



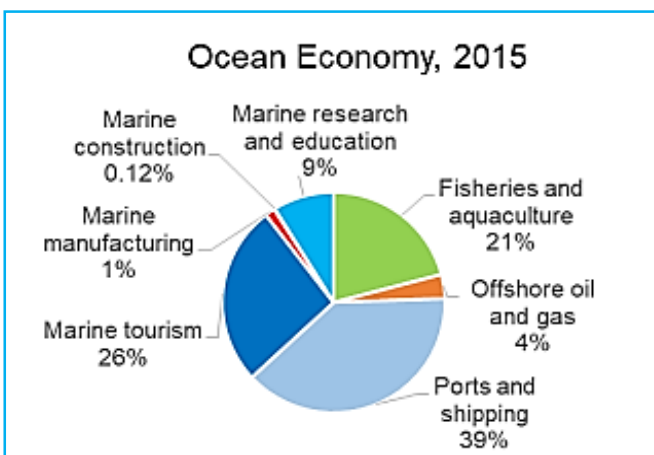
Socio-economic profile

Malaysia is an industrialized, upper-middle income country in South-East Asia. Malaysia's population is approximately 32.6 million people (2019) with 76.2% of the population living in urban areas. The average annual urban population growth rate (2.7%) is much higher than average annual rural population growth rate (-1.2%). The total surface area is 330,290 sq. km. The Gross Domestic Product (GDP) in 2018 was US\$358.582 billion.ⁱ In 2018, Malaysia's economy grew 4.7% at 2015 constant prices, as compared to 5.7% in 2017. The services and manufacturing sectors served as the main contributors to the economy (79.1%).ⁱⁱ

According to a Taman Laut Malaysia (Marine Park of Malaysia) report,^{iv} Malaysia has a recorded 612 reef building coral species - which is 77% of the total recorded species in the world. In Malaysia, value of marine ecosystems ranges between RM39.6 million to RM3.6 billion a year. There are 42 Marine Parks in Malaysia covering an area of 2,486.13 sq.km. These Marine Parks were set up with the principal goal to protect, conserve and manage in perpetuity representative marine ecosystems of significance, particularly coral reefs and their associated flora and fauna. Together they provide for the economic and social needs of the population, serve as coastal protection systems, and generate revenue through tourism. The fisheries industry in Malaysia contributes 1.3% of the national GDP with a value of RM12.7 billion a year. Marine Parks in Malaysia receive an average of 630,000 visitors a year, and generates around RM283 million of spending by tourists annually. The annual value of carbon sequestration provided by coral reefs and mangroves in Marine Parks is estimated between RM85 thousand and RM14.6 million. The contribution of the ocean economy to the country's GDP was valued at 23% in 2015 - through fisheries and aquaculture, ocean energy, ports and shipping, oil and minerals exploitation, and sustainable tourism activities.

Coastal and marine ecosystem and economy

Malaysia is located in the Indo-Pacific region with its coastlines bordering the Andaman Sea, the Straits of Malacca and Singapore, the Gulf of Thailand, the South China Sea, the Sulu Sea and Sulawesi Sea. The length of the coastline in Malaysia is 8,840 km (2018),ⁱⁱⁱ and there is a coastal population of 22.9 million. Malaysia is one of the 12 most biologically diverse countries in the world. The country's coasts and seas are endowed with a wealth of marine biodiversity, ecosystems, habitats and other natural resources.



Fisheries and aquaculture ^v

- Marine fisheries: US\$2.1 billion
- Aquaculture production: US\$829 million

Coastal and marine tourism

- Gross value Added (GVA): US\$155.3 million
- Employment: 131,112

Ports and shipping

- GVA: US\$226.7

However, the destruction and deterioration of marine ecosystems is happening at an alarming rate, with marine debris one of the threats. Plastic leakages are one of the key factors contributing to the killing of wildlife and beach pollution. Plastic in marine debris can also accumulate chemicals, posing a potential threat to food security – since 60% of protein intake among Malaysians is sourced from marine resources.

