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Exploring Global Regulatory Policies to Plastic Waste Circular Economy and Prospects for Implementation in Malaysia: A Systematic Literature Review

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Abstract—

Plastic waste has emerged as a pressing global environmental concern, with Malaysia being no exception. Environmental problems linked to plastic waste has served as a catalyst for transitioning towards a circular economy (CE). Presently, CE is a widely embraced concept for future sustainable development, advocated not only by the European Union (EU) but also other countries including China, Japan, Germany, France, Canada, the Netherlands, Finland, and others. In fact, CE offers a viable alternative to the current linear system by focusing on increasing the reuse or recycling of plastic materials within the system. However, in Malaysia, the absence of comprehensive legislation tailored to the CE principles suggests a gap in the regulatory policy framework for supporting the transition towards a CE for plastic waste. Through the CE concept, a systematic literature review (SLR) was conducted. A final set of 21 papers were selected for examining potential regulatory policies to plastic waste CE by identifying existing policies and laws in various countries and their prospects for implementation in Malaysia. The findings may provide an overview of the laws and policies that support CE implementation, and they could also serve as a guide for Malaysia in determining which policies should be implemented.

Index Terms—*Plastic, Plastic waste, Circular economy, Policies.*

I. INTRODUCTION

Plastics, which previously served as a catalyst for socio-economic development over the past decades, have turned into a developmental problem due to their omnipresence in the environment. Due to a remarkable upswing in the demand for plastic, the downside of plastic consumption has become apparent as plastic waste has caused undeniable sustainability impacts at a multi-nation scale. To solve these problems, effort is required to develop plastic waste minimization strategies to shift away from the traditional “take–make–dispose” linear model that is currently practiced. Hence, it is vital to change the practice of plastic waste management by transitioning towards a circular economy (CE) which offering an alternative mindset crucial for future prosperity. Several authors have argued that CE, or the closed-loop economy, may be a new way forward towards a sustainable and secure future [9][31][2][25][30]. As opposed to the “take-make-dispose” linear model, a CE is seen as an alternative economic model which elevates the need for restorative and regenerative “take-make-use-recover and restore” economy [14]. CE aims to create an economic system where economic growth is decoupled from the consumption of finite resources, achieved through prolonging product and material usage and minimizing waste and pollution [12][7]. To move decisively towards a more sustainable plastics economy, many countries concerned about the impact of linear model have proposed specific laws or policies that address the transition towards circular approach in plastic waste management. For instance, the European Union (EU) has established the “Circular Economy Action Plan 2.0” (CEAP 2.0) in March 2020, which aimed to shift towards circular models by targeting sustainable design, resource efficiency, waste prevention, and recycling [13]. Similarly, France has adopted “Anti-waste and Circular Economy Law” in 2020; with the goals of eliminating waste and pollution from the design stage and transforming the system of production, distribution, and consumption from a linear to a CE model. Not to be outdone, Germany has introducing “Packaging Act” which designed to avoid waste, recycle it to the highest possible quality and use raw materials in a closed loop so that the life cycle of the products is extended.

Nevertheless, Malaysia's approach remains fragmented. Malaysia still relies on specific sections and regulations within existing laws, including the Environmental Quality Act 1974, the Solid Waste and Public Cleansing Management Act 2007, and the Environmental Quality (Scheduled Waste) Regulation 2005 to demonstrate its initiatives towards promoting resource circulation [29]. Moreover, despite the Twelfth Malaysia Plan 2021-2025 announced by our former Prime Minister on 27 September 2021 had outlined intentions related to the CE, CE has yet to be implemented as a separate policy and is only presented in some sections of the plan [11]. Consequently, how the transition towards a CE should be achieved is uncertain and unclear, and it highlights the country's relative lack of progress in this area. As such, concrete guidelines and legislation for the CE must be developed at haste [29].

