



INTERNATIONAL JOURNAL  
OF LAW, GOVERNMENT  
AND COMMUNICATION  
(IJLGC)


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## THE ROLE OF GOVERNMENT IN REDUCING ENERGY CONSUMPTION IN MALAYSIA


Zuraidah Ismail<sup>1\*</sup>, Saliza Sulaiman<sup>2</sup>, Fauziana Fauzi<sup>3</sup>, Fauziah Samsudin<sup>4</sup>, Natasha Ramlan<sup>5</sup>

<sup>1</sup>Department of Business and Management, Universiti Teknologi MARA, Puncak Alam, Malaysia

 [zurail24@uitm.edu.my](mailto:zurail24@uitm.edu.my)

 <https://orcid.org/0009-0009-5639-8728>

<sup>2</sup>Department of Business and Management, Universiti Teknologi MARA, Puncak Alam, Malaysia

 [salizas421@uitm.edu.my](mailto:salizas421@uitm.edu.my)


 <https://orcid.org/0000-0001-9305-9957>

<sup>3</sup>Department of Business and Management, Universiti Teknologi MARA, Puncak Alam, Malaysia

 [fauziana@uitm.edu.my](mailto:fauziana@uitm.edu.my)

 <https://orcid.org/0009-0005-7349-8289>

<sup>4</sup>GNI Groups of Company

 [gni.mktg@gmail.com](mailto:gni.mktg@gmail.com)

 <https://orcid.org/0009-0006-9897-5077>

<sup>5</sup>SMK Gali, Raub, Pahang

 [fatinramlan98@gmail.com](mailto:fatinramlan98@gmail.com)

 <https://orcid.org/0009-0001-5568-4564>

\*Corresponding Author

### Article Info:

#### Article history:

Received date: 20.01.2026

Revised date: 10.02.2026

Accepted date: 25.03.2026

Published date: 31.03.2026

#### To cite this document:

Ismail, Z., Sulaiman, S., Fauzi, F., Samsudin, F., & Ramlan, N. (2026). The Role of Government in Reducing Energy Consumption in Malaysia. *International Journal of Law, Government and Communication*, 11(43), 619-631.

### Abstract:

The rapid economic growth in Malaysia has been consistently accompanied by an upward trend in energy consumption, driven by rapid industrialization, urbanization, population increase, and continued dependence on fossil fuel. These developments pose significant economic, environmental, and energy security challenges, especially within the framework of climate change commitments and sustainable development imperatives. This paper discusses the role of the government in the reduction of energy consumption in Malaysia by analysing policy frameworks, fiscal measures, and institutional mechanisms put in place for energy efficiency improvement. Adopting a mixed-method approach, the study draws on secondary data obtained from government reports, international organizations, and academic literature, supported by comparative insights from selected advanced economies. The findings reveal that government-driven initiatives, like subsidy rationalization, offering financial incentives, regulatory standards, and implementing the National Energy Efficiency Action Plan, are crucial in determining energy consumption behavior across important sectors. However, challenges of enforcement, high initial investment costs, and limited public awareness persist. The study finds that sustained policy coordination and stronger institutional capacity are

vital for realizing long-term reductions in energy consumption in Malaysia.

**DOI:** 10.35631/IJLGC.1143040 **Keyword:**

Energy Consumption; Energy Efficiency; Government Policy; Sustainable Development; National Energy Efficiency Action Plan; Malaysia



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## Introduction

The Malaysian state has shown a significant amount of economic development in the last few decades, marking its place amongst the front-ranking nations of the countries within the state of Southeast Asia. But the problem that emerged due to the significant development in the state is the increasing consumption of energy. There has been a large amount of consumption of energy due to the development of the state with regards to the increasing amount of urbanization, industrialization, and the ever-increasing amount of the state's population. Hence, the need for the consideration of this point with regards to the aspects of sustainable development. The energy requirements of the state have been dominantly led by the use of fuel, coal, along with gas. These sources cumulatively produce almost the total demands of the state, along with that, they cause a heavy amount of damage to the earth. The need for the development of an amendment with regards to the development of a more earth-friendly or a sustainable source of energy appears to be a matter of extreme urgency due to the factors such as an increasing amount of damage, the significant amount of emissions of the earth's harmful substances, along with an ever-increasing amount of the import of the state's coal.

