

Legal and Policy Guidance on Addressing Marine Litter in Malaysia

Gap Analysis and
Needs Assessment





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Abbreviations

3R	Reduce, Reuse, Recycle
ALDFG	Abandoned, Lost and otherwise Discarded Fishing Gear
AP	Approved Permit
ASEAN	Association of Southeast Asian Nations
BHRE	Business, Human Rights and the Environment
CCI	Clean Coast Index
COBSEA	Coordinating Body on the Seas of East Asia
COVID-19	Coronavirus Disease
DOE	Department of Environment
EPR	Extended Producer Responsibility
EQA	Environmental Quality Act
eSWIS	Electronic Scheduled Waste Information System
FAO	Food and Agriculture Organization
FMCG	Fast-moving consumer Goods
FOI	Freedom of Information
GDP	Gross Domestic Product
GVA	Gross Value Added
IMO	International Maritime Organization
INTERPOL	International Criminal Police Organization
JPSPN	National Solid Waste Management Department
KASA	Ministry of Environment and Water
KPDHNEP	Ministry of Domestic Trade & Consumer Affairs
KPKT	Ministry of Housing and Local Government
MAREA	Malaysia Recycling Alliance
MARPOL	International Convention for the Prevention of Pollution from Ships
MaSPA	Malaysian Sustainable Plastics Alliance
MIDA	Malaysian Investment Development Authority
MIMA	Maritime Institute of Malaysia
MSW	Municipal Solid Waste
PRO	Producer Responsibility Organization
PSMA	Port State Measures Agreement
RAP MALI	Regional Action Plan on Marine Litter
RM	Malaysian Ringgit
SDG	Sustainable Development Goals
SUP	Single Use Plastic
SWCorp	Solid Waste Management Corporation
UN	United Nations
UNEP	United Nations Environment Programme
WEP	Waste Eco Parks



Executive Summary

Recent studies reveal that Malaysia ranks high among the contributors of mismanaged plastic flowing into the sea. To address this problem, it is important to strengthen the regulatory framework and improve legal measures, especially on waste management and marine litter. This would implement policy roadmaps and action plans which seek to shift systems towards a circular economy and human rights-based approach. Such reforms in the legal framework would improve marine litter and overall environmental governance in Malaysia.

This report aims to provide guidance to strengthen national regulatory frameworks in Malaysia through the conduct of a gap analysis, needs assessment and prioritization of legal frameworks that seek to address marine litter. It reviews the current state of governance and identifies potential gaps in accordance with priority issues. Recommendations for policy reforms and development of legal measures are then drawn from the exercise. In doing so, this guidance is intended to become a practical tool for government and stakeholders to develop laws and regulations, with guidance on key elements and considerations to respond to Malaysian conditions.

The gap analysis and needs assessment framework is divided into two broad categories, plastics and marine litter governance and environmental governance. Each of these is further classified into thematic tracks to address specific issues and provide appropriate recommendations.

Plastics and Marine Litter Governance

This encompasses the enabling framework to address plastic pollution by effectively managing waste systems to prevent leakage into the oceans. The gap analysis focuses on four themes that would cover the entirety of the plastic value chain in relation to marine litter in Malaysia.

- 1. Managing the Plastic Value Chain and Waste.** The main challenge is that existing legal and policy frameworks are too focused on downstream approaches and a comprehensive enabling environment that would address the issues of the entire plastics value chain has not been adopted.

To address the gaps, comprehensive regulations should be designed to expand the current focus from downstream waste management to the entire life cycle of plastics using circular economy principles. Extended Producer Responsibility (EPR) legislation could provide the framework that would address a multitude of issues covering the whole plastics value chain. It is also envisaged to respond to issues in collection, disposal to recycling as it would make producers and manufacturers share the responsibility for end-of-life collection and recycling of their plastic waste.

- 2. Promoting Systemic Changes on Production and Consumption.** The gaps focus on the need to improve prevention of plastic pollution through a robust legal framework on waste management and littering, which would enable changes in the social behavior of individuals to stop littering and signal the shift to a sustainable consumer society.

To ensure a strong regulatory environment, it is important for government to strengthen anti-litter regulations to encourage behavioral change for individuals on waste littering and cleaning surroundings, as well as enact single-use plastics regulation. Eco-design also performs a key role in reducing the potential impacts of plastic products in the oceans by adopting end-of-life management of products and ensuring the durability and recyclability of packaging.

Such interventions necessitate installation of facilities and enabling ecosystems to accompany legal frameworks promoting behavioral changes.

3. Addressing Sea-based Sources of Marine Litter. The gaps identified look at enhancing prevention measures from sea-based industries and activities to avoid marine litter generation. It also covers preventing further damage from sea-based sources already at sea through curative and recovery efforts.

To address sea-based sources of marine litter, policies and regulations must take from established best management practices and circular economy principles. This includes minimizing waste materials that could be brought on board, circular packaging in gear and equipment, clear garbage management and procedures aboard vessels, and integration with land-based touchpoints such as port reception facilities.

4. Curbing Waste Crime and Illegal Importation. Transboundary waste crime has been a major issue in Malaysia since, especially as it become a major plastic waste export destination since 2018. Gaps in policy, enforcement and compliance have led for opportunities for waste crime to proliferate, which have exacerbated risks of such plastics being introduced into the environment.

To curb waste crime, interventions that could be introduced include improving investigations, detection and inter-agency cooperation to successfully prosecute cases. Institutionalizing transparency to shed light on illicit operations is also vital, as this would facilitate traceability and enable better monitoring of waste imports.

Environmental Governance

Interventions to address marine litter encompass not only plastic and waste-specific policies but must operate within an enabling environmental governance framework. The gap analysis focuses on two themes that would ensure that legal frameworks to address marine litter are in line with sound environmental governance principles.

1. Jurisdictional and Institutional. The main gap is the asynchronous response to specific issues coming from different sectors and parts of the value chain, leading to inconsistencies among

policies and regulation among the states and relevant institutions.

An integrated approach with suitable institutional structures makes for effective environmental governance to prevent marine litter. This would require a coherent and coordinated approach to policy and regulation, as well as improved communication lines across different sectors and parts of the value chain.

2. Environmental and Human Rights. This aims to address challenges in developing legal frameworks to integrate environmental and human rights. It also covers understanding gender considerations and procedural environmental rights such as access to information and public participation, which may be overlooked in the process.

Protecting the right to a healthy environment entails safeguarding of human rights and gender equality across the regulatory framework and at all levels of the plastics life cycle. The development of any legal framework would need to integrate these considerations in the identification of issues, as well as strengthen procedural environmental rights and the interplay of business, human rights and the environment.

In view of the foregoing, the following key recommendations are provided in accordance with identified priorities, as Malaysia seeks to strengthen the legal framework to address the marine litter problem.

1. In the short term, mitigate plastic waste leakage by preventing plastic pollution from land and sea-based sources as well as improving waste collection, transportation and final disposal sites.
2. In the medium term, increase plastic waste recovery by strengthening waste separation at source, recovery and recycling waste from land and sea-based sources, and improving enforcement to curb waste crime.
3. In the long term, adopt sustainability in production and consumption by promoting eco-design and addressing single-use plastics.
4. In the long term, improve environmental governance of plastics by strengthening institutions and upholding environmental and human rights.



Introduction

This report aims to provide guidance to strengthen national regulatory frameworks in Malaysia through the conduct of a gap analysis and needs assessment of legal and governance frameworks that seek to address marine litter, in line with the Coordinating Body on the Seas of East Asia (COBSEA) Regional Action Plan on Marine Litter (RAP MALI). The assessment was undertaken by the United Nations Environment Programme (UNEP) upon the request of Malaysia to support improved governance of marine litter through technical legal assistance.

Overview of Marine Litter

Plastic is a pervasive part of modern lifestyles and its proliferation in human society poses many environmental challenges. In recent decades, plastic pollution and marine litter have emerged as one of the most serious ecological crises, causing the degradation of marine and coastal ecosystems along with economic and health threats. It is estimated that 80% of all marine pollution originates from land-based activities where waste have leaked into the oceans¹. Sea-based sources have also contributed to marine litter, through marine sectors such as shipping, fisheries, aquaculture and offshore activities². As a result, plastic has become the third highest waste source worldwide after food and paper wastes³, with the amount of plastic entering the ocean estimated to be increasing by about 8 to 12 million tons per year⁴. Such volumes are projected to further increase as populations and levels of consumption grow⁵.

Marine litter is particularly concerning in Asia Pacific, which has been experiencing the fastest waste generation growth rates globally⁶. Asia is considered as a major hotspot for marine debris and plastic pollution, hosting 8 out of the top 10 countries with mismanaged plastic waste polluting the ocean and 8 rivers which transport 88%–95% of the global ocean plastic load⁷. Despite this growing challenge, waste management remains a challenging area of municipal services with gaps that need to be addressed.

Addressing marine pollution is considered as a matter of high international priority which requires urgent attention. The United Nations Sustainable Development Goals specifically call for a significant reduction of marine pollution of all kinds, including marine debris, by 2025 (SDG 14.1). Conventions which contribute to addressing the issue include the International Convention for the Prevention of Pollution from Ships (MARPOL) and the Basel Convention on the Control of Transboundary Movements of Hazardous Waste. Soft law instruments have also sought to address the issue of marine litter, such as the Action Plan to Address Marine Plastic Litter from Ships by the International Maritime Organization (IMO), and the Aichi Biodiversity Targets, along with global initiatives such as the Global Program of Actions for the Protection of Marine Environment from Land Based Activities and various regional seas program led by the UNEP. However, the problem of marine litter remains complex, and addressing it requires an adaptive and multi-stakeholder approach to shift systemic and behavioral issues.

1 Powers, A. and D. VanderZwaag. 2008. The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance, 23 *International Journal of Marine and Coastal Law*. 423.

2 United Nations Environment Programme (UNEP). See <https://www.unep.org/cobsea/what-we-do/marine-litter-and-plastic-pollution>

3 Kaza, S. et al. 2018. What a waste 2.0: A global snapshot of solid waste management to 2050. Urban Development Series. World Bank: Washington, DC. <https://openknowledge.worldbank.org/handle/10986/30317>

4 Ellen MacArthur Foundation. 2017. The New Plastics Economy: Rethinking the Future of Plastics. <https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics>

5 Chen, HL et al. 2021. The plastic waste problem in Malaysia: management, recycling and disposal of local and global plastic waste. *SN Applied Sciences*.

