, leading to subsidized Research Octane Number 95 petrol being sold to ineligible parties (Petrol Dealers Association of Malaysia, 2022).

Petrol consumption in Malaysia is primarily driven by low relative petrol prices as a result of the country's petrol subsidy policy on transportation petrols such as petrol, diesel, and electricity. Total petrol consumption in Malaysia grew from 1210.39 kg per capita in 1990 to 2967.54 kg in 2018, increasing by 2% annually over 14 years, compared to other ASEAN members such as Singapore (1%), Indonesia (1%), Indonesia (1%) and the Philippines (0.1%) (Ministry of Finance Malaysia, 2023). Over the past 10 years, petrol subsidies have been causing an overflowing fiscal deficit and increasing national debt, primarily in Malaysia. The number of government expenditures went to a tremendous petrol subsidy, which is about RM24.2 billion out of RM 241.02 billion of the expenditure allocated on petrol in 2021 (Ministry of Finance Malaysia, 2023). The condition became worse with a huge economic and fiscal cost when global petrol prices were growing (Gidigbi, Bello, & Babarinde, 2019; Sulaiman, Harun, & Yusuf, 2022; Vivanco, Nechifor, Freire-González, & Calzadilla, 2021).

Petrol subsidy in Malaysia is regressive, compounded by the lack of a comprehensive petrol subsidy program to buffer the negative impact of hiking petrol prices on B40 and M40 households. Petrol subsidies are growing each year, and without sustainable petrol subsidy program they might threaten the achievement of long-term national development goals. Ramli, Kadir, Ismail, Othman, and Melo (2021) found that 87% of subsidy payments are made to households living above the poverty line rather than to the poor, and more than half of subsidy payments are made to the richest 40% of households. According to McCulloch, Moerenhout, and Yang (2021), rising energy consumption and petrol price fluctuations endanger the public finances of the country. The petroleum subsidy in

Malaysia is higher than the subsidy ratio in other important sectors, including health, education, and infrastructure. The recent COVID-19 pandemic creates a great barrier to Malaysia's economic growth and national productivity, causing the petrol subsidy to have a greater economic impact on B40 and M40 households than ever before (Ramli et al., 2021).

There is a lack of a sustainable petrol subsidy program in Malaysia at the present moment. At the present moment, it is subject to the government's discretion whether the petrol revenue will be used to reduce the deficit in the national budget or for the welfare of people, given the fact that petrol income is not distributed evenly between the B40 and M40 populations most of the time (Nweke, 2019). Figure 1 illustrates the research flow of this study.



Figure 1. Research flow.

3. RESEARCH METHOD

Sixty households with income less than RM 4850 (B40 households) and between RM 4850 and RM 10959 (M40 households) (Ministry of Finance Malaysia, 2023) participated in this study from July 2021 to September 2021. Questionnaire was administered to 60 B40 and M40 households in the central regions of Malaysia. Respondents were identified via the purposive sampling method, where participating households were asked to confirm their household incomes before they were permitted to answer the questionnaire. Being one of the very limited petrol subsidy studies in Malaysia, this research method serves as an important foundation for future petrol subsidy studies in B40 and M40 households.

Section A consists of questions capturing respondents' demographic profiles. Section B consists of 60 questions measuring key factors such as fiscal and macroeconomic issues, environmental pollution, and household welfare that contribute to the sustainability of petrol subsidies in Malaysia post-COVID-19 pandemic. Respondents were requested to follow instructions by rating each construct on a five-point Likert scale, with 1 (strongly disagree), 2 (disagree), 3 (moderate), 4 (agree), and 5 (strongly agree).

4. RESULTS

According to Table 1, M40 households (mean rating = 3.51) are more likely than B40 households (mean rating = 3.35) to support a sustainable petrol subsidy program in Malaysia. M40 households are more likely to perceive that a sustainable petrol subsidy program needs to take into account Fiscal and macroeconomic issues, such as aggregated demand for goods and services, inflation, and the growth of the economy (mean rating = 3.61).

Compared to B40 households (mean rating = 3.61), M40 households (mean rating = 3.73) are also more likely to perceive that a sustainable petrol subsidy program in Malaysia should take into account their household welfare.

M40 households are also more inclined to take into account the environmental pollution impact (mean rating = 3.97) when proposing a sustainable petrol subsidy program. They are concerned that the environmental pollution resulting from substantial petrol usage in Malaysia may deteriorate public health. Compared to M40 households, B40 households seem to have less concern over the environmental pollution resulting from substantial petrol usage in Malaysia (mean rating = 3.69).