Plastics and plastic packaging Production and usage

The Malaysian Plastics Manufacturers Association (MPMA) and Malaysian Plastic Recycling Association (MPRA) estimates that the total value of manufactured plastics goods, or goods containing plastics parts, across sectors in the economy amounts to approximately RM320 billion per year. Of this, the electronic and electrical sector produces RM290 billion of end-products which contain plastics, while the automotive sector produces RM25 billion and the food and beverage (F&B) sector, RM3 billion. Table 1 provides a snapshot of Malaysia's plastic industry. The plastics industry in Malaysia is expected to grow at about 2% in 2019.

In 2018, Malaysia's annual plastic resin consumption per capita was about 76 Kg. With 48% of plastic consumption, packaging topped the major market segments for plastic product in 2018, followed by electrical electronics (27%), construction (8%), automotive (8%), household (3%), agriculture (3%) and others (3%).^{vii} Based on the Solid Waste Management and Public Cleansing Corporation (SWCorp) 2012 survey on the MSW composition, only a rough estimation can be made that packaging waste constituted 26.6% of the total MSW generated in the country, including plastic (13.2%), paper (8.5%), glass (3.3%) and Tetrapak (1.6%).^{viii}

Solid waste management

Malaysia generated 13.8 million tonnes of municipal solid waste (MSW) in 2018, which is a slight increase from 2017 (13.68 million tonnes). The 2018 per capita generation was around 1.17 kg per person per day.^{ix} According to the Solid Waste Management and Public Cleansing Corporation (SWCorp) 2012 survey on solid waste composition, plastic constituted 13.2%. However, according to an article published on The Star on 30 July 2019,^x the SWCorp deputy chief executive officer (technical) Dr Mohd Pauze Mohamad Taha quoted plastic in MSW as 20% of waste.

The Government has made it mandatory to separate household solid waste at source beginning 1 September 2015 (and extended to commercial, institutional, industrial and the construction sectors in 2018). The implementation will be pursuant to regulations under Solid Waste and Public Cleansing Management Act 2007 (Act 672) enforced in the following states and Federal Territories: Kuala Lumpur, Putrajaya, Johor, Melaka, Negeri Sembilan, Pahang, Kedah and Perlis.

A gradual increase in the national recycling rate of household waste has been observed in Malaysia; recycling rate increased from 21% in 2017 to 24.6% in 2018 and 28.06% in 2019.^{xi} The 2020 target is to reduce waste to landfill by 40% and have 30% of plastic waste recycled nationally. The MPMA estimates that the plastics recycling industry produces 1.5 million tonnes of recycled resins a year worth approximately RM4.5 billion in revenue, and exports roughly 70% of its production. This estimation is only true if the 13.2% of plastic in the MSW is packaging plastics. There was a gradual increase in plastic waste recycling at 38.19% (in 2017) to 46.48% (in 2018) but a decline in 2019 with only 40.34% of plastic waste recycled.^{xii}

Figure 1: Solid waste generation in Malaysia

Source: Survey on solid waste composition, characteristics and existing practices of solid waste recycling in Malaysia 2012