The globally acting forces of having to conform to fulfill the needs of climate change commitments, such as that of Paris, contribute to these tendencies. Malaysia finds itself at a crossroads where the needs of its economy appear to be under threat as are its environmental needs. This particular scenario underlines the relevance of a reassessment of its energy policies to ensure efficiency and sustainability above everything else. Malaysia can align the needs of its energy policies with those of sustainable development by promoting innovations in the area of sustainable energy resources, energy efficiency, as well as addressing the associated issues of transportation, industry, and buildings. The particular fact that it is a transition phase means

that the government had to play its vital role in these endeavors and strategies through the use of public financial instruments.

## Background

In the current years, Malaysia, a country found in Southeast Asia, which is developing at a very rapid rate, has achieved substantial developments in their economy. Although it is very positive and has ended up with the country's economic status being improved, it is an actual fact that the country is also faced with higher demands to meet its energy requirements appropriately as it continues to grow at a rapid rate with an ever-increasing population. The need for managing energy appropriately is therefore at the heart of this particular aspect. In regard to the energy mix of this country, fossil fuels such as coal and gas, accounting for the highest electricity generation in the country, play an important role.

Even though these sectors are the backbone of economic development, the environmental and societal problems that come along with these sectors are gradually being recognized. Among the issues that the sector faces include the reliance on imported coal, air pollution, and the increase of gas emission. There is, therefore, an eminent need for the country to adopt suitable energy strategies, given that the country had signed the Paris agreement, among others. The pattern of energy use in the country indicates the inefficiencies of several sectors, including transportation, industries, and residential. Both the industries that are energy-intensive and the houses that need energy-inefficient tools are indicative that an opportunity for improvement is present. The carbon print of the country is, therefore, worsened by the reliance on fossil fuel of the transportation sector of the country.

The Malaysian government is an essential key in shaping the consumption trend of energy. As a matter of fact, it can set initiatives and provide economic benefits to the people to influence their consumption trend and ensure the implementation of renewable energy to meet their demands. The National Energy Efficiency Action Plan is one of the important initiatives through which Malaysia aims to cut down their consumption of energy and ensure sustainable development at the same time. In fact, in addition to the initiatives set forward by their government, Malaysia's role in the global environmental policy will strengthen its stand on the issue of sustainable development because it aligns with international standards that will increase their ability to manage energy successfully. Furthermore, the partnership with international organizations, together with neighboring countries, offers a chance for knowledge and technology transfer, which quickens the pace of advancement in energy efficiency.

Renewable energy sources have been identified as the solution for controlling energy usage and mitigating the problem of degradation of the environment in the Malaysian strategy. The plans by the government in solar energy sources, hydropower energy sources, and biomass energy sources are just examples of serious commitment made in the recent years. The Feed-in Tariff approach and the Net Energy Metering approach have encouraged even more people and companies to transform themselves into users of renewable energy sources. Despite the best efforts, the path to energy consumption in Malaysia is fraught with many challenges. The opposition to the adoption and promotion of the use of renewable energy resources in terms of the cost of installation and the existing information and awareness among the public, as well as the existing interests in the conventional energy resources, is an important challenge that needs to be overcome in the pursuit of the goal. In addition to this, the absence of a method for

the enforcement of energy efficiency is an important factor that needs to be taken into consideration.

