
A Systematic Review of Economic Policy Uncertainty and Sustainable Development Goals: Climate Action Center

Arifha Mohamad^{1*}, Saima Afsheen², Umi Kartini Rashid³, Mohd Rezuwan Shah Zakaria⁴ and Wan Anis Aqilah Megat Zambri⁵

[¹]Johor Business School, University Tun Hussein Onn Malaysia, Batu Pahat, Malaysia (Doctor),

[²] Faculty of Science, Engineering and Social Sciences, Canterbury Christ Church University, United Kingdom (Student)

[³]Johor Business School, University Tun Hussein Onn Malaysia, Batu Pahat, Malaysia (Doctor),

[⁴]Nutrition Technologies Sdn Bhd, Iskandar Puteri, Johor, Malaysia

[⁵] Faculty of Communication and Media Studies, University Teknologi Mara (UiTM) Negeri Sembilan, Kampus Rembau, Malaysia (Lecturer)

[¹]arifha@uthm.edu.my (<https://orcid.org/0000-0002-5578-1436>), [²]thesaimaa@gmail.com, [³]kartini@uthm.edu.my (<https://orcid.org/0000-0003-0187-0756>), [⁴]rezuwan@nutrition-technologies.com, [⁵]wanisaqilah@uitm.edu.my (0000-0003-1701-8007)

How to cite this article: Arifha Mohamad, Saima Afsheen, Umi Kartini Rashid, Mohd Rezuwan Shah Zakaria and Wan Anis Aqilah Megat Zambri (2024) A Systematic Review of Economic Policy Uncertainty and Sustainable Development Goals: Climate Action Center. *Library Progress International*, 44(3), 3747-3755.

ABSTRACT

This study investigates the relationship between Economic Policy Uncertainty (EPU) and Sustainable Development Goals (SDGs), with a specific focus on SDG 13 addressing climate change. The introduction highlights global concerns regarding emissions, economic expansion, and natural resource depletion, emphasizing the importance of the SDGs, particularly SDG 13. The study focuses to Malaysia, exploring its commitment to international climate agreements, including the National Policy on Climate Change and its adaptation efforts. The Malaysian Development of SDG section examines the involvement of Malaysian companies in the UN Global Compact, highlighting their contributions to sustainability. The economic, social, and environmental aspects of SDGs in Malaysia are discussed, emphasizing the country's transformation into an upper-middle-income economy and its progress in poverty eradication, healthcare, and climate resilience. Various studies on the intersection of SDGs and social work, corporate financial performance, energy efficiency, and poverty distribution in Malaysia are presented. In summary, this study contributes to the limited but growing body of literature on the intersection of EPU and SDGs. It calls for further research across different nations to formulate appropriate policies that align with sustainable development objectives. The study recommends future research to conduct pre and post analyses of carbon emission trading in relation to EPU and climate change action

Keywords: climate change; economic policy uncertainty; sustainable development goals; sustainability.

INTRODUCTION

Policymakers are becoming increasingly concerned about the rising levels of emissions on a worldwide scale. The trajectory of economic expansion driven by energy, the pattern of global consumption, and the depletion of natural resources are making it difficult to sustain intergenerational equity. As a result, the basis for sustainable growth is compromised. The Sustainable Development Goals (SDGs), which the UN introduced in an effort to address this global issue, mandate that all countries adhere to the 17 developmental goals by the year 2030. The SDGs aim to reorient the current trajectory of economic growth in order to restore global equilibrium. Of the 17 developmental agendas, the SDG 13—which addresses climate action—needs particular consideration.

France's position in addressing climate change issues is rather poor when compared to other developed nations in Europe. 2019's G7 Presidency of the Climate and Clean Air Coalition saw France draw attention to its shortcomings in addressing climate change. While France's air quality regulations adhere to EU directives, they are not working as

intended [1]. During the parliamentary discussion of the energy bill, which sought to achieve net zero emissions by 2050, this came up [2]. The Yellow Vest protest movement, which focused on the detrimental socioeconomic effects of the policy measures, also encountered environmental protection regulations. The pro-environmental policy for France was thus placed in a state of policy uncertainty [3].

Carbon emissions from enterprises may be impacted by Economic Policy Uncertainty. It has been well demonstrated in the literature that EPU can impact financial and macroeconomic factors, including oil process [4], firms investment decisions [5], and choice of energy fuels [6]. Since EPU has an impact on businesses' external business environments, it will also have an indirect impact on their financial performance and investment choices, which may have an impact on their emission performance.

The National Policy on Climate Change, which was approved by the Cabinet in 2009, is the primary policy directing government agencies, business, communities, and other stakeholders in addressing the issues of climate change in Malaysia [7]. In light of Malaysia's participation in international climate agreements, this document acknowledges the need for both mitigation and adaptation activities and is based on five principles: coordinated implementation (i.e., incorporating climate change considerations into all development programs), effective participation, sustainable development, conservation, and the idea of common but differentiated responsibilities and respective capabilities.