Table 1. Key concern of B40 and M40 households on petrol subsidy program.

Items	B40 households	M40 households
1. Fiscal and macroeconomic	3.58	3.61
2. Household welfare	3.61	3.73
3. Environmental pollution	3.97	3.69
4. Sustainable petrol subsidy	3.35	3.51

Table 2 presents the important findings of this study. M40 and B40 households perceive household welfare as the most critical factor for petrol subsidy sustainability in Malaysia. The second critical factor in the sustainability of gasoline subsidies is fiscal and macroeconomic issues. Environmental pollution is the third essential factor that contributes to the sustainability of the gasoline subsidy program. M40 households perceive household welfare, fiscal and macroeconomic issues and environmental pollution as more important compared to B40 households.

Table 2. Key elements of sustainable petrol subsidy program.

Model	B40 households	M40 households	t	Sig.	Collinearity statistics	
	Beta coefficient	Beta coefficient			Tolerance	Variance inflation factor
Constant	2.054	2.214	4.723	0.000	0.000	0.000
1. Fiscal and macroeconomic	0.300	0.358	2.823	0.007	0.705	1.418
2. Household welfare	0.413	0.433	3.617	0.001	0.790	1.266
3. Environmental pollution	0.318	0.334	2.560	0.001	0.763	1.311

Dependent variable: Sustainability of petrol subsidy

5. DISCUSSION AND RECOMMENDATION

This study discovers that B40 and M40 households in Malaysia are greatly concerned about the fiscal and macroeconomic impact of petrol subsidies in Malaysia. There are worries that the COVID-19 pandemic may bring a long-term economic recession at the macroeconomic level. B40 and M40 households perceive a sustainable petrol subsidy program as an urgent measure to provide extra fiscal space to allow the Malaysian government to promptly manage its debts and finances in times of emergency and macroeconomic recession. A sustainable petrol subsidy program should take into account the fiscal and macroeconomic impact to ensure that the government is capable of restoring fiscal consolidation and strengthening public finances post-COVID-19 pandemic. This finding is new and very important as it enriches the finding of the most recent study, [Benkhodja, Fromentin, and Ma \(2023\)](#), that petrol subsidy reform in developing countries will result in higher employment and greater labour force participation among B40 and M40 households.

This finding also ascertains the result of another most recent study in China, [Kang, Yu, and Wan \(2023\)](#), that sustainable petrol subsidies must be applied to B40 and M40 households in developing countries, as when the petrol price crosses \$100 per barrel, the petrol prices will be unaffordable to B40 and M40 households. According to the latest International Monetary Fund Fossil Petrol Subsidy Data in 2023, the petrol subsidy comprises 32.9% of the overall government budget in Malaysia, a relatively high ratio compared with the world average of 8.1% ([Black, Liu, Parry, & Vernon, 2023](#)). As the continued increase in the petrol price post-COVID-19 pandemic makes petrol subsidies unaffordable, mounting fiscal pressure pushes the Malaysian government to implement a sustainable petrol subsidy program ([Black et al., 2023](#)).

B40 and M40 households that participate in this study think that a sustainable petrol subsidy program must offer budget relief to the Malaysian government. This finding concurs with the finding of [Iba, Bariah, Musrizal, and Hendiyan \(2022\)](#) that petrol subsidies consume a substantial portion of a country's budgets, and government should reallocate part of the budget from petrol subsidies to more critical areas such as healthcare and infrastructure development, which are essential to the livelihood of B40 and M40 households. By implementing targeted petrol subsidies for the households in need, the Malaysian government is able to redirect funds to the six key national key result areas (reducing crime, fighting corruption, offering quality education, reducing poverty, improving rural development, and improving public transport) to drive Malaysia's socio-economic development and improve overall public service delivery ([Ministry of Finance Malaysia, 2023](#)).

As continuous petrol subsidies can worsen budget deficits in the country, B40 and M40 households that participate in this study hope that a sustainable petrol subsidy program is in place to help the Malaysian

government maintain fiscal flexibility and reduce the risk of financial crises at the macroeconomic level. B40 and M40 respondents in this study think that targeted petrol subsidies are more sustainable than generalized petrol subsidies in the long run.