6 Hoorweg, D. and P. Bhada-Tata. 2012. What a Waste: A Global Review of Solid Waste Management. Urban Development Series – Knowledge Papers No. 15. <https://openknowledge.worldbank.org/handle/10986/17388>

7 Jambeck et al. 2015. Plastic waste inputs from land into the ocean. *Science*. <https://science.sciencemag.org/content/347/6223/768>

Regional Efforts

The Coordinating Body on the Seas of East Asia (COBSEA) brings together nine Southeast Asian and East Asian countries (Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Singapore and Viet Nam) in the development and protection of the marine environment and coastal areas of the region. The area covered by COBSEA is characterized by its high populations, many of which live along coasts, and rapid urbanization rates. The region also hosts high concentrations of shipping and fishing vessel activity⁸. In 2019, COBSEA countries adopted the revised Regional Action Plan on Marine Litter (RAP MALI) to guide regional action on marine litter and thus contribute to achieving the SDG 14 target of preventing and significantly reducing marine pollution. Among the programs of COBSEA is to reduce marine litter from both land-based and sea-based sources through addressing waste leakage into the ocean⁹. Initiatives from the COBSEA include SEA Circular, which aims to promote market-based solutions and develop enabling frameworks to improve value chains and prevent plastic pollution in Southeast Asia.

The Association of Southeast Asian Nations (ASEAN) adopted the Framework of Action on Marine Debris in 2019, which comprises four priority areas for collaboration to combat marine litter, particularly policy support and planning; research, innovation, and capacity building, public awareness, education, and outreach; and private sector engagement. Each of these priorities are accompanied with suggested actions and corresponding activities. Furthermore,

ASEAN heads of state have adopted the Bangkok Declaration on Combating Marine Debris to facilitate regional collaboration within ASEAN and with partners to prevent marine debris.

Methodology and Objectives

The research was undertaken through a comprehensive desktop review as well as interviews and focus group discussions with key stakeholders from government, industry and civil society. Where applicable, it also draws from model regulations and best practices from other jurisdictions to operate in the Malaysian context.

The report starts by taking stock on the status of plastics and waste management in Malaysia. It situates needs with the current trends in solid waste management and plastic leakage and proceeds to map the existing legal and regulatory framework governing the management of waste and plastic at all stages. The gap analysis starts with a prioritization of actions and the identification of the desired outcome for future interventions based on reports primarily for UNEP, INTERPOL and other key publications¹⁰. A review of the current state is then undertaken to identify potential gaps. Recommendations are drawn for each priority from the needs assessment. Ultimately, this report is intended to become a practical tool for government and stakeholders to develop laws and regulations with guidance on key elements and considerations to respond to Malaysian conditions.

Gender and Human Rights Considerations in Addressing Marine Litter

The development of legal frameworks to address marine litter necessitates a lifecycle approach which integrates human rights and gender considerations. This is essential to effectively respond to the distinct roles and exposure of men and women over the issue.¹¹ Furthermore, upholding of human rights is vital to sound environmental governance, which includes substantive rights of the people to life, well-being and a healthy environment, as well as procedural rights to provide an enabling environment for the public to engage on marine litter issues¹².

A human rights-based approach on the issue recognizes that impacts of plastic pollution on marginalized groups and guides interventions to respond accordingly. Moreover, the framework reminds governments and industry of their accountability for the health and well-being of consumers, the public and all stakeholders, especially those which are oftentimes excluded in the environmental decision-making process¹³. The emerging concepts of business, human rights and the environment (BHRE) also holds private sector stakeholders to account on their human rights obligations through environmental due diligence and corporate responsibility.

8 UNEP, *supra*.

9 *Ibid*.

10 The literature for desired outcomes is primarily from the Strategies to Reduce Marine Plastic Pollution from Land-based Sources in Low and Middle - Income Countries (2019) by UNEP and the Institute for Global Environmental Strategies (IGES), the Strategic Analysis Report on Emerging Criminal Trends in the Global Plastic Waste Market (2020) by INTERPOL and the Best Practices Framework (2021) of the Global Ghost Gear Initiative (GGGI).

11 UNEP COBSEA and Stockholm Environment Institute. 2019. Marine plastic litter in East Asian Seas: Gender, human rights and economic dimensions. <https://www.unep.org/cobsea/resources/report/marine-plastic-litter-east-asian-seas-gender-human-rights-and-economic-dimensions>

12 See https://www.sea-circular.org/wp-content/uploads/2020/03/UNEP-COBSEA-SEA-circular_Issue-Brief-01_A-human-rights-based-approach-to-preventing-plastic-pollution.pdf

13 UNEP COBSEA and Stockholm Environment Institute, *supra*.

Malaysia Profile

Economic Profile

Malaysia is an industrialized, upper-middle income country in Southeast Asia. Its Gross Domestic Product (GDP) was measured at USD 336.7 billion in 2020¹⁴. GDP growth rates have ranged from 4-8% annually in the past decade although this has been disrupted by the COVID-19 pandemic where the Malaysian economy contracted considerably¹⁵. The services and manufacturing sectors have served as the primary contributors to the Malaysian economy, with a share of 79.1% in 2018¹⁶.

Malaysia's population is approximately 32.66 million people as of the second quarter of 2021, 76.2% of which are living in urban areas (2019)¹⁷. In the most recent government statistics, the number of poor households increased to 0.63 million households in 2020 compared to 0.4 million in the past year. Although the rate has risen in 2021, the incidence of absolute poverty in Malaysia remains relatively low in the region at 8.4 %. Extreme poverty is pegged at 1% covering approximately 78 thousand households¹⁸.

The ocean or “blue” economy constitutes a major pillar in the Malaysian economy, with a Gross Value Added (GVA) US\$63 billion in 2015¹⁹. Such industries contribute to 4% of total employment. Moreover, the estimated value of coastal and marine ecosystem services in Malaysia is set at USD 17.7 billion²⁰.

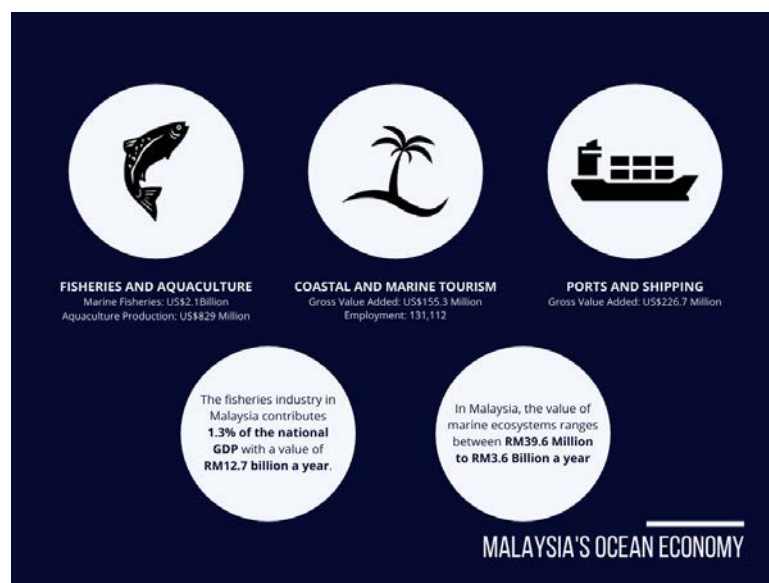


Figure 1: Malaysia's Ocean Economy 2015²¹

Plastic Pollution and Marine Litter in Malaysia

Malaysia has over 1,300 plastic manufacturers, thus hosting one of the biggest plastic production industries in the world. Plastic resins value up to 30 billion Malaysian Ringgits (RM) were exported globally in 2016, with plastic packaging the principal end-use product being manufactured²². In addition, Malaysia became the world's biggest importer of foreign plastic waste in 2018 after China established its waste import restrictions²³. Although the plastics industry

14 See <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=MY>

15 *Ibid.*

16 Department of Statistics Malaysia. n.d. National Accounts and State Socioeconomic Reports. https://www.dosm.gov.my/v1/index.php?r=column/ctwoByCat&parent_id=99&menu_id=TE5CRUZCbh4ZTZMODZlBmk2aWRRQT09

17 *Ibid.*

18 *Id.*

19 Partnerships in Environmental Management for the Seas of East Asia (PEMSEA). 2018. State of Oceans and Coasts Malaysia. http://pemsea.org/sites/default/files/NSOC_Malaysia.pdf

20 *Ibid.*

21 PEMSEA, *ibid* and UNEP COBSEA, SEA Circular Country Profile: Malaysia, see <https://www.sea-circular.org/publications/sea-circular-country-profile-malaysia/>

22 Chen et al., *supra*

23 INTERPOL. 2021. INTERPOL Strategic Analysis Report: Emerging criminal trends in the global plastic waste market since January 2018. Lyon: INTERPOL.

Key Concepts towards a Circular Approach to Address Marine Litter

- The **circular economy** is regarded as a critique against the traditional linear economy model whereby resources are extracted, converted into products and eventually disposed (“take-make-waste”). The circular economy model highlights reducing both waste and the use of finite resources through better design and material alternatives, improving material reuse, recycling and recovery, and thus reducing environmental impacts and pollution²⁹.
- Under the **polluter pays principle**, policies and regulations aim to place the cost of pollution on the person or entity responsible for causing it.
- The **waste management hierarchy** prescribes that waste prevention must be the preferred option in waste management policies. The hierarchy is then followed by reuse, recycling, recovery and safe disposal as a last resort.

Environmental policy approaches such as Extended Producer Responsibility (EPR), whereby the producer’s obligation for a product is extended up to the post-consumer stage of its life cycle, provides opportunities to integrate the abovementioned concepts. Such mechanisms promote circular economy principles while operationalizing the polluter pays principle through the institutionalization of shared responsibilities of manufacturers to prevent harm and control the introduction of their products in the environment³⁰.

contributes significantly to Malaysia’s economy, the indiscriminate use and mismanagement of its waste has led to increased levels of marine pollution.