Malaysia's international commitments have shaped its climate change goals and targets ever since this policy was formulated. In 2015, Malaysia made its initial submission of a nationally determined contribution (NDC), which was later amended in 2021. One of the commitments made in Malaysia's initial NDC to the United Nations Framework Convention on Climate Change (UNFCCC) was to cut the country's GDP's emissions intensity by 35% by 2030 compared to 2005. An additional non-binding development commitment (NDC) to reduce GDP emissions by 45% is contingent upon the availability of global climate funds and technology transfer. In order to achieve an unconditional 45% decrease in carbon intensity by 2021, this was later modified and improved. An annex including information on Malaysia's adaptation efforts highlighted seven sectors: water, coasts, agriculture, infrastructure, and cities, public health, forestry and biodiversity, and disaster management [8]. Thus, the purpose of this study is to analyse theoretically the function of EPU in enhancing sustainable development focusing in the climate change area.

MALAYSIAN DEVELOPMENT OF SDG

Sustainability and ESG issues are becoming more widely known in Malaysia. For instance, in 2008, Malaysian Resources Corporation Bhd (MRCB), is the first Malaysian firm, became a member of the UN Global Compact. As for January 2024, there are 19 Malaysian Public Listed Companies, 8 from Small and Medium sized enterprise, one from NGO and Public Sector Organization respectively, becoming participant at United Nations Global Compact. Participation at the UN Global Compact will benefit business and society. In terms of businesses, a stable economy and a workforce that is well-educated, talented, and in good health are essential for the success of businesses and organizations. Additionally, investors backing, and brand trust are higher for sustainable businesses.

In benefiting society, businesses provide society with innovative ideas and scalable answers to its problems, which is just needed to improve the world. The UN Global Compact's 3,800 non-business members and more than 16,000 business members are already transforming the globe. They are assisting in the alleviation of extreme poverty, addressing labor concerns, lowering global environmental dangers, and more.

TABLE 1: List of Malaysian Public Listed Companies Participate in UN Global Compact

NAME	SECTOR	YEAR JOINED
Aeon Credit Service (Malaysia) Berhad	Finance and credit services	2023
Bank Islam Malaysia Berhad	Banks	2023
Northport (Malaysia) Bhd	Industrial Transportation	2023
Prasarana Malaysia Berhad	Industrial Transportation	2023
Malaysia Steel Works (KL) Bhd	Industrial materials	2023
Telekom Malaysia Berhad	Telecommunications equipment; telecommunications service providers	2023
Astro Malaysia Holdings Berhad	Media	2023
Malaysia Aviation Group	Diversified	2023
Allianz Malaysia Berhad	Nonlife Insurance	2022
Pos Malaysia Berhad	Industrial Transportation	2022
Alliance Bank Malaysia Berhad	Finance and credit services	2022
Bank Pembangunan Malaysia Berhad	Banks	2022
Heineken Malaysia Berhad	Beverages	2022
Carlsberg Malaysia	Beverages	2022
PLUS Malaysia Berhad	Industrial Transportation	2021
Tata Consultancy Services Malaysia Sdn Bhd	Software & Computer Services	2021

Vinda Malaysia Sdn Bhd	Personal Goods	2021
Bursa Malaysia Berhad	Finance and credit services	2020
Malaysian Resources Corporation Berhad	Construction & Materials	2008

Malaysia has undergone a remarkable economic transformation, elevating its status from a low-income to an upper-middle-income economy within a single generation. The gross national income (GNI) per capita experienced a substantial 29-fold increase, soaring from US\$347 in 1970 to US\$10,118 in 2020. This transformative journey has been characterized by successful poverty eradication, narrowed inequalities, and an improved quality of life for the population—progress closely aligned with the Sustainable Development Goals (SDGs). Notably, Malaysia has made concerted efforts to address SDG 1 (No Poverty) by significantly reducing absolute poverty and eliminating hard-core poverty [9]. The COVID-19 crisis, while posing challenges, prompted targeted economic recovery packages in alignment with SDG 8 (Decent Work and Economic Growth) to stimulate growth and protect vulnerable populations. In the healthcare sector, Malaysia's initiatives to enhance the delivery system and promote healthier lifestyles resonate with SDG 3 (Good Health and Well-being). Additionally, the nation's commitment to sustainable development and climate resilience, as evident in SCP practices and renewable energy adoption, aligns with SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). Emphasizing unity in diversity and social cohesion, Malaysia's support for South-South Cooperation and the establishment of the All-Party Parliamentary Group on SDGs demonstrates a commitment to SDG 17 (Partnerships for the Goals). Voluntary Local Reviews further ensure local initiatives are in line with the broader SDG framework. Malaysia's multifaceted progress showcases a holistic approach to sustainable development, contributing significantly to the global pursuit of the SDGs.

