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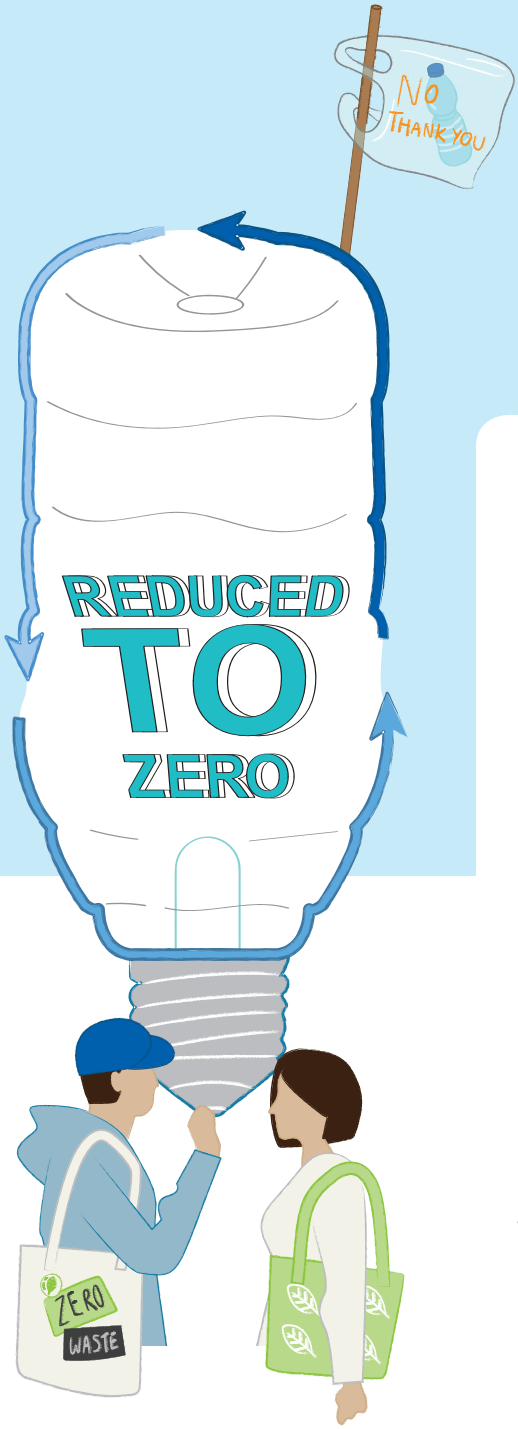
On behalf of:
Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
of the Federal Republic of Germany

MAJLIS BANDARAYA SHAH ALAM



STUDY ON SHAH ALAM CITY'S SINGLE USE PLASTIC (SUP) BASELINE AND THE CITY'S CURRENT POLICIES AND PRACTICES ON SUP MANAGEMENT

(DECEMBER 2021)
Supported by
The Collaborative Actions for Single-Use Plastic Prevention in South-East Asia (CAP SEA)

FOREWORD

The global project Export Initiative Environmental Technologies (ExI), funded by the Federal Ministry for the Environment, aims to create sustainable and favourable conditions for introducing of resource-efficient, climate-friendly, and innovative technologies in its target countries. For the regional project "Collaborative Action for Single-Use Plastic Prevention in Southeast Asia" (CAP SEA), the module aims to reduce disposable plastic waste, focusing on prevention and reuse. To achieve this, CAP SEA provides policy advice to stimulate a recycling economy, capacity development for key stakeholders, local pilot activities and support for innovative business models for SUP prevention.

Since 2017, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports the German Federal Ministry for the Environment, Nature Safety and Consumer Protection (BMUV) initiative by providing advisory services and coordinating activities to support the development of framework conditions that enable the introduction of environmental approaches and technologies in partner countries. The project measures are implemented in collaboration with bilateral projects of German technical cooperation in seven countries (Egypt, India, Indonesia, Malaysia, Jordan, Thailand, and Ukraine) but also in global modules. The staffs deployed locally form the point of contact for other ongoing projects carried out by BMUV grant recipients in these countries. This promotes the regular exchange of information and experiences between the projects and creates synergies. In addition, the projects are better embedded in the strategies of the target countries.

The supported measures build up technical and institutional know-how and foster knowledge and technology transfer, raise environmental awareness, and build capacities, thereby contributing to the transition to more circular economies and the achievement of specific sustainable development goals (SDGs).

General information about the project module in South-East-Asia: Malaysia

In Malaysia, CAP SEA supports to the Malaysia's Roadmap Towards Zero Single-Use Plastics (2018-2030), Malaysia Plastics Sustainability Roadmap (2021-2030) and the Twelfth Malaysia Plan (2021-2025). CAP SEA implementation in Malaysia has recognized that introduction of circular economy (CE) principles in the production and trade along the waste generation hierarchy (i.e., reduce, reuse, recycle) are essential solution, and these focuses on SUP prevention strategies. The Malaysian government support could be alleviated by providing incentives mechanism (e.g., preference for packaging-free solutions in the context of public procurement), recycling market development (e.g., reducing barriers and stimulating post-consumer recycling content in products), a gradual introduction of Extended Producer Responsibility (EPR), bans on certain SUPs, and voluntary commitments by main polluters.

CAP SEA implementation in Malaysia has four technical work packages, of which Technical Working Group 4 (TWG 4) focusses on SUP prevention pilot project. The objective of TWG 4 is to develop an integrated pilot project, to test a comprehensive approach to prevent SUP and to implement the Roadmap Towards Zero Single-Use Plastics at local level.

Supported by Malaysian Green Technology and Climate Change Centre (MGTC), CAP SEA has set selection processes and criteria for finalisation on one SUP prevention pilot at local council level. The selection included different criteria such as readiness of the local government, to inclusion of businesses, industries, communities, and other relevant stakeholders. The Shah Alam City Council (MBSA) met the most requirement and thus shortlisted as the pilot site for TWG 4 activities. Since selection in last quarter of 2020, MBSA has demonstrated a very high commitment and support for TWG 4. MBSA officers also actively participate on relevant technical capacity building events, webinars and project steering meeting organized by GIZ (local and global).

Study on Shah Alam City's Single Use Plastic (SUP) baseline and the city's current policies and practices on SUP Management

The objective of this report is to present the findings from the recently conducted survey on the baseline practices as well as to assess in depth the available policies at national, state and local level. For this report, SUP shall be defined as:

"Single-Use Plastics" often referred to as disposable plastics, are commonly used for plastic packaging and include terms intended to be used only once before they are thrown away or recycled. These include, among other items, grocery bags, food packaging, bottles, straws, containers, cups and cutlery" (reference: United Nations Environment Programme, UNEP (2018): Single-Use Plastics: A Roadmap for Sustainability)

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EXECUTIVE SUMMARY

The benefits of plastic are undeniable. Due to its versatility and universal functionality, the production of plastic has increased significantly over the past century. It is predicted that the trend will continue in next decades. Unfortunately, most of these plastics are consumed only once, and will be thrown away or recycled after being use, which results in single use plastic (SUP) waste accumulation. Malaysia is tracking global trends in both the overall generation of plastic waste and the consumption of SUP and since 2017, has been the world's largest importer of plastic waste. Malaysia imported 333.5 tonnes of plastic waste/scraps in 2019 and that doesn't include the large quantities that are imported illegally. The most visible and disturbing impacts of marine plastics are the ingestion, suffocation and entanglement of hundreds of marine species. Marine wildlife mistakenly plastic waste for prey or food; ingestion of plastic waste will make their stomach filled with plastic, hence die of starvation.

The management of SUP waste requires serious attention and urgent actions to avoid unprecedented impacts to the environment with current incremental consumption rate of SUP waste. The success in reducing the problems posed by SUP waste disposal in Malaysia will require conceited and sustained effort at many levels, but positive experiences from other countries in managing their SUP waste can provide guidelines and learning. The purpose of this report is to highlight the existing policies, regulations and initiatives done by federal and local government with regards to the SUP management in Malaysia.

The study also presented the findings from survey conducted on the consumption behavior and understanding of SUP among public and relevant stakeholders in Shah Alam City. Based on the survey, the level of awareness on SUP and recycling among public are relatively satisfactory, however the initiatives to implement SUP prevention and reduction are still minimal due to the non-existence of guidance from the local and federal government in terms of policy and regulations. The Shah Alam stakeholders' engagement through webinar and focus group discussions also provide similar output; the need to strengthen the public awareness and policy direction. Thus, it is anticipated that Shah Alam City Council (MBSA) could leverage further towards the achievement of SUP prevention and reduction in Shah Alam with the support from project Collaboration Action on Prevention of Single-Use Plastic in Southeast Asia (CAP SEA) and partnership with Malaysian Green Technology and Climate Change Corporation (MGTC) and Zero Waste Living Lab.