This is probably because the targeted petrol subsidy allows the Malaysian government to allocate financial resources more efficiently, while generalized petrol subsidy will probably encourage wasteful consumption. B40 and M40 households that participate in this study think that a sustainable petrol subsidy program in Malaysia should be aligned with the current macroeconomic economy to avoid unintended consequences for the economics of the country. B40 and M40 households that participate in this study also think that market-driven petrol prices should be imposed on T20 households that own luxury cars by allowing supply and demand forces in the market to determine the petrol prices that T20 households need to pay.

In addition, B40 and M40 households also hope that a sustainable petrol subsidy program will be beneficial to society. They are concerned over the unequal welfare resulting from inadequate distribution of the gasoline subsidy. The current petrol subsidy program in Malaysia allows every citizen, regardless of their economic power, to buy subsidized petrol at a low price, which results in a disproportionate share of the welfare of the society. In order to resolve this social welfare inequality, M40 households wish that all additional revenues earned by the government from petrol prices must be reallocated to social welfare through effective social intervention. While at the same time, the welfare of middle-income households, who are neither rich nor poor, should not be ignored because of low-income households to prevent them from falling into poverty (Asgarian, Hejazi, & Khosroshahi, 2023). Compared to high-income households, low-income households tend to consume more petrol. Poor households in developing countries mainly use petrol for lighting and transportation (Liu & Xu, 2022). This finding is important to the Malaysian government as it is the ultimate hope of B40 and M40 households in Malaysia that petrol subsidies will lead to poverty reduction, while B40 and M40 households hope to enjoy petrol prices below the market price as a way of enhancing the welfare of the poor households.

When a sustainable petrol subsidy program is absent in Malaysia, B40 and M40 households will experience higher petrol prices for lighting and private transport (Asgarian et al., 2023). Moreover, there will be an indirect surge in prices for other goods and services consumed by B40 and M40 households as higher petrol costs will result in an increase in production costs and consumer prices (Asgarian et al., 2023). As the consumption baskets of B40 and M40 households in Malaysia are relatively more petrol intensive compared to T20 households (Asgarian et al., 2023), the impact of price surge if sustainable petrol subsidies are absent will be greater. The most recent studies on the impact of petrol prices indicate a \$0.25 per litre increase in petrol prices is substantial as it will result in a 5.9 percent decline in B40 and M40 real incomes on average (Liu & Xu, 2022). The welfare impact of increasing petrol prices by \$0.25 per litre is substantial for B40 and M40 households in Malaysia, with an average 6 percent increase in B40 and M40's monthly household expenditure (Liu & Xu, 2022). More than 50% of this monthly increase in households arises from higher prices of food-related goods and services (Liu & Xu, 2022).

Given the fact that petrol prices have substantially reduced the welfare of B40 and households, a sustainable petrol subsidy program is therefore ensuring that B40 households are entitled to fixed monthly petrol for both motorcycle and car owners. In addition, B40 households who are also Bantuan Sara Hidup (BSH) beneficiaries (Ministry of Finance Malaysia, 2023) hope to be given priority in receiving petrol rebates in the form of cash transfers directly to their bank accounts.

B40 and M40 households that participate in this study think that a sustainable petrol subsidy program must provide financial relief specifically to eligible B40 and M40 households. To ensure the success of targeted petrol subsidies, Malaysia should invest in accurate data collection and verification mechanisms to identify eligible B40 and M40 households effectively. The Malaysian government should implement a gradual transition from generalized petrol subsidies to targeted petrol subsidies to minimize disruption and social discomfort (Ministry of Finance Malaysia, 2023). B40 and M40 households hope that the government can effectively address the needs of

their B40 and M40 towards a fairer and more equitable society. This finding is in line with the most recent study by [Greve and Lay \(2023\)](#), which found that petrol subsidies have been used for decades by governments worldwide to alleviate the financial burden of rising petrol prices on their low-income citizens. However, unfair petrol subsidies can often be ineffective and benefit wealthier, high-income groups disproportionately ([Greve & Lay, 2023](#)). M40 households who participate in this study are more likely to think that Malaysian government must communicate the rationale behind petrol subsidies more effectively through public advertisement and campaigns to emphasize the benefits of the petrol subsidies precisely and concisely to the targeted B40 and M40 households and consider phasing out petrol subsidies for T20 household. Government needs to ensure that B40 and M40 households are able to directly benefit from and are not adversely affected by any future petrol subsidy moves. A well-designed cash transfer program should be introduced by the Malaysian government to ensure that the petrol subsidy program benefits B40 and M40 households and not T20 households who may not require financial assistance. Equitable distribution of petrol subsidy benefits should be the main theme of the sustainable petrol subsidy program in Malaysia to reduce social conflicts related to income inequality in a multiracial collectivist society ([Ministry of Finance Malaysia, 2023](#)).