[10] investigated the core principles of the SDGs and their relevance to social work practice and human rights issues in the Malaysian context. This inquiry involved a review of the shared ethos between SDGs and social work values, emphasizing the holistic and integrated interventions recommended. Notably, the proactive initiatives and documents on social work and social development by the global social work community have played a pivotal role in encouraging a positive response from social workers. This collaborative effort between SDGs and social work principles signifies a synergistic approach to addressing societal challenges and advancing human rights concerns within the Malaysian landscape. A study focusing on public listed companies in Malaysia conducted by [11] revealed that the majority of companies had primarily focused on economic elements associated with decent work and economic growth (SDG8). The second most engaged goal fell under the social domain, specifically SDG3, which centered on Good Health and Well-Being. Additionally, the goal related to responsible consumption and production (SDG12) emerged as the most frequently mentioned objective within the environmental domain. Regarding the correlation between engagements with Sustainable Development Goals (SDGs) and Corporate Financial Performance (CFP), the study identified a significant negative relationship between SDG3 (social domain) and SDG8 (economic domain) with CFP.

[12] critically examined the dynamic interrelationships between energy efficiency, health expenditure, and economic growth within the specific context of Malaysia, spanning the years 1980 to 2016. With the overarching goal of contributing to the achievement of SDGs, the research employed robust methodologies, including autoregressive distributed lag cointegration analysis and a causality approach through the vector error correction model. By delving into the complex relationships among these pivotal factors, the study uncovered enduring co-integration causal links between economic growth and health expenditure. However, the investigation yielded nuanced findings concerning both determinants: an increase in real income was associated with a more efficient utilization of energy sources, while heightened government spending on health appeared to intensify energy usage. This in-depth exploration provided valuable insights that extended our understanding of the intricate dynamics governing economic development, health investments, and energy efficiency, offering crucial guidance for the formulation of strategies aligned with the pursuit of SDGs in Malaysia.

[13] delved into the intricate spatial distribution of poverty in Malaysia, focusing primarily on unravelling the factors contributing to its spatial configuration. Employing advanced analytical tools such as hotspot analysis and geographically weighted regression, the research aimed to shed light on the complexities surrounding poverty in the Malaysian context. While acknowledging the ambitious nature of Sustainable Development Goal (SDG) number one, aimed at eradicating poverty, the paper uncovered significant spatial patterns in poverty rates. Notably, the findings highlighted a substantial clustering of poverty, particularly in the north-eastern states of Kelantan and Terengganu. These spatial dynamics, elucidated in the study, provided essential insights for policymakers as they navigated the implementation of strategies for poverty eradication in alignment with SDG 1.

[14] examined alternative political policies, distinct from the prevailing capitalist/liberal democracy, such as ecological democracy, as potential avenues for the Malaysian smart urbanization movement to achieve the SDGs. Employing a case study analysis method, the study investigated empirical examples related to stakeholder partnerships and environmental cases within smart urbanization in Malaysia. Their paper argued that the current capitalist hegemony poses a substantial challenge to SDG achievement. Nevertheless, by incorporating environmental ethics and embracing participatory politics, the SDGs can be realized with the trust granted by the government. The implications of their

findings included a call for support for an emerging ecological democracy that aligns seamlessly with the SDGs while being embedded in environment, social, and economic developments.

Economic SDG in Malaysia

The main focus of the comprehensive study of climate change is mitigation of and adaptation to it. By reducing or improving the anthropogenic components of climate change, such as greenhouse gas emissions, mitigation seeks to lessen or restrict the severity of climate change. However, adaptation focuses on reducing the harm brought about by climate change or seizing its chances by forecasting its trends and effects. Malaysia had introduced New Economic Model (NEM) in 2010 to catalyse transformation of Malaysia into a high-income economy in a relevant manner. The Economic Transformation Programme (GTP), which was created by translating the NEM, aims to enhance the twelve National Key Economic Areas (KEAs), with the most important ones being agriculture, palm oil/rubber, and oil, gas, and energy. Although there was a strong emphasis on using sustainable practices to mitigate climate change, the National Transformation Programme Annual Report 2017 appeared to be primarily concerned with the NKEAs' economic success [15].

Initiatives taken by Malaysia in offering of RM 1 billion portfolio guarantee scheme by Credit Guarantee Corporation Malaysia Bhd (CGC) partnering with 18 participating banks [16]. In an effort to encourage the industry sector to embrace environmentally friendly operations and practices as well as the green technology approach in their innovations, Malaysia launched the Green Technology Financing Scheme (GTFS) in 2010. An allocation of RM 1.5 billion was made to the initiative for the benefit of green technology manufacturers and users. The maximum loan amount available is RM50 million for producers and RM10 million for user companies. A total of 219 projects received green certification in 2010. Of the total, financial institutions participating offered money for 76 projects totaling RM1.016 billion in funding arrangements [17].