Related studies reveal that Malaysia ranks as the eight top contributor of mismanaged plastic flowing into the sea. Marine plastics input from Malaysia is estimated to range from 0.14 to 0.37 million metric tons annually²⁴. Plastic consumption has also grown significantly, with a growth rate of 3.6% annually from 2012 to 2016²⁵. The equivalent figures in volume for consumption range from 2.15 million tons to 2.5 million from 2013-2017²⁶. Current plastic consumption rates per capita is approximately 78 Kg for 2017²⁷. Malaysia’s trends are consistent with global increases in plastic waste generation and consumption of single-use plastics²⁸.

Institutional Arrangements

Plastic pollution and marine litter management in Malaysia encompass a multitude of government agencies having jurisdiction on varying issues over the plastic life cycle. For waste management and public cleansing, the primary responsible agency is the Ministry of Housing and Local Government (KPKT), while the Ministry of Environment and Water (KASA) has authority over regulating and monitoring standards on

pollution³¹. In addition, each of these ministries have dedicated departments and other instrumentalities which take charge of specific activities and policies. The principal government agencies are described as follows:

Government Agency/ Instrumentality	Responsibilities
Ministry of Housing and Local Government (KPKT)	Establishment and enforcement of solid waste legislation, such as national 3R (Reduce, Reuse, Recycle) policies separation at source (SAS) policies and solid waste management. Note: The Ministry of Local Government and Housing Sarawak and Ministry of Housing and Local Government Sabah have similar powers under their respective ordinances.
National Solid Waste Management Department (JPSPN)	Coordinating federal and state governments as well as local authorities on implementing solid waste management and public cleansing policies (Act 672 states); issuance of Approved Permits (AP) for plastics importation.
Solid Waste Management Corporation (SWCorp)	Monitoring of operations and compliance of third-party concessionaires (Act 672 states); publication and collection of data on solid waste management and recycling rates.
Ministry of Environment and Water (KASA)	Establishment and enforcement of pollution reduction policies, including those related to plastic waste; ensuring compliance with environmental standards.
Department of Environment	Enforcement of the Environmental Quality Act and environmental safety regulations including for waste processors.
Ministry of Domestic Trade & Consumer Affairs (KPDHNEP)	Setting of price controls for consumer goods such as plastic and packaging material.

Table 1. Government agencies and instrumentalities involved in addressing marine litter

24 Jambeck et al., *supra*.

25 United Nations Centre for Regional Development (UN CRD). 2020. State of Plastics Waste in Asia and the-Pacific - Issues, Challenges and Circular Economic Opportunities. Discussion Paper.

26 *Ibid.*

27 *Id.*

28 Chen, *supra*.

29 See Akenji, L. et al. 2019. Circular Economy and Plastics: A Gap-Analysis in ASEAN Member States. Brussels: European Commission Directorate General for Environment and Directorate General for International Cooperation and Development, Jakarta: ASEAN.

30 Kamaruddin, H. and Marwan, M. 2021. Extended Producer Responsibility (EPR) in Malaysia – Towards a Sustainable Waste Management System. Journal of Contemporary Issues in Business and Government.

31 UNEP COBSEA SEA Circular, *supra*.



It is further important to note that as a federal constitutional monarchy, administrative jurisdiction in Malaysia is divided between federal and state governments through Federal, State and Concurrent Lists. Sabah and Sarawak have additional powers, especially on local authorities, that the peninsular states do not have. Sanitation and thus waste management is included under the concurrent list where both federal and state governments have administrative authority³².

32 Fauziah, H. et al. 2021. Marine debris in Malaysia: A review on the pollution intensity and mitigating measures. *Marine Pollution Bulletin* 167



Stocktaking: Waste Management in Malaysia

Waste Generation

Malaysia's total municipal solid waste generation is estimated at 14 million tons per year, with plastics comprising 1.8 million tons of the total number³³. The plastics composition in total solid waste is one of the highest in Asia, second only to the Philippines³⁴. Household waste generation ranges from 0.85 kg to 1.5kg per capita per day, depending on the location and economic status. This figure sets Malaysia's household waste higher than other countries in Southeast Asia such as Indonesia (0.22 kg) and the Philippines (0.4 kg)³⁵.

scrap plastics from 2017 to 2019. Data from 2017 reveals that plastic waste imports were primarily sourced from Germany, Japan, the United States, and the United Kingdom³⁷.

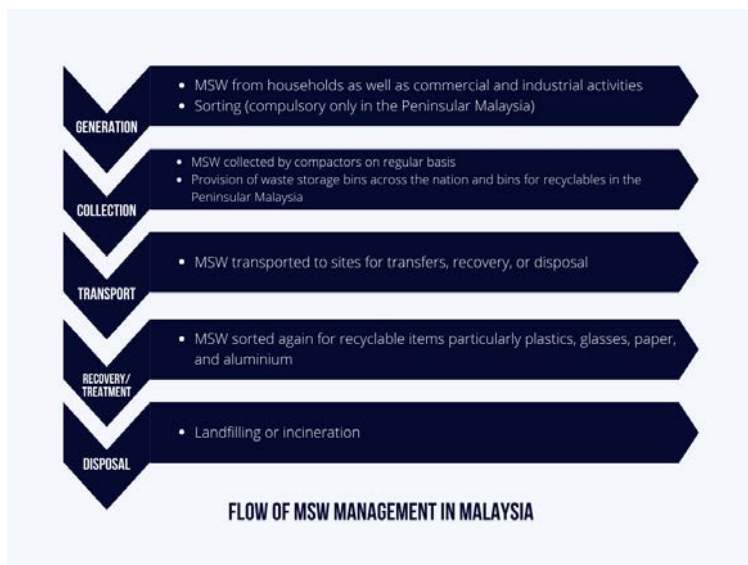


Figure 2. Municipal Solid Waste Management in Malaysia³⁶



Figure 3. Municipal solid waste generation in Malaysia 2021³⁸

Waste Collection and Recycling

National collection and recycling rate estimates in Malaysia differ by source. It may thus be difficult to reach accurate figures as there is no uniform data for national accounts. In some areas such as Kuala Lumpur, the municipal solid waste collection rate is assessed at 80%³⁹. Before the pandemic, the recycling rate in Malaysia was on an increasing trend with municipal solid waste

Waste Importation

Malaysia became the top plastic waste export destination in 2018, and has been a net importer of

33 WWF-Malaysia. 2021. EPR Policy Review Booklet. <https://www.wwf.org.my/?29045/WWF-Malaysia-EPR-Policy-Review-Booklet>

34 Chen et al., *supra*.

35 *Ibid*.

36 Ho, D. 2020. Municipal Solid Waste Management in the Sarawak State of Malaysia and the Way Forward. *Asian Journal of Civil Engineering* 12(2):38-55

37 Buchholz, K. 2019. Malaysia new hub for plastic waste as China exits market. <https://www.statista.com/chart/18451/trade-flows-of-major-exporters-of-plastic-waste/>

38 WWF-Malaysia, *supra*.

39 Kaza, S. et al. *supra*.

recycling rates peaking at 28.06% in 2019⁴⁰. Accounts for 2021 from JPSPN show waste recycling rates at 22% in 2020⁴¹. However, reports from market players estimate the national rate for recycling to be more likely around 15%.⁴²

Economic gains from recycling for the same year are projected at around RM 4.14 million in value from collection for recycling of PET bottles alone⁴³. Only 433,080 tons are recycled of the 1,848,000 tonnes of collected plastic⁴⁴, while Informal recyclers recycle an estimated 136,682 tons of plastic in landfills.⁴⁵

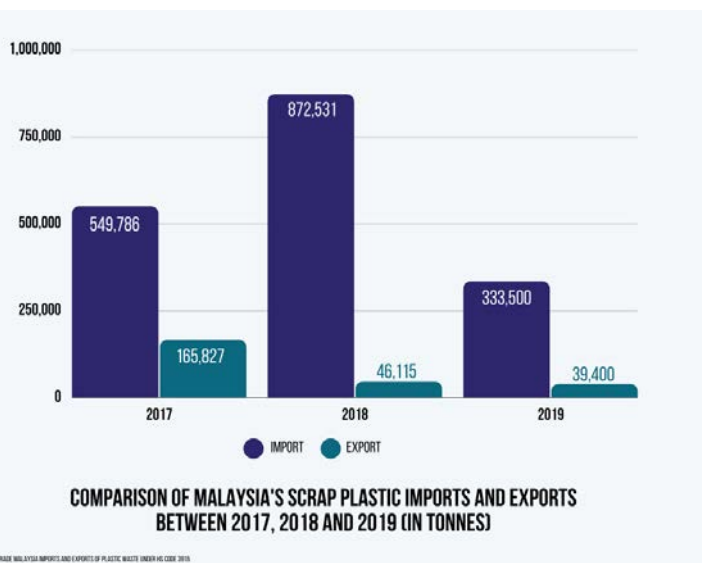


Figure 4. Comparison of Malaysia's scrap plastics imports and exports from 2017-19⁴⁶

Waste Disposal

Waste management disposal systems have been met with challenges in dealing with levels of plastic waste being disposed. As such, the main methods of plastic waste disposal are through landfills and open burning. It is estimated that 72% of collected plastic waste through municipal solid waste management end up in landfills or open dumps, with many thrown in unsanitary landfills⁴⁷.



