The Regulatory Frameworks in Monitoring and Controlling Mechanisms of Retail Solid Waste in Malaysia

Anis Najihah Mazlan[1] and Ani Munirah Mohamad[2]

[1]Universiti Utara Malaysia, Malaysia
[2]Universiti Utara Malaysia, Malaysia
anismazlan6@gmail.com

Abstract: Malaysia is facing difficulty in handling retail solid waste monitoring and controlling mechanisms as a result from the increase in the amount of solid waste produced, rising urban population and industrialisation. The retail industry as one of the major contributors of solid waste in Malaysia also contributes to ecological pollution caused by the excessive amount of retail solid waste disposed in the landfill. The problem still persists despite the efforts made by government to reduce the amount of retail solid waste through the current regulatory frameworks. This paper seeks to examine the regulatory frameworks governing the retail solid waste monitoring and controlling mechanisms in Malaysia through doctrinal legal research method. The regulatory frameworks include the Local Government Act 1976, Environmental Quality Act 1974, Street, Drainage and Building Act 1974, Solid Waste and Public Cleansing Management Act 2007, Malaysia's Roadmap to Zero Single-Use Plastics, National Cleanliness Policy and Food Waste Management Development Plan. The study found that the recent regulatory frameworks have shifted from linear to circular economy to divert the waste from being disposed in the landfill but there are ambiguity in focusing on the monitoring and controlling mechanisms, the lack of uniformity and enforcement, the lack in promoting the 3R agenda, the insufficiencies in retailers' accountability, the lack of comprehensiveness, the lack of legal repercussions and the delay in improving the current regulatory framework governing the retail solid waste in Malaysia. Admittedly, the regulatory frameworks governing retail solid waste play a crucial role in enhancing waste sustainability. The findings would contribute to better understanding of regulatory frameworks in monitoring and controlling mechanisms of retail solid waste in Malaysia, and become a catalyst for future researches in the same area.

Keywords: Regulatory Frameworks, Retail Solid Waste, Solid Waste Monitoring and Controlling Mechanisms, Solid Waste Management

© The Author(s) 2024
R. Abdul Rahman et al. (eds.), *Proceedings of the 12th UUM International Legal Conference 2023 (UUMILC 2023)*, Atlantis Highlights in Social Sciences, Education and Humanities 15,
https://doi.org/10.2991/978-94-6463-352-8_24

1 Introduction

1.1 Retail Solid Waste

Waste can be produced from various sources such as construction, institutional, commercial, household and industrial [1]. One of the types of businesses that produce waste under the commercial sector is the retail industry [1]. Retail solid waste is categorised under the commercial waste which is the second largest contributor of solid waste in Malaysia [2]. Malaysia is facing difficulty in handling solid waste management as a result from the increase in the amount of solid waste produced, rising urban population and industrialisation [3]. The retail industry is included within the scope of commercial sector and one of the main service sectors in Malaysia that contributes to ecological pollution through high production of solid waste [4]. The retailers are among the major contributors of solid waste in the form of packaging and food waste [4]. Food waste makes up the majority of the solid waste produced in Malaysia (45%), followed by plastic (13%), paper (9%) and diapers (12%) [5].

1.2 The Monitoring and Controlling Mechanisms of Retail Solid Waste

Solid waste monitoring mechanism involves the activity of keeping track of the waste and allows the waste generators to control the waste by recognising the present level of waste production and calculating the amount of waste created [6]. It also optimises the waste generated through utilising the resources and materials involved in the solid waste management [6]. The example could be seen from collecting sufficient database in regard to the process of handling waste such as production, collection and recycling [7]. The controlling mechanism of solid waste on the other hand, is associated with the control measures taken to reduce the amount of waste generated. For instance, the waste control practices in Malaysia are conducted through legal instruments and the extensive research on the best methods to dispose solid waste [8]. Additionally, sustainable waste disposal and treatment methods such as using the incinerator, composting, and Anaerobic Digester machine could become effective controlling mechanisms as they reduce the solid waste from being disposed into the landfill. Finding other alternatives to divert the solid waste from being disposed in the landfill such as 3R (reduce, reuse, recycling) activities can also be regarded as control measures to reduce waste. This indicates that monitoring and controlling mechanisms of retail solid waste are connected to each other as solid waste monitoring could assist in controlling the amount of waste produced through utilising available resources. The mechanisms aim to provide sustainable retail solid waste management while reducing the environmental pollution.