The requirements of a supportive environment that concentrated on the financial aspects of green technology were outlined in the Second Strategic Pinch of the NGTP. The industry partners in the program would deliver green technology products to local and international markets, generate jobs, and support the national economy in order to meet the goals of the Green Technology Policy, all while keeping in mind the growth of the green technology industry.

Social SDG in Malaysia

In order to promote coordination among government ministries, agencies, the corporate sector, and important stakeholders on green initiatives, the National Green Technology Council and Climate Change at the ministry level were established in 2009. A steering committee assists the Council in developing policies, identifying strategic concerns, coordinating, overseeing, and assessing the creation of national green technology initiatives and the National Green Technology Policy. The Malaysian government's initiatives and programs pertaining to green technology were to be coordinated and carried out by a different organization, the Malaysian Green Tech Agency (GTAC), in close collaboration with the National Green Technology Council.

Environment SDG in Malaysia

The Ministry is also creating an integrated program to improve and advance environmentally friendly goods and services in Malaysia. The initiative, dubbed the MyHIJAU Program, is divided into four smaller initiatives: MyHIJAU SME & Entrepreneurs, MyHIJAU Labeling, MyHIJAU Directory, and MyHIJAU Acquisition. The manufacturing phase of the program will continue until it is commercialized. This program's main goals are to increase community awareness and knowledge about the importance of environmental conservation through the concept of sustainable production and consumption, to coordinate and streamline all development initiatives, green products, and services in Malaysia, and to develop the industry's capacity and skills, particularly those of Small and Medium Enterprises and local entrepreneurs in the production of green products more competitively [18].

ECONOMIC POLICY UNCERTAINTY (EPU)

Economic Policy Uncertainty (EPU) refers to the degree of unpredictability and ambiguity regarding future economic policies within a country [19; 20; 21]. In the literature, policy uncertainty is widely acknowledged as an economic risk characterized by the ambiguity surrounding future government policies and regulatory frameworks. This phenomenon introduces a heightened level of risk, compelling both businesses and individuals to defer their spending and investment decisions amidst market uncertainties. The aftermath of the 2008 global financial crisis witnessed a pronounced surge in uncertainty regarding government policies [22; 23]. This was manifested in the form of heightened concerns among businesses and households, encompassing aspects such as the prospective regulatory landscape, government spending, taxation policies, monetary strategies, and healthcare initiatives. Scholarly perspectives posit that this surge in policy uncertainty played a pivotal role in impeding the post-crisis recovery, as businesses and households opted to postpone critical decisions related to investment and consumption expenditures [24]. Consequently, the delayed response to policy ambiguity is seen as a contributing factor to the prolonged recovery process following the 2008 recession.

The enduring impact of future policy ambiguity becomes apparent when considering its predominantly long-term effects. It is evident that numerous factors contribute to the overall uncertainty landscape. Certain factors, such as currency fluctuations and shifts in senior management, exert influence on uncertainty in both short and long terms, while

others, like fluctuations in oil prices, predominantly induce short-term effects [25]. Consequently, the temporal dimension emerges as a pivotal factor in comprehending the influence of determinants on uncertainty. This necessitates the identification and measurement of uncertainties stemming from diverse factors.

In recent years, research considering EPU in different contexts is increasing. For instance, [26] investigated the impact of EPU on China's exchange rate volatility spanning from December 2001 to November 2018. Utilizing quantile regression, the results revealed asymmetry and heterogeneity in how EPU affects exchange rate volatility across different markets. Notably, the influence of EPU on China's exchange rate volatility showed a consistently positive and significant association across all quantiles. Moreover, the study unveiled notable heterogeneity, indicating distinct impacts on exchange rate volatility contingent on specific economic contexts. Specifically, it was observed that EPU originating from the United States, Europe, and Japan had significant effects on China's exchange rate volatility. [27] explored the effect of global EPU shocks on China's financial conditions index (CFCI) and analyzed the sources of uncertainty shocks. Their results of the spillover index showed that the spillover effects of global EPU on CFCI were concentrated in the crisis periods, but mostly had an insignificant effect in the normal periods. The uncertainty shocks emanating from China itself were the major sources of China's financial markets' volatility, and the US EPU appeared to be the most significant exogenous cause of the fall of CFCI.

[28] constructed a time series model, drawing inspiration from [29] methodology, to gauge the impact of both the United States and China on pivotal international markets, including stocks, credit, energy, and commodities. The findings reveal a notable increase in China's influence; however, the preeminent position of the United States persists across all analyzed markets. [30] generated an EPU index specific to Turkey, utilizing the frequency of newspaper coverage as a basis. This index reflects the count of articles in major Turkish newspapers containing terms related to the economy, policy, and uncertainty. Throughout their analysis, the EPU index exhibited notable surges coinciding with key events such as national elections (in 2002, 2007, and 2015), periods of domestic uncertainty (in 2008 and 2013), domestic and global financial crises (in 2001 and 2009), and the Euro area debt crisis in 2011.