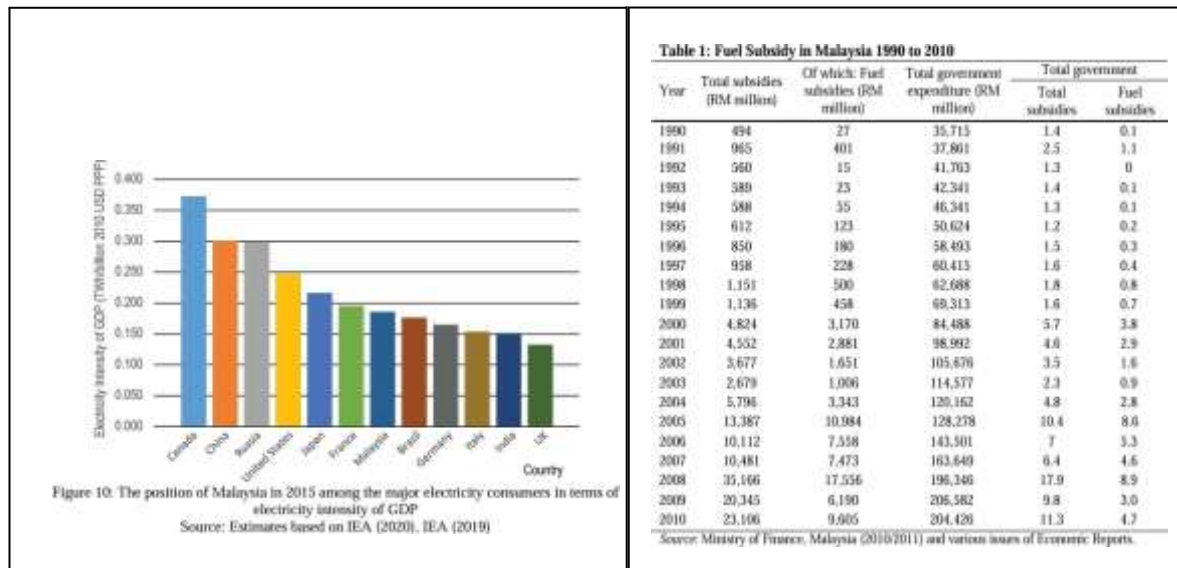
On the contrary, there are opportunities within these challenges. The growth in smart grids, energy storage systems, and many more has unparalleled potential for turning around this situation in the country of Malaysia. Secondly, enhanced awareness with regard to the economy and environment for energy efficiency could translate into lifestyle modification with an environmentally sustainable shift in culture. The government of Malaysia has an elaborate involvement in energy savings as part of its decision-making and people engagement activities. The use of renewable energy sources, the optimal use of energy, and the systematic correction of energy savings are three broad areas wherein the government of Malaysia needs to take the front-line initiative in its quest for securing a bright and protected future with regard to energy. As development and advancement are gaining momentum, the need for active participation of the government cannot be overemphasized in underpinning growth with protection and conservation of the earth and all its resources in their natural forms for securing future needs and demands with sustainability.

### **Analysis Methodology**

The study will adopt a hybrid research approach that will combine both qualitative as well as quantitative research methodologies in order to conduct an in-depth study on the approach that will help the Malaysia government minimize consumption in Malaysia. Data under this study will be obtained from varied sources such as publication documents of international bodies such as the United Nations Development Program (UNDP) among others, as well as data from the Ministry of Natural and Environmental Sustainability (NRES) in Malaysia.

Aside from these sources of information, articles from different research journals and different statistics with regards to energy consumption patterns over the years in the country of Malaysia shall also be included in the study. Moreover, a comparative analysis with regards to energy consumption policies in different countries shall also be made. For example, Germany and South Korea. The conclusion shall be made through the process of triangulation wherein data from mathematical models shall be verified through different insights. Through a holistic approach, it is absolutely certain that all trends qualitative and quantitative with regards to energy patterns in Malaysia shall be identified.