Figure 5. Recycling rates per plastic type (2021)⁴⁸



Figure 6. Waste disposal statistics in Malaysia (2021)⁴⁹

40 WWF-Malaysia, *supra*.

41 Jabatan Pengurusan Sisa Pepejal Negara (JPSPN), 2021. Solid Waste Management Report. Malaysia. <https://jpspn.kpkt.gov.my>

42 United Nations Centre for Regional Development (UN CRD). 2017. State of 3Rs in Asia Pacific, Country Chapter Malaysia. [https://www.uncred.or.jp/content/documents/5691\[Nov%202017\]%20Malaysia.pdf](https://www.uncred.or.jp/content/documents/5691[Nov%202017]%20Malaysia.pdf)

43 WWF-Malaysia, *supra*.

44 *Ibid.*

45 *Id.*

46 UN Comtrade, as cited by World Bank Group. 2021. Market Study for Malaysia : Plastics Circularity Opportunities and Barriers. East Asia and Pacific Region Marine Plastics Series. World Bank: Washington, DC. <https://openknowledge.worldbank.org/handle/10986/35296>

47 Chen et al., *supra*.

48 WWF-Malaysia, *supra*.

49 UN CRD, *supra* and WWF-Malaysia, *supra*.



Other Initiatives

The Maritime Institute of Malaysia (MIMA) introduced the Clean Coast Index (CCI) as a monitoring and evaluation tool to study the cleanliness of coastal areas. Specifically, the index measures beach plastic debris as one of the cleanliness indicators. In a pilot study in 2010-2011 that assessed actual coast cleanliness in the beach, it was reported that plastic debris is the biggest component of marine debris, comprising more than 60% of all litter collected.⁵⁰ In turn, the CCI has been used to measure success of campaigns such as education and enforcement programs against marine litter.

Industry led efforts include the Malaysian Sustainable Plastics Alliance or (MaSPA), previously called the Malaysia Plastic Pact. MaSPA is a platform which brings together different stakeholders to encourage plastic value chain actors to collaborate and contribute to achieving national targets. Within the alliance is an EPR working group that looks at the prospects and implementation of EPR⁵¹. The Malaysia Recycling Alliance (MAREA) is also an important player in working towards the development of an EPR system in Malaysia. It is an industry-led voluntary Producer Responsibility Organization (PRO) founded by 10 fast-moving consumer goods (FMCG) companies to collaborate with the government and private stakeholders to adopt circular economy principles, including the increase of collection and rates of recycling.

50 Kaur, CR and Jaabi, A. 2017. Marine Plastic Pollution and Fisheries: Making sense of the environmental issue and implications. *Seaviews: Online Commentary on Maritime Issues*.

51 World Bank Group, *supra*.

Stocktaking: Malaysia's Legal and Policy Frameworks

Legal and Regulatory Frameworks

TREATIES AND CONVENTIONS

Malaysia is a party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention), having acceded to the treaty in 1993. The Basel Convention seeks to restrict the transboundary movements of hazardous wastes while providing a regulatory system applying to cases where such movements are permissible⁵². Malaysia ratified the Basel Convention Ban Amendment in 2001 (entered into force in 2019), which prohibited a list of countries from transboundary movements of hazardous wastes covered by the Convention⁵³. Malaysia is also bound by the Plastic Waste Amendments to the Basel Convention, which was adopted in 2019 and became effective in 2021, which clarifies plastic wastes which are presumed hazardous and subject to the exports control regime whereby consent of importing countries must be secured⁵⁴.

Malaysia has ratified the International Convention for the Prevention of Pollution from Ships (MARPOL), and specifically Annex V in 2005, which aims to eliminate and reduce the volume of garbage being dumped into the sea from ships and thus prevent marine environment pollution. Particularly, Annex V addresses dumping of plastic wastes and materials from ships, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags, among others⁵⁵.

NATIONAL LAWS AND REGULATIONS

The main legislation for plastics and waste management in Malaysia is the Solid Waste and Public Cleaning Management Act 2007 (Act 672). Act 672 vested responsibility of managing municipal solid

waste (MSW) to the federal government to ensure an integrated approach to waste management⁵⁶ and supported the privatization of waste management services to concession companies. However, this Act only applies to a number of peninsular Malaysian states (Melaka, Johor, Kedah, Pahang, Perlis, Negeri Sembilan) as well as the federal territories of Kuala Lumpur and Putrajaya. The so-called "non-Act" states of Penang, Perak, Selangor, Kelantan, Terengganu, Sabah and Sarawak, along with the federal territory of Labuan, are responsible for their own system under applicable federal laws and respective state legislations.

Act 672 regulates the management of controlled items such as municipal solid waste for the purpose of maintaining proper sanitation and public cleanliness. It contains prohibitions of unauthorized depositing of controlled solid waste and illegal dumping, among others. It also seeks to promote and regulate reduction of waste, reuse and recycling (3R). Notable subsidiary regulations of Act 672 include the Licensing Regulations for the provision of public cleansing management services, as well as the Separation at Source Regulation that mandates separating of household solid waste at source with a '2+1 collection system' or the collection of general waste 2 times a week, and collection for recyclables and bulky and green waste once weekly. Along with Act 672, the Solid Waste Public Cleansing Management Corporation Act 2007 (Act 673) was also enacted for the establishment of the Solid Waste and Public Cleansing Management Corporation (SWCorp) to administer and enforce solid waste and public cleansing management laws.

For solid waste management and public cleansing in non-Act states, the Local Government Act 1976

52 See <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>

53 See <http://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx>

54 See <http://www.basel.int/Implementation/Plasticwaste/Amendments/Overview/tabid/8426/Default.aspx>

55 See <https://www.imo.org/en/OurWork/Environment/Pages/Garbage-Default.aspx>

56 Kamarudin and Marwan, *supra*.

Extended Producer Responsibility (EPR) and Circular Economy in the Legal Framework

EPR as a concept has been incorporated in the Malaysia waste management framework through various policies, actions plans and legislation. Specifically, the EQA and Act 672 contain provisions pertaining to EPR, although expressed in generic terms.

Act 672

Section 101 authorizes the National Solid Waste Management Department (JPSPN) to require the reduction, reuse and recycling of controlled solid waste through the use of environmentally friendly material and specified amounts of recycled materials, among others. Section 102 empowers JPSPN to adopt a take back system by requiring producers and manufacturers to take back their products or goods for recycling or disposal at their own cost as well as the establishing of a deposit refund system.

Environmental Quality Act

Section 21 empowers the Department of Environment (DOE) to specify condition of emissions, hazardous material, or waste while Section 30A authorizes it to prescribe any substances to be reduced, recycled, recovered or regulated and to prescribe a minimum recycled content to producers on their products. Notably, Section 30B enables the DOE to specify rules on deposit and rebate schemes.

These provisions provide the regulatory basis for an EPR system through further regulation to take shape, by providing a legal framework for the requirements of take-back and deposit-refund systems as well as standards for recycled content that could be expanded on through a more specific EPR law.

(Act 171) as amended by Act A1311 (2007) remains applicable. The Ministry of Housing and Local Government (KPKT) exercises supervisory function over the non-Act peninsular states while Sabah and Sarawak have their own⁵⁷. The Act enables local authorities to address solid waste management issues which is understood to cover marine litter.⁵⁸

In addition, the principal law in preventing and controlling pollution is the Environmental Quality Act (EQA) 1974 (Act 127) and its amendments. The law proscribes discharge of environmentally hazardous substances, pollutants, or wastes into the Malaysian waters⁵⁹. Scheduled Wastes regulations provide further clarification to include wastes which may contain either inorganic or organic constituents of polychlorinated biphenyls (PCB) or polychlorinated triphenyls (PCT)⁶⁰. Other regulations include the Management of Scheduled Wastes and Prescribed Activities which require Environmental Impact Assessment for recycling activities.

For anti-littering regulations, the Streets, Drainage and Building Act 1974 (Act 133) along with subsequent amendments apply. This makes littering an offense as defined in the law⁶¹. Furthermore, the Town and

Country Planning Act 1976 (Act 172) as amended by Act A1313 (2007) authorizes the local planning authority to incorporate relevant Act 672 provisions for planning and permitting⁶².

For importation of wastes, the relevant regulation is Custom (Prohibition of Import) Order 2017 governing the import of plastic waste under HS Code 3915. Importation is highly controlled and regulated with permissible waste requiring an Approved Permit (AP) from the JPSPN to clear. A schedule lists materials which are prohibited from importation, along with exceptions. With the surge of plastic imports in 2018, the JPSPN updated the provisions to conditions for importation, which included mandates for recycling plants to pay levies, categorize wastes and keep records of appropriate documents, among others.

Governance for sea-based sources of wastes falls within multiple agencies in Malaysia i.e. Department of Environment, empowered by the Exclusive Economic Zone Act 1984 and Environmental Quality Act 1974; Marine Department Malaysia empowered by the Merchant Shipping Ordinance 1952; and Department of Fisheries Malaysia, empowered by the Fisheries Act 1985 for areas within marine parks. These legislations

57 Ecowaste Coalition. 2021. Waste Trade in Southeast Asia, Legal Justification for Regional Action. https://ipen.org/sites/default/files/documents/waste_trade_in_asean-final_revised.pdf

58 Fauziah et al., *supra*.

59 Unless licensed. Sec. 29, Environmental Quality Act.

60 Kamaruddin, H et al. 2021. Approaches to Effective Management in Reducing Plastic Waste in Malaysia from the Socio-Legal Aspect. *Journal of Contemporary Issues in Business and Government* 27:1

61 Nopiah, Z., et al. 2019. Enhancing Sustainable Solid Waste Management In Malaysia Through Anti-Littering Laws. Conference: ICLES 2018 - International Conference on Law, Environment and Society.

62 Fauziah et al., *supra*.

enable the Agencies to regulate and manage wastes within their purview.

SUBNATIONAL LAWS AND REGULATIONS

As sanitation and cleanliness is included in the Concurrent List item, the responsibility is shared by the state and federal governments in accord with the Malaysian Federal Constitution. This setup has led to different legal mechanisms and institutions in each jurisdiction and complexity in the implementation and standardization of legal frameworks⁶³.

For example, waste management in Selangor is regulated under each Local Authority's garbage collection, discard and disposal by-laws, although a new Selangor enactment is undergoing review⁶⁴. In East Malaysia, Sabah and Sarawak each have different by-laws and ordinances for waste. Sabah waste collection is under the responsibility of the 26 local authorities through Local Ordinance 1961. Waste management also falls under relevant provisions in the Sabah State Policy on the Environment, Sabah Environment Protection Enactment, as well as the Uniform (Anti-Litter) By-laws 2010 for anti-littering regulations⁶⁵. In Sarawak, the Natural Resources and Environmental Ordinance Sarawak and the Local Authorities Ordinance 1996 Local Authority (Cleanliness) By-Laws 1999 apply for municipal solid waste management.