Figure 2: National recycling rate research

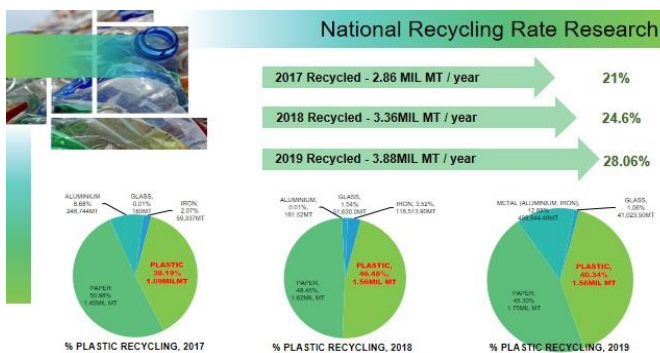


Figure 3: Plastics waste components

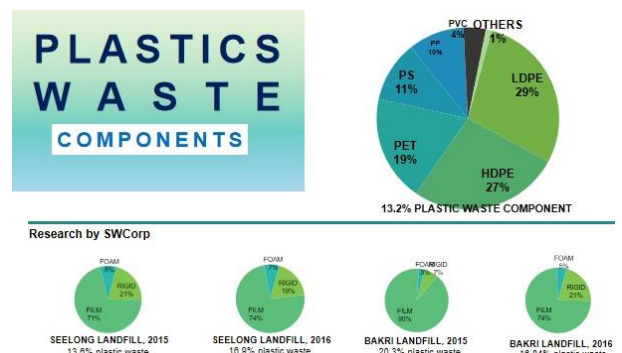


Table 1: Key data on Malaysia's plastic industry ^{iv}

	2014	2015	2016	2017	2018
Malaysia's GDP Growth	6%	5%	4.2%	5.9%	4.7%
Number of plastic manufacturers ^v	1300	1300	1300	1300	1300
Employment	82,000	80,000	79,000	84,000	81,500
Turnover (RM Billion)	RM19.46 (+7.3%)	RM24.77 (+27.3%)	RM27.32 (+10.3%)	RM29.80 (+9.1%)	RM30.98 (+4%)
Export (RM Billion)	RM11.94 (+11.5%)	RM12.96 (+8.5%)	RM13.11 (+1.2%)	RM14.58 (+11.2%)	RM14.60 (+0.14%)
% of export against turnover	62%	52%	48%	49%	47%
Resin consumption (million Metric Tonne)	2.15 m MT (+2.5%)	2.22 m MT (+3%)	2.26 m MT (+2%)	2.35 m MT (+5%)	2.45 m MT (+3%)
Per capita consumption of resins (in kg)	71 kg	72 kg	72 kg	73 kg	76 kg

Table 2: International coastal clean-up efforts and marine litter items (number) found in Malaysia ^{xiv}

Source: Reef Check Malaysia and Trash Hero Malaysia – combined data for International Coastal Clean-up Day and World Clean-Up day 2019

Country / location					People	KG	KM of coast	Total items collected	
Malaysia					12,817	36,895.48	1,463.15	546,614	
Cigarette butts	Food wrappers (candy etc.)	Straws stirrers	Plastic forks Knives spoons	Plastic beverage bottles	Plastic bottle caps	Plastic grocery bags	Other plastic bags	Plastic lids	Plastic cups plates
148,691	139,958	21,715	81,841	47,004	9,132	12,111	2,759	15,915	6,836

Marine litter status

Malaysia ranks 8th amongst the countries with mismanaged plastic waste in the world. There is an annual leakage of 0.14 to 0.37 million tonnes of plastic waste into the oceans from Malaysia.^{xiii} Oceans and beaches in the country are threatened by mismanaged solid waste including plastic waste. Table 2 above lists the plastic waste items collected during the International Coastal Clean-up effort in Malaysia.

The Maritime Institute of Malaysia (MIMA), through a study in 2010-2011, has established the clean-coast index (CCI) tool to systematically assess coastal cleanliness and develop a baseline for the country. The CCI has proven to be a useful tool for measuring progress and the success of activities such as education campaigns, media coverage, and enforcement actions. The pilot study conducted by MIMA included selected coastal areas (beaches) in the country i.e., Morib and Kelanang (Selangor), Desaru (Johor), Cenang (Langkawi), Balok (Pahang), Puteri (Malacca), Tanjung Tuan and Cermin (Port Dickson), Puteri (Sarawak), and Tanjung Tuan (Sabah) showed that plastic is the major contributor to coastal debris comprising 66% of overall debris collected. The CCI managed to pinpoint the amount, composition, and distribution of coastal debris in the sampling survey. Based on the established baseline CCI for the sampled recreational sites, Pantai Cenang in Langkawi recorded the lowest index at 1.08 indicating that the beach had little plastic debris. Meanwhile, Pantai Desaru in Johor had the highest index at 7.11 indicating that the beach had more plastic pollution recorded.