1 INTRODUCTION

Plastic is used across by almost every sector globally and provide many benefits. The synthetic plastic are polymers derived from crude oil, natural gas, or coal. Thus, the material is cheap, lightweight, and relatively easy to manufacture. Due to its versatility and universal functionality, the production of plastic has increased significantly over the past century. It is predicted that the trend will continue in next decades. Unfortunately, most of these plastics are consumed only once, and will be thrown away or recycled after being use, which results in single use plastic (SUP) waste accumulation. Despite being convenient in our day-to-day live, overconsumption of plastic imposes a great environmental threat to us. Plastics are dumped into the oceans thus suffocating the marine life. Whilst in the cities around the world, plastic waste often clogs the drainage system, and cause massive floods and flood related breeding diseases. Indirectly, there will be losses in tangible and intangible economic values. What even more of concern is the harm if plastics are consumed by the livestock, and later penetrates into the human food chain.

Plastic from packaging waste accounts for nearly half of all plastic waste generated globally, and most of it are thrown away as SUP. SUP among many are items like lightweight plastic carrier bags, straws, coffee cup stirrers and lids, soda and water bottles (polyethylene terephthalate, PET), and most of the take-away food. Additionally, with the emergence of the Covid-19 pandemic, people have shifted to e-commerce platform for on-line purchase of consumer goods as well as food, resulting a massive increase of SUP wrappers and films, and food packaging. It is anticipated that online purchase platform will be a normal practice hereafter, thus SUP waste originating from packaging will continuously increase.

Malaysia is tracking global trends in both the overall generation of plastic waste and the consumption of SUP and since 2017, has been the world's largest importer of plastic waste. Malaysia imported 333.5 tonnes of plastic waste/scraps in 2019 and that doesn't include the large quantities that are imported illegally. The problem started when China bans the imports of most plastic waste starting from 2018 in line with their "National Sword Policy" to reduce pollution levels. China was the largest global importer of plastic waste, however, due to the ban, plastic waste diverted to other countries, especially to Southeast Asian countries including Malaysia (Figure 1). With Malaysians producing large quantities of plastic waste ourselves, it becomes irrelevant for the authorities to permit the import of more such waste. Despite of contributing benefits of recycling companies, it has serious adverse effects on the health of our people and our environment. Recycling of imported plastic wastes contaminates the terrestrial and marine ecosystems. The most visible and disturbing impacts of marine plastics are the ingestion, suffocation and entanglement of hundreds of marine species. Marine wildlife mistakenly plastic waste for prey or food; ingestion of plastic waste will make their stomach filled with plastic, hence die of starvation. Heavy metals, polycyclic aromatic hydrocarbons (PAHs), some of the volatile organic compounds (VOCs) and flame retardants (FR) can cause harm to human's health resulted from the uncontrolled plastic waste disposal.

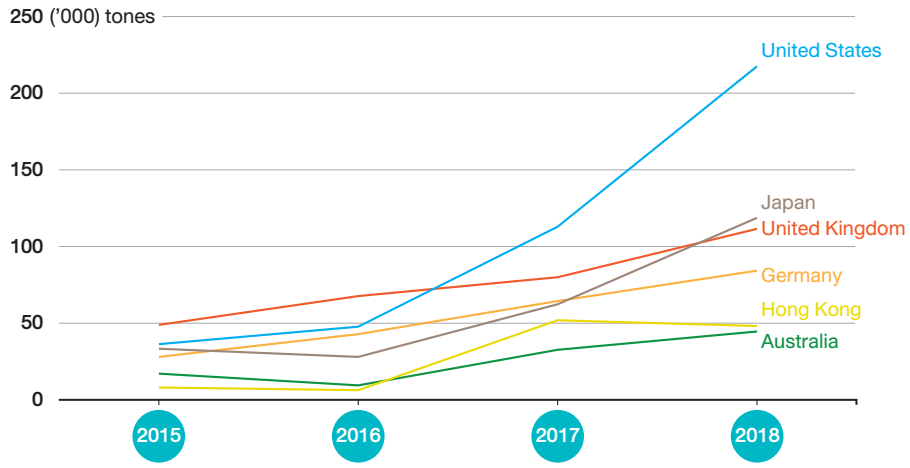
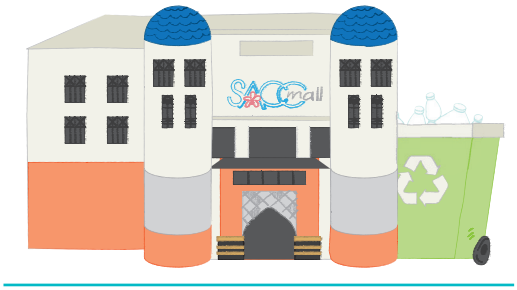


Figure 1
Malaysia's imports of plastic waste from top 6 countries (Khazanah Research Institute, 2019)

Nevertheless, this results major challenges for the country's plastic waste management system. The common practice in Malaysia for SUP wastes with recycle value like PET is generated at the household and are collected by the kerbside (the side of a road or pavement) but those lightweight plastics are disposed as general waste and ends in the landfill. In last few years, efforts were initiated towards reducing the consumption of SUP by promoting multi-level actions such as from government agencies, private partners as well as the community organizations.

The management of SUP waste requires serious attention and urgent actions to avoid further consequences to the environment with current incremental consumption rate of SUP waste. The success in reducing the problems posed by SUP waste disposal in Malaysia will require conceited and sustained effort at many levels, but positive experiences from other countries in managing their SUP waste can provide guidelines and learning. The purposes of this report based on survey and policy assessment are:

1. To highlight the current policies and regulations with regards to the SUP management at Federal Government (National), Selangor State Government and Local Government (Majlis Bandaraya Shah Alam) (MBSA)
2. To list on-going initiatives or programs on SUP waste management in Malaysia and by MBSA
3. To present the findings of SUP survey in Shah Alam stakeholders on their SUP consumption behavior and knowledge on the subject.



2
SUP WASTE MANAGEMENT IN MALAYSIA

The overall generation of plastic waste and consumption of SUP has moved in upwards trajectory since the 1970s (Figure 2), indicating that Malaysia has increasing trends of plastic waste generation. This resulted from the expansion of global plastics industry after the World War II where plastics has substituted the use of other materials in packaging of goods. Based on a survey in 2012, the plastic waste composition in municipal solid waste is 13.2% and estimated to increase to 20% in 2019 (Solid Waste Management and Public Cleansing Corporation, 2012). Additionally, Malaysia had surge of plastic waste imports in 2018, after China banned the imports of world plastic waste in 2018. The problem is that not all plastic waste is recyclable, and the non-valuable plastics will end up at the landfills of Malaysia.

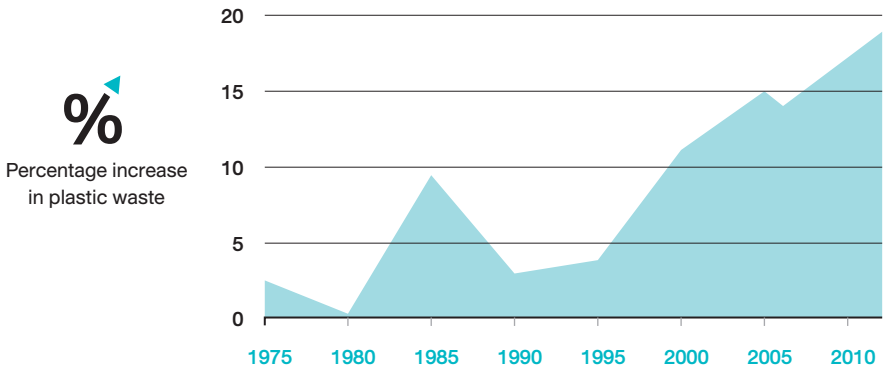


Figure 2
Percentage increase of the generation of plastic wastes in Malaysia from 1975 to 2012 (Chen et al., 2021)

The most recent study indicated that Malaysia disposes approximately 1.1 million tonnes of plastic waste resins, but only 24% of key plastic resins are recycled in 2019, and still far from achieving the national recycling target of 40% by 2025 (World Bank Group, 2021). The current practice is that plastic waste is collected and transported directly to landfill sites by privatized waste collection companies or separated at source for recycling purposes (Figure 3). While there is evidence of a gradual increase in plastic recycling, significant impacts of waste minimization and participation in recycling programs have yet to be seen since the launch of National Recycling Program in 1993. Nevertheless, with the implementation of Solid Waste Management and Public Cleansing Act in 2010 where source separation was introduced and later to be made mandatory, plastic recycling rate can be gradually increased and recovered from the waste stream.