More specifically, despite CE is gaining more and more attention by the governments, policy makers, and researchers, there has no systematic effort to comprehensively synthesize and assess the knowledge produced through a systematic literature review (SLR) regarding existing global policies and laws related to plastic waste CE and their prospects for implementation in Malaysia. To address these research gaps and align with the principles of literature review research [8], this study conducts a SLR to address the following research question: “What are the existing policies and laws can serve as a guide for Malaysia to consider and to be applied?”. To answer this research question, this study conducts an SLR to explore the existing policies and laws to plastic waste circular economy and their prospects for implementation in Malaysia. The rationale for this selection is substantial by the pivotal role of an SLR in facilitating the adoption of a clear, systematic, and replicable approach within research endeavors [33][6][37]. An SLR is a methodological approach that relies predominantly on literature as its primary data source. The main contribution of this review related to providing an overview of the laws and policies that support CE implementation, and they could also serve as a guide for Malaysia in determining which policies should be implemented.

II. METHODOLOGY

The present study adopted an SLR as the method to provide an updated overview of existing study on policies to plastic waste CE and its implementation in Malaysia. SLRs are widely regarded as the preferred tool over other literature review methods for several reasons. Primarily, SLRs offer a higher degree of objectivity compared to narrative literature reviews, as they generate robust research findings based on a more systematic approach that includes methodology reporting, search terms, databases used, as well as inclusion and exclusion criteria [35]. Second, SLAs help in identifying research gaps within the current understanding of a field, thereby highlighting methodological concerns in research studies that can enhance future work within the topic area [10][37]. Third, SLRs produce comprehensive conclusions through a detailed, planned, and transparent process, facilitating reproducibility [33][6][37]. Thus far, the SLR method has primarily been applied in the social sciences [34] with the objective of presenting findings in a manner that is pertinent and easily accessible to academics and policymakers [35].

The implementation of a systematic and transparent SLR process adhered to the three main phases method of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) as outlined by Page et al. (2021): (1) Identification of records through database keywords; (2) Screening of records by eliminating non-relevant articles; and (3) Selection of data items related to the study. PRISMA constitutes an evidence-supported essential elements for reporting in systematic reviews and meta-analyses. The PRISMA technique was adopted in this study because it facilitates a comprehensive literature search from various sources, providing researchers with a defined sequence to implement [23].

2.1 Protocol and Registration

In order to ensure that the research is well-conducted, mitigate bias, establish a clear research roadmap, and facilitate an unbiased systematic review of the literature, the researchers formulated a comprehensive protocol. This protocol aimed to prevent duplication of paper titles and followed a structured sequence comprising the proposal of research questions, establishment of inclusion and exclusion criteria, formulation of a search strategy, study selection, evaluating quality and risk of bias, extracting data, analysis, and reporting findings, thereby ensuring the reliability of the review.

Table 1: Summary of Inclusion and Exclusion Criteria

No	Selection Criteria	Inclusion Criteria	Exclusion Criteria
1	Language	English	Non-English
2	Time of Publication	January 2001 to January 2024	Prior to January 2001
3	Database	<ul style="list-style-type: none"> • Scopus • Web of Science (WoS) 	Not indexed in Scopus or Web of Science (WoS)
4	Document Type	<ul style="list-style-type: none"> • Article • Review • Conference paper • Book Chapter • Book 	Others: Early access, Editorial Material, Meeting
5	Source Type	<ul style="list-style-type: none"> • Journal • Conference Proceeding 	Other source type than the included criteria

2.2 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria are everything a study must have to be included as they define the parameters for selecting studies to be included in the review. As [35] indicates, including clear and transparent inclusion and exclusion criteria ensures that the review process is systematic, objective, and reliable. In this stage, the inclusion and exclusion criteria are developed including languages, time of publication, databases, subject areas, and document types, as outlined in Table 1 below.

2.3 Literature Search

To obtain the relevant literature, a comprehensive search strategy was developed to retrieve electronic versions of updated articles from the Scopus and Web of Science (WoS) databases, resulting in 6,134 and 291 results, respectively. The keywords and search strategy utilized are outlined in Table 2, employing Boolean operators 'AND' and 'OR' to incorporate each concept into a new field.