2 Problem Statement

The retail industry as one of the major contributors of solid waste in Malaysia causes ecological pollution as a result from the excessive amount of retail solid waste disposed in the landfill. The problem still persists despite the efforts made by government to reduce the amount of retail solid waste through the current regulatory frameworks. The

main disposal method of solid waste in Malaysia is the landfill despite it being unsustainable due to its harmful effects on the environment [9]. The monitoring and controlling mechanisms in the retail solid waste involves control measures taken to reduce the waste through the most suitable waste disposal method. This affects the retail solid waste monitoring and controlling mechanism as it does not reduce the amount of waste produced. It is important for other alternative to be enforced in the regulatory framework for the purpose of diverting the solid waste from being discarded in the landfill. However, the current regulatory framework is still unclear regarding the matter. Most of the retailers in Malaysia are still depending on the landfill and are not obliged with responsibilities to recycle their solid waste. This calls for the policy maker in Malaysia to update the current regulatory framework governing the monitoring and controlling mechanisms of retail solid waste to reduce dependency on the landfill [10].

3 Research Question and Purpose of Study

This study will inquire on what are the current regulatory frameworks governing the monitoring and controlling mechanisms of retail solid waste in Malaysia? Thus, this paper seeks to examine the regulatory frameworks governing the retail solid waste monitoring and controlling mechanisms in Malaysia to identify the lacuna or gaps that exist in the current regulatory frameworks. This is due to the unsustainable and unclear retail solid waste monitoring and controlling mechanisms in Malaysia despite the existence of various regulatory frameworks.

4 Research Methods

This research applies doctrinal legal research which undertakes the qualitative research method through documentary data. The primary and secondary data such as Malaysian statutes, policies, academic publications, journals and online sources will be collected through the library-based research. The data will be analysed through content, descriptive and analytical approach.

5 The Regulatory Frameworks in Monitoring and Controlling Mechanisms of Retail Solid Waste

5.1 Environmental Quality Act, 1974 (Act 127)

Act 127 is implemented in the whole Malaysia for the purpose of prevention, abatement, control of pollution and enhancement of the environment. This Act is one of the earliest Act introduced to govern the matters pertaining to retail solid waste in Malaysia. Any person is forbidden from committing the disposal of waste produced from trade business to the atmosphere under section 21, disposal to the land under section 24 and disposal to inland waters under section 25. The failure to comply could cause the person to be liable to a fine not exceeding ten thousand ringgit or to imprisonment for not more than two years or both. It could be seen that Act 127 is vague in terms of retail

solid waste monitoring and controlling mechanisms as there are no specifications made for the types or sources of waste produced. The Act mainly focuses on the types of location that are prohibited for the disposal of the retail solid waste such as the atmosphere, soil and inland waters. The prohibitions however, are made to control and prevent the effects of pollution which is in line to the purpose of the retail solid waste monitoring and controlling mechanisms.

5.2 Street, Drainage and Building Act 1974 (Act 133)

This Act is only implemented in Peninsular Malaysia and is enacted to combine the regulatory frameworks governing street, drainage and building. Section 46 of the Act governs the retail solid waste monitoring and controlling mechanisms through prohibiting the disposal of retail solid waste to public places within a local authority. The incompliance will result to a fine not exceeding five hundred to one thousand ringgit. This Act generally do not focus on retail solid waste monitoring and controlling mechanisms, as its main purpose is to ensure the public cleanliness instead of solid waste management.

5.3 Local Government Act 1976 (Act 171)

The Local Government Act 1974 (Act 171) is implemented in the whole Peninsular Malaysia and is not applicable in the West Malaysia such as Sabah and Sarawak. The jurisdiction pertaining to retail solid waste fall under Part 9 of the Act which specifically mentions Food, Markets, Sanitation and Nuisances. The markets here are referred to the businesses conducted in public premises involving food, clothing or other merchandises as stated under section 2 of the Act. The Local Authorities in Peninsular Malaysia has been authorised to establish, maintain and carry out sanitary services particularly, the disposal, destruction or any dealing regarding the rubbish, litter, dead animals as well as all kinds of refuse and effluent under section 72 of Act 171.

The retail solid waste monitoring and controlling mechanisms is governed under this section as it provides the Local Authorities with duties to monitor and control the disposal through ensuring that the retail solid waste is not disposed illegally in prohibited areas. However, Act 171 is still unclear about the mechanisms as they are not mentioned directly and only being integrated upon. There is also no specification on retail solid waste disposal and treatment methods that can be applied such as the 3R agenda (reduce, reuse and recycle).

Nevertheless, this Act gives the power to Local Authorities to enact subsidiary legislations under section 102 for the best interest of health, safety and well-being of the inhabitants for various purposes that include monitoring and controlling retail businesses. However, this leads to the lack of uniformity in the regulatory frameworks in terms of its enforcement as the subsidiary legislations that are enacted only applied to the particular local authority only and are not implemented outside the particular jurisdiction of that local authority.