## Causes and Effects



**Figure 1: The Position Of Malaysia Among Major Electricity Consumers**

### Causes:

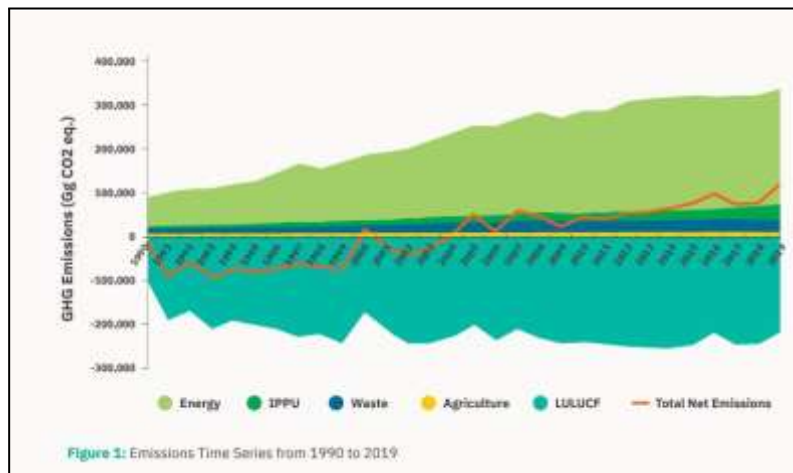
#### *High Energy Demand*

There are many reasons for this high energy consumption in Malaysia; however, the most prominent ones are the rapid industrialization, urbanization, as well as population growth in Malaysia. There has been an enormous rise in energy demand as Malaysia's economy has expanded, with some of these sectors being manufacturing, as well as the provision of services. Malaysia's economy, with its high electricity intensity, which ranks amongst one of the highest in the ASEAN region, indicates enormous consumption of energy in terms of economic production (Aktar Rita et al., 2022).

#### *Subsidy Policies*

The energy consumption patterns in the past for Malaysia have been significantly affected by the energy subsidy system and its impacts on the economy and environment. The energy subsidy has led to less incentive for residences and firms in utilizing renewable energy sources and energy efficiency because of the reduction in the cost of fossil fuels such as petrol, diesel fuel, and electricity. Due to the lack of firms and residences' own investments in renewable energy sources and energy efficiency strategies dependent on subsidised fossil fuels such as petrol, diesel fuel, and electricity, energy use in the country remains high (Hamid & Rashid, 2012).

**Effects:**



**Figure 2: Emissions Time Series from 1990 to 2019**

***Economic Impact***

The over-reliance of the Malaysian nation on energy has several adverse effects on the economy as well as the environment within the nation (Hamid & Rashid, 2012). From the economic perspective, the over-reliance of the nation on energy means that the nation ends up paying high energy costs, especially in domestic and business setups, and this might result in a decline in discretionary incomes within the nation. The rise in the cost of energy might result in the problem of poverty becoming widespread within the nation.

***Environmental Consequences***

The rising dependence on fossil fuel resources has become one of the magnets for the greenhouse gas emissions of the Malayan government, thereby increasing the effects of climate change experienced by the country, which paved the way for the adoption of sustainable fuel resources. The level of carbon dioxide emissions has reached a record level because of the dependence on fuel resources like coal, gas, and oil. The Malayan government faces the greatest challenges in balancing the need to fulfill the fuel requirement of the country while maintaining environmental sustainability.

***Role of Fiscal Policies, Government Decisions, and External Factors***

The fiscal policies introduced by the government of Malaysia include tax incentives when investing in green energy, rebates to encourage the usage of energy-efficient appliances, and progressive reduction of subsidies. SAVE 4.0, for example, offers rebates in the usage of energy-efficient appliances to encourage the reduction of electricity usage (Sustainable Energy Development Authority Malaysia, 2011). There are also strategic considerations such as the enhancement of the target for the use of renewables, which aid the energy transition. The National Energy Transition Roadmap explains the strategies proposed for the reduction of carbon emissions and the enhancement of the share of renewables used in the production of electricity. These are strategies employed by the Ministry of Natural and Environmental Sustainability (NRES), (2024).

The government is also gradually abandoning blanket fuel subsidies so that energy prices will be market-driven with selective support for the disadvantaged. International Factors such as global changes in oil prices affect Malaysia's consumption AND pricing of energy. This could mean that with an increase in oil prices, it will translate to higher fuel prices, which will impact industries and households, or with lower prices, the development of renewable energy could continue at a slowed pace (Ministry of Natural and Environmental Sustainability (NRES), 2024).