The data provides a useful description of the status of the plastic waste in coastal areas in Malaysian, and hence can become a tool to evaluate the cleanliness of these areas.^{xv} The Department of Fisheries have created 30 categories of waste for marine debris after assessing 42 marine park islands in Malaysia.^{xvi}

Action on marine litter: Key stakeholders

Government

At the institutional level, the Ministry of Environment and Water (regulator) is responsible for pollution, policy, regulations and standards as well as monitoring and control for environment in general. For waste management, the National Solid Waste Management Department under the Ministry of Housing and Local Government / Kementerian Perumahan dan Kerajaan Tempatan (KPKT) is responsible for proposing policies, plans and strategies in respect of solid waste and public cleansing management. It sets standards and specifications and codes of practice relating to any aspect of solid waste management services and public cleansing management services; and formulate plans for solid waste management including location, type and size of new treatment facilities, coverage areas of solid waste management facilities. The Solid Waste Management and Public Cleansing Corporation (SWCorp) was established under the Solid Waste Management and Public Cleansing Corporation Act 2007 (Act 673) and commenced operation on 1 June 2008 under the purview of the KPKT.

Figure 3: Leakages from the plastic value chain in Malaysia

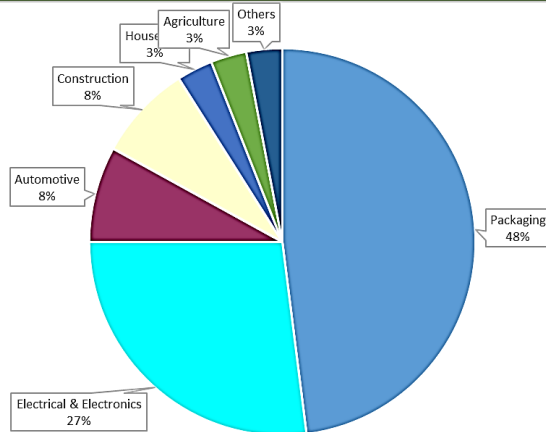
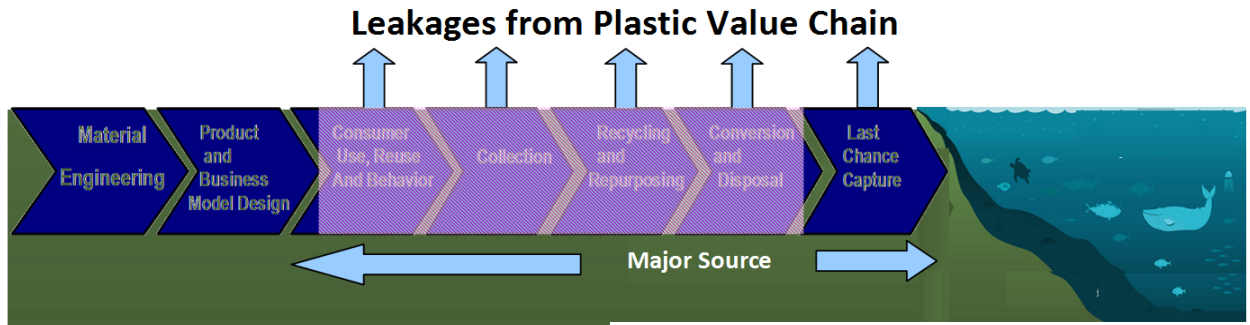


Figure 4: Major market segments for plastic products
 (Source MPMA, 2017 <http://mpma.org.my/v4/wp-content/uploads/2019/02/Performance-of-the-Malaysian-Plastics-Industry-2017-14-2019A.pdf>)

The role of the Corporation is to ensure that solid waste and public cleansing management services will be more efficient and integrated, as well as meeting consumers expectations. It has the power to administer and enforce solid waste and public cleansing management laws and matters related thereto. For coastal and marine, the Department of Environment is a nodal agency for development, implementation, enforcement and monitoring of policy, regulations related to water, wastewater and marine and island water. The Marine and Water Division, under Department of Environment (DOE) serves as the COBSEA contact point.