5.4 Solid Waste and Public Cleansing Management Act 2007 (Act 672)

Act 672 is only applicable in six states which are Perlis, Kedah, Pahang, Negeri Sembilan, Melaka, Johor and two Federal territories which are Kuala Lumpur and Putrajaya. Act 672 is the main legislation governing retail solid waste monitoring and controlling mechanisms in Malaysia but its enforcement is not executed widely throughout Malaysia which indicates the lack of standardisation on the enforcement of the regulatory frameworks.

Section 71 of Act 672 forbids any person from carrying out any unauthorised depositing, separating, storing, collecting, transporting, and disposing the solid waste not in accordance with this Act. The person who contravenes the requirement will be considered as making an offence and will be liable to a fine from ten thousand ringgit to one hundred thousand ringgit and may be liable for imprisonment from six months to five years or both as stated under section 71. Section 72 of the Act also makes the solid waste generators to monitor and control the solid waste through preventing solid waste in their possession from escaping by taking into action reasonable measures. Section 71 and 72 of Act 672 integrates the monitoring and controlling mechanisms through ensuring that the retailers and other stakeholders involved in the process have to monitor and control the process to be in accordance with the Act.

Moreover, section 101 of the Act gives authority to the Minister to require for solid waste generators including the retailers to reduce the amount of solid waste produced and promoting recycling through having an efficient system for labelling the recyclable materials. The Minister also may require for any action that is carried out to reduce, reuse and recycle the solid waste. The contravention of the Act will cause the person to be imposed a fine not exceeding ten thousand ringgit or to imprisonment for six months or both. This Act also authorises the Minister to make regulations if necessary, under section 108 for the purpose of providing the solid waste collection and disposal manner, as well as the methods on how recycling is conducted.

The provisions of Act 672 however, is still lacking in promoting the 3R agenda. The order to conduct the 3R activities from the Minister requires a long process and procedures until the order is published in the Gazette. There is no provision that directly oblige the 3R agenda to be imposed on the retailers. This act also mainly caters for solid waste management services such as storage, collection, transfer, processing, and disposal and not the process involved before the solid waste is produced, which is reuse and reduce. It is still ambiguous in stating the manner in which the recycling could be conducted by the retailers or any of the solid waste generators. Besides, the act of monitoring the retail solid waste produced is integrated within provisions of the Act through section 71 and 72 but are not explicitly stated. This shows the insufficiencies and the lack of comprehensiveness in the current regulatory framework governing retail solid waste in Malaysia.

5.5 Solid Waste and Public Cleansing Management Corporation Act 2007 (Act 673)

Act 673 was enacted to set up a Federal Agency which is the the Solid Waste Management and Public Cleanliness Corporation (SWCorp) to enforce Act 672. The function of SWCorp is as laid out under section 17 of Act 673 which include recommending and

implementing the solid waste and public cleansing management regulatory frameworks, monitoring the enforcement whether it complies to the standards of solid waste management services, and imposing fees for the services. Act 673 authorizes SWCorp to govern retail solid waste monitoring and controlling mechanisms and only applicable to the states which enforce the Act.

5.6 Solid Waste and Public Cleansing Management (Scheme for Commercial, Industrial and Institutional Solid Waste) Regulation 2018 [P.U. (A) 181/2018] (ICI Regulations 2018)

The ICI Regulations 2018 is particularly introduced to provide guidelines on the duties to manage the commercial, industrial and institutional solid waste. The retail solid waste is included within the jurisdiction of commercial solid waste. Rule 7 of the ICI Regulation 2018 requires the retailers to segregate the solid waste into four categories (i.e. residual, bulky, recyclable and garden solid waste) as stated under rule 4. The obligation to conduct waste segregation at source encourages recycling which may assist in reducing the amount of retail solid waste in the landfill. Rule 7 imposes punishment of a fine of ten thousand ringgit for the failure of retailers to comply with the waste segregation. The obligation imposed on the retailers directly allow them to monitor and control the retail solid waste produced. Nevertheless, the four categories are insufficient as there is no category particularly for organic solid waste (i.e. food waste) which should be handled separately. This is for the purpose of diverting the waste from being disposed in the landfill as a mean to reduce the greenhouse gases emission [11]. The amount of organic solid waste is larger than inorganic solid waste (i.e plastic) [5]. Hence, the reduction of organic solid waste could make a positive impact on the amount of retail solid waste produced.

Rule 9 provides obligations to the retailers and other solid waste generators in the commercial, industrial or institutional sectors to keep database on the records of collection services which must be kept for seven years. Rule 13 and 14 also provides the obligation to keep records for the licensee of collection services and licensee for transfer station respectively. The contravention will result to the person be liable to a fine up to ten thousand ringgit upon conviction. It could be derived that the Regulations are in line with the monitoring and controlling mechanisms of retail solid waste in terms of keeping track of the waste through the obligations to produce a database.