Since COP28, the Malaysian government has increased its focus on sustainable development and aims for at least 31% of renewable energy usage in the power sector by 2025, as well as a 45% reduction in carbon intensity by 2030. Empirical studies using CGE models reveal that dependence on coal and natural gas can act as barriers in cutting down emissions. Although increasing renewable energy has positive implications for economic welfare, its effects on the decrease in carbon emissions are quite modest in absence of complementary policies. Rationalizing subsidies is important for greater efficacy in reducing emissions. (Yahoo, M., Mohd Salleh, N. H., Chatri, F., & Huixin, L. ,2024)

### ***Comparison of Different Economies to Address Similar Issues***

With solar and wind power comprising over 40% of the electricity production, the German Energiewende (energy transition) is seen as a successful shift to renewable energy (Anderson, 2024). Key steps involve cutting dependence on the use of coal, a transition away from nuclear energy, and investing in the network upgrade and citizen energy support, Bürgerenergie. Transmission, opposition in the coal regions, and the high capital investment are challenges, however. Technologies such as carbon capture and hydrogen are the main focus of the Korean New Deal, which is supported through government budgets and joint partnerships. Although addressing problems associated with transformation away from fossil fuel industries, among which balancing the need for sustainability and growth is part, it aims to promote the use of more renewable sources of energy. Through balancing growth with sustainability, the aim is to increase the use of sources of renewable energy while reducing GHG emissions by a dramatic margin (Thurbon & Mathews, 2022).

It is high time that Malaysia learns from such examples and promotes international cooperation, trains staff and facilitates the transformation of the fossil-based sector. Such projects could include energy storage and hydrogen fuel cells partnerships, which should be made possible through clear regulations and attractive terms for eco-friendly investments. Moreover, it is high time that Malaysia placed high emphasis on policies dealing with the issue of costs and public resistance. This could serve as an opportunity for Malaysia to attract multinational corporations to invest in its energy transformation with the consequence of a cascading trend of eco-friendly development. Such strategies would facilitate eco-friendly development and economic growth for the country with the help of appropriate adaptation of international best practices by Malaysia.

Research has proved that there is increasing focus on renewable energy in Southeast Asia due to growing demands and environmental threats. Comparisons between Indonesia, Malaysia, Vietnam, and the Philippines indicate that there are varying policies depending upon political and economic considerations. The decision-making process in governments is based not only on their institutions but also on external connections like foreign investments and public-private partnerships. Cooperation within ASEAN helps achieve common objectives in relation

to energy needs, although limited coordination poses barriers. Although much has been accomplished, there are still difficulties to overcome. (Küçük, M., & Ruvi, M. 2025).

With regard to the rapid development of the ASEAN region, which is associated with a growing energy demand, the development of solar photovoltaic power generation has become one of the important priorities in the ASEAN region. The literature demonstrates that various countries experience different levels of success due to the presence of various policy frameworks, incentives, and market conditions. Thus, such countries as Vietnam and Thailand have successfully developed their solar industry under the influence of feed-in tariffs, whereas there are several regulatory and financing barriers in Indonesia and the Philippines (Tarigan, E. 2025).

### ***Solutions and Policy***

One of the major concerns faced by countries around the world, including Malaysia, is energy consumption. The consumption of energy has significantly risen due to continuous urbanization and industrialization. This leads to a substantial rise in the emission of greenhouse gases and environmental issues. In view of this challenge, the government of Malaysia acknowledges that some measures need to be taken to reduce energy consumption. The Malaysian government has invested in energy efficiency initiatives over the past ten years. All these projects were jointly funded by the Danish International Development Agency (DANIDA), the Japan External Trade Organization (JETRO), the Energy Conservation Centre Japan (ECCJ), and the United Nations Development Programme (UNDP). All these projects have enhanced the capabilities of the nation in various fields pertaining to energy efficiency.