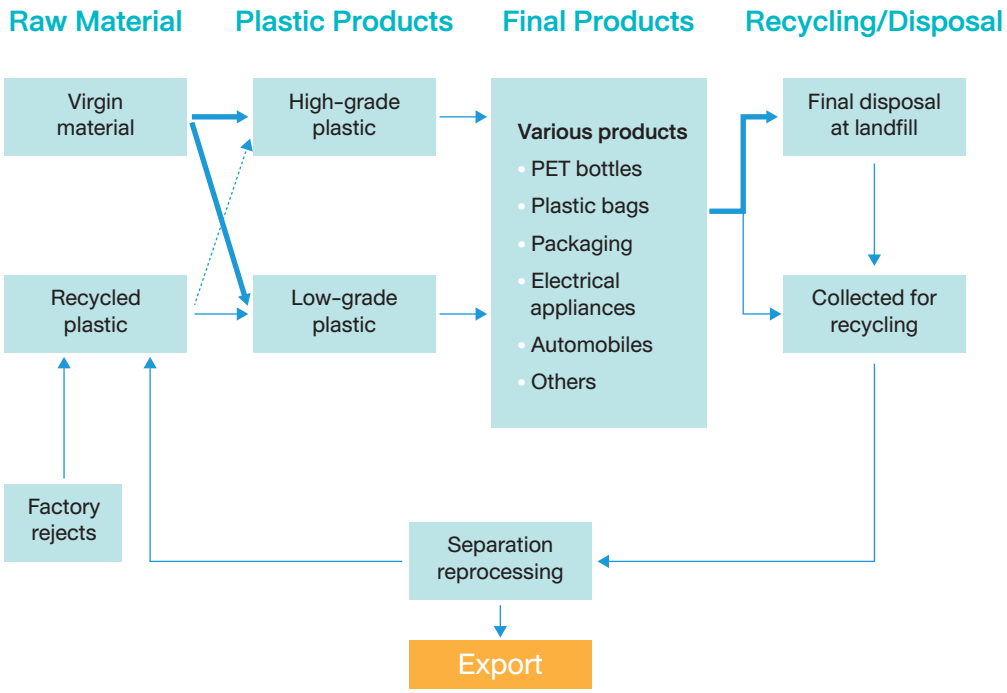


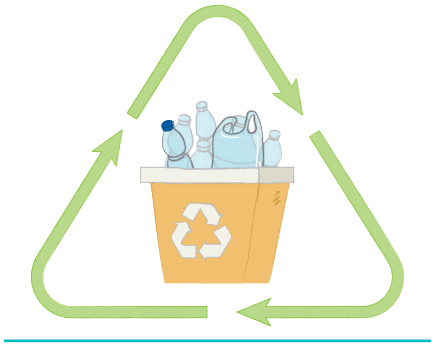
Figure 3
Malaysia plastic recycling flow (Chen et al., 2021)

The total waste generated in Malaysia can be reduced by plastic waste recovery and utilization of materials of potential economic value. Malaysia has plastic waste recycling facilities, and after China banned the imports of world plastic waste in 2018, the wastes were rerouted to Malaysia. The problem is that not all imported plastic waste are recyclable, there are non-value plastics that eventually ends up at the Malaysian landfills. In addition, recovery of recyclable plastics from the local waste streams are also big challenges due to minimal separation at the source and uneconomical transportation due to high volume but light weight. Low plastic recovery rate in Malaysia is due to various reasons as shown in Table 1.

Table 1
Issues related to plastic waste recovery in Malaysia

ISSUES	JUSTIFICATIONS	CONSEQUENCES
Low production cost of new plastics	Virgin resin is much cheaper than recycled plastic pallets	Lesser plastic recovery from the waste streams and at the source.
Low commodity price of recycled plastics	No market motivation	Plastic recycling industry did not grow due to low demand.
SUP is mainly low density and easily contaminated	More cost incurred to clean the contamination which discourages the recyclers from doing so.	Multi-layer plastics are not recovered. Recyclers prefer to import better quality plastics from abroad. Since 2017, Malaysia has been the world's largest importer of plastic waste.
Multi-layer plastics are difficult to be recycled	Requires more energy, costs, heterogeneous chemicals and lengthy processes to separate each type of plastic before it can be recycled individually	
Low public awareness to recycle plastic at source	Limited number of recycling and waste separation facilities Waste separation has not been made regulated/ as mandatory by law Prices offered for buy back are not attractive and low	No motivation for the public to recycle plastics at source
Sensitivity on halal issues of food packaging recycling	Recycling of non-halal food packaging cause concerns among Muslims Stated in MS 2565: 2014 Halal Packaging General Guidelines where direct food packaging cannot be made from recycle material	Increase SUP and less to be recycled

Source: Literature research and focus group discussion inputs



3
PLASTIC WASTE COMPOSITION AND RECYCLING RATE

The plastics industry contributes a significant amount to Malaysia's economy. A total turnover of RM33.10 billion was registered in 2019 (MPMA, 2020). Malaysia is a net exporter of plastic resin as the country imported close to 3.1 million tonnes of resin in 2019, while exporting 3.5 million tonnes (Ministry of International Trade and Industry (MITI)). In total, Malaysia's consumption of key resin adds up to 1.7 million tonnes, with the largest volumes comprised of PP, PE, LDPE/LLDPE, HDPE and PET (for polyester and packaging purposes) (World Bank, 2021). In terms of consumption, the packaging, electrical & electronics (E&E), construction and automotive sectors accounts for 91% of the Malaysian plastics manufacturing industry's RM33.10 billion annual turnover. Packaging is the largest end-use sector, consuming 48% of resin to produce plastic bags, containers, films, plates, sheets, foil, strip bottles and boxes (see Figure 4).

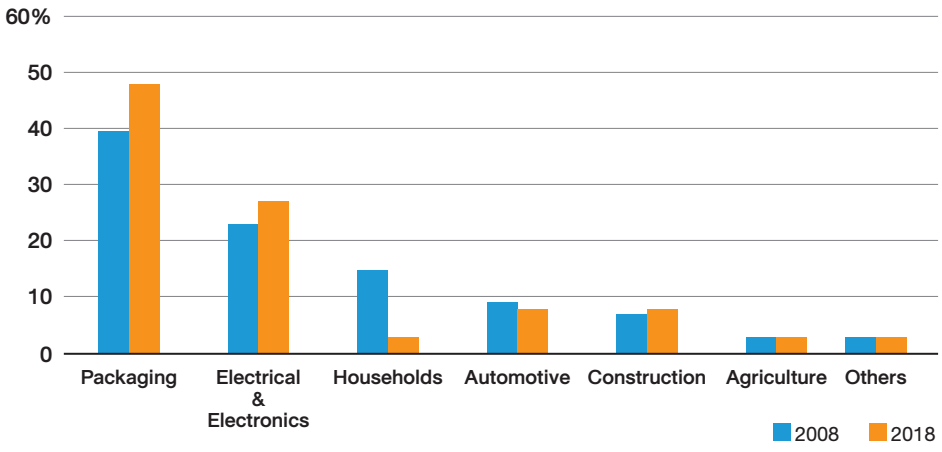


Figure 4
Market Share of Plastic in Major Market Segments in Malaysia, 2008 and 2018

Malaysia has increasing trends of plastic waste generation. Based on the Solid Waste Management and Public Cleansing Corporation (SW Corp) survey in 2012, plastic waste composition in municipal solid waste is 13.2%, where else in a press release in 2019, SW Corp quoted the plastic waste composition has increased to 20%. The Covid-19 pandemic also significantly increased the volumes of plastic packaging waste from food and goods.

Generally, plastic is divided into seven categories and not every type can be recycled in Malaysia. According to Table 1, Malaysia has the capacity to recycle categories 1, 2 and 5 (Table 2). According to the National Solid Waste Management Department (JPSPN), the most common method to recycle plastic waste is through mechanical recycling, where the plastic is reproduced into a new form but its initial chemical composition still remains unchanged.

Table 2
Categories of plastics

Category	Product usage	Recyclable in Malaysia
Polyethylene Terephthalate (PET/PETE)	Mineral water bottles, cookie jars	Yes
High density polyethylene (HDPE)	Milk containers, buckets, bottles	Yes
Polyvinyl chloride (PVC)	Pipes, synthetic leather	No
Low density polyethylene (LDPE)	Bubble wrap, plastic bags	No
Polypropylene (PP)	Disposable food containers, caps	Yes
Polystyrene (PS)	Disposable cups, plates, cutleries	No
Others	Nylon	No

The recycling rate in Malaysia is considered relatively low despite of various initiatives taken by the government to inculcate recycling habits among Malaysians. In order to achieve the recycling rate as in developing countries, a rate of 30% is targeted to be achieved by 2025. In Figure 5, the recycling rate of plastic is far less than half of the total recycling rate for all the years selected. Unless there is an increase in awareness of the problems related to plastic waste and the importance of "reuse, reduce and recycle", it will be difficult to lessen our waste and achieve a satisfactory recycling rate.