However, there are still important details that could be added in the regulations to be enforced on the retailers such as the obligation to record the performance of recycling activities for organic and inorganic solid waste and the types of waste disposal and treatment methods preferred in managing the waste. Since recycling is essential in controlling the amount of retail solid waste produced, a comprehensive regulation in conducting recycling on the part of retailers is needed. The ICI Regulations 2018 still do not provide the obligation for the retailers to control or limit the amount of retail solid waste produced. It also fails to make recycling compulsory and only encouraging them to do so through waste segregation at source.

Nevertheless, the monitoring and controlling of solid waste for the retailers in the commercial sector has been improved through this Regulations as it prescribes the obligations to handle commercial waste particularly, which could be directly applied to the retailers. It also added responsibilities to retailers to monitor and control their solid

waste. However, the enforcement is still not standardised as it is only being implemented in six states and two federal territories which could lead to ineffectiveness in monitoring and controlling mechanisms.

5.7 Green Technology Master Plan Malaysia (2017-2030)

The Green Technology Master Plan (GTMP) for Malaysia (2017-2030) focuses on several major areas, including energy, manufacturing, transportation, construction, waste, and water. This policy laid out the current existing initiatives on municipal solid waste in Malaysia which includes waste treatment and disposal. The government in handling waste treatment and disposal is working on the improvement of policies and upgrading technology in the operation of landfills. The government has directed for the landfill in Malaysia to be built in accordance with sanitary standards with the addition of sustainable features such as liners, leachate collection and treatment, gas harvesting and final covers.

The plan also includes developing the policy on food waste management. The application of green technology in waste reduction, separation and composting is very relevant in food waste management. The Government has developed the National Strategic Plan for Food Waste Management which encourages diversion and minimisation of food waste from entering the landfill, proper treatment of food waste generated and effective recovery of landfill gases.

It has also been underlined in this policy that the government's efforts should focus on changing from waste management to resource efficiency. The priority given should be in accordance with the five steps of the waste hierarchy starting from waste reduction, followed by reuse, recycling, recovery and lastly, disposal which should only be applied as a last resort.

One of the measures taken in executing the waste hierarchy is enhancing policy by strengthening the institutional framework. A National committee on Sustainable Waste Management has been established by the government with an aim to increase the standardisation and coordination on the management of solid waste. In moving towards waste reduction, this Committee should streamline the roles and responsibilities of numerous authorities in creating policies to handle all types of waste. The measures also include formulating policy paper on waste segregation in non-residential areas such as the industrial, commercial and institutional sector after the waste segregation at source in the residential area has been implemented. A detailed action plan on food waste segregation that encourage technology adoption to compact and segregate the waste will also be developed. The government also strives to improve the strategy on the implementation of Waste-to-Energy (WTE) and aims to develop three thermal plants by 2030.

It could be derived from this policy that the government strives to improve the retail solid waste policies by formulating policy paper on waste segregation in commercial sector. The government is moving towards sustainable retail solid waste disposal methods such as using the sanitary landfill and food waste segregation to divert the waste from being disposed in the landfill. The Plan also highlighted waste hierarchy which prioritises the 3R rather than the disposal of waste. This could enhance the retail solid waste monitoring and controlling mechanisms in the country as it reduces the amount of waste. In spite of the facts, this policy is still lacking in providing details about the

plan in strengthening the legal framework governing the retail solid waste monitoring and controlling mechanisms or the solid waste produced in the commercial sector. There are zero suggestion of harsh punishment that can be imposed on the retailers as a result of using of unsanitary landfill or the contravention from applying the waste hierarchy particularly for retailers. There are also no further detail on the baseline data. These show the lack of comprehensive planning in developing the regulatory frameworks governing retail solid waste in Malaysia.

There is also a delay in improving the retail solid waste regulatory frameworks because according to this GTMP policy, the government plans to formulate the policy for the commercial sector after the waste separation at source in residential sector has been enforced. This is understandable as the residential sector is the major contributor of solid waste in Malaysia. When this plan is suggested in 2017 through the GTMP, there are two regulatory frameworks that have been introduced in regard to waste separation at source in the household namely the Solid Waste And Public Cleansing Management Regulations (Scheme For Household Solid Waste And Solid Waste Similar To Household Solid Waste) (Amendment) Regulations 2016 and Source Separation Initiative in 2015 which have not being successfully implemented [12]. These regulations are only implemented in the states that apply Act 672 and are not implemented to the whole country. Since there are not much progress has been made in enforcing the waste separation at source in the household, it might take a long time before the regulatory frameworks in the commercial sector which governs the retail solid waste could be developed.