The Malaysian government removed fuel subsidies in 2014 as part of energy reform to create a common regulatory framework for a sustainable energy future. Latest developments on the government's nuclear plans will also be discussed. (Tick Hui & Hasanuzzaman et.al (2018) Moreover, the projects have also improved awareness about energy efficiency in the corporate sector and different stakeholders, as well as in energy consumers in general. They also made way for the formulation of various energy efficiency rules and regulations for different selected industries in the country. Besides promoting sustainable development, human capital development, and conservation, the strategy for the development of the nation will also serve as a roadmap that guides the integration of energy security issues affecting the country with development programs. This strategy takes into consideration all factors and works in harmony with other relevant development programs. The following strategic thrusts have been identified:

#### ***Thrust 1: Implementation of Energy Efficiency Plan***

One important element in the process that can help ensure the energy efficiency target for the country is delivered is an effective action plan. The objective of the ten measures in the action plan is to reduce energy consumption in the commercial, industrial, and residential (appliances) categories.

### ***Thrust 2: Strengthen Institutional Framework, Capacity Development and Training for Implementation of Energy Efficiency Initiatives***

Emphasis on the importance of enhancing the Energy Commission's capacity in supervising, monitoring, and reporting on the implementation of programs identified in the National Energy Efficiency Plan, as well as developing stakeholder capacity.

### ***Thrust 3: Establishment Of Sustainable Funding Mechanisms to Implement Energy Efficiency Initiatives***

To establish the finance system via commercial financial institutions to support the continued promotion and implementation of the proposed energy efficiency measures.

### ***Thrust 4: Promotion of Private Sector Investment in Energy Efficiency Initiatives***

Since the government alone cannot invest Cooperation from the private sector is a key factor in the achieving the aims of initiatives geared towards energy efficiency. Through the concept of Energy Performance Contracting, the private sector plays a crucial role in the implementation of energy efficiency initiatives.

## **Strategic Actions**

### ***Action 1: Strengthening Institutional Framework***



**Figure 3: The organizational Structure of NEEAP Project Team**

Having a special division for energy efficiency within the Energy Commission (EC) that will monitor the implementation and enforcement of policies. Taking cues from the effective EE&C practices in India and Japan, this division will handle the different NEEAP programs. Its key functions include promoting awareness of energy efficiency, handling NEEAP projects, monitoring progress, and updating the data bank on energy efficiency. Further, it will monitor the implementation of NEEAP among other relevant organizations. Its key functions include:

- Execute the National Energy Efficiency Action Plan programs in an effective and efficient manner
- Encourage different energy users to learn about energy efficiency
- Provide knowledge and information by means of energy efficiency programs and initiatives.
- Continually track and assess the National Energy Efficiency Action Plan initiatives

- Periodically prepare a progress report on the National Energy Efficiency Action Plan
- The National Energy Efficiency Action Plan's statistics and information about energy use and efficiency should be kept up to date in a database

The organizational structure of the NEEAP section is shown in Figure 3. The section will be led by a Project Leader with support from sectoral Programme Managers and a finance officer, ensuring efficient financial management and data-driven progress reports.

### ***Action 2: Government-Led Initiatives***

Even though the private sector is expected to bear the majority of the effect from energy efficiency, government agencies and businesses with ties to the government play a critical role in the successful implementation of energy efficiency programs. Circulars are one way the government may encourage its institutions to operate more energy-efficiently. Therefore, the government will lead the way in establishing internal rules for the acquisition of energy-efficient equipment and appliances with a 5-star energy label, conducting energy audits at big facilities, putting energy-saving measures into place, and putting energy management techniques into practice. Because providers will be incentivized to introduce energy-efficient technology and services to the market, this will lead to a shift in the market towards energy-efficient practices and technologies. Because the government will have served as the market's icebreaker, the private sector will be able to adopt this strategy more quickly.

### ***Action 3: Sustainable Financing Mechanism***

In line with Thrust 3, In order to get money from the private sector, new financial products for energy efficiency must be created, according to the NEEAP. The promptness and sufficiency of financial resources in fulfilling the budgetary need are critical to the success of any project. Only seed money that will allow the private sector to invest in energy efficiency projects and technology will be required to carry out the NEEAP. Malaysia is at a pivotal point in its history as it transitions from a developing to a high-income economy.