Targeted petrol subsidies provide direct financial assistance to B40 households to effectively minimize poverty levels. For many B40 and M40 households, access to affordable transportation in daily life is crucial for maintaining employment. The petroleum subsidy ensures that transportation remains accessible to B40 and M40 households. When B40 and M40 households receive the targeted petrol subsidy, they have more disposable income to stimulate demand for daily necessities. Rising petrol prices can contribute to inflation, worsening the standard of living for B40 and M40 households. Targeted petrol subsidies can help B40 and M40 mitigate this inflationary impact, providing greater economic security and stability for poor B40 and M40 households.

On top of that, B40 and M40 households are also concerned about the pollution arising from petrol usage. According to [Loo and Harun \(2019\)](#), the environmental quality of the environment deteriorates at every stage of petrol's value chain, from extractive industry activities to intermediate processes such as transportation, refining, and power production, as well as final energy consumption. As predicted by [Ramli et al. \(2021\)](#) high magnitude of petrol subsidies may accelerate petrol consumption and the emission of environmental pollutants such as nitrogen oxides and greenhouse gases, which will endanger the health of Malaysian citizens. B40 and M40 households in Malaysia hope that the energy resource can be utilized in a reasonable and environmentally friendly way to maintain the sustainable development of the environment.

B40 and M40 households that participate in this study think that a sustainable petrol subsidy program should be targeted at reducing greenhouse gas emissions. In the most recent study conducted in 2023, [Arzaghi and Squalli \(2023\)](#) shared the same views as B40 and M40 households in this study: that a sustainable petrol subsidy program should be able to lead to carbon emission reductions equivalent to a quarter proposed in Paris Climate Change Agreement ([Shaar & Leal-Arcas, 2023](#)). As sustainable petrol subsidies could reduce wasteful consumption and encourage more efficient use of energy resources ([Shaar & Leal-Arcas, 2023](#)), when petrol subsidies are reduced, B40 and M40 households in Malaysia are more likely to use petrol more efficiently and consider alternative public transportation options.

This will result in lower carbon dioxide greenhouse gas emissions, contributing to effective climate change prevention ([Shaar & Leal-Arcas, 2023](#)). Sustainable petrol subsidies allow the Malaysian government to conserve valuable energy resources for future generations. Petrol subsidy to households in need can not only encourage responsible petrol use but also result in an improvement in air quality when T20 households who are not qualified for petrol subsidy start to reduce the use of private cars. When the petrol subsidy was implemented for all income levels in Malaysia in the past decades ([Husaini, Lean, Puah, & Affizzah, 2023](#)), lower petrol prices increased vehicle use and traffic congestion, which deteriorated the air pollution ([Asgarian et al., 2023](#)). M40 families who participate in this study are more likely to have the perception that a sustainable petrol subsidy program can help alleviate air

pollution effectively and improve the health and well-being of Malaysian society, as higher petrol prices for T20 households can encourage them to use public transportation or carpool. Compared to B40 households, M40 households who participate in this study are more likely to think that sustainable public transportation options due to petrol subsidy reforms are not only reducing traffic congestion but also reducing the demand for new roads and new toll construction.

As discovered by Van Asselt (2023), petrol subsidy reforms can create incentives for the adoption of electric vehicles and renewable energy sources as higher petrol prices make electric vehicles and renewable energy alternatives more attractive to T20 consumers. In addition, higher petrol prices encourage T20 households and big industries to adopt energy-efficient practices and green technologies, which can lead to reduced energy consumption to preserve the environment (Asgarian et al., 2023). As developing countries such as Malaysia increasingly recognize the urgency of addressing environmental concerns, the sustainable petrol subsidy program is becoming an essential national policy to combat climate change.

In conclusion, based on the feedback from B40 and M40 households, a sustainable petrol subsidy program should take into consideration fiscal and macroeconomic issues, household welfare, and environmental pollution. Figure 2 illustrates the proposed sustainable petrol subsidy program.