5.8 Food Waste Management Development Plan for Industry, Commercial and Institution Sector (2016-2026).

This policy is focusing on food waste management as food waste is the majority component of the retail solid waste. There are six strategies outlined in this policy which could be referred to as follows:

The Establishment of Baseline Data. The government has started to spread awareness and engaging with the stakeholders involved in the establishment of baseline data for food waste within the regulatory frameworks from 2015 to 2017. After the enactment of the ICI Regulations in 2018 the obligation to collect baseline data is constructed upon the retailer under rule 9 and waste management service provider under 13 and 14. However, the issuance of data from the retailer is only about collection services and do not involve other details such as the amount of food waste generated. Since food waste is the major contributor of retail solid waste, it is important to track and monitor the food waste management to reduce the food waste generated in Malaysia especially in the retail settings. Reducing food waste could directly reduce the amount of solid waste generated. The establishment of baseline data could strengthen the retail solid waste monitoring and controlling mechanisms regulatory framework and encouraging the cutting down of waste through resources available.

The Establishment of Food Waste Regulation. As of now, there is no legally binding regulatory framework that focus solely for food waste in Malaysia. The governance of food waste management is within the jurisdiction of solid waste management regulatory framework. The current legislation is silenced on the matter of food waste reducing, reusing or recycling. This regulation for food waste should be made to hold the retailers responsible for collecting data, separation of food waste at source, minimisation of food waste and sustainable waste disposal and treatment [13]. This shows that the Plan will be in line with the retail solid waste monitoring and controlling mechanisms through collecting data and practicing 3R.

Food Waste Minimisation at Source. Food waste minimisation is one of the strategies provided in the Plan and one of the most important retail solid waste monitoring and controlling mechanism. The suggestions to reduce the amount of food waste is through making donation to food bank and introducing food reduction programs during festive season [14]. The programs usually organised by non-profit environmental organisation (NGO) incorporated on 2013 where the retailers and other solid waste generators (i.e. manufacturers, distributors, wholesaler, companies or individual) can donate their food waste to be distributed among the needy [15]. In addition, in order to prevent food waste, the organisers should prepare extra food to be handed to locations they have already specified. Dr. Mohd Ali Muhamad Don, senior lecturer at the Academy of Contemporary Islamic Studies at the University Teknologi Mara (UiTM), stated that it is essential to identify the food distribution places in order to prevent food being dumped on particular groups by NGOs during Ramadan [16]. This is because there is always a tendency to dump edible food in the area where the amount of donations exceed beyond the number of receivers.

This could also be applied during the festive season as the amount of food waste increases during the time. Penang Island has observed a rise in food waste from perishables such as prepared food, fruits, and vegetables of 40 tons in just 10 days of Ramadan [17]. The Penang Island City Council has pledged to act to resolve the situation via donation to people in need or used as animal feed. Similar initiatives have been launched by other local governments in Kuantan and Shah Alam where unsold food and beverages from Ramadan Bazaars are given to those in need.

Establishment of Waste Treatment at Source. Waste treatment at source is included within the alternatives that can be applied in avoiding landfill as a waste disposal method. This strategy is expected to control the amount of food waste disposed in the landfill through various waste treatment methods such as composting, Black Soldier's Fly larvae and Zero Waste Community (Zecomm). Black soldier fly larvae composting is the new composting technology that is widely applied in developing countries including Malaysia [18]. It transforms food waste into fertiliser which could greatly reduce the excessive amount of waste generated. The larvae is known to be the best sustainable waste disposal method as it can also process the organic waste in the landfill [19]. These are the sustainable alternatives of food waste disposal which could also be

implemented within the retail sector particularly in handling fruit peels or surplus vegetables. The initiative to include public participation is also suggested through Zecomm which prepares reward for participants who separated recyclable waste and food waste before sending it to Zecomm centre. Those who patriciate in the program will be rewarded with stamp on a coupon that could be exchanged with rice and cooking oil [20]. The methods suggested under the strategy could combat the inadequate waste treatment which has been a challenging issue within the solid waste monitoring and controlling mechanisms in the retail sector.

Centralised Food Waste Treatment Facilities. This strategy involves the Anaerobic Digester Machine facility in the commercial area which include the retailers. The benefits of having a centralised food waste treatment facilities include diverting the waste from the landfill which is the main purpose of retail solid waste monitoring and controlling mechanisms. The centralized facilities also encourage zero waste, reduce the transportation cost by 95%, and reduce the use of garbage truck and RORO by 95% [14]. Besides, the product of AD Machine which converts food waste into burnt ash can be commercialised to be used as fertiliser and construction industry.

Recovery of Methane Gas in the Landfill. Landfill methane is a free and cleaner source of energy compared to the conventional energy sources [21]. This Plan attempts to lower greenhouse gas emissions related to the landfill disposal of food waste through effective management. This is also one of the sustainable retail solid waste disposal methods as it converts the methane gas in the landfill to a source of energy. This method could be adopted by the retailers as their main retail solid waste disposal method is dumping the waste to the landfill.