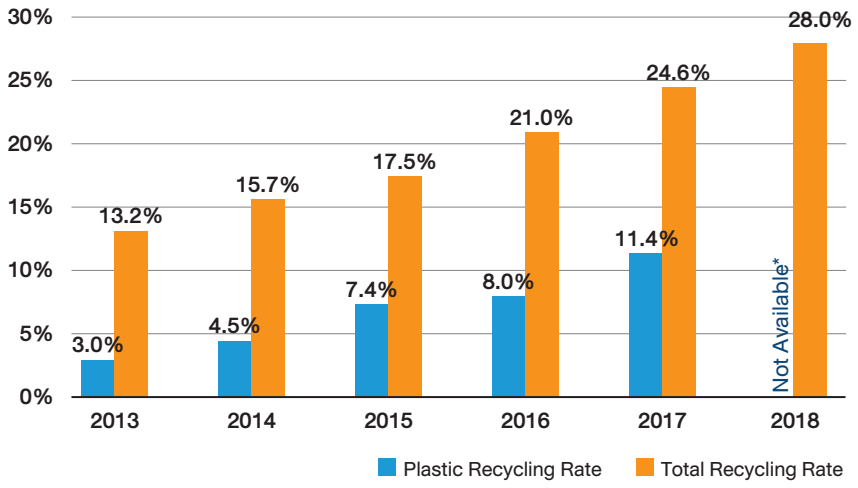
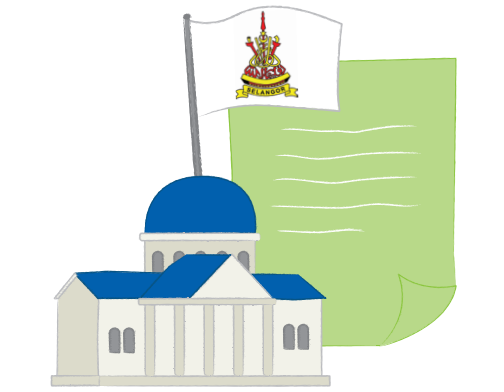


Figure 5
Recycling rate for total waste generation and plastic in Malaysia (2013- 2018) (Khazanah Research Institute, 2019)



4
POLICIES AND REGULATIONS ON SUP

This section will describe the relevant policies on waste management at Federal Government, Selangor State Government and MBSA level, framework on Zero SUP and MBSA's plans and policies relevant to solid waste management and SUP.

4.1 Relevant Policies on Waste Management

In Malaysia, solid waste management (SWM) is under the jurisdiction of the National Solid Waste Management Department (JPSPN), under the big umbrella of the Ministry of Housing and Local Government (KPKT). Not until 2007, solid waste management was managed independently by local authorities (LAs). Prior to the enforcement of Solid Waste Management and Public Cleansing Act in 2007, The Solid Waste Management and Public Cleansing Corporation (SW Corp) was later formed to view the issue on the overall basis and not merely collection of solid waste and construction of disposal sites and is responsible to monitor, supervise and enforce SWM and public cleansing in the country. According to ERIA (2020), Malaysia has several basic national laws and regulations on solid waste management as listed below:

1. **Environmental Quality Act 1974**
   - states that 'no person shall, unless licensed, discharge environmentally hazardous substances, pollutants, or wastes into the Malaysian waters … (Section 29)'.

2. **Promotion of Investments Act 1986**
   - gives fiscal incentives for the manufacture of biodegradable packaging and household ware as well as waste-recycling activities listed as promoted products and activities. Manufacturers and promoters of such products and activities are eligible for pioneer

3. **Environmental Quality (Scheduled Wastes) Regulations 2005**
   - classify scheduled wastes. Part II of the first schedule classifies the following as scheduled waste: rags; plastics; paper; or filters contaminated with paint or ink or organic solvents from motor vehicle assembly plants, metal works, electronic or semiconductor plants, and printing or packaging plants (S251).

4. **Solid Waste and Public Cleansing Management Act 2007**
   - part IV, states that any solid waste management services and facilities or any public cleansing management services require a license from the Director General of Solid Waste and Public Cleansing Management.
   - Chapter 30(1) of part V states that '[t]he Minister may from time to time prescribe, either separately or as a consolidated rate, controlled solid waste charges, fees, or levy which shall be paid by (a) the owner; (b) the occupier; (c) the local authority; or (d) any other person, to whom solid waste management services are provided under this Act'.
   - In line with part IV, part VIII states that all controlled solid waste shall be de posited, treated, kept, stored, or disposed of only at licensed solid waste management facilities. In addition, any person in possession of any controlled solid waste shall take all reasonable measures to prevent the escape of any controlled solid waste from his possession.
   - Reduction, reuse, and recycling efforts are enhanced by imposing several requirements in part X, including a take-back system and deposit refund system. Malaysia has, since September 2015, enforced mandatory solid waste separation, especially at the source of waste, in Kuala Lumpur, Putrajaya, Johor, Melaka, Negeri Sembilan, Pahang, Kedah, and Perlis only. Other states in Malaysia are not blinded to this enforcement.

5. **Solid Waste and Public Cleansing Management (Licensing) (Undertaking or Provision of Public Cleansing Management Services) Regulations 2011**
   - provide further information to any person who intends to apply for a license, which shall have a duration of not less than 2 years but shall not exceed 5 years. The licensee shall pay the annual license fee of RM100.

4.2 Relevant Policies at Federal Government Level: Framework on Zero SUP

Figure 6

Six principles in the Malaysia's Roadmap Towards Zero Single-Use Plastics 2018-2030

a) Malaysia's Roadmap to Zero Single-Use Plastics (2018–2030)[1]

In recognition of emerging plastic pollution problem in the country, in 2018, the Malaysian Government, through Ministry of Environment and Water, KASA (formerly known as MESTECC) has released the Malaysia's Roadmap to Zero Single-Use Plastics 2018–2030. The main focus of this blueprint is to address SUP pollution in Malaysia through evidence-based and holistic approach by all identified stakeholders. The vision is to deploy sets of actions in different phases to reduce the SUP waste generation by 2030, hence, achieving more sustainable pathway to create cleaner and healthier environment. It also motivates the local market to adapt new eco-friendly plastic products in line with the Sustainable Development Goals (SDGs). The roadmap provides a policy direction, guidelines and uniformed efforts with collective approach while at the same time, balancing the economic advances along with environmental protection initiatives. The six principles that support the roadmap are as shown in Figure 6. The implementation of roadmap is divided into three phases as summarized in Table 3.

1 https://www.pmo.gov.my/wp-content/uploads/2019/07/Malaysia-Roadmap-Towards-Zero-Single-Use-Plastics-

Table 3

Summary of the different phases of the Malaysia's Roadmap to Zero Single-Use Plastics 2018–2030

PHASES	KEY ACTIONS
PHASE 1 (2018-2021)	2018
	• Launch of Roadmap towards Zero Single-Use Plastics
	2019
	• "No straw by default" practice
	• Encouragement of using food containers by customers
	• Pollution charge at RM0.20 for plastic bags
	• Review of existing legal framework on single-use plastics
	2020
	• Launch of a Malaysia's Plastics Sustainability Roadmap
	2021
	• Technical workshop for the implementation of the Plastics Sustainability Roadmap
PHASE 2 (2022-2025)	2022
	• Extension of "No straw by default" practice to non-fixed premises
	• Implementation of Plastics Sustainability Roadmap
	• Extension of minimum pollution charge on plastics bag to non-fixed premises by 2025-2023
	• Imposition of pollution levy to manufacturers of plastic bags
	• R&D funding on eco-friendly products
	• Implementation of a regional marine debris project
	• Introduction of legal framework on single-use plastics
	• Publication of the mid-term review of the Roadmap
	2023
	• Imposition of pollution levy to manufacturers of plastic bags
	• R&D funding on eco-friendly products
	• Implementation of a regional marine debris project
	• Introduction of legal framework on single-use plastics
	• Publication of the mid-term review of the roadmap
PHASE 3 (2026-2030)	
	• Expansion scope of compostable and biodegradable products
	• Publication of the implementation report of the roadmap
	• R&D funding on eco-friendly product

b) Malaysia's Plastics Sustainability Roadmap (2021-2030)[2]

KASA launched the Malaysia's Plastics Sustainability Roadmap (2021-2030) in December 2021. The roadmap is one of the deliverables as listed in the Malaysia's Roadmap Towards Zero Single-Use Plastics (2018–2030). The roadmap outlines the strategies and action plans to achieve greater plastic circularity levels in Malaysia and serves as guidance to all stakeholders in ensuring plastic sustainability along the value chain guided by the concept of circularity and be part of the solution towards a sustainable environment.

The three objectives of the roadmap are:

- To sustainably address plastic pollution in Malaysia, ensuring economic development, environmental protection, and societal wellbeing,
- To provide guidance and promote sustainable business practices in ensuring plastics circularity and sustainability through circular economy approach, and
- To harmonise actions along plastic value chain through adoption of life cycle approach.

This roadmap covers four types of resin, PP, PET, HDPE and LDPE/LLDPE as these resins are the most highly produced and disposed in Malaysia, commonly used for single-use packaging with shorter application lifetimes and possess the highest recyclable value. The implementation of roadmap is divided into three phases as summarized in Figure 7.

c) Environmental Sustainability in Malaysia (2020–2030)[3]

KASA is also spearheading the efforts towards a Sustainable Malaysia 2030. In essence, there are 26 initiatives developed based on four main pillars: empowering governance, green growth, strategic collaboration, and social inclusiveness. These initiatives covered four main elements in the environment which are the atmosphere (air), hydrosphere (water), lithosphere (land) and biosphere (living beings). Ultimately, the vision is to continuously improve the environmental well-being as we continue to depend on natural resources in our daily lives.