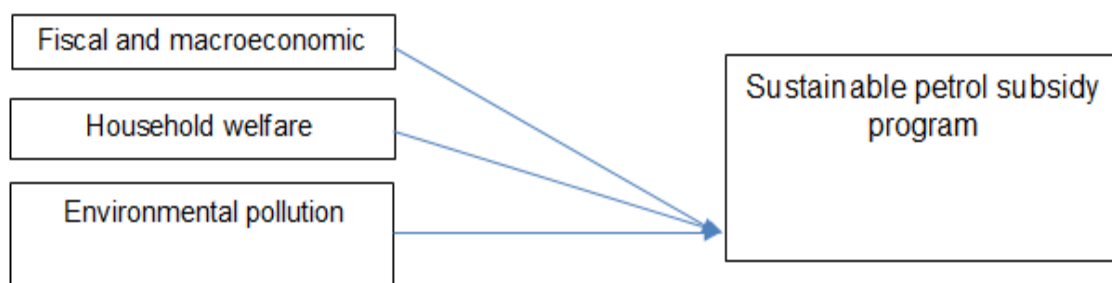


Figure 2. Proposed sustainable petrol subsidy program.

6. RESEARCH IMPLICATION

This research is the pioneering research in Malaysia that provides comprehensive insights on sustainable petrol subsidy, leading to a significant influence on the socio-economic wellbeing of the B40 and M40 households. It helps the Malaysian government effectively plan and design petrol subsidy program according to the latest needs and demands of B40 and M40 households. As electric vehicles become more prevalent in developing countries such as Malaysia, a sustainable petrol subsidy program can be adapted to support T20, M40, and B40 households in transitioning to electric vehicles. The proposed sustainable petrol subsidy program of this study aims to reduce the risk of petrol subsidy to non-deserving T20 households to ensure that the subsidized energy resources reach their targeted B40 and M40 recipients. Sustainable petrol subsidy program is recognized as the best international policy, because it is in line with the United Nations' Sustainable Development Goals to reduce economic and social inequality and preserve the environment.

Therefore, governments in developing countries, particularly Malaysia, should seize the opportunity to transition towards more sustainable petrol subsidy policies. The proposed sustainable petrol subsidy program of this study contributes significantly to the government policy in developing countries in terms of sustainable development and improved energy resource allocation and governance. The proposed sustainable petrol subsidy program of this study aims to allow Malaysian governments to respond more effectively to changing macroeconomic and fiscal conditions in the country.

The proposed sustainable petrol subsidy program gives the government the flexibility to adjust petrol subsidies based on the actual needs of B40 and M40 households, ensuring that adequate social and environmental support is

in place to alleviate poverty. The limitation of this study is that it only focuses on B40 and M40 households in Malaysia. Future research can replicate the research design to expand this research to other countries in Asia.

Funding: This research is supported by the Ministry of Higher Education Malaysia (Grant number: FRGS/1/2020/SS01/MMU/02/5).

Institutional Review Board Statement: The Ethical Committee of the Multimedia University, Malaysia has granted approval for this study on 16 June 2021 (Ref. No. 20210371).