Private sector

Private sector (formal) is involved in a significant manner at collection, transportation and disposal of MSW in Malaysia. Waste collection and public space cleansing services are handled by Alam Flora Sdn Bhd, SWM Environment Sdn Bhd (SWM), and E-Idaman Sdn Bhd. Alam Flora collaborates closely with 13 Local Authorities (in WP K.Lumpur, WP Putrajaya, Pahang) to provide public cleansing and waste management for 33 schemes zones. SWM Environment Sdn Bhd (SWM) handles waste management services in Johor, Melaka, Negeri Sembilan, and E-Idaman Sdn Bhd. covers Kedah and Perlis.^{vii}

Private sector (informal) is involved in a major way in collection, transportation and disposal. Further, some of the major plastic recycling companies include EPD Plastic Industries SDN BHD, Wespac and Environmental Preservation and Innovation Centre SDN BHD (EPIC). EPIC provides consultancy services and works as an intermediary for initiating interventions in the area of environment and waste management in Malaysia. There are private sector associations like the Malaysian Plastics Manufacturers Association (MPMA), which was established in 1967, is a trade association providing leadership and quality service to its members and the plastics industry. MPMA's members currently represent about 60% of plastics manufacturers in the country and account for 80% of the country's total production of plastics products.

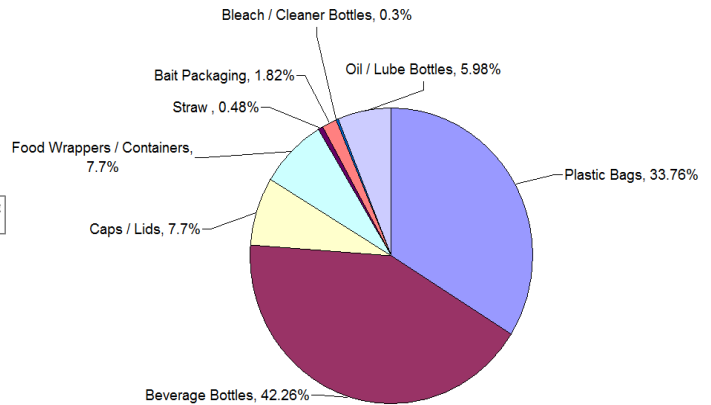


Figure 5: Marine litter composition

(Source International Coastal Clean-up, 2012) IGI Global. (2020). Pariatamby, A. Hamid, F.S. and Bhatti, M.S (2020). Sustainable Waste Management Challenges in Developing Countries. Chapter 8. Municipal Solid Waste Management in Malaysia. Pp. 186-222.

In 2011, MPMA signed the Declaration of the Global Plastics Associations for Solutions on Marine Litter which operates as the Global Plastics Alliance (GPA). The GPA is committed to take action and make measurable progress to contribute and execute sustainable solutions locally and regionally to address the issue of marine debris. The Malaysian Plastics Recyclers Association (MPRA) was formed in 2014 to spur the growth of the plastics recycling industry, enhance integrity and to engage with Government and regulators. MPRA plays a key role in building a sustainable platform for the plastics recycling industry and supports sustainable practices and education.

For plastic waste management, an introduction of Malaysia Plastic Pact (MPP) under the then MESTECC brought together all stakeholders / stakeholders in addressing the problem of plastic waste in Malaysia. The MPP is expected to complement and drive efforts to develop a plastic circular economy, as outlined in Malaysia's Roadmap Towards Zero Single-Use Plastics 2018 – 2030.

Policy frameworks on MSW and marine litter Global frameworks on marine litter

Malaysia has ratified the Annex V of the [International Convention for the Prevention of Pollution from Ships \(MARPOL\)](#) in 1997. MARPOL is the key international agreement to prevent marine environment pollution caused by ships' operational and unintended activities. Annex V, enforced since 31 December 1988, specifically addresses the issue of plastic dumping from ships: 'The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited'. Besides prohibition of plastic waste disposal, Regulation 3 number 2 of the Convention also calls for stricter regulations on mixed garbage discharge.