2 https://www.kasa.gov.my/ms/mpsr

3 https://www.kasa.gov.my/roadmap/Roadmap_KASA_2020-2030-en.pdf

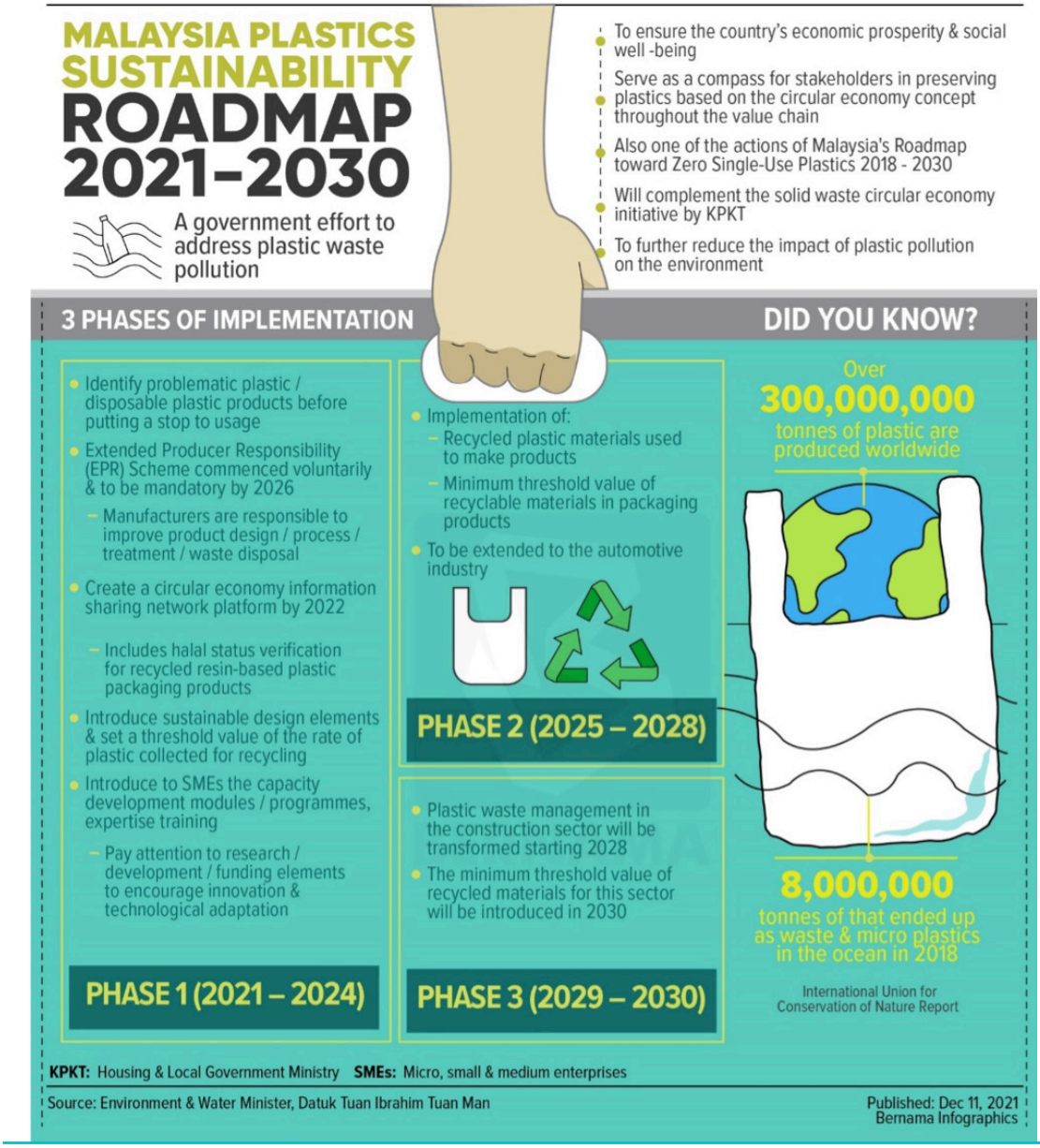


Figure 7

Malaysia Plastics Sustainability Roadmap published on December 2021.

4.3 Relevant Policies/Programs at Selangor State Government Level

The Selangor State Government has launched two major programs to support the plastic waste reduction as follows:

a) No Plastic Bag campaign in Selangor

As an effort to reduce plastic shopping bags use, the Selangor state government has declared every Saturday as a "No Plastic Bag Day" (NPBD) back in 1st of January 2010. This initiative is in line with the Federal Government through the Ministry of Domestic Trade, Cooperative and Consumerism 2011 which launched the NPBD Campaign throughout Malaysia for each Saturday. The objective is to reduce the use of plastic bags in order to reduce its negative impact on the environment. All retail outlets, supermarkets, and hypermarkets followed to impose the ban. They allowed the use of new plastic bags for wet markets, restaurants and night markets for hygiene purposes when carrying wet groceries and food. The stores that do not provide the plastic bags to encourage customers to bring their own carrier bags, or they have the option to purchase eco-friendly bags. Some stores also provide paper bags or synthetic fibre carrier bags that can be reused a number of times.

Starting Jan 1st, 2017, the "No Plastic Bag" campaign has been extended to 7 days a week. The Selangor government has also stopped the use of plastic bags and polystyrene products at all official programs and government buildings. Currently, the state government reinforced this for all days throughout the year with a charge or levy of RM0.20 for each plastic bag requested by the retail store customer. The use of the environmental tax as a disincentive to deter from certain behaviour that may lead to environmental degradation. The tax collection money is either channelled back to charity or given to the stores to be used to implement environmental conservation activities.

b) Say No to Plastic Straw

In line with the "Malaysia's Roadmap Towards Zero Consumption of Single-Use Plastics (2018-2030)", "Say No to Plastic Straw" campaign was launched in an effort to reduce pollution and preserve the environment. The Selangor government has kicked off its Plastic Straw Free (#BebasStrawPlastik) campaign on 1 July 2019, but strict enforcement will only be enforced by 2025. The Selangor Environment, Green Technology, Science and Consumer Affairs Committee has urged consumers as well as food and beverage outlets to use the six-year grace period to get themselves adjusted to the new policy. There will be no enforcement, no fines yet, but this campaign is to create awareness among the people on the importance of preserving and protecting the environment. The ultimate aim is to cut down on single-use plastics.

4.4 Relevant Policies at Shah Alam City Council (MBSA) Level

In line with the National's aspiration towards Zero SUP, MBSA has shown their support through establishment and re-adjustment of their existing policies in regard to waste management, plastic pollution as well as SUP. Although it may not be translated to relevant policy documents, some of the existing policies are generalized and can be used to address SUP issues. The relevant policies in MBSA which can be used to support the advocacy related to SUP are as follows:

1. **Local Government Act (1976) (Act 171)**
   - Disposal of waste (solid/liquid) from industry into the waterbodies

2. **Refuse Collection, Removal and Disposal Bylaws (MBSA) 2007**
   - The prohibition of littering, waste disposal and dumping sites
   - enforcement and authority to arrest

3. **Penalty and compound**
   MBSA has taken progressive steps towards sustainability through the establishment of relevant documents on solid waste management as follows:

a) MBSA Solid Waste Master Plan

The Solid Waste Master Plans was initiated in 2019 with the objective to help reduce the quantity of solid waste generation, better utilize the resources in solid waste stream, avoid the disposal of valuable resource and improve the quality and efficiency of waste management. The plans were divided into four phases as shown in Figure 8.

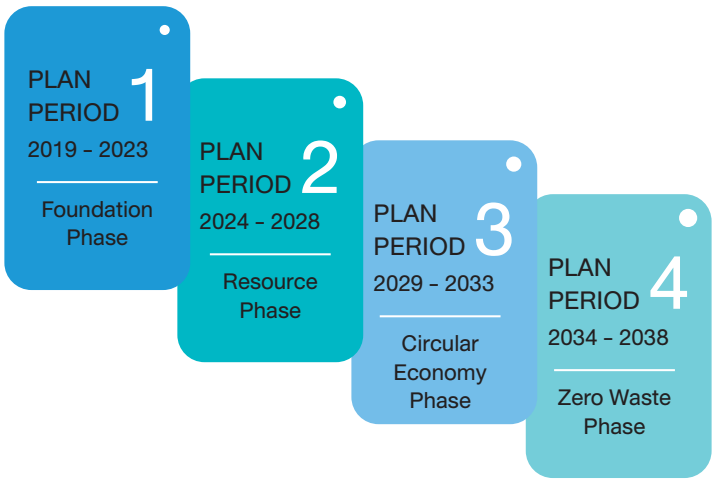


Figure 8
Scope of the Solid Waste Master Plan

The masterplan represents the different phases of the long run development of solid waste management which highlights on the different elements of waste management that has to be taken in account in the implementation phases. Each of the elements will be progressively improved towards the ideal, sustainable and integrated waste management. Stakeholders are identified with each assigned their roles and responsibilities in order to create holistic contributions and participations. Transitions of current linear resource management towards circular economy are adapted as part of the Zero Waste aspiration and as shown as Figure 9.