[31] employed a panel local projections (LP) model to examine the impact of EPU on real equity returns across thirteen economies, collectively representing 77.4% of global output. Through the utilization of both linear and non-linear LP models, their analysis showcased that economic policy uncertainty has a negative influence on real equity returns. Furthermore, the non-linear LP model brought to light that uncertainty amplifies losses in real equity returns, especially during non-expansionary periods. [32] conducted a study investigating the influence of economic policy uncertainty on stock markets in the United States spanning from 1900 to 2014. Their findings demonstrate that an upsurge in policy uncertainty significantly diminishes stock returns. Notably, this effect is observed to be more pronounced and enduring during periods characterized by extreme volatility. [33] conducted an examination involving a panel of 20 countries, covering the period from 2003Q1 to 2017Q4. They employed panel techniques designed to account for heterogeneity and cross-sectional dependence. The study's findings indicate the existence of a long-term relationship between exchange market pressure and EPU. The results of their study indicated that, irrespective of whether a country operated with a fixed, flexible, or intermediate exchange rate regime, EPU significantly influenced its foreign exchange market.

[34] explored the dynamic effects of economic policy uncertainty (EPU) and political stability (PS) on business fixed investment (BFI), real estate activities (RE), financial market activities (FIN), and patent applications (PAT) using annual data from 19 major high-income and emerging economies spanning the years 1996 to 2016. Through the application of panel vector autoregression (PVAR) and dynamic least squares (DOLS) methods, the results revealed that a positive shock to EPU elicited a negative response from BFI, RE, FIN, and PAT in the short run. Additionally, higher levels of EPU were found to significantly decrease BFI, RE, and FIN in the long run. The findings also suggested that BFI, RE, and PAT responded positively to a shock in PS in the short-run, and there exists a positive, long-run relationship between PS, RE, and FIN.

[35] investigated the impact of economic policy uncertainty on insurance premiums in a panel of 15 countries over the period 1998–2016, employing heterogeneous panel estimation techniques with cross-sectional dependence. Findings from the error correction-based panel estimations revealed that the insurance sector was not immune to the effects of EPU. Additionally, the findings indicated that various factors, including national income, education, population, financial development, and institutional quality, all raised insurance premiums, while inflation lowered insurance premiums.

MALAYSIAN ECONOMIC POLICY UNCERTAINTY

Specifically in Malaysia, [36] found that EPU had a negative impact on growth. The moderating impact of EPU on exports further contributed to negative economic growth. On the other hand, the impact of Geopolitical risk on growth showed both negative and positive effects but was insignificant in the short-run and long-run, respectively. The study concludes by suggesting that the government of Malaysia should work towards ensuring macroeconomic and political stability to achieve export-driven growth in the country. [37] examined the potential predictability of stock returns and volatility in Hong Kong, Malaysia, and South Korea using measures of EPU at both domestic and global levels, including China, the European Area, Japan, and the US. Despite employing linear Granger causality tests, the study

failed to uncover evidence of predictability, with an exception noted for South Korean EPU predicting its own stock returns. However, a nonparametric causality-in-quantiles test presented a different picture. Robust evidence of causality emerged from the EPUs, notably influencing stock return volatility in Malaysia and affecting both returns and volatility at specific segments of the conditional distributions for South Korea.

[38] explored the impacts of geopolitical risk, global EPU, and oil price shocks on stock prices in Malaysia, utilizing a factor-augmented Structural Vector Autoregression (SVAR) approach. Their findings revealed that, while geopolitical risk did not exert significant direct impacts on the overall stock market, its indirect effects were notable and transmitted through the channels of global economic policy uncertainty and oil shocks. Global economic policy uncertainty demonstrated negative effects on the overall stock market, and these impacts were magnified in the presence of geopolitical risk. Additionally, oil-related shocks displayed asymmetric effects on both aggregated and sectorial stock prices.

[39] examined the effects of economic uncertainty on MNC investment in Malaysia from 2009 to 2019, utilizing an ARDL method. The results revealed that EPU exhibited a positive association with the capital expenditures of Nestle, British American Tobacco, and Public Bank in the long run. Over the same period, Gross Domestic Product (GDP) demonstrated a positive and significant relationship with the capital expenditures of British American Tobacco and Heineken. However, inflation was found to be negatively related to the capital expenditures of British American Tobacco and Heineken. Furthermore, the exchange rate was identified to have a significant and negative relationship with the capital expenditures of Nestle and Petronas.