Table 2: Summary of Keyword Search

No	Databases	Keyword Search
1	Scopus	ALL Fields ((Plastic* OR “Plastic Waste” OR “Plastic Waste Management”) AND (Circular Economy) AND (Policy* OR “Framework”) AND (Country*))
2	Web of Science (WoS)	ALL=((Plastic* OR “Plastic Waste” OR “Plastic Waste Management”) AND (Circular Economy) AND (“Policy” OR “Framework” OR “Regulatory” OR “Roadmap” OR “Approach” OR “Strategy” OR “Initiative”) AND (“Global” OR “Nation” OR “Country”))

2.4 Data Extraction

In line with the protocol, studies that met the inclusion criteria and were deemed relevant were retrieved for review based on the research questions (RQs). To prevent excluding data that matched the review inclusion criteria, an independent search was conducted to capture relevant articles that were not retrieved previously. Fig. 1 summarized the identified, screened, and included studies, based on PRISMA 2020 flow diagram for systematic review. Initially, 6,425 results were identified from the electronic databases (6,425 results from Scopus and 291 results from WoS). These results were exported into comma-separated values (CSV) files and subsequently converted into Microsoft Excel for analysis. In this process, 121 duplicate records were eliminated, while 6,304 publications were remained for title and abstract screening. Articles that did not meet the inclusion and exclusion criteria were not further screened. Subsequently, 157 publications were screened for eligibility, and finally, 21 of which met all the inclusion criteria and were chosen for further in-depth analysis.

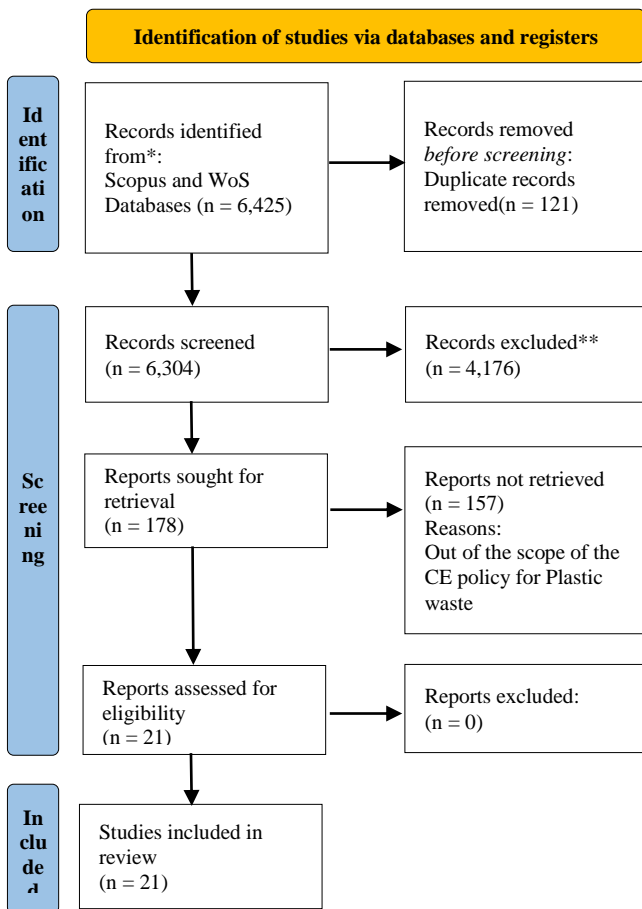


Fig. 1: Overview of PRISMA flowchart

III. RESULTS

As outlined in the methodology section, a total of 21 publications were analyzed. Generally, the Journal of Cleaner Production and Sustainability (Switzerland) had the highest number of articles published. The reason may be these two journals extensively cover environmental and sustainability issues across various sectors including governments, educational institutions, businesses, geographic areas and societies. In addition, the maximum research related to CE policies in plastic waste has been carried out in European Union (EU), China and the Netherland. The distribution suggests that both developed and developing countries are focusing on CE. However, it is important to note that the number of research articles may not necessarily reflect the ground reality. Table 3 shows a summary of the selected studies, including several details such as authors, document title, publisher, field of research, and the document type. Fig. 2 presents the country-wise distribution of publication.