To help shift consumer behavior from further usage of single use plastics, the Ministry of Domestic Trade Cooperatives and Consumerism (MDTCC) launched a No Plastic Bag Day (NPBD) campaign in 2011. The initiative aims to discourage the use of plastic bags by prohibiting its free disposition in grocery stores and supermarkets, while imposing a levy of 0.20 MYR for the use of every plastic bag. As such, several states such as Penang, Kedah, Selangor and Pahang have adopted the campaign to address the proliferation of single-use plastics⁶⁶. In particular, Selangor and Penang have imposed a 20-sen charge for the use of plastic bags, and retailers are obliged to only use approved biodegradable plastic bags as a term under their commercial license.

Furthermore, Selangor and the federal territories of Kuala Lumpur, Putrajaya and Labuan have banned usage of plastic straws. Kuala Lumpur and Putrajaya have also adopted a ban on conventional food containers in

addition to plastic bags and promotes biodegradable and compostable materials as alternatives.

Policy Frameworks

ROADMAPS AND ACTION PLANS

Malaysia's Roadmap to Zero Single-Use Plastics (SUPs) 2018–2030 seeks to provide coherent policy direction for a uniform approach in addressing SUPs, enabling the shift to eco-friendly alternatives, and adapting products to prevent plastic pollution. It provides a three-phase national plan to address SUPs through four approaches: refuse, reduce, reuse and recycle. It also aims to adopt tools and mechanisms such as pollution charges to be paid by consumers and manufacturers, while working to develop a legal and governance framework on SUPs.

The National Cleanliness Policy 2020-2030 provides key guidance related to solid waste management, references to advance circular economy principles and EPR, as well as waste separation directives for public cleanliness. It encourages waste hierarchy and the 3Rs and supports the development of industries which are in line with Malaysia's circular economy goals.

The National Solid Waste Management Policy 2016 provides for a broad and cost-effective solid waste management policy while promoting 3R (reduce, reuse, recycle) and waste management hierarchy. Specifically, it aims to reduce household, commercial, industrial and institutional waste, promote efficient and cost-effective waste management, and strengthen legislation and institutions around waste management.

Aside from these policies and roadmaps, Malaysia has issued numerous national plans, action plans and policies which are related to or touch upon waste management. This includes the 2005 National Strategic Plan on Solid Waste Management which led to the passage of Act 672. Other policies include the Master Plan for National Waste Minimization, which sets targets on recycling, as well as the 10th, 11th and 12th Malaysia plans which are the development plans of Malaysia to ensure sustainability and green growth.

Notably, National Marine Litter Policy and Action Plan 2021-2030, along with the Malaysia Plastics Sustainability Roadmap, was recently launched by the Ministry of Environment and Water (KASA).

63 WWF-Malaysia, *supra*.

64 Wong, P. 2021. Malaysia is not a "Garbage Dump": Citizens against corruption, complacency, crime, and climate crisis. Center to Combat Corruption and Cronyism. <https://c4center.org/malaysia-is-not-a-garbage-dump/>

65 Nopiah, Z et al, *supra*.

66 Ma, ZF et al., Microplastic Pollution and Health and Relevance to the Malaysia's Roadmap to Zero Single-Use Plastics 2018–2030. *Malays J Med Sci*. 2020 May; 27(3): 1–6.



The Action Plan seeks to coordinate actions to address marine litter at the national, state and local levels to achieve priority areas and actions. The outcomes of which include strengthened national planning and enhanced regional coherence in addressing marine litter. The Malaysia Plastics Sustainability Roadmap, 2021-2030 outlines strategies and action plans to achieve greater plastic circularity levels, and provides guidance to stakeholders in ensuring plastic sustainability along the value chain. The plan and roadmap take a multi-stakeholder approach in targeting the reduction of plastic waste at source and addressing potential gaps in the plastics value chain such as low plastic waste recycling rates and fragmented policy implementation.⁶⁷

ECONOMIC INCENTIVES

Economic incentives for proper waste management have been adopted in Malaysia, with the overarching policy encapsulated in the Green Technology Master Plan 2017-2030. The Plan provides relevant references for the establishment of an EPR system in Malaysia, in line with circular economy principles. In addition, the National Entrepreneurship Policy provides tax incentives and exemptions for social enterprises on green technology that could cover waste management. In turn, the Green Investment Tax Allowance includes innovations in waste management, as well as research grants towards such initiatives, under its scope.

In 2010, the Green Technology Financing Scheme was launched to attract investments which would facilitate green growth. Among the sectors eligible for financing and soft loans were waste management and recycling⁶⁸. In the scheme, the government bears part of the interest rate and provides a partial guarantee. Furthermore, the Malaysian Investment Development Authority (MIDA) has a program for the provision of tax incentives for green industry activities and provides incentives for the developers, operators and managers of Waste Eco Parks (WEP) through income tax exemptions⁶⁹. MIDA also offers tax incentives for manufacturers of recycling products and bio-based or biodegradable plastics by giving eligibility for pioneer status and investment tax allowance for five years⁷⁰.

Malaysia has introduced ecolabelling criteria or technical standards for compostable and biodegradable plastic packaging materials, biomass-based products for food-contact application as well as recycled plastics constructed products⁷¹.

67 See <https://www.thestar.com.my/news/nation/2021/06/24/policy-in-the-works-to-address-marine-litter-challenges>

68 UNEP COBSEA SEA Circular, *supra*.

69 Malaysia Investment Development Authority (MIDA). N.d. Sustainable Waste Management in Malaysia: Opportunities and Challenges. <https://www.mida.gov.my/sustainable-waste-management-in-malaysia-opportunities-and-challenges/>

70 MIDA. 2020. Incentives for New Investments. <https://mida.gov.my/wp-content/uploads/2020/07/Chapter-2-Incentives-for-New-Investments.pdf>

71 Developed by SIRIM under the Ministry of International Trade and Industry (MITI)

Gap Analysis and Recommendations

The gap analysis and needs assessment framework is divided into two broad categories, plastics and marine litter governance and environmental governance. Each of these is further classified into thematic tracks, whereby desired interventions from literature are first laid out, and legal and regulatory gaps are identified in accordance with priority issues. Other related needs are also included, covering technical capacity, technology and data. Recommendations are then drawn from the assessment exercise.

Plastics and Marine Litter Governance

Plastics and marine litter governance encompasses the enabling framework to address plastic pollution by effectively manage waste systems to prevent leakage into the oceans. The gap analysis focuses on four themes that would cover the entirety of the plastic value chain, as well as specific issues related to marine litter in Malaysia.

MANAGING THE PLASTIC VALUE CHAIN AND WASTE

GAP ANALYSIS AND NEEDS ASSESSMENT

Legal and regulatory gaps

The main challenge in managing the plastic value chain and waste in Malaysia is that existing legal and policy

frameworks are too focused on downstream approaches. A comprehensive enabling legal framework that would address the issues of the entire plastics value chain has not been adopted, which would then lead to systemic reforms that would consider the life cycle of plastics.

The fragmentation of plastics and waste management policy is evident as states implement different requirements, with such laws typically prioritizing collection and disposal over recycling. At the federal and state levels, plastics and its value chain are often considered primarily as a waste management issue rather than a systemic concern⁷². In recent decades, related policy interventions such as bans as well as tax and economic incentives have been placed across various government agencies and ministries.

In terms of prioritization, managing the plastics value chain should first and foremost seek to stem the flow of plastics into the marine environment. Under this banner, actions should be implemented in the short-term to include improving waste collection and final disposal sites. The second strategy of increasing plastic waste recovery and recycling may take a longer time frame to further structure the enabling framework it entails. This would include interventions such as strengthening plastic waste separation and increasing recovery and recycling.

72 Akenji et al., *supra*.



SHORT-TERM STRATEGY: MITIGATE PLASTIC LEAKAGE INTO THE ENVIRONMENT
STRATEGIC ACTION: IMPROVE WASTE COLLECTION, TRANSFER AND TRANSPORTATION

Interventions ⁷³ (Desired State)	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Plastic waste collection targets, strategies and policies	✓	✓		✓	■	🏛️
Standardized plastic waste collection systems	✓	✓		✓	■	🏛️
Community-based systems for collecting plastic waste	✓	✓	✓	✓	■	◆
Incentives for informal, community-based and private sector involvement for plastic waste collection and transportation		✓		✓	■	🏛️🔧
Take-back systems	✓	✓		✓	■	🏛️🔧
Charges on waste producers for collection of non-recyclable plastic (collection fees/Extended Producer Responsibility (EPR) system)		✓		✓	■	🏛️
Investments for developing collection, sorting and processing systems		✓		✓	■	🏛️🔧

STATUS: ■ = full, ■ = partial, ● = none
 RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 🧑 = Civil Society, ◆ = All

As most plastics in the oceans are derived from land-based sources, providing adequate waste collection services has the potential to drastically reduce plastic waste leakage into the environment. This would require an integrated and holistic approach concerning government and different value chain actors. As such, gaps in this regard include:

- Waste collection lacks harmonized and integrated plastic waste collection targets. Standardizing the application to non-Act states is especially challenging as it could meet pushback on the basis of their local autonomy.
- The informal community-based system for collection exists although it lacks a coordinated approach and proper documentation. Furthermore,

there is a need to develop more efficient methods of waste collection in the informal sector.

- Although initiatives such as take-back and deposit-refund systems have been codified in Act 672, a comprehensive legal framework has yet to be enacted. There are, however, ongoing efforts to include these under a prospective EPR system.
- Related to the EPR system is the need to cultivate a Producer Responsibility Organization (PRO) within the framework that would enable charging of waste producers for collection of non-recyclable plastics.
- The incentives for developing green technology have especially focused on recycling and recovery, and thus incentives need to be scaled up to the collection system as well.