ECONOMIC POLICY UNCERTAINTY AND SDG

In the pursuit of sustainable development, the global community recognizes the pivotal role of economic stability and policy certainty. As nations strive to align their economic policies with the imperatives of sustainable growth, understanding the implications of EPU becomes paramount. EPU has been shown to exert a notable impact on investment patterns, potentially shaping the allocation of resources in critical sectors for sustainable development [40; 41]. The uncertainty surrounding government policies can influence investment decisions in areas such as renewable energy, environmental conservation, and social infrastructure, all of which are integral to the realization of SDGs. In recent years, there has been a growing body of research exploring the implications of EPU in various contexts related to the SDGs. As an illustration, [42] contributed to the evolving but still limited literature addressing the impact of economic policy uncertainty, renewable energy utilization, and economic growth on environmental degradation in Egypt. Using the autoregressive distributed lag (ARDL) bound test, the study examined cointegration relationships spanning from 1990 to 2018. Results demonstrated a positive correlation between economic policy uncertainty and environmental degradation, evident in both short and long-term perspectives. [43] conducted an analysis to examine the influence of trade policy uncertainty and sustainable development policies on investment in medical innovation by covering the period from 1980 through 2020, with a special focus on the impact of COVID-19. The study revealed bidirectional and unidirectional causality through a negative response to the innovation shock and a positive response by R&D, respectively. Importantly, a long-term association was established between medical innovation, trade policy uncertainty, and R&D spending. In terms of sustainable development, the study highlighted positive long-run relations between medical innovation and GDP growth, and Human Development Index (HDI), while negative associations were observed with the GINI index and CO2 emissions.

Utilizing a panel model, [44] conducted empirical testing on data from a sample of 15 countries, spanning the period from 1997 to 2019. The empirical findings revealed a significant negative impact of economic policy uncertainty on per capita CO2 emissions. In other words, heightened economic policy uncertainty correlated with lower per capita CO2 emissions across countries. Notably, this negative effect was observed to be more pronounced in emerging market countries compared to advanced countries. [45] employed the innovative Augmented ARDL method, overcoming the limitations of traditional ARDL methods by applying the STIRPAT framework. Their findings contribute insights for shaping a policy framework aligned with SDG 7 and 13 in the literature review. [46] investigated the impact of EPU on green growth (GGDP) in BRICS countries during the period 1990–2020, utilizing panel quantile regression (PQR), revealed a consistent hindrance of GGDP across all quantiles due to EPU. The study highlighted the insufficiency of existing literature in guiding policymakers effectively toward formulating policies aligned with Sustainable Development Goals (SDG) 7 and 13. Policymakers were urged to prioritize addressing economic policy uncertainty as an essential measure to enhance GGDP and advance sustainability objectives.

The existing discourse highlights the scarcity of research on the intersection of EPU and Sustainable Development Goals (SDG), with diverse outcomes reported. The overall consensus is challenging to determine due to the limited number of studies and the varying effects reported. Therefore, there is a crucial need to explore this topic across different nations to formulate appropriate policies.

CONCLUSION

The study of EPU and SDG getting an attractive support from the previous worldwide researchers, hence there is still limited study on the EPU towards the SDG specifically in SDG13 climate change. The environmental issues are getting

had impacted the economic, social and environmental. Towards achieving economic sustainability, the large organizations specifically have to be a first mover in helping to fulfill the objectives of SDG. From a theoretical perspective, uncertainty of economic development in Malaysia can slowdown the fulfillment towards the SDGs. The policymakers should aim at harmonizing their economic strategies with the nation's climate objectives. Nowadays, Malaysian policymakers encourage the climate change actions conducted by the large organizations with the dual benefits, like reduce tax, enhance the reputation and stock market. The systematic review of this paper supported the EPU and climate change action to provide a strong support from the management of the organization and encourage them to have more environmental awareness. It is recommended for future study to have pre and post analysis of carbon emission trading towards the EPU and climate change action.

ACKNOWLEDGEMENT

This research was supported by Universiti Tun Hussein Onn Malaysia (UTHM) through TIER 1 (vot Q122).