Table 3: Details of Selected Review Article and Proceedings Paper

Authors	Journal	Publisher	Field	Document Type
Awino and	Integrated	John Wiley	Developing	Review

Apitz (2024)	Environmental Assessment and Management	and Sons Inc	Countries; Waste Collection; Separation at Source	
Chenavaz and Dimitrov (2024)	Journal of Cleaner Production	Elsevier Ltd	Industrial Symbiosis; Sustainable Development; Circular Economy	Article
Li and Mu (2024)	Sustainability (Switzerland)	Multidisciplinary Digital Publishing Institute (MDPI)	Community Participation; Green Product ; Environmental Attitudes	Article
Yu et al. (2023)	Recycling	Multidisciplinary Digital Publishing Institute (MDPI)	Plastics ; Marine Debris; Litter	Review
Zhang et al. (2023)	Journal of Environmental Management	Academic Press	Community Participation; Green Product ; Environmental Attitudes	Article
Calisto Friant et al. (2022)	Sustainability (Switzerland)	Multidisciplinary Digital Publishing	Plastics ; Marine Debris;	Article

		g Institute (MDPI)	Litter	
Murti et al. (2022)	IOP Conference Series: Earth and Environmental Science	Institute of Physics	Plastics ; Marine Debris; Litter	Conference Paper
Calisto Friant et al. (2021)	Sustainable Production and Consumption	Elsevier B.V.	Industrial Symbiosis; Sustainable Development; Circular Economy	Article
Feng and Lam (2021)	Chinese Economy	Routledge	Industrial Symbiosis; Sustainable Development; Circular Economy	Article
Subekti (2023)	Yustisia	Sebelas Maret University Faculty of Law	-	Article
Herrador and Van (2024)	Science of the Total Environment	Elsevier B.V.	Industrial Symbiosis; Sustainable Development; Circular Economy	Article

Ogutal. (2023)	Frontiers in Sustainability	Frontiers Media S.A.	Industrial Symbiosis; Sustainable Development; Circular Economy	Article
Ting et al. (2023)	Environment, Development and Sustainability	Springer Science and Business Media B.V.	Industrial Symbiosis; Sustainable Development; Circular Economy	Article
Kamalakkannan et al. (2022)	Sustainability (Switzerland)	Multidisciplinary Digital Publishing Institute (MDPI)	Plastics ; Marine Debris; Litter	Article
Kamarudin et al. (2022)	Res Militaris	Association Res Militaris	Plastics ; Marine Debris; Litter	Article
Ahmed et al. (2022)	Heliyon	Elsevier Ltd	Industrial Symbiosis; Sustainable Development; Circular Economy	Review
Herrador et al. (2020)	Journal of Cleaner Production	Elsevier Ltd	Industrial Symbiosis; Sustain	Review

Auth ors	Journa l	Publisher	Field	Docu ment
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			able Develo pment; Circula r Econo my	
Tsai (2022)	Environ ments - MDPI	Multidis ciplinary Digital Publishi ng Institute (MDPI)	Plastics ; Marine Debris; Litter	Articl e
Fitch-Ro y et al. (2022)	Journal of Cleaner Product ion	Elsevier Ltd	Industri al Symbio sis; Sustain able Develo pment; Circula r Econo my	Articl e
Fadeeva and Berkel (2020)	Journal of Environ mental Manage ment	Academi c Press	Plastics ; Marine Debris; Litter	Revie w

				Type
Fan and Fang (2021)	Environmental Impact Assessment Review	Elsevier Inc.	Industrial Symbiosis; Sustainable Development; Circular Economy	Article