SHORT-TERM STRATEGY: MITIGATE PLASTIC LEAKAGE INTO THE ENVIRONMENT
STRATEGIC ACTION: IMPROVE FINAL DISPOSAL SITES

Interventions	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Targets on zero plastic waste to landfills in overall waste management strategies/ policies	✓			✓	■	🏛️
Enforcement of actions to reduce illegal dumping and open burning of plastic waste at disposal sites	✓				■	🏛️
Enforcement of legislation requiring the closing of open dumpsites and establishment and operation of sanitary landfills	✓				■	🏛️
Bans of recyclable plastics disposal at dumpsites	✓				●	🏛️
Charges on waste producers for discharging of non-recyclable plastic (landfill fees/disposal fees/ EPR system)		✓			■	🏛️🔧

STATUS: ■ = full, ■ = partial, ● = none
 RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 🧑 = Civil Society, ◆ = All

73 Prioritization and interventions derived from Strategies to Reduce Marine Plastic Pollution from Land-based Sources in Low and Middle - Income Countries by UNEP and IGES (2019). See https://wedocs.unep.org/bitstream/handle/20.500.11822/31555/Marine_Plastic_Pollution.pdf?sequence=1&isAllowed=y



MEDIUM-TERM STRATEGY: INCREASE PLASTIC WASTE RECOVERY
STRATEGIC ACTION: INTRODUCE PLASTIC WASTE SEPARATION AT SOURCE

Interventions	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Mandatory plastic waste separation and collection	✓			✓	■	🏛️
Targets for plastic waste separation and collection	✓		✓	✓	■	🏛️
Standardized separated plastic waste collection and transportation	✓				■	🏛️
Incentives to promote waste separation at source (pay-as-you-throw systems, volume-based collection fees)		✓		✓	■	🏛️

STATUS: ■ = full, ■ = partial, ● = none

RESPONSIBLE PARTY: 🏛️ = government, 🏭 = industry, 👤 = Civil Society, ◆ = All

Plastic waste disposal at dumpsites and landfills is faced with non-uniformity of standards and targets especially on non-Act states, while enforcement can sometimes be lacking. This is particularly concerning as there have been reported increases in number of cases of illegal dumping in the country⁷⁴. As such, gaps in the landfills and disposal system include the following:

- There is a need to upgrade capacity of landfills as most are already beyond capacity. Studies reveal that the average lifespan of Malaysia's landfills is two years, which is markedly different from other developed countries of up to 10⁷⁵.
- Lack of funding for the maintenance and upgrade of final disposal sites is a challenge, especially in non-Act states and rural areas. Limitations in maintenance and capacity of sanitary landfills have thus led to more open dumping of municipal solid waste⁷⁶.
- Disposal sites with perceived high landfill tipping fees have disincentivized proper disposal as collectors would rather dispose waste at open dumpsites to avoid paying.
- The question of ownership of waste from collector to disposal sites must be addressed to determine the rights to manage the resource i.e. for recycling, etc.

From preventing leakage of plastic into the oceans, the next strategy aims to support the transition of the waste management system to align with circular economy principles. As such, this may entail a longer timeframe to reform policy on increasing plastic waste recovery and recycling.

Malaysia has an existing segregation at source policy which is encapsulated in Act 672 and further clarified in a subsidiary regulation. Although this has been a step in the right direction, some gaps remain as follows:

- Segregation at source is still unstandardized nationwide as there are different state laws and legal mechanisms to implement the requirement.
- The lack of standards, particularly for materials and residuals which co-mingle has hampered the quality of recyclables and its management in the value chain⁷⁷.

Although the recycling industry of Malaysia is more advanced than other countries in the region, further improvements can be made by strengthening the regulatory framework and streamlining efforts. There will be a need to integrate and adopt a holistic approach to be applied nationwide and by different government agencies, and fill in gaps such as:

- The fragmented approach of statutory targets needs to be addressed. This is best exemplified in recycling targets, as SWCorp targets for 40%

74 Devadoss, PS et al. 2020. Implications of municipal solid waste management on greenhouse gas emissions in Malaysia and the way forward. *Waste Management* 119 (2021) 135–144.

75 Abas, MA and Wee, ST. 2014. Sustainable Solid Waste Management in Malaysia: The Concept of Multi-Stakeholder Governance in Solid Waste Policy Implementation. *Public Policy and Administration* 4(10):26-35.

76 World Bank Group, *supra*.

77 UNEP COBSEA SEA Circular, Malaysia National Stakeholder Consultation on Marine Litter – Solving Plastic Pollution at Source. <https://www.sea-circular.org/wp-content/>

MEDIUM-TERM STRATEGY: INCREASE PLASTIC WASTE RECOVERY
STRATEGIC ACTION: IMPROVE PLASTIC WASTE RECOVERY AND RECYCLING

Interventions	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Statutory targets for recycling of plastic waste	✓			✓	■	🏛️
Mandatory requirement for recycled content	✓			✓	■	🏛️
Environmental standards in recycling systems	✓		✓		■	🏛️
Regulatory framework for informal sector and small, medium enterprise recycling activities	✓				●	🏛️
Legal and policy framework for Extended Producer Responsibility (EPR)	✓	✓			●	🏛️🔧
Developed domestic reprocessing capacity to reduce reliance on global markets		✓			■	🏛️🔧
Taxes or trading mechanisms to internalize the externalities associated with primary plastics		✓			■	🏛️
Support and incentives for recycled plastics, e.g. through lower VAT rate		✓			■	🏛️
Public sector procurement policies to create demand for recycled plastic waste	✓				●	🏛️
Bans on hazardous additives in primary plastics	✓				●	🏛️
Labelling for biodegradable plastics and improved associated standards and certification for biodegradability	✓		✓		■	🏛️

STATUS: ■ = full, ■ = partial, ● = none
 RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 👤 = Civil Society, ◆ = All

recycling rate by 2025 for the Act states. However, this target does not cover the non-Act states comprising 63% of Malaysia's population⁷⁸.

- Regulations for mandates for recycled content could be streamlined in line with national standards for specific sectors.
- For the prospective EPR system, while a voluntary PRO could start the evolution of the process place, there will be a need to include other overlooked stakeholders such as smaller scale producers and specific sectors such as tourism and hospitality sector to fill in the gaps.

The informal sector forms an essential part of the recovery and recycling value chain. However, its role in waste management and recycling has oftentimes been undervalued, with a number of gaps identified as follows:

- There is currently no comprehensive policy or regulation that seeks to formalize and regulate the role of the informal sector, including safeguard policies that address the lack of health and safety measures⁷⁹.
- There is a need to address the inefficient management of the high amounts of recyclables

processed by the informal sector due to lack of capacity and facilities.

Furthermore, the recycling industry may benefit from further support through improved infrastructure and linkages with markets within Malaysia⁸⁰. Policies should also address challenges in the business case and costs, especially for recycling municipal plastic waste. Further gaps are detailed as follows:

- Weak and fragile supply chains for local plastic recyclers, especially in areas with less established recycling industries if there is no off-take market.
- The need to invest in more recycling facilities which complies with quality requirements and regulations⁸¹.
- The need to address the high transportation cost to recycling facilities, which is especially challenging in rural and remote areas with limited waste collection services and infrastructure⁸².
- The need to set standards for recyclables, especially on low-value material which often end up on landfills and illegal dumpsites⁸³.
- Lack of guidance to manage multi-material plastics such as the development of efficient post-use processing.

uploads/2020/01/SEAircular-Malaysia-Stakeholder-Consultation-56-November-2019-Meeting-Report-v2-28-Nov-MESTECC.pdf

78 World Bank Group, *supra*.

79 Moh, YC and Latifah, AM. 2017. Solid waste management transformation and future challenges of source separation and recycling. Resources, Conservation and Recycling 116 1-14.

80 Malaysian Plastics Manufacturers Association (MPMA) and Malaysia Plastic Recyclers Association (MPRA). 2019. An Advanced Plastics Recycling Industry for Malaysia. White Paper. <https://mpma.org.my/v4/wp-content/uploads/2019/09/White-Paper-FINALR.pdf>

81 World Bank Group, *supra*.

82 Johannes, HP, et al. 2021. Applying the extended producer responsibility towards plastic waste in Asian developing countries for reducing marine plastic debris. Waste Management & Research: The Journal for a Sustainable Circular Economy 39:5.

83 Khazanah Research Institute. 2019. An Undegradable Problem. http://www.krinstitute.org/assets/contentMS/img/template/editor/Views_Plastic%20An%20Undegradable%20Problem.pdf

These gaps reveal the need for a comprehensive framework which may be addressed through a further legislation or regulation i.e. an EPR system. Moreover, other issues that may not be addressed in such a framework include strengthening a green procurement policy as well as technical standards for ecolabelling.

Additional cross-cutting issues and gaps:

In terms of technical capacity and technology, needs may include the following:

- Scalable cost-effective systems for collecting, transporting and sorting waste.
- Support on developing technologies for waste recovery and recycling facilities.
- Commercially viable technology to process mixed and or low value plastics, through purifying and stabilizing processes.

For data and information gaps, needs may relate to:

- Public awareness of waste segregation at source rules.
- Closing data gaps on national scales due to the decentralized waste management system, especially on trends and key indicators across the value chain.
- Difficulty in generalizing national assessments as they are often based on extrapolated or limited case study data⁸⁴.
- Exclusion of non-Act states from national reporting to SWCORP.
- Limited or outdated data from local authorities (especially from non-Act states) and concessionaires and non-standardized datasets⁸⁵.

HOW TO ADDRESS GAPS

Addressing legal and regulatory gaps

To address the identified gaps, there is a need to widen the scope of government intervention in terms of policy development. Comprehensive regulations should be designed to expand the current focus from downstream waste management to the entire life cycle of plastics using circular economy principles. This approach is envisaged to spur system reform across the value chain and change behavior among different stakeholders.

Extended Producer Responsibility (EPR) Legislation

The comprehensive legal framework that would address a multitude of issues across all the strategies may be through an EPR legislation covering the whole plastics value chain. The EPR system is an encompassing framework that would respond to issues on each of the gap from collection, disposal to recycling as it would make producers and manufacturers responsible for end-of life collection and recycling of their products⁸⁶. This provides incentives not only for eco-design of packaging (upstream issues), but also to address persistent challenges in the plastics value chains including low recycling rates and high costs of collection.

Importantly, EPR would serve as an effective platform for dialogue and exchange between upstream and downstream actors. It could also cover the wide range of stakeholders from government, industry, the informal sector and civil society to participate in reducing waste through a cost-efficient management system following circular models.