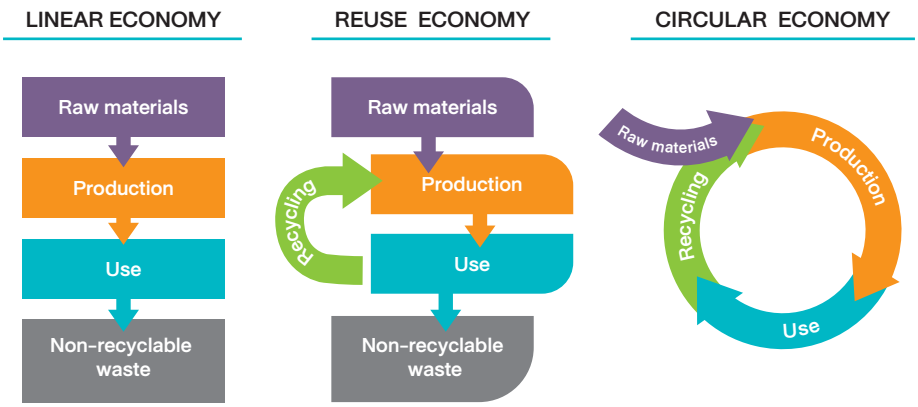


Figure 9
Transition to a Circular Economy

b) MBSA 3R Policy

MBSA has developed their o3R Policy in 2020 towards reducing waste disposal at landfills through optimizing resource recovery and waste separation at source according to the Solid Waste Management Hierarchy. The policy statement and six main pillars that supported the 3R Policy is shown in Figure 10.

In order to ensure effective implementation of the policy statement, strategies were developed for each of main pillars. A set of action plans will be developed towards the implementation of 3R Policy which will further accelerate the initiatives towards achieving Shah Alam as a sustainable city.

MBSA
MAJLIS BANDARAYA SHAH ALAM

KENYATAAN POLISI 3R

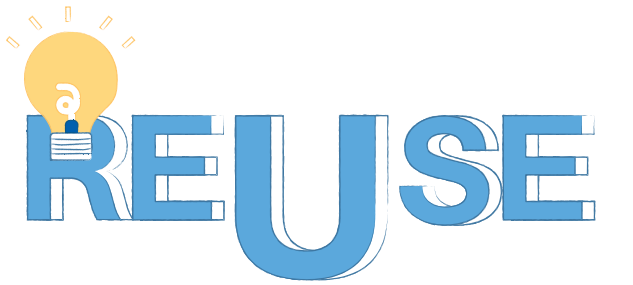
MBSA komited secara berterusan ke arah pengurangan sisa pepejal ke tapak pelupusan melalui galakan pengurangan penjanaan sisa di punca, guna semula dan kitar semula berlandaskan hierarki pengurusan sisa pepejal secara holistik dan bersepadu.

Bagi mencapai matlamat ini, Polisi 3R MBSA ditetapkan seperti berikut:

1. Menggalakkan pengurangan sisa di punca dan guna semula sumber melalui amalan 3R di pelbagai agensi.
2. Memperkasakan institusi pentadbiran organisasi dan pemantauan berterusan ke arah pelaksanaan 3R yang efisien.
3. Membangunkan fasiliti, aplikasi teknologi dan kemudahan awam untuk aktiviti 3R.
4. Meningkatkan kesedaran awam ke arah membudayakan 3R dalam kalangan warga Shah Alam.
5. Memantapkan sistem pengurusan data berpusat sisa pepejal dan 3R.
6. Menumpukan pembangunan modal insan untuk peningkatan kesedaran amalan 3R yang berterusan.

DATO' HAJI HARIS BIN KASIM
D.P.M.S.,S.I.S.,A.S.A.,P.P.T.,
Datuk Bandar
Majlis Bandaraya Shah Alam
07 OKTOBER 2020

Figure 10
MBSA 3R Policy Statement



5
EXISTING INITIATIVES AND PROGRAMS ON SUP

a) Reducing SUP at Source

The success of Phase 1 (2018 -2021) for Malaysia's Roadmap to Zero Single-Use Plastics in imposing the "No straw by default" practice and pollution charge at RM 0.20 per plastic bag can be seen as part of the government strong commitment to create a sustainable consumption society embedded in the consumer behavior.

It was stated that the revenue from the plastic bag levy will be used to fund environmental programs. During the earlier stages of this program, it was implemented on every Saturdays, which later were extended to Sundays due to the overwhelming respond from the public. This campaign is now still on-going and has now been extended to 7-days a week; and positive responds are emerging where public are seen to bring their own bags when shopping. Publics are now seen to bring their own reusable shopping bags in avoidance of excessive use of SUP. Way forward, the regulatory or legislative framework can provide clear guidelines and mechanisms for consumers, the retailers, supermarkets and the plastic industry may be needed. It will increase the consumer's confidence, in addition to retailer and plastic industry involvement.

Similarly, introduction of the metal, bamboo, lemongrass, and paper straws as alternatives to plastic straws was a result of the government implemented its "Tak Nak Straw Plastik" (Say No To Plastic Straws) campaign in an effort to reduce pollution and preserve the environment. Nowadays it has become a trend, as most premises that sell food, including fast-food chains and cafes in hotels are no longer providing the plastic drinking straws.

b) Collection of Recyclables

The Act 672 applies only for states Kuala Lumpur, Putrajaya, Johor, Melaka, Negeri Sembilan, Pahang, Kedah, and Perlis. Other states in Malaysia are not binded to this enforcement. For Act 672 states, the collection of recyclables are carried out by the solid waste concessionaires under the Concession Agreement (CA). The concessionaires are obliged to provide once a week collection of recyclables for the residential areas under their coverage. Residents are required to put their mixed recyclables materials outside their house or at the bins/containers provided (for high-rise residential), and the concessionaire will collect once weekly based on their respective collection schedules. Separation at source is mandatory however yet to be strictly regulated.

Implementation collection of recyclables at other states are not mandatory. It depends on the initiatives by the respective state's local authorities.

For MBSA, the collection of recyclables is carried out door to door once a week on Sunday at the landed residentials by appointed 3rd party contractors. A total of 25 contractors were appointed with total contract value of RM 80,000 monthly/each. From this door-to-door collection practices, MBSA has collected a total of 457 tonnes of mixed recyclables in year 2020, which consists of 22% mixed plastic, 64% mixed papers, 10% metal, 3% glass and 1 % e-waste. The public were not given any monetary incentive for their efforts.

For strata housing (high-rise, etc.), MBSA has launched a pilot project for recyclable collection in Section 18 and 24 in collaboration with two partners, namely Nestle Malaysia and KPT Recycle Sdn Bhd. A total of 540 household has participated this program.

c) Community Recycling Program

i. Recycle Exchange Program

This initiative applies to a barter system concept, whereby public brings along their recyclable items to the recycling center/stations for the exchange of food and basic household needs. The program was initiated with the objective to encourage public to recycle voluntarily as well as bringing the recyclables to the recycling facilities. Regularly, this program is co-organized with sponsors to support the drive as well as ensuring the continuity of the program.

MBSA has started this program in January 2020 at 3 locations and the total collection of recyclables is 4.65 tonnes cumulatively. For this program, only papers, used cooking oil and metal were sent by the community. Plastic is not included, but usually brought in as well by public together with other waste. The recyclables are exchanged with basic needs including flour, sugar and cooking oil.

ii. Community Recycling Centers (CRC)

Recycling centers were built within community areas to facilitate community to encourage recycling at home. It usually involves the collaboration between Local Government, community organizations, non-governmental organizations (NGO) and private stakeholders. It operates at specific schedule which provide recycling facilities as close as possible to the community aim to recover household recyclables. Cash incentives were offered for the exchange of the recyclables. Information and updates were also publicized to the community to increase participation.

MBSA has developed 12 community recycling centers (CRC) with budget ranging between RM 10,000 to RM 50,000 depending on the capacity and land area allocated. In year 2020, plastic composition from the total of recyclables sent to these CRCs is 8%. Majority was mixed paper, which is 63%.

iii. Awareness Program

The National Recycling Program was initiated in 1993 by KPKT to encourage and inculcate the 3Rs (Reduce, Reuse, Recycle) among public. It was first celebrated in 2001 and falls on the 11 November every year as the peak celebration of the 3R initiatives nationwide. During the celebrations, various programs were conducted with regards to the waste minimization, recycling and sustainable waste management. Rewards were presented to the outstanding achievers among public, community, schools, industries as well as government sectors.