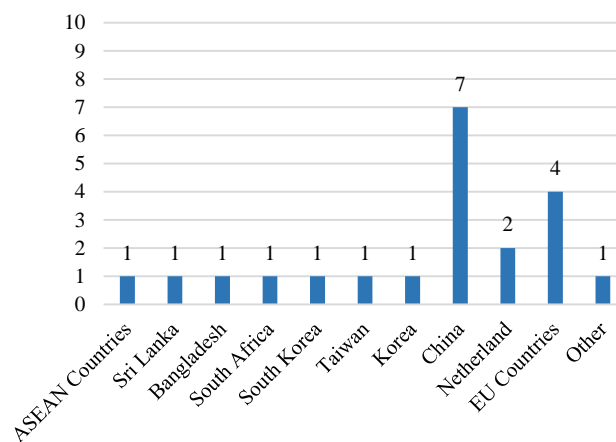


Fig. 2: Country-wise Distribution of Publication

IV. FINDINGS AND DISCUSSION

A. Circular Situation in Malaysia

According to a report published by World Wide Fund for Nature – Malaysia (WWF-Malaysia), approximately 1.07 million tonnes of annual post-consumer plastic waste is generated in Malaysia in 2016 [39]. Comprising mostly Polyethylene Terephthalate (PET), Polypropylene (PP), Low-Density Polyethylene/Linear Low-Density Polyethylene (LDPE/LLDPE), and High-Density Polyethylene (HDPE), this figure rose to approximately 1.40 million tonnes in 2019 [24]. This poses a specific challenge with regard to post-consumer plastic waste, which commonly comprises a diverse mix of various polymer types and additives. Such waste is often generated from products with short-lifespans and single-use plastic packaging materials. Unfortunately, 76% of all post-consumer plastic waste consumed in Malaysia is disposal in landfills, rather than pivoting towards recycling or reuse, resulting in an 81% of loss of the material value [38].

In response to the negative consequences of the plastic waste and to move decisively towards a more sustainable plastics economy, the Malaysian government has reinforced the shift from linear towards the CE model by establishing specific sections and regulations within existing laws to offer partial solutions and primarily revolve around plastic waste management. These include, the Environmental Quality Act 1974, the Solid Waste and Public Cleansing Management Act 2007, and the Environmental Quality

(Scheduled Waste) Regulation 2005 to demonstrate its initiatives towards promoting resource circulation [29]. Another CE initiatives announced by our former Prime Minister on 27 September 2021 is the Twelfth Malaysia Plan 2021-2025. Moreover, in October 2018, another the Malaysian government launched another initiative aimed at transitioning towards a CE: “Toward Zero Single-Use Plastics for A Cleaner and Healthier Environment in Malaysia by 2030”. The Roadmap, aimed to reduce the use of single-use plastics and manage plastic waste across industries, is being implemented and enforced across sectors and households in Malaysia through three distinct phases. This entails enforcement measures such as “no straw by default” policies in fixed establishments, imposing a charge of RM 0.20 for plastic bag usage, investing in research and development for eco-friendly alternatives to plastic products, reviewing and enhancing the legal framework concerning single-use plastics, initiating a regional marine debris project, among other initiatives.

Obviously, the Malaysian government has set ambitious goals towards the sustainability and reinforces the shift from linear towards the CE model for plastic. However, [21] highlighted that Malaysia's approach remains fragmented as CE has yet to be implemented as a separate policy and is only presented in some sections of the plan. Unfortunately, this has not effectively dealt with plastic wastes in Malaysia. Consequently, the absence of comprehensive legislation tailored to the CE principles suggests a gap in the regulatory policy framework for supporting the transition towards a CE for plastic waste in Malaysia.

In relation to the ineffective policy made by the government, a concrete guidelines and legislation for the CE must be developed at haste [29]. It has been a major concern as it opposes challenges in ensuring an explicit CE policy framework for plastic waste in Malaysia is implement, in order to contribute to less plastic being downcycled, incinerated and landfilled, and contribute to making plastic waste a resource for new products in a closed-loop production and consumption system.

B. The Potential of Adoption of Circular Economy

According to [5], comprehensive regulatory policies are crucial for fostering the CE transition by focusing on four main types of policies: extended producer responsibility (EPR), product design and labelling standards (PDLs), bans and restrictions (BR), and deposit schemes (DS). Regulatory policies are legal protection and play supporting role in the development of CE. As identified above, three countries including China, European Union (EU), and Netherland serve as good examples for adoption in this study as they have adopted regulatory policies that included these four main types of policies. The regulatory policies that were the object of study, by the articles selected in the databases are shown in Table 4.