5.9 Malaysia's Roadmap to Zero Single-Use Plastics 2018–2030

This Roadmap is one of the efforts made by the government to address the issue of single-used plastics pollution in Malaysia. Single-use plastics are plastics that are commonly used for plastic packaging, which is also common in the retail sector. The Roadmap involves the cooperation from all relevant stakeholders to achieve its objectives which is to provide a unified direction of policy to all stakeholders including State Government. Other stakeholders are the NGOs, academia, industry, retailers, federal agencies and state governments. The effectiveness of the implementation of this Roadmap will require the efforts from all stakeholders in the plastic using chain industry such as the retailers.

The problem statements that lead to the birth of this policy are the lack of uniform policy network and low plastic recycling rate. There are forty action plans altogether that will be conducted in three phases from 2018 until 2030. Among the action plans in Phase I include the nationwide enforcement of the charge imposed on plastic bag at a minimum of RM 0.20 and the selling of plastic bag as a stock keeping unit with barcode. In Phase II, a Circular Economy Roadmap (CER) for plastics which includes bottle will be implemented. Technical workshop will be provided to the relevant stakeholders in

the enforcement of CER. The expansion of sustainable replacement of the regular plastic bags such as biodegradable and compostable food packaging, food container and cutleries are expected in this phase. In Phase III, it is expected for significant increase in the volume of biodegradable and compostable replacement of plastics within local consumption. Alternative products in this phase are extended to medical devices, diaper and hygiene products.

This Roadmap also lists substantial challenges arise in its implementation such as the lack of awareness as the habit of littering and unsustainable plastic options are deep rooted in the society. Low recycling rate as food packaging that has lower value compared to clear plastic bottle are almost never recycled. The retail solid waste such as food packaging has always been left out in the recycling industry as they focus on waste materials that hold high value such as plastic bottle. There are also challenges in terms of high prices of current alternatives of plastics which discourage the business owners to sort to other alternative, the high dependency on other stakeholders for the Roadmap to be enforced successfully and the integrated waste management which requires the Roadmap to be integrated with sustainable waste disposal method such as composting that can also convert organic waste into fertilizer as a mean to apply biodegradable alternative option.

This Roadmap is made specifically to cater one of the most common retail solid waste which is plastic. Although the policy does not mention explicitly the monitoring and controlling mechanisms of retail solid waste, there are several monitoring and controlling mechanisms features that are ingrained through the action plans through utilising available resources in the 3R and providing sustainable option for waste disposal and treatment method such as composting. The Roadmap also provides action that need to be taken to implement the circular economy through CER which could reduce the amount of retail solid waste generated. Besides, it highlights the struggle of recycling industries involving retail solid waste such as food packaging that has to be overcome. It is worth noting that all of the suggestions plans provided in the Roadmap could assist in monitoring and controlling the amount of retail solid waste.

5.10 National Cleanliness Policy (2020-2030)

This policy is a government initiative to make Malaysia a clean country and to create a society that adopts the practice of cleanliness in order to guarantee the well-being of the people and sustainability of the environment. There are four objectives of the policies which are to (i) enhance awareness and adopt the practice of cleanliness in the community, (ii) to enhance cleanliness of the surroundings and sustainability of the environment, (iii) encourage waste to money initiatives towards circular economy and (iv) to reinforce governance and enforcement for greater efficiency, effectiveness and integrity. The implementation of the policy is divided into five clusters. The Clusters consist of the (i) awareness of cleanliness, (ii) environmental sustainability, (iii) circular economy, (iv) governance and enforcement and (v) quality and skilled human capital.

The matters pertaining to the retail solid waste could be referred to Cluster 2 which emphasises the needs and actions to maintain environmental sustainability to be in line with the rapidity of national development. Maintenance of cleanliness in this policy encompasses the surroundings in the commercial premises which include the retail set-

ting as well as industrial, institutional premises and public areas. There are three strategies that have been outlined namely (i) Optimise Cleanliness Quality, (ii) Create Clean and (iii) Comfortable Surroundings and Improve Solid Waste Management Mechanisms.

The action plans under the strategies include reinforcing the monitoring and enforcement of the importation of various types of solid waste such as plastic waste and improving the management and procedures for the importation of plastic waste. The action plan urges the government to apply monitoring mechanism in handling waste produced from commercial sector which include the retailers. The action plans also include planning and developing solid waste treatment facilities to be in line with technological advances and providing facilities for the management of solid waste according to the type of residence or building and utilising the environmentally friendly technology. The plans also include encouraging the retailers within the commercial organisations to formulate workplace cleanliness regulations at the organisational level and reinforce the implementation of waste segregation in commercial areas.