6
SUP SURVEY IN SHAH ALAM

SUP survey was conducted from 23 August to 31 August 2021 in Shah Alam. The survey was conducted online by sending the google form link using Bulk Message facility owned by MBSA to various Shah Alam's stakeholders including the public, communities, institutions, government offices and industries. The objective of the survey is to measure the current level of awareness on SUP and practices to reduce SUP consumption, willingness to pay for SUP alternatives and to obtain respondents perspectives on SUP management, and the way forward. The questionnaire was prepared in both Malay and English languages, to ensure that various level of the public segments can understand the questions. The questionnaire was divided into two parts as follows:

Part 1 by Individual	**Section 1** - Demographics and background of the respondents **Section 2** - Respondents' personal views on SUP
Part 2 by Category of sector	**Sections 3 to 6** - Current practices, policies and views according to 4 different groups of respondents as follows: a) Industry b) Commercial c) Community d) Government sectors.

The questions are designed in the form of bipolar choices, multiple choices and open-ended questions. For some specific questions, respondents were also given the opportunity to provide their own answers and suggestions in addition to the list of suggested answers provided. Sample of questionnaire is shown in Attachment 1. Summary of the survey findings are discussed in the next section and the complete survey report is in Attachment 2.

6.1 Summary of the survey

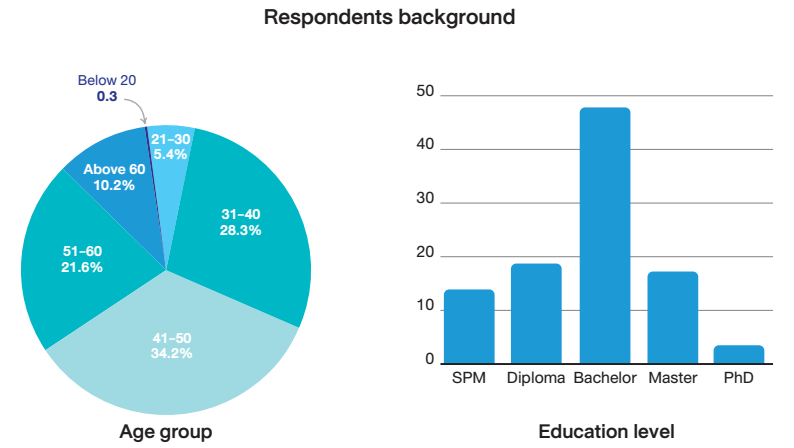
The main findings and highlights from survey are as follows.

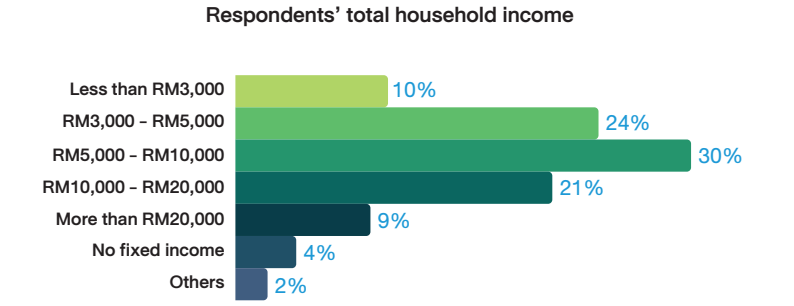
Figure 11
Main findings and highlights from the survey

6.2 Respondents Background

A total of 1,928 respondents participated and answered this questionnaire. The largest group of respondents are in the range of 31 -50 years old (62.5%) while the group of respondents under 20 years old was the smallest group of respondents (0.3%). Almost half of the total number of respondents have a qualification of university degree and above, composing 67.9%. In general, the middle and mature age group of 31-50 years old with higher level of education are sensitive and aware of SUP and interested in contributing to related issues. This elevated the quality of this study and results can be accepted as a basis for the improvement of issues related to SUP.

The majority of respondents come from the household size of less than 10 people while as many as 3 out of 5 respondents lived in terrace houses. Most respondents (54%) have a moderate total household monthly income between RM 3,000 to RM10,000.





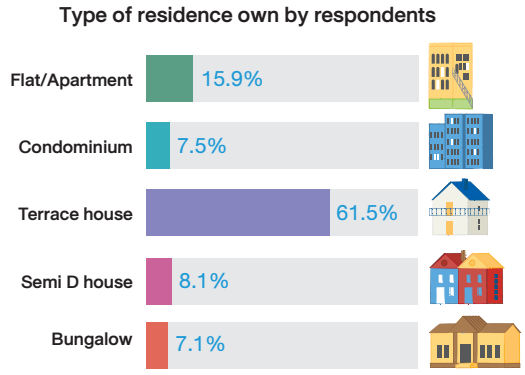


Figure 12
Summary of demographic profile of respondents

6.3 Respondents Awareness on SUP

In order to know the level of awareness on SUP, several questions have been included in the questionnaire and the results are as follows:

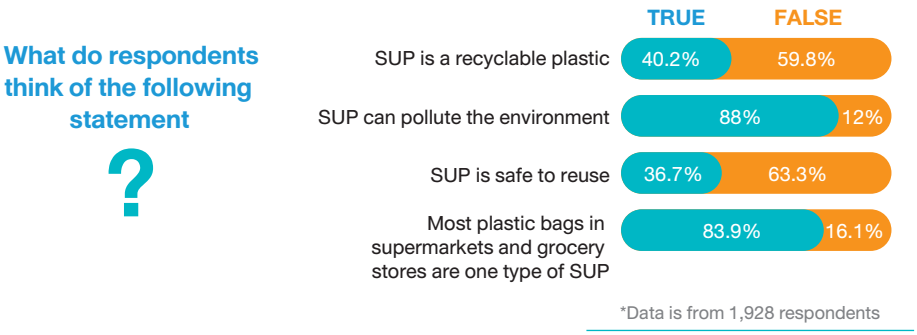


Figure 13
Results from four statements

The results showed that majority is aware of SUP, that its disposal can pollute the environment but only 36.7% viewed SUP as safe to reuse, and 40.2% is aware that SUP could be recycled. Therefore, it can be concluded that it is important to educate and create more awareness among the public on their SUP's knowledge.

6.4 SUP Reduction Practices

There were inclusive initiatives by respondents in reducing the use and recycling of SUP. The result of the survey shows that on average, the respondents are practicing 3R in their SUP management which involves the segregation at source, multiple use of certain SUP such as food containers, plastic spoons, straws, etc., as well as recycling their SUP generation. These initiatives are mainly done by individual through self-initiative to care for the environment. Respondents also in opinion that the given incentives were not the main driver for them to recycle SUP, this may be due to the non-competitive price offered for plastic products and also the light-weighted SUP.

However, the constraints to recycle SUP are mostly related to the lack of nearby facilities which influences the attitude of respondents to practice SUP recycling. The need for relevant information and continuous promotion in reducing the use of SUP among consumers and distributors must consistently remain to reduce the attitude-behavior gap as well as to shift the public mindset regarding the awareness of the excessive use of SUP. Below is the survey result on respondents' action in reducing the SUP consumption (Figure 14).

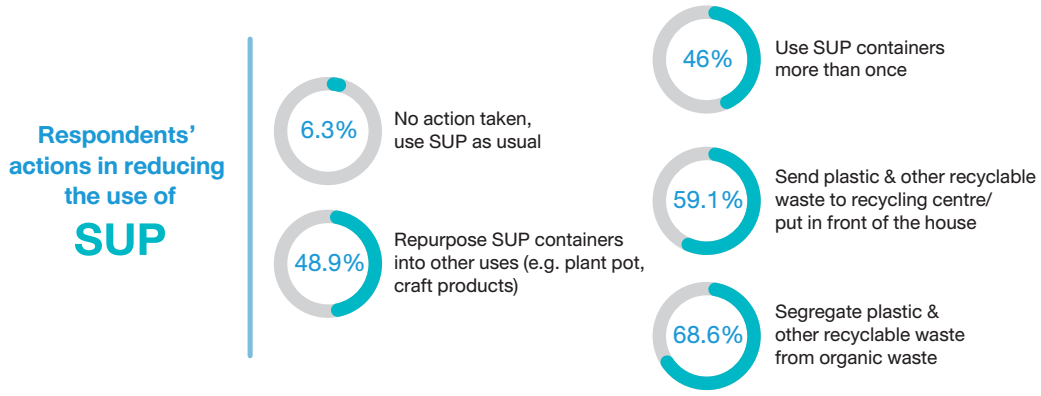


Figure 14
Initiatives by respondents to reduce SUP

6.5 Willingness to Pay

By adopting the Polluters Pay Principle, respondents were asked about their willingness to pay for the use of SUP, using other alternatives to replace SUP as well as the proposed affordable price if a SUP surcharge to be imposed. Although 72% of the respondents agreed to clean the SUP container for reuse, other responses are mostly stating their willingness are very much depending on the following factors:

a. Condition of the SUP; either suitable for washing or reuse by others
b. The amount of incentives or rewards offered for their efforts
c. Doubt the usefulness of all washed SUP
d. Specific guidelines and policies outlined by the Federal and Local Governments in encouraging the reuse of such SUPs
e. The existence of refilling facilities for the purpose of reusing the container being washed, for example: drinking water, washing soap and so on.

3 out of 5 respondents agreed to pay for other alternative products instead of SUP. However, some respondents responded that there is need for subsidies and full commitment from the government in minimizing and subsequently abolishing the use of SUP which are cannot or difficult to recycle. They also opted that public should not be burdened with additional costs for SUP alternatives, alas, the use of SUP is widespread currently due to its low price and its versatility.