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

REFERENCES

- Arzaghi, M., & Squalli, J. (2023). The environmental impact of fossil fuel subsidy policies. *Energy Economics*, 126, 106980. <https://doi.org/10.1016/j.eneco.2023.106980>
- Asgarian, F., Hejazi, S. R., & Khosroshahi, H. (2023). Investigating the impact of government policies to develop sustainable transportation and promote electric cars, considering fossil fuel subsidies elimination: A case of Norway. *Applied Energy*, 347, 121434. <https://doi.org/10.1016/j.apenergy.2023.121434>
- Benkhodja, M. T., Fromentin, V., & Ma, X. (2023). Macroeconomic effects of green subsidies. *Journal of Cleaner Production*, 410, 137166. <https://doi.org/10.1016/j.jclepro.2023.137166>
- Black, S., Liu, A. A., Parry, I., & Vernon, N. (2023). *IMF fossil petrol subsidy data: 2023 update*. International Monetary Fund (No. 2023/169).
- Elliott, C., Bernstein, S., & Hoffmann, M. (2022). Credibility dilemmas under the Paris agreement: Explaining fossil fuel subsidy reform references in INDCs. *International Environmental Agreements: Politics, Law and Economics*, 22(4), 735-759. <https://doi.org/10.1007/s10784-022-09581-8>
- Federation of Malaysian Consumer Associations (FOMCA). (2022). *Petrol subsidy programme*. Retrieved from <https://www.fomca.org.my/v1>
- Gabhane, D., & Gabhane, M. (2021). Rising prices of petrol and diesel in India since 2014: An analytical study. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 18(7), 2309-2315.
- Gidigbi, M. O., Bello, K. M., & Babarinde, G. F. (2019). Petroleum subsidy and its impact on tax revenue volatility. *The Review of Finance and Banking*, 11(1), 1-12.
- Greve, H., & Lay, J. (2023). "Stepping down the ladder": The impacts of fossil fuel subsidy removal in a developing country. *Journal of the Association of Environmental and Resource Economists*, 10(1), 121-158. <https://doi.org/10.1086/721375>
- Husaini, D. H., Lean, H. H., Puah, C.-H., & Affizzah, A. D. (2023). Energy subsidy reform and energy sustainability in Malaysia. *Economic Analysis and Policy*, 77, 913-927. <https://doi.org/10.1016/j.eap.2022.12.013>
- Iba, Z., Bariah, C., Musrizal, M., & Hendiyan, D. (2022). Dynamic relationship between energy subsidy and fiscal deficit in Indonesia. *International Journal of Social Science, Educational, Economics, Agriculture Research and Technology*, 1(7), 363-376.
- Kang, F., Yu, Q., & Wan, M. (2023). Corporate innovation incentive policy during business cycles: Fiscal subsidy or tax incentives? *Emerging Markets Finance and Trade*, 59(7), 2190-2203. <https://doi.org/10.1080/1540496x.2023.2167488>
- Liu, C., & Xu, Y. (2022). *Fossil fuel subsidy reform policy*. In: Taghizadeh-Hesary, F., Zhang, D. (Eds.), *The Handbook of Energy Policy*. Singapore: Springer.
- Loo, S. Y., & Harun, M. (2019). Fuel subsidy abolition and performance of the sectors in Malaysia: A computable general equilibrium approach. *Malaysian Journal of Economic Studies*, 56(2), 303-326. <https://doi.org/10.22452/mjes.vol56no2.7>

- McCulloch, N., Moerenhout, T., & Yang, J. (2021). Fuel subsidy reform and the social contract in Nigeria: A micro-economic analysis. *Energy Policy*, 156, 112336. <https://doi.org/10.1016/j.enpol.2021.112336>
- Ministry of Finance Malaysia. (2023). *Formulation of targetted subsidy mechanism for petrol not easy – PM Anwar*. Retrieved from <https://www.mof.gov.my/portal/en/news/press-citations/formulation-of-targetted-subsidy-mechanism-for-petrol-not-easy-pm-anwar>
- Nweke, A. C. (2019). Effect of subsidy reduction on petroleum products on civil servant's psyche/emotion and service delivery in Nigeria: A study of Anambra State. *Socialscientia: Journal of Social Sciences and Humanities*, 4(1), 1-9.
- Petrol Dealers Association of Malaysia. (2022). *Petrol subsidy programme*. Retrieved from <https://www.pdamweb.org/>
- Ramli, A. R., Kadir, J. M. A., Ismail, N., Othman, A. A., & Melo, P. C. (2021). Fuel subsidies, fuel consumption, and road transport emissions: A systematic review. *Environment-Behaviour Proceedings Journal*, 6(16), 275-281. <https://doi.org/10.21834/ebpj.v6i16.2721>
- Shaar, T. L., & Leal-Arcas, R. (2023). Fuel subsidy reform, decentralized electricity markets and renewable energy trade: Evidence for a successful energy transition in the Middle East and North Africa Region. *The Journal of World Energy Law & Business*, 16(2), 112-126. <https://doi.org/10.2139/ssrn.4278844>
- Sulaiman, N., Harun, M., & Yusuf, A. A. (2022). Impacts of petrol subsidy rationalization on sectoral output and employment in Malaysia. *Asian Development Review*, 39(01), 315-348. <https://doi.org/10.1142/s0116110522500081>
- Van Asselt, H. (2023). The SDGs and fossil fuel subsidy reform. *International Environmental Agreements: Politics, law and Economics*, 23(1), 1-7.
- Vivanco, D. F., Nechifor, V., Freire-González, J., & Calzadilla, A. (2021). Economy-wide rebound makes UK's electric car subsidy fall short of expectations. *Applied Energy*, 297, 117138. <https://doi.org/10.1016/j.apenergy.2021.117138>

Views and opinions expressed in this article are the views and opinions of the author(s), Asian Development Policy Review shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.