The prospects of an EPR regulation have already been envisioned by Act 672 which empowers the JPSPN to establish take-back, deposit refund systems, waste reduction and recycling through potential EPR systems. In recent years, there has been great interest from government, civil society and industry in implementing such system, with the EPR framework projected to be regulated by Ministry of Housing and Local Government (KPKT) in line with its mandates under Act 672. A National EPR Advisory Council led by KPKT and including JPSPN, KASA, DOE, SWCORP can oversee plastic and packaging waste policies, provide strategic guidance, and ensure funding flow for the framework⁸⁷.

Such regulation would align with the recently launched marine litter action plan, which provides guidance to enhance actions on EPR to be implemented across the board, including a buyback programme and deposit refund scheme. The plan also envisages improved collaboration between industry actors to develop and promote product sustainability and circularity criteria on the market. In addition, the plastic sustainability roadmap includes EPR as a key strategy towards the transition to a sustainable plastics economy.

84 World Bank Group, *supra*.

85 Moh, YC and Latifah AM. 2014. Overview of household solid waste recycling policy status and challenges in Malaysia. *Resources, Conservation and Recycling*. 82:50-61.

86 Akenji et al., *supra*.

87 See WWF-Malaysia EPR Policy Review Booklet and Study on EPR Scheme Assessment for Packaging Waste in Malaysia. <https://www.wwf.org.my/?28886/Study-on-Extended-Producer-Responsibility-EPR-Scheme-Assessment-for-Packaging-Waste-in-Malaysia>

The dedicated EPR legislation would establish the legal structure for a mandatory system that would strengthen the institutional framework and streamline processes and responsibilities between authorities and industry with other stakeholders. Furthermore, the scheme would provide needed funds to undertake extensive collection to recycling covering all packaging materials, along with stringent monitoring systems.

The EPR legislation should be adaptive, with tailored provisions for the specific circumstances in Malaysia. To the extent that it would be applicable, elements from other EPR models and practices may be considered. In designing the Malaysian framework⁸⁸, it is suggested that the EPR legislation have the following elements:

- Objectives;
- Definitions;
- Scope and coverage of plastics;
- Framework design;
- Stakeholders and their responsibilities;
- Producer Responsibility Organization (PRO);
- Fees and financing;
- Packaging requirements;
- Collection system with quantitative targets;
- Sorting and recycling system with quantitative targets;
- Role of state and local governments;
- Role of the informal sector;
- Information system and reporting;
- Control mechanisms;
- Fines and penalties for breach;
- Plan on utilization of EPR funds.

Importantly, the EPR legislation must contain clear provisions differentiating the responsibility of producers and avoiding free-riders⁸⁹. It should also provide guidance on how to address gaps in collection and recycling in rural and remote areas. Ultimately, the legislation should institutionalize a mandatory EPR system, which can evolve over time from the current voluntary PRO already in place.

Notably, the above-mentioned measures should focus on the “downstream” side of the EPR framework, which ensures that producers and manufacturers take responsibility for the waste derived and generated from their products. An equally important component of an EPR scheme aims to support reforms on the “upstream” side of production, focusing on the eco-design and

material content of products to ensure sustainability of productions⁹⁰. This is further discussed in the gap analysis to improve production systems. Ultimately, both sides of the EPR should work synchronously to ensure a holistic approach in reforming the system.

In line with the Plastics Sustainability Roadmap, the mandatory EPR scheme is envisioned to be in place by 2026, following the operations of a voluntary EPR to be implemented from 2023 to 2025. Such EPR governance framework under the roadmap should incorporate the EPR target, responsibilities of each party, eco-modulated fee structure, and mechanisms for product improvement.

To address specific gaps regarding the transition to a mandatory EPR system, the legislation should also consider the following recommendations:

- Develop operational guidelines on recycling initiatives which are integrated in the framework.
- Expand and integrate smaller producers and manufacturers in the growth of the PRO as well as plans for specific sectors such as the tourism and hospitality industry.
- Provide for an effective means of coordination among government agencies involved, taking lessons from the implementation of the National Zero Single Use Plastics Roadmap.
- Support industry through economic incentives to develop markets and linkages to close gaps in the value chain.
- In accordance with the Marine Litter Action Plan, explore the formation of dedicated working group on EPR to identify best practices, available plastic waste recycling technologies and requirements for the quality of plastic waste feedstock.

The EPR framework also provides the opportunity to address the needs of the informal sector by formalizing its role within the whole plastics value chain. The informal sector must be integrated in the system. It should not create competition on who can collect and recycle materials with the PRO⁹². Considerations for the informal sector in the development of EPR include the following:

- Ensure that there are safeguards established for the informal sector, especially health and safety measures.

88 See WWF-Malaysia, *supra*.

89 Johannes et al., *supra*

90 UNEP and World Resources Institute (WRI). 2020. Tackling Plastic Pollution: Legislative Guide for the Regulation of Single-Use Plastic Products. Nairobi: UNEP. <https://wedocs.unep.org/handle/20.500.11822/34570>

91 *Ibid.*

92 Johannes et al., *supra*.

Best practices in EPR and PRO

India's legal framework on EPR is governed by the Plastic Waste (Management and Handling) Rules of 2016 and has been recognized because of its comprehensive nature. Manufacturers must comply with a number of requirements such as selling only to registered plastic producers and implementing methods for waste collection. Producer Responsibility Organizations (PROs) are supported in the framework as a means where manufacturers can outsource their responsibilities. Important and parallel to the system is the phaseout of the use and manufacture of multilayered plastics which are non-recyclable or non-energy recoverable within a period of two years.

The EPR rules provides fines for non-compliance, as well as monitoring through annual reports of plastic waste processing and recycling by producers collaborating with the competent government authorities. It also establishes a framework for the recognition of the informal sector such as waste pickers; and includes standards for the use of recycled plastic waste for new products⁹¹.

A draft Uniform Framework for EPR guideline document⁹³ was released in 2020 pursuant to the Plastic Waste Management Rules. The framework recognizes the silence of the rules on allocating responsibility for producers on the waste management system from material recovery to disposal, and thus provides further detail for their involvement. An online portal for registration and record keeping will be setup for the EPR, and different models are suggested which could be best suited to the conditions of different towns for ease of implementation and participation. The two basic models include:

- Fee based model. The responsibility of collection to final disposal is with local bodies, which presupposes robust capacities and infrastructure. EPR funding will be provided each to local bodies and the recycler.
- PRO based model. To address limitations on expertise and resources of local bodies, a PRO will facilitate a plastic credit system. Producers may collect credits upon recycling or recovery through accredited processors, which transactions shall be recorded in an online portal. The system can set recycling rate targets with a tradable recycling credit mechanism where credits can be exchanged among producers to achieve industry-wide targets.

Furthermore, the engagement of the PRO local bodies can take several forms through mutual coordination and agreement. However, the main guiding principle is for local bodies to lead the set-up of the system and share the costs with the PRO. Producers shall submit quarterly reports on collection and disposal online, and all the registered PROs shall also be members of a national PRO association where all data and information are shared. For funding requirements, assessments are envisaged to be a rate per kilogram fee for each type of plastic specified.

The framework is consistent with the Guidelines for the Recognition of PRO/ Agency 2018⁹⁴, which provides that PROs should enter an agreement with producers and outline their role and responsibility in managing the EPR. This may cover the collection mechanism and recycling of plastic waste on behalf of authorized producers, establishment of collection centers and channel partners for collection and handling, and logistics agreements, among others. The PRO should also specify its capacity for handling plastic waste, such as its capabilities for collection, storage and its arrangement with recyclers. Registration requirements include a minimum of 5 years experience in waste management and prior success stories in disposal of municipal solid waste and plastics.

93 See Uniform Framework for Extended Producer Responsibility, <http://moef.gov.in/wp-content/uploads/2020/06/Final-Uniform-Framework-on-EPR-June2020-for-comments.pdf>

94 See Guidelines & application form for recognition of PRO/Agency 2018 <https://kspcb.karnataka.gov.in/sites/default/files/inline-files/Guidelines-for-Producer-Responsibility-Organization-11.08.2018.pdf>

Integrating the Informal Sector: Models

In Indonesia, around 6000 scavengers have been registered and formalized since 1991 through the support of the Indonesian Scavenger Association. The process of registration has improved the exercise of the workers' rights and access to welfare. This has also provided them the means to secure health insurance from the Jakarta government at no cost⁹⁵.

In India, SWaCH was established as the country's first cooperative of self-employed waste collectors in Pune. Members of the cooperative deliver waste management services such as daily waste segregation and collection. Overall, they cover more than 70% of the city and this approach has provided a sustainable means of livelihood for the sector⁹⁶.

- Build capacity of the sector and link them with facilities and infrastructure to enable them to process high amounts of recyclables.
- Consider informal workers' work as essential work to avoid unnecessary disruption to their operations.
- Explore the possibility of formal employment for their services within the EPR framework, possibly through the PRO.
- Provide support to the establishment of cooperatives and worker's associations.

Furthermore, the EPR framework provides the opportunity to close gaps by institutionalizing and scaling up initiatives and good practices from collection, waste management to recycling. In relation to the short-term strategies of improving waste collection and final disposal sites, the EPR framework can integrate the following considerations:

- Harmonize nationwide waste collection standards target, possibly under the auspices of upcoming circular economy action plans.
- Provide requirements and guidance on plastics being disposed in landfills to ensure there are no prohibited substances.
- Develop appropriate funding for more sanitary and controlled landfills, while upgrading existing ones (especially near waterways), to cope with the increase in generated waste.
- Assess the appropriate rate for the tipping fee that would not disincentivize collectors from utilizing the site.
- Determine the ownership of waste from collection into disposal to avoid any potential conflicts on beneficial use and recycling.
- Support infrastructure development in rural areas and enhance systems of community-based

recycling with appropriate waste handling procedures.

For the medium-term strategy of increasing plastic waste recovery, the EPR framework could provide the opportunity to strengthen the existing separation at source policies and improve recycling initiatives. Mechanisms that could be institutionalized within the system include the following:

- Standardize segregation at source processes as well as recycled content targets among all states.
- Scale further up the expansion and establishment of recycling parks, especially in rural areas, to share facilities among the community.
- In infrastructure planning, situate facilities as close as possible to the waste source to minimize costs in transportation.
- Identify opportunities to incentivize investments in recycling through economic instruments such as tax exemptions⁹⁷.
- Set standards for the recycling of low-value and mixed materials and explore their potential offtake markets.
- Dedicate EPR fund to industry innovations such as improving recycling infrastructure in Malaysia.