Cluster 3 in the policy discusses about the circular economy which requires the government to shift from linear economy to circular economy based on the 3R principles. There are four strategies to achieve this objective which are (i) Promote Practices of 3R and Waste Separation, (ii) Generate Income from Waste (Waste to Money), (iii)Encourage Industry Players to Adopt Circular Economy and (iv) Implement Extended Producer Responsibility (EPR) To Promote Recycling. The action plans include providing collection points for collecting recyclable items and food waste in commercial areas and encouraging the development of recycling facilities close to the area. The policy also encourages the using of the latest technology in processing or treating organic waste such as the Anaerobic Digester (AD), using recycled goods in government procurement projects, as well as developing Waste to Energy (WtE) and food waste treatment facilities. The planning also involves formulating food packaging regulations with the urge to use the recycled materials.

It could be derived that these plans enhance the retail solid waste monitoring and controlling mechanism as it focuses on sustainable waste disposal and treatment method such as recycling and converting waste to energy instead of disposing the waste to the landfill. These plans signify a great step towards providing a sustainable waste management methods for the retailers as they do not have to rely on the same waste disposal method as the residential sector which is landfill and can apply other sustainable alternatives in accordance with different types of waste. It also provides plans for food waste management (collection and treatment) which is crucial for retail solid waste monitoring and controlling mechanisms as the methods are able to reduce the greenhouse gases emission. However, the action plans mainly encourage the retailers with no obligations for the implementation. This policy together with the GTMP and Roadmap are statements of intentions from the government which contain potential benefits to society as a whole. There is no legal repercussions on the lack of enforcement of this policy. This is contrary with the regulatory frameworks enacted by the government such as Act 127, Act 173, Act 171, Act 672, Act 673 that require all parties (subject to restrictions stated in the legislations), including private individuals, groups, and businesses, as well as public figures, organisations, and institutions, to abide by the written law [22].

6 Conclusion

The analysis of the current regulatory framework in retail solid waste monitoring and controlling mechanism in Malaysia indicated a shift from linear economy to circular economy. This is due to the fact that all of the recent regulatory frameworks explicitly strive towards sustainability with emphasis on segregation of waste at source, converting waste to energy, and various sustainable waste disposal and treatment alternatives. Nevertheless, these sustainability features are not mentioned directly on the regulatory frameworks that are introduced in the legislations enacted by the government.

There are several weaknesses that could be found in the current regulatory frameworks such as the lack of uniformity and enforcement as the main legislations governing retail solid waste (Act 672 and Act 673) are only implemented in a few states and not to the whole parts of Malaysia. They are also insufficiencies in uplifting the 3R agenda. There is also ambiguity in terms of retail solid waste monitoring and controlling mechanisms particularly in monitoring and the 3R activities in the legislations that are introduced earlier such as Act 127, Act 173, Act 171. The government also has yet to produce a regulatory framework that particularly focus on the retailers with strong legal effects. There is also the absence of details about the suggestions to strengthen legal framework through database and punishment which show the lack of comprehensiveness of the regulatory framework. Furthermore, there is the lack of accountabilities imposed on the retailers as they are not obliged to control or limit solid waste production. There is also a delay in improving the retail solid waste segregation at source which is caused by the failure to enforce waste segregation within residential sector.

Therefore, the policy makers should incorporate the retail solid waste monitoring and controlling mechanisms that are standardized into the regulatory frameworks that particularly caters for the retailers. A sole focus on the retailers will simplify the enforcement of the regulatory frameworks particularly in regard to food waste management within the retail sector. The recent action plans made by the government about the single-use plastic alternatives, waste disposal alternatives and the waste hierarchy should also be incorporated together with the details particularly on the ways to strengthen legal frameworks. This is in terms of punishment and the specifications involved in the database especially in regard to recycling activities. The formulation of the regulatory frameworks should also be entailed with rigid and strong legal repercussions to ensure a strong compliance from the retailers and other stakeholders that could assist the retailers in executing the plans such as the manufacturer, waste management service provider and the public. This is crucial in moving towards the 12th Sustainable Development Goals (SDG) which highlights the importance of resources efficiency and waste reduction in order to guarantee a better quality of life for the future generations.

7 Acknowledgement

This research was supported by Ministry of Higher Education (MoHE) of Malaysia through Fundamental Research Grant Scheme (FRGS/1/2021/SSI0/UUM/02/20).