Malaysia has adopted the [Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal \(Basel Convention\)](#) in 1997 (accession date: 8 October 1993). On 26 October 2001, Malaysia ratified the Ban Amendment which was adopted by the third meeting of the Conference of the Parties in 1995. The 14th Meeting of the Conference of Parties to the Basel Convention in May 2019 agreed to include mixed, unrecyclable and contaminated plastic waste exports into the control regime that requires the consent of importing countries before waste exports can proceed. The amendment will be effective in January 2021. Subsequently, the Basel Convention Plastic Waste Partnership (PWP) was established by the Conference of the Parties to the Basel Convention through its decision BC-14/13 adopted during its fourteenth meeting held in April/May 2019 and was launched officially on 12 November 2019 in Palais Eynard in Geneva. The PWP aims to improve and promote the environmentally sound management of plastic waste at the global, regional and national levels and in the long-term, to eliminate the discharge of plastic waste and microplastics into the environment, in particular the marine environment. Membership to the Plastic Waste Partnership working group is open to Parties to the Basel Convention and other stakeholders dealing with the different aspects of prevention, minimization and management of plastic waste.

Regional frameworks on marine litter

Malaysia as the ASEAN member State has adopted “the Bangkok Declaration on Combating Marine Debris in the ASEAN Region” and “the Framework of Action on Marine Debris” in 2019.

The ASEAN Framework of Action on Marine Debris:

The Framework was developed to act on the recommendations from the ASEAN Conference on Reducing Marine Debris in ASEAN Region in Phuket in November 2017, taking into account the East Asia Summit (EAS) Conference on Combating Marine Plastic Debris in Bali in September 2017. The Framework comprises four priority areas namely: (i) Policy Support and Planning; (ii) Research, Innovation, and Capacity Building; (iii) Public Awareness, Education, and Outreach; and (iv) Private Sector Engagement. Each priority area consists of actions and suggested activities for further collaboration in ASEAN region and among ASEAN and its partners in combating marine debris.

Bangkok Declaration on Combating marine debris in ASEAN region

ASEAN ratified the Bangkok Declaration on Combating Marine Debris and the ASEAN Framework of Action on Marine Debris at the 34th ASEAN Summit in Bangkok, Thailand on 22 June 2019.

The Coordinating Body on the Seas of East Asia (COBSEA) Regional Action Plan on Marine Litter

COBSEA brings together nine countries - Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Singapore and Vietnam in development and protection of the marine environment and coastal areas of the region, for the health and wellbeing of present and future generations. At the 24th Intergovernmental Meeting of the Coordinating Body on the Seas of East Asia (COBSEA) in June 2019, participating countries adopted the revised Regional Action Plan on Marine Litter to guide action on marine litter in the East Asian Seas region. The Regional Action Plan on Marine Litter will thereby directly support COBSEA participating countries to deliver target 14.1 of Sustainable Development Goal 14, to prevent and significantly reduce marine pollution of all kinds, particularly from land based activities, including marine debris and nutrient pollution, and also contribute to the achievement of other Sustainable Development Goals and associated targets.

National policy frameworks on municipal (plastic) waste management

The National Strategic Plan on Solid Waste Management (2005); The Study on National Waste Minimization Plan in Malaysia (2006); The National Solid Waste Management Policy (2006); The Solid Waste and Public Cleansing Management Act (2007) (Act 672) and the associated Regulations (2011); The National Strategic Plan for Food Waste Management in Malaysia (2011) A Survey on Solid Waste Composition, Characteristics & Existing Practice of Solid Waste Recycling in Malaysia 2013 and The National Recycling Target of 22% of the total solid waste recycled by the year 2020 are some of the policy frameworks addressing MSW in Malaysia. Through the 2005 National Strategic Plan for Solid Waste Management, the Malaysian Government aims to set overall waste reduction and recovery at 17% and the recycling target for plastic at 20% by 2020. The country also undertakes: Mandatory Separation at Source; Establish Regulations on Licensing Collection for Construction and Demolition Waste and Business Waste; Implement the National Strategic Plan for Food Waste Management in Malaysia and Implementation of solid waste management based on waste hierarchy of 3Rs.