Table 4: The CE of Plastic Waste in China, EU, and Netherland

Country	Policy	Method of CE	Method of CE			
			EPR	PDLs	BR	DS
China	Circular Economy Promotion Law (2008)	-Implementing EPR for the collection, recycling, and disposal of packaging waste	√			
		-Creating a Plastic Recycling Fund to support the collection, recycling, and treatment of post-consumer plastic waste	√			

		-Adopting a Green Dot program for packaging materials, where producers and importers affix a green dot symbol on packaging to indicate compliance with EPR obligations and financial contribution to packaging waste recovery and recycling efforts	√	√		
	13 th Five Year Plan (2016-2020)	-Implementing EPR framework	√			
		-73% reuse rate for industrial solid waste	√			
		-90% treatment rate for domestic waste in rural area by 2020	√			

Country	Policy	Method of CE	Method of CE			
			EPR	PDLS	BR	DS
	National Sword Policy National Development and Reform Commission 14 th Five Year Plan (2021-2025)	- Prohibiting the import of foreign waste from the country			√	
		- Nationwide ban on the production, sale, and use of plastic shopping bags that are less than 0.025 mm thick			√	
		- Redesign of key products	√	√		

		-Increasing waste collection and recycling	√			
		-Governance for plastic pollution	√			
		-Emphasise the full-chain governance of plastic pollution	√			
EU	Directive on the Reduction of the Impact of Certain Plastic Products on the Environment (EU2019/904)	-Bans several single-use plastics (SUPs) (e.g. cotton bud sticks, cutlery, plates, stirrers, straws, etc.) by July 3 rd , 2021			√	
		-PET SUPs bottles must consist of 25% recycled plastic by 2025 and increase to 30% by 2030		√		
		-Caps and lids of SUP bottles must remain		√		
		- Responsible consumer behaviour is incentivised by providing information on reusable alternatives, the environmental impacts of SUPs, and optimal waste management options				√
		-Establish EPR system	√			

		by December 31 st 2024				
	Circular Economy Action Plan (2020)	-Reduce the EU's consumption footprint and double the EU's circular material use rate by 2030	√	√		
		- Establish mandatory requirements for recycled plastic content and measures to mitigate plastic waste for key products such as packaging by 2021/2022	√	√	√	
		- Implement restrictions on intentionally added microplastics and measures to address the unintentional release of microplastics by 2021			√	
		- Implement a policy framework for bio-based plastics and biodegradable or compostable plastics by 2021	√	√		
		- Implement a policy framework for bio-based plastics and biodegradable or compostable	√	√		

		plastics by 2021				
		-Introduction of a tax on non-recycled plastic waste starting in 2021	√			
Strategy for Plastics in a Circular Economy		-All plastics packaging introduced into the EU market must be reusable or easily recycled in a cost-effective manner by 2030	√	√		
		-Recycle more than 50% of plastics waste generated in Europe by 2030	√			
		-Four-fold increase in sorting and recycling capacity and enhanced separate collection systems by 2030	√			
		-Increase utilization of innovative materials and alternative feedstocks (non-fossil fuel) for plastic production	√	√		
		-Greater adoption of circular solutions to enhance plastic waste prevention (e.g.	√	√		

		implementing reverse logistics for packaging and exploring alternatives to disposable plastics)				
		- Ensure that deposit return system (DRS) are set up for SUP beverage bottles with a capacity of up to 3 litres by 1 January 2029				√
		- Producers of packaging would have extended producer responsibility for the packaging that they sell	√	√		
Netherland	A circular economy in the Netherlands by 2050	- 50% reduction in the use of primary raw materials by 2030 and to become 100% circular by 2050	√	√		
		- A decrease in exports of unsorted plastics (mainly to China) due to stricter controls here (Human Environment and Transport Inspectorate) and import restrictions elsewhere			√	
	Plastic Pact NL (2019)	- Ensuring all plastic products and packaging are reusable whenever possible and appropriate, and in any case, are 100%	√	√		