In terms of the price for an alternative to SUP, a minimum price of RM 0.20 is proposed. However, other suggestions indicating their unwillingness to pay additional surcharges, instead opting to:

a. Bring your own containers when shopping
b. Boycotting shops/premises that charge surcharges and do not allow buyers to bring their own containers to pack food/products
c. Suggested a very high surcharge on alternatives to SUP as an incentive for buyers to bring their own containers
d. Propose a comprehensive study by the government on the level of public affordability before any surcharge to be imposed to avoid burdening the public.

6.6 Survey Results for Industry, Commercial, Community and Government Agencies

Out of 1,928 respondents, 314 respondents are from the 4 sectors including industry, commercial, community and government agencies. The breakdown is shown in the following chart.

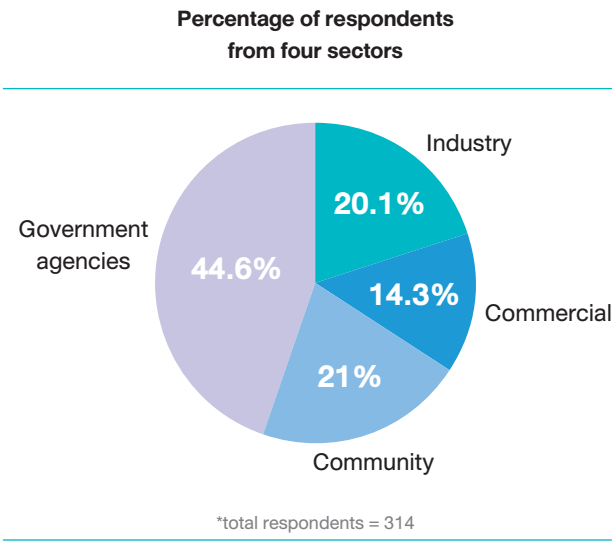


Figure 15
A total of 314 respondents are from four major sectors

Question 1:
What are the obstacles and challenges to reduce SUP?

Answer:

No other alternatives

Question 2:
What are the success factors to reduce SUP?

Answer:

Staff awareness

* The answer with the highest score among the respondents from the four sectors (Government agencies, Industry, Commercial, Community)

Figure 16.
Answers from 314 respondents

All sectors have the highest percentage of "No other alternatives" as obstacles and challenges to reduce SUP and answered that the key success factors for reducing SUP is staff awareness.

Percentage of respondents' willingness to pay for reusable containers to replace SUP

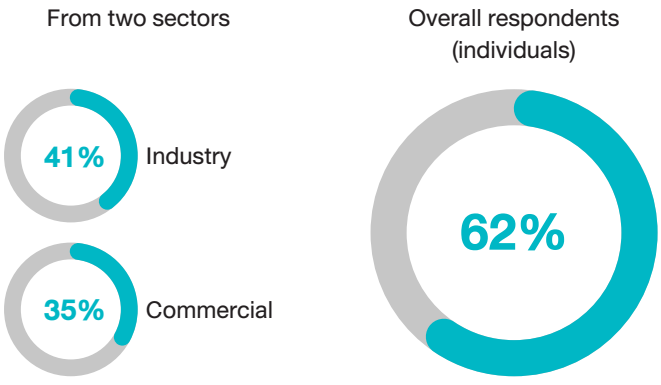


Figure 17.
Comparison of respondents' from Industry and Commercial sectors

A total of 62% respondents are willing to pay for reusable containers to replace SUP. Willingness to pay has higher percentage from the industrial sector (41%) but majority of commercial sector (52%) are not willing to pay. Major challenges faced by all sectors to reduce SUP is there is no alternative for SUP and higher cost of non-SUP products. Summary of results for all common questions are as follows (Table 4):

Table 4
Summary of survey results.

QUESTION	INDUSTRY	COMMERCIAL	COMMUNITY	GOVERNMENT AGENCIES
Total respondents	63	45	66	140
Department responsible for recycling	• SHE • QA	• HRA • SHE • Individuals	• Working committees	• Working committees • Individuals • Outsource
Reduction of SUP during pandemic	46%	42%	NA	58%
Generation of SUP weekly	Less than 50 units/week Less than 100 kg/week	Less than 50 units/week	Less than 10 units/week/ household	Less than 20 units/week
Willingness to pay	41%	35%	NA	NA
Proposed increase cost	Less than 2%	Less than 2%	NA	NA
Challenges	• No alternative • Higher cost of non-SUP products	• No alternative • Higher cost of non-SUP products	• No alternative • Higher cost of non-SUP products	• No alternative • Higher cost of non-SUP products
Key success factors	• Staff awareness to reduce SUP • Suitable policy	• Staff awareness to reduce SUP • Continuation of awareness programs	• Staff awareness to reduce SUP • Continuation of awareness programs	• Staff awareness to reduce SUP • Suitable policy
Importance of having SUP policy	96.4%	91.4%	94.8%	98.1%

6.7 Webinar for Single Use Plastic (SUP) Reduction with the Stakeholders in Shah Alam

A virtual "Webinar for Single Use Plastic (SUP) Reduction with the Stakeholders in Shah Alam" was organised by MGTC in collaboration with Shah Alam City Council on 5th October 2021. The webinar is part of CAP SEA implementation activity in Malaysia on the scope of establishing an integrated SUP prevention pilot project at the local level.

The webinar had brought together nearly 117 participants from partnering government ministries and agencies, enthusiastic local councils, supportive businesses and industries within Shah Alam, NGOs, academics, and communities. The webinar also has the Mayor of MBSA encouraging the participants to support the intervention towards circular plastics economy through the pilot project activities implementation.

Thereafter, a series of focus group workshops were held online to identify the issues on plastic waste recovery, training and awareness required, key ongoing actions and identify policies or regulations required. Based on the series of stakeholder consultation workshops held for the industry, community and NGOs, as well as government agencies, the following feedback was gathered from the participants:

1 Issues identified from plastic waste disposal and recovery for recycling

Economic

- Not economical to recycle packaging materials i.e food wrappers, bubble wraps
- Virgin plastic resins are much cheaper than recycled plastic pellets.
- No market motivation due to low demand for recycling industry
- High cost to separate and transport to recyclers.
- Cost needed to clean the SUP contamination

Technology

- Multi-layered plastics are difficult to be recycled; requires additional energy, costs, heterogenous chemicals and lengthy processes for separation before recycled
- Styrofoam boxes used for packing are not recyclable

Environment

- Disposed plastic container act as mosquitoes breeding ground
- Disposed plastics takes hundreds of years to disintegrate, thus overloading our landfills

Social

- Low public awareness to recycle plastic at source.
- No motivation for the public to recycle plastic at source due to:
  - Limited number of recycling facilities, and
  - The prices offered for buy back are low and not attractive enough.

2 Training and Awareness required

1. Awareness of SUP and how to reduce SUP footprint
2. Understanding the impacts of SUP to the environment, economy and social well-being
3. Plastic Upcycling
4. Digital advertisement on SUP to create awareness on SUP through social media
5. "KUDAH" campaign – Kutip (collect) and Riadah (recreation)
6. SUP policy development and action plan preparation

3 New/revised policies prepared

1. Development of new policy i.e Polluter Pay Principle at Community level, provide incentives (tax deduction and provide special fund) and "No bins in classrooms or offices".
2. Ban or stop using plastics; put standards for packaging.
3. Waste Minimization and avoidancef
4. Promote the reuse concepts as outlined in the MBSA 3R policy and Malaysia's Roadmap Towards Zero Single-Use Plastics (2018-2030).

4 Value added proposal

1. To introduce Extended Producer Responsibility (EPR) in Shah Alam by implementing the take back system and installation of Reverse & Refill vending machines
2. Measure SUP project success by monitoring data at the recycling center and public participation
3. To get involvement from education institutional for early education theoretically and hands on activities on plastic waste.

Figure 18

Feedbacks gathered from series of focus group workshops.

7 RECOMMENDATION

Based on the survey results, output from the webinar and focus group discussion, and review of the available policies and current practices, the following actions are recommended for SUP prevention are to;

a. Carry out baseline data collection for SUP plastic waste composition in Shah Alam
b. Develop specific policy and action plans on SUP prevention which are applicable by all stakeholders, and which will drive the SUP reduction and prevention initiatives or programs
c. Study market needs and demand for alternative SUP
d. To carry out awareness program and training to various sectors for better under standing on SUP, it's impact to the environment and the criticality to eliminate SUP

8 CONCLUSION

The key success factors for SUP reduction and prevention are continuous public awareness and availability of suitable policy direction. Stakeholders' willingness to pay additional minimal cost to replace SUP is a positive sign. Current MBSA's initiatives and available plans and policies could be enhanced by adding SUP prevention action plans. MBSA has succeeded in creating 3R awareness and practices in the city based on positive response from survey respondents. Therefore, similar approaches with some improvements and more proactive activities would bring better results for SUP reduction and prevention.

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