As a result, unless the government and the populace take decisive action now to shift to sustainable energy consumption, the country will face uncertainty, higher energy supply costs, and increased CO<sub>2</sub> emissions. Consequently, NEEAP should therefore be implemented quickly through funding from public as well as corporate sectors, as well as NGOs and the local communities. The investment made by the nation as well as its people will yield long-term benefits to not only the present generation, but also to future generations to come as long as proper governance is followed during the implementation process of NEEAP and is anchored by principles of environmental economic ideas.

New academic work looks at the role played by carbon pricing approaches, such as carbon tax and cap-and-trade schemes, in promoting the growth of renewable energy generation capacity. From the findings, it is clear that such approaches are effective in enhancing renewable energy generation not only in the short but also the long term in developing nations. On the other hand, in the developed world, such approaches could have some negative impacts due to several considerations. The implication here is that the effect of policies can vary depending on the context. (Zhao & Tang, 2024).

## Conclusion

The Malaysian government's quest to manage its escalating energy demand for the purpose of sustainable growth is significantly assisted by the National Energy Efficiency Action Plan (NEEAP). The energy demands of the country are projected to escalate at an alarming rate due to the fact that the country is undergoing fast industrialization and growth at an unprecedented rate. The main objective of the use of the National Energy Efficiency Action Plan is to ensure that the energy demand for the country is reduced at the minimum cost possible without causing damage to the environment. The actions taken include the adoption of energy-efficient devices and the establishment of energy conservation standards.

The Malaysian government's approach in finding a middle ground between the sustainability of the environment and economic development can be identified in the implementation of the NEEAP. Companies can cut down on their costs of doing business, consumers can cut down on their electricity costs, or the Malaysian government can cut down on its consumption of fuel by decreasing the various wastages that occur in energy. Increasing the practice of energy efficiency will not just decrease carbon emissions into the environment, as it will also enhance energy security in Malaysia. The Malaysian government considers energy efficiency one of its highest aspects in its struggle against climate change. Although NEEAP appears to be an optimistic beginning, in the long run, it could actually fail in addressing all the problems being created in energy management.

The government can think of other instruments that can be employed in a broader way in dealing with the issues of energy. These may include increased expenditure in other forms of energy, the success of the health education campaigns, or the enforcement of the energy efficiency could be other beneficial approaches. The application of the revolutionary energy saving techniques can also contribute significantly towards the promotion of the process of sustainable development. In the forthcoming years, the success of the NEEAP will be dependent upon the improvement process, the emphasis placed on the support of the laws, and the support of the society and the corporate world. The future expectations of the Malaysia State can place its hopes in a situation where the conservation of the environment can mix well together with the development of the State, via the optimal utilization of energy.

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- Acknowledgements:** The authors would like to express their sincere gratitude for the financial support granted by the Department of Business and Management, Universiti Teknologi MARA (UiTM), Puncak Alam Campus for providing a supportive academic and research environment and facilitated the development of this study . Besides, the authors owe thanks to all respondents for their priceless input and to their colleagues for their helpful support. The authors accept full responsibility for any remaining mistakes.
- Funding Statement:** This research received financial support from the research grant Facing Dual Crisis: Urban Poverty & Climate Change in Kuala Lumpur (Grant No. 600-TNC25/3/DF(FPP) (027/2024)). The funding body had no role in the design of the study, data collection, analysis, interpretation of results, or the decision to publish this manuscript.
- Conflict of Interest Statement:** The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the International Journal of Law, Government and Communication (IJLGC).
- Ethics Statement:** This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.
- Author Contribution Statement:** All authors contributed significantly to the development of this manuscript. Zuraidah Ismail was responsible for the conceptualization, methodology, and overall supervision of the study. Saliza Sulaiman and Fauziana Fauzi handled data collection, analysis, and interpretation of results. Fauziah Samsudin and Fatin Ramlan contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.
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