Other Policy Interventions for Managing the Plastics Value Chain

Aside from the comprehensive EPR framework, other types of legal instruments can provide incentives for circularity and spur behavioral change in businesses as follows:

- Enact regulations for the inclusion of recycled plastics in green public procurement.
- Impose taxes on production of virgin plastics.
- Allocate revenue from taxes, fees and levies towards funding for circular waste management initiatives.

95 See Ikatan Pemulung Indonesia <https://si-ipi.com/>

96 See SWaCH <https://swachcoop.com/>

97 Johannes et al., *supra*.

Potential Scale-up: Good Practices in Source Segregation

Penang enacted a mandatory policy where households are required to segregate waste into either general waste or mixed recyclables streams. If general waste disposal exceeds 5 items, the household is slapped with a RM125 fine. In 2019, the participation rate among households was pegged at 68%. As a result, plastic recyclables collected rose up to a rate of 13.5%, which is significantly higher than the 0.1% plastic recyclables collection across all the Act states⁹⁸.

Petaling Jaya in Selangor worked with Nestle Malaysia to implement the Green Assessment Tax Rebate Scheme for House Owners to encourage waste separation in 2020. The scheme also provided financial incentives to for residents to follow the 3R (reduce, reuse, recycle). A door-to-door collection program was undertaken which led to higher recycling participation rates in the pilot site⁹⁹.

Addressing other related gaps

Needs with respect to technical capacity and technology can be addressed as follows:

- Build capacities for technical staff to monitor and effectively implement the EPR framework.
- Expand incentives for investments in technology across the value chain, including recycling innovations and treatment technologies.

Data and Information gaps may be addressed by the following:

- Boost segregation, collection and recycling program through extensive communication, education and public awareness campaigns.
- Adopt big data and internet of things in waste management monitoring, preferably by integrating data into a national platform.
- Require uniformity in data reporting from state and local authorities (especially from non-Act states) to feed into the national platform
- Conduct further studies on the trends and status for each stage of the value chain and from different plastics waste input streams.

PROMOTING SYSTEMIC CHANGES ON PRODUCTION AND CONSUMPTION

GAP ANALYSIS AND NEEDS ASSESSMENT

Legal and regulatory gaps

With leakage of plastic waste into the oceans estimated at 0.14 to 0.37 million ton annually, Malaysia is among the top 10 countries saddled with mismanaged plastic

waste¹⁰⁰. Regulations should thus aim to prevent plastic leakage in the first place. These interventions must focus on avoiding plastic waste littering due to flawed waste management systems and gaps in legal frameworks on preventing litter. This also goes into the core of ensuring sustainable plastic production by changing consumer lifestyles and social behavior to shift from a linear to a circular economy.

The main priority is preventing plastic pollution through a robust legal framework on waste management, littering and infrastructure planning. This would enable changes in the social behavior of individuals to stop waste littering in the short term. Over the longer term, shifts in policy should signal a new sustainable consumer society, along with sustainable production such as eco-design of packaging and phasing out single use plastics.

Although Malaysia has developed a relatively robust legal system for waste management, individual changes in attitude on litter, as well as systems for street sweeping and clearing of general litter, are still met with some challenges especially on uniformity and specificity. These are discussed further as follows:

- Although Act 672 makes it unlawful to dispose 'litter'¹⁰¹ in general terms, and the Environmental Quality Act seeks to prevent pollution on discharge wastes in Malaysian waters¹⁰², these rules remain very generalized and lack further implementing guidance for full effect.
- While Act 672 is meant to guide reduction and recovery of controlled solid waste, directives and

98 World Bank Group, *supra*. Also see UNEP and COBSEA. 2021. Waste Segregation at Source: Solving Plastic Pollution in Penang. <https://www.mbsp.gov.my/images/government/waste-segregation.pdf>

99 UNEP and COBSEA. 2021. Petaling Jaya's Assessment Tax Rebate Scheme, 3R (Reduce, Reuse, Recycle) Initiatives: Solving Plastic Pollution at Source. https://www.mbpj.gov.my/sites/default/files/pj_case_study_malaysia_under_sea_circular_project.pdf

100 Jambeck et al., *supra*.

101 Sec 71 (1), Act 672 provides that "no person shall deposit, separate, store, keep, collect, transfer, transport, treat or dispose of or cause to be or permit to be deposited, separated, stored, kept, collected, transferred, transported, treated or disposed of any controlled solid waste otherwise in accordance with this Act".

102 Sec 29 (1), EQA provides that "No person shall, unless licensed, discharge environmentally hazardous substances, pollutants or wastes into the Malaysian waters in contravention of the acceptable conditions specified under Section 21"

SHORT-TERM PRIORITY: MITIGATE PLASTIC LEAKAGE INTO THE ENVIRONMENT
STRATEGIC ACTION: PREVENT PLASTIC POLLUTION

Interventions	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Anti-litter regulations, laws and enforcement	✓			✓	■	🏛️
Overall waste management policy and planning	✓			✓	■	🏛️
Plastic litter innovation funds		✓			■	🏛️🔧
Fixed penalties for plastic littering	✓				■	🏛️

STATUS: ■ = full, ■ = partial, ● = none
 RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 👤 = Civil Society, 🌐 = All

implementing policy are lacking especially on problematic issues such as single-use-plastics and specific marine litter and leakage concerns.

- Anti-littering legislation are not standardized at federal and state levels, with inconsistent implementation and penalties meted by local authorities from non-Act (which is covered by Act 133 and bylaws) and Act states.
- Potential low deterrent effects for low fines of discharge and leakages.

The leakage into the oceans may also be traced to gaps in identifying and managing waste from its source and pathways. Gaps are specified for each of these streams as follows:

Rural Areas

- Household waste management in rural areas are particularly challenging because of lack of infrastructure and institutional support. Thus, household in rural areas typically prefer open burning or private burying.
- Municipal solid waste collection under Act 672 and state law are especially difficult to implement in remote and rural areas which have limited accessibility and challenging terrains¹⁰³.

Islands and Marine Protected Areas/ Marine Parks

- Malaysian islands, which include major and more economically developed ones such as Tioman and Langkawi have typically operated poorly designed and unsanitary landfills¹⁰⁴.
- Collecting and managing waste is a challenge especially in islands and coastal villages as they are often not covered directly by municipal services under Act 672 and state laws.
- High costs of transporting to the islands through boats have disincentivized integration into municipal systems and have promoted self-reliance through burying or open burning.

Riparian Zones

- River zones' implementation of zoning and greenbelts have met enforcement difficulties, especially with villages abutting river without proper disposal systems.
- Zoning and planning guidelines which include ensuring public open spaces in riverside are managed in silos by specific departments with respective internal guidelines.
- Location of some of the landfills and dumping sites in proximity to the river, with reports of illegal dumping in abandoned sand mines along riverbanks, further contribute to leakage.

Aside from the above-mentioned streams into the oceans, gaps also exist on specific sources of plastic pollution which have been largely unregulated in Malaysia, such as:

- Transboundary marine debris is an often overlooked but serious contributor to plastic pollution¹⁰⁵. There have not been many initiatives addressing this, but this has been reported as an issue especially during the monsoon season.
- Microplastics is an emerging issue, but Malaysia is yet to have regulations directly addressing it.
- Microbeads is another emerging issue without regulations to directly address it, including its prevalence in consumer and personal care products.

To effectively address marine litter, it is necessary to ensure sustainability in both production and the consumption. These would include eco-design of products for reuse and better recycling and improved production processes, as well as phasing out single-use plastics. This should also have corresponding framework to spur behavioral change in lifestyles and attitudes towards plastic.

¹⁰³ Municipal Solid Waste Management in the Sarawak State of Malaysia and the Way Forward

¹⁰⁴ WWF-Malaysia. 2020. Study on EPR Scheme Assessment for Packaging Waste in Malaysia. <https://www.wwf.org.my/?28886/Study-on-Extended-Producer-Responsibility-EPR-Scheme-Assessment-for-Packaging-Waste-in-Malaysia>

¹⁰⁵ See generally Scientific and Technical Advisory Panel (STAP). 2011. Marine Debris as a Global Environmental Problem: Introducing a solutions based framework focused on plastic. A STAP Information Document. Global Environment Facility, Washington, DC.

LONG TERM STRATEGY: ADOPT SUSTAINABILITY IN PRODUCTION AND CONSUMPTION
STRATEGIC ACTION: PROMOTE ECO-DESIGN AND ADDRESS SINGLE-USE PLASTICS

Strategic Action	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Phase out or ban single use plastics	✓		✓	✓	■	🏛️🔧
Minimize input of virgin materials/resins	✓				●	🏛️
Standardize labelling of materials to enable plastic recycling	✓				■	🏛️
Set incentives and national/local funds/subsidies to support R&D into new design and materials as alternatives to plastics		✓			■	🏛️

STATUS: ■ = full, ■ = partial, ● = none
 RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 👤 = Civil Society, ◆ = All

On the upstream side for production, it is important to provide the regulatory framework and incentives for designing resource-efficient and low impact products or what is called “eco-design”¹⁰⁶. This is vital for sustainability in the production stage as it directly influences the impacts and end-of life-management of plastic products. This could also considerably impact the prevalence of problematic single-use-plastics through a circular approach where upstream industries are involved. As such, gaps to address have been identified as follows:

- Necessity to integrate durability, recyclability, reusability and reparability in the design of plastics products.
- Need to address the lack of guidance on the limits to virgin inputs and the material content of products.
- Need to enhance standards and ecolabelling criteria to ensure high quality and safety of products while minimizing environmental impacts.

On the consumption side, regulations should endeavor to shift society away from the traditional linear approach to plastics products and adopt circular economy principles. This would also address issues that arise from the prevalent use of single-use packaging for peoples' day-to-day lifestyles. Although there have been advances in recent years, gaps that still remain include the following:

- Need to increase consumer