REFERENCES

- [1] Climate and Clean Air Coalition (CCAC), "France: CCAC partner," 2021. [Online]. Available: <https://www.ccacoalition.org/en/partners/france>.
- [2] "Energy and Technology (E&T), France Falling Short of Own Emission Targets, New Climate Council Admits," 2019. [Online]. Available: <https://eandt.theiet.org/content/articles/2019/06/france-falling-short-of-own-emission-targets-newclimate-council-admits/>.
- [3] G. D. Clercq, "New French Energy Law Puts off Difficult Climate Decisions," Reuters, 2009. [Online]. Available: <https://www.reuters.com/article/us-franceenergy-idUSKCN1S61X1>.
- [4] D. Cheng, X. Shi, J. Yu, and D. Zhang, "How does the Chinese economy react to uncertainty in international crude oil prices?," *Int. Rev. Econ. Financ.*, vol. 64, pp. 147–164, 2019.
- [5] K. Handley and N. Limão, "Trade and investment under policy uncertainty: theory and firm evidence," *Am. Econ. J. Econ. Policy*, vol. 7, pp. 189–222, 2015.
- [6] F. F. Adedoyin, A. Zakari, "Energy consumption, economic expansion, and CO2 emission in the UK: the role of economic policy uncertainty," *Sci. Total Environ.*, vol. 738, p. 140014, 2020.
- [7] Ministry of Natural Resources and Environment, 2009.
- [8] Government of Malaysia, "Malaysia's Nationally Determined Contribution (NDC)," Putrajaya, 2021.
- [9] G. Redmond, R. Praino, and N. Siddiquee, "Child deprivation in Malaysia.: Final report for UNICEF," 2017.
- [10] D. Jayasooria, "Sustainable development goals and social work: Opportunities and challenges for social work practice in Malaysia," *J. Hum. Rights Soc. Work*, vol. 1, no. 1, pp. 19–29, 2016.
- [11] N. Ahmad and S. Buniamin, "The relationship between SDG engagement and corporate financial performance: Evidence from public listed companies in Malaysia," *Global Bus. Manag. Res.*, vol. 13, no. 4s, pp. 730–741, 2021.
- [12] H. Matahir, J. Yassin, H. R. Marcus, N. A. Shafie, and N. F. Mohammed, "Dynamic relationship between energy efficiency, health expenditure and economic growth: in pursuit for SDGs in Malaysia," *Int. J. Ethics Syst.*, vol. 39, no. 3, pp. 594–611, 2023.
- [13] M. Vaziri, M. Acheampong, J. Downs, and M. R. M. Majid, "Poverty as a function of space: Understanding the spatial configuration of poverty in Malaysia for Sustainable Development Goal number one," *GeoJournal*, vol. 84, pp. 1317–1336, 2019.
- [14] S. B. Lim, J. A. Malek, M. Y. Hussain, Z. Tahir, and N. Saman, "SDGs, smart urbanisation, and politics: Stakeholder partnerships and environmental cases in Malaysia," *J. Sustain. Sci. Manag.*, vol. 16, pp. 190–219, 2021.
- [15] CSDU, "National Transformation Programme Annual Report 2017," 2017. [Online]. Available: http://www.mampu.gov.my/images/pengumuman/NTP_AR2017_ENG.pdf. Accessed date: 27 June 2018.
- [16] Bank Negara Malaysia, "JC3 Announces Initiatives to Support an Inclusive Transition to a Greener Economy," 2023. [Online]. Available: <https://www.bnm.gov.my/-/jc3j20-pr-en>.
- [17] The Economic Planning Unit, Prime Minister's Secretariat, "Tenth Malaysian Plan 2011-2015," Putrajaya, 2010.
- [18] A. Mohamad, U. K. Rashid, W. Y. Wan Fauzi, and M. N. Mohd Adi, "Assessing the Readiness of Sustainable Development Among MSMEs," in *Proceeding ICABEC 2022*, 2022.

- [19] S. A. Al-Thaqeb and B. G. Algharabali, "Economic policy uncertainty: A literature review," *J. Econ. Asymmetries*, vol. 20, p. e00133, 2019.
- [20] A. R. A. Aljanabi, "The impact of economic policy uncertainty, news framing and information overload on panic buying behavior in the time of COVID-19: a conceptual exploration," *Int. J. Emerging Markets*, vol. 18, no. 7, pp. 1614–1631, 2023.
- [21] O. Farooq, I. Jabbouri, and M. Naili, "The nexus between economic policy uncertainty and access to finance: a study of developing countries," *Int. J. Manager. Financ.*, 2023.
- [22] D. Altig et al., "Economic uncertainty before and during the COVID-19 pandemic," *J. Public Econ.*, vol. 191, p. 104274, 2020.
- [23] S. R. Baker, N. Bloom, and S. J. Davis, "Measuring economic policy uncertainty," *Quart. J. Econ.*, vol. 131, no. 4, pp. 1593–1636, 2016.
- [24] P. Arestis and N. Karagiannis, "The Recent Global Crises and Economic Policies for Future Durable Recovery," in *Prospects and Policies for Global Sustainable Recovery: Promoting Environmental and Economic Sustainability*, Springer, 2023, pp. 1–39.
- [25] A. Kurov and R. Stan, "Monetary policy uncertainty and the market reaction to macroeconomic news," *J. Banking Finance*, vol. 86, pp. 127–142, 2018.
- [26] L. Chen, Z. Du, and Z. Hu, "Impact of economic policy uncertainty on exchange rate volatility of China," *Finance Res. Lett.*, vol. 32, p. 101266, 2020.
- [27] Z. Li and J. Zhong, "Impact of economic policy uncertainty shocks on China's financial conditions," *Finance Res. Lett.*, vol. 35, p. 101303, 2020.
- [28] D. Zhang, L. Lei, Q. Ji, and A. M. Kutun, "Economic policy uncertainty in the US and China and their impact on the global markets," *Economic Modelling*, vol. 79, pp. 47–56, 2019.
- [29] F. X. Diebold and K. Yılmaz, "On the network topology of variance decompositions: Measuring the connectedness of financial firms," *J. Econometrics*, vol. 182, no. 1, pp. 119–134, 2014.
- [30] S. Sahinoz and E. Erdogan Cosar, "Economic policy uncertainty and economic activity in Turkey," *Appl. Econ. Lett.*, vol. 25, no. 21, pp. 1517–1520, 2018.
- [31] W. Ginn, "The impact of economic policy uncertainty on stock prices," *Economics Letters*, vol. 233, p. 111432, 2023.
- [32] M. Arouri, C. Estay, C. Rault, and D. Roubaud, "Economic policy uncertainty and stock markets: Long-run evidence from the US," *Finance Res. Lett.*, vol. 18, pp. 136–141, 2016.
- [33] I. O. Olanipekun, G. Olasehinde-Williams, and H. Güngör, "Impact of economic policy uncertainty on exchange market pressure," *Sage Open*, vol. 9, no. 3, p. 2158244019876275, 2019.
- [34] H. F. Gholipour, "The effects of economic policy and political uncertainties on economic activities," *Res. Int. Bus. Financ.*, vol. 48, pp. 210–218, 2019.
- [35] M. Balcilar, R. Gupta, W. J. Kim, and C. Kyei, "The role of economic policy uncertainties in predicting stock returns and their volatility for Hong Kong, Malaysia and South Korea," *Int. Rev. Econ. Financ.*, vol. 59, pp. 150–163, 2019.
- [36] F. F. Adedoyin, J. O. Afolabi, K. Yalçiner, and F. V. Bekun, "The export-led growth in Malaysia: Does economic policy uncertainty and geopolitical risks matter?," *J. Public Affairs*, vol. 22, no. 1, p. e2361, 2022.
- [37] M. Balcilar, R. Gupta, W. J. Kim, and C. Kyei, "The role of economic policy uncertainties in predicting stock returns and their volatility for Hong Kong, Malaysia and South Korea," *Int. Rev. Econ. Financ.*, vol. 59, pp. 150–163, 2019.
- [38] M. Enamul Hoque, L. Soo Wah, and M. Azlan Shah Zaidi, "Oil price shocks, global economic policy uncertainty, geopolitical risk, and stock price in Malaysia: Factor augmented VAR approach," *Econ. Res.-Ekon. Istraž.*, vol. 32, no. 1, pp. 3701–3733, 2019.
- [39] P. A. Mariadas, U. Murthy, M. Subramaniam, M. Selvanathan, and N. H. Lun, "The effects of economic uncertainty on multi-national companies (MNCs) investment in Malaysia," *J. Asian Finance, Econ. Business*, vol. 8, no. 5, pp. 1–9, 2021.

- [40] F. Durani, R. Bhowmik, A. Sharif, A. Anwar, and Q. R. Syed, "Role of economic uncertainty, financial development, natural resources, technology, and renewable energy in the environmental Phillips curve framework," *J. Cleaner Prod.*, vol. 420, p. 138334, 2023.
- [41] R. M. Elavarasan, R. Pugazhendhi, T. Jamal, J. Dyduch, M. T. Arif, N. M. Kumar, et al., "Envisioning the UN Sustainable Development Goals (SDGs) through the lens of energy sustainability (SDG 7) in the post-COVID-19 world," *Appl. Energy*, vol. 292, p. 116665, 2021.
- [42] M. G. Selmei and A. A. Elamer, "Economic policy uncertainty, renewable energy and environmental degradation: Evidence from Egypt," *Environ. Sci. Pollut. Res.*, vol. 30, no. 20, pp. 58603-58617, 2023.
- [43] M. N. Shabbir, M. U. Arshad, M. A. Alvi, and K. Iftikhar, "Impact of Trade Policy Uncertainty and Sustainable Development on Medical Innovation for Developed Countries: An Application of DID Approach," *Sustainability*, vol. 15, no. 1, p. 49, 2022.
- [44] Y. Chen, X. Shen, and L. Wang, "The heterogeneity research of the impact of EPU on environmental pollution: empirical evidence based on 15 countries," *Sustainability*, vol. 13, no. 8, p. 4166, 2021.
- [45] C. Xue, M. Shahbaz, Z. Ahmed, M. Ahmad, and A. Sinha, "Clean energy consumption, economic growth, and environmental sustainability: what is the role of economic policy uncertainty?," *Renewable Energy*, vol. 184, pp. 899-907, 2022.
- [46] Y. Liu, M. S. e. Ali, and P. T. Cong, "Nexus between economic policy uncertainty and green growth in BRICS countries: evidence from panel quantile regression," *Environ. Sci. Pollu*