		recyclable				
		- Implementing a reduction of 20% in plastic usage compared to the reference year 2017 through measures such as minimizing consumption, promoting increased reuse, and utilizing alternative sustainable materials	√	√		
		- Ensuring the efficient recycling of at least 70% of all single-use plastic products and packaging disposed of in the Netherlands to meet high standard	√	√		
		- Implementing the use of the maximum feasible quantity of recycled plastics in all single-use plastic packaging and products, a minimum average of 35% per participating plastics-using company	√	√		
	National Waste Management Plan	- Landfilling and incineration without energy recovery for all types of plastic waste are prohibited			√	
	Deposit-return System (DRS)	- In July 1 st 2021, a 15 cents deposit will be added to each small plastic bottle (< 1 litre). The deposit on larger plastic bottles (> 1 litre)				√

		will remain at 25 cents				
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Table 4 presents a comparison of success indicators related to the CE, specifically highlighting regulations and strategies. Regulation plays a crucial role in the development of the CE. In some countries, CE implementation is specifically governed by a single comprehensive legal framework. For instance, both the EU and the Netherlands have implemented the “Circular Economy Action Plan” as the central guidelines for implementing a CE across multiple policy sectors. Similarly, China has made significant progress in CE policy over nearly two decades through its “Circular Economy Promotion Law”, effectively transforming the nation into a CE leader.

Based on the comparison presented in Table 4, it can be concluded that Malaysia’s current CE regulatory policy lack comprehensive to drive the transition towards a CE for plastic waste. Unlike China, the EU, and the Netherlands, Malaysia currently lacks a comprehensive national legal regulatory policy specifically targeting the CE. In Malaysia, the transition to a CE is predominantly focused on minimizing the negative consequences of waste and pollution, with less attention on maximizing the value of raw materials. Although requirements governing sustainable economic activities are included in a number of multi-sectoral laws, there are still differences in how these regulations are actually implemented in practice since there are no technical regulations pertaining to the relevant regulations' implementation mechanism. In addition, implementation may vary and be inconsistent throughout Malaysia due to variances in authority between the Federal and State governments.

Therefore, there is a crucial need to enact legislation specifically designed to govern the CE. A comprehensive CE regulatory policy should be developed to ensure optimal regulation and applicability across all sectors, thereby enhancing CE implementation in Malaysia from a legal standpoint. After reviewing and comparing data from various nations, it is evident that key aspects to be regulated within CE legislation involve the establishing regulatory policies for plastic waste management, promoting resource efficiency and sustainability, encouraging closed-loop production processes, and imposing penalties for non-compliance with CE principles and regulations. In order to facilitate the transition towards a fully-fledged CE for plastic waste in Malaysia, the following policy recommendations are proposed:

- (a) A comprehensive national policy is essential for governing the adoption of the CE.
- (b) The policy should clearly define the roles and responsibilities of the various stakeholders involved in implementing CE initiatives.
- (c) CE policies should include national-scale measures concerning regulation, taxation, and standardization.
- (d) Local governments plays a crucial role in monitoring the implementation of CE regulations, particularly concerning plastic waste and other aspects of CE initiatives within their jurisdictions.
- (e) Government should actively regulate the plastic waste management industry and households environmental practices.

CONCLUSION

The global transition to circularity has been facilitated by the enactment of various regulatory policies in many countries. Although the Malaysia government has formally issued numerous plans and frameworks addressing plastic waste management, proper implementation has not been achieved. Existing laws and regulations pertaining to environmental management, including the Environmental Quality Act 1974, the Solid Waste and Public Cleansing Management Act 2007, and the Environmental Quality (Scheduled Waste) Regulation 2005, have not effectively overseen the adoption of CE policies in

Malaysia. Hence, it is imperative for the government to demonstrate commitment to implementing CE policies, such as establishing institutional and technical regulations. With a well-formulated strategic plan and systematic policy, Malaysia can continue making strides towards its goal. This paper addresses a significant research gap by examining Malaysia's CE policies, offering policy recommendations that are pertinent for practitioners and academics aiming to enhance their understanding of CE implementation. Furthermore, the research findings have implications for government, corporate sector, and community, demonstrating how embracing the CE concept can mitigate plastic waste and influence the formulation of more effective approaches and practices in business. Hence, there is a pressing need for the development of policies to foster a unified vision across initiatives in transitioning to a comprehensive CE framework.

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