References

1. Syed, S.:Solid And Liquid Waste Management.Emirates Journal for Engineering Research, 11(2), 19-36 (2006).
2. Integrated Solid Waste Management : Challenge And Future, http://nehapmalaysia.moh.gov.my/wp-content/uploads/2021/06/Paper-2-Solid-Waste.pdf, last accessed 20/01/2023.
3. Vijayan, G.: Sustainability Practices in Malaysian Grocery Retail Industry. PhD Thesis, Universiti Putra Malaysia, pp. i-ii (2015). http://psasir.upm.edu.my/id/eprint/59107/1/FP%202015%2036IR.pdf
4. Nasir N., Zulkipli F., Mohd Faizal, N.F.S, Mohamad Ghadafy, N., Azman, N.H.: Forecasting Solid Waste Generation in Negeri Sembilan and Melaka. Journal of Quality Measurement and Analysis, (2021) 61-77.
5. Khamis, S. S., Purwanto H.,Rozhan A.N., Mohd Salleh, H.:Characterization of Municipal Solid Waste in Malaysia for Energy Recovery, IOP Conference Series Earth and Environmental Science 264(1):012003 (2019).
6. Optimize Waste Management through Monitoring, Tracking and Analytics, https://wasteharmonics.com/waste-management-monitoring-tracking-analytics/#:~:text=Monitoring%20waste%20also%20reduces%20liability,manage%20proper%20disposal%20and%20logistics, last accessed 22/06/2022
7. Why Should You Care About Preventing Waste?, https://www.epa.gov/p2/why-should-you-care-about-preventing-waste-small-business-guide, last accessed 22/02/2022.
8. Wahi, N., Joseph, C., Tawiec, R. Ikau, R.: Critical Review on Construction Waste Control Practices: Legislative and Waste Management Perspective. Procedia - Social and Behavioral Sciences 224 pp 276 – 283, (2016) doi: 10.1016/j.sbspro.2016.05.460
9. Abd Ghafar, S. W.:"Food Waste in Malaysia: Trends, Current Practices And Key Challenges. Research Gate, (2017).
10. Mohd Yusop, Y. and Othman, N.: Linking the Malaysia's Solid Waste Management Policy Instruments with Household Recycling Behavior. International Journal of Academic Research in Progressive Education and Development, 8 (4) 474-488. (2019). doi:10.6007/ijarped/v8-i4/6567.
11. The benefits of separate organic waste collection, https://www.european-bioplastics.org/the-benefits-of-separate-organic-waste-collection/#:~:text=The%20contamination%20rate%20of%20the,source%20of%20greenhouse%20gas%20emissions, last accessed 20 April 2023.
12. Md Razi H. H., Roslly K.A., Jurimi, S., Sharkawi S.: Why Does Waste Separation At Source Initiative (SSI) Did Not Fully Commission In Malaysia? An Exploratory Preliminary Study. Journal of Entrepreneurship, Business and Economics, 10(2) 86–109. (2022).
13. Mahdzir, N., Mohamad A.M, Abdullah, N.A., Mohd Noor, N.F., Idris, S.H.: The Need For Food Waste Monitoring And Control Mechanism Among Retailers: Towards Malaysian Environmental Sustainability. UITM INTERNATIONAL CONFERENCE ON LAW & SOCIETY 2021, Shah Alam, Malaysia .
14. Food Waste in Malaysia: Challenges and Initiatives, https://apec-flows.ntu.edu.tw/upload/edit/file/APEC2019302.pdf, last accessed 27/12/2022.
15. Food Aid Foundation, https://foodaidfoundation.org/, last accessed 07/01/2023.
16. Experts: Food wastage expected to last till end-Syawal, https://selangorjournal.my/2023/04/experts-food-wastage-expected-to-last-till-end-syawal/, last accessed 17/04/2023.

17. Reduce Food Waste, 15000 tonnes daily is too much, https://www.thesundaily.my/opinion/reduce-food-waste-15-000-tonnes-daily-is-too-much-CE897613, last accessed 20/12/2022.
18. Attiogbe, F.K., Ayim, N.Y.K, Martey J.: Effectiveness of black soldier fly larvae in composting mercury contaminated organic waste. Scientific African, 6. (2019). https://doi.org/10.1016/j.sciaf.2019.e00205
19. Malaysia to use black soldier fly larvae in organic waste treatment, https://www.channelnewsasia.com/sustainability/malaysia-black-soldier-fly-organic-waste-treatment-2630526, last accessed 15/08/2022.
20. More households embracing waste separation, https://www.nst.com.my/news/nation/2020/02/568249/more-households-embracing-waste-separation, last accessed 22/08/2022.
21. Noor Z.Z., Yusuf, R.O, Abba A.H, Abu Hassan, M.A., Mohd Din M.F.: An overview for energy recovery from municipal solid wastes (MSW) in Malaysia scenario. Renewable and Sustainable Energy Reviews 20, 378-384. (2013)
22. "Difference Between Law and Policy, https://www.differencebetween.info/difference-between-law-and-policy, last accessed January 20, 2023.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.