Malaysia has established a phased and holistic approach toward managing single-use plastic pollution by involving all stakeholders through its Roadmap Towards Zero Single-use Plastics 2018–2030 (launched on 17 October 2018). The action plan has three phases to tackle the 5 key problems in Malaysia: severity of plastic pollution, low recycling rates of plastic waste, absence of environmentally friendly and cost-effective alternatives and the absence of a uniform policy framework. The Roadmap introduces various measures including introducing a levy on plastic manufacturers; creating a circular economy for single-use plastics; providing incentives for eco-friendly alternatives; conducting research and development on plastic alternatives; and promoting communication, education and public awareness. The Roadmap will first target introducing pollution charges on plastic straws and bags, and subsequently, on plastic containers and cutlery.

National policy frameworks on marine litter

At a regional level, Malaysia plays an active role as a member of the Coordinating body of the Seas of East Asia (COBSEA) and the ASEAN Working Group on Coastal and Marine Environment. These platforms are useful vehicles to strengthen national work on marine debris and plastic pollution. Malaysia will be establishing a marine debris policy that will also be aligned with the Bangkok Declaration on Combating Marine Debris in the ASEAN Region and the ASEAN Framework of Action on Marine Debris.

Fiscal incentives

The cost of managing solid waste is highly subsidized by the federal government. The Malaysian government spent about RM950 million to manage solid waste under the Ninth Malaysia Plan (RMK9) alone. With the SWM Act, it is currently a transition period for Malaysia to transform from translating waste economic instruments in terms of subsidies (incentive) and assessment tax (disincentive) to public private sector partnership, tax breaks for the industries/operators, cross-concession trading (incentive) as well as direct billing, proper calculated tipping fees, license to the operators and penalties in terms of fines and temporary suspension of services to a household (disincentive).

Malaysia plans to give incentives to 3R practitioners Investment Tax Allowance (ITA).^{xvii}

Examples of pilot projects, master plans and/or policies include companies undertaking waste recycling activities that are high value-added and use of high technology for getting eligible for Pioneer Status.

Tax Incentive in the 2019 Budget includes Pioneer Status incentive of 70% or investment allowance of 60% for five years to be granted to companies which produces environmentally friendly plastics based on bio-resins and bio-polymers. Malaysia also has enabling green financing opportunities.

The Green Technology Financing Scheme was introduced in 2010 to create enabling conditions for the growth of a green economy.

Waste management is one of the six sectors that could be financed. Financing for the adoption of green technology in waste recycling, waste to fertilizer conversion, waste reduction, and wastewater treatment. The scope of financing includes various types of waste: Garden waste, industrial waste (i.e. spent bleaching earth, waste edible oil, Palm Oil Mill Effluent), municipal waste including plastic bags, agricultural waste, and organic waste and sewage .

Conclusions

Marine plastic pollution has emerged as one of the most significant environmental threats to Malaysia. However, in an effort to achieve a 22% recycling rate target in 2020, a 40% reduction of waste disposal into landfills and dumping sites, including reducing marine plastic leakages, the government is taking bold actions and setting ambitious targets.

One such effort is the Roadmap Towards Zero Single-use Plastics 2018–2030 that aims to abolish single-use plastic by 2030. Malaysian government is also cracking down on and closing unlicensed plastic recycling factories around the country, and sending back foreign plastic scrap to its country of origin.

To increase the recycling rate among Malaysian, numerous campaigns are in place, which includes the National Recycling Day (celebrated on 11 November), the 3R campaign, and the 'No Plastic Bags' on Saturdays where shoppers requesting plastic bags are charged RM0.20 per bag. Malaysia needs to continue effective enforcement of its waste management regulatory framework, work together with stakeholders including the private sector participation to keeping plastic out of the terrestrial and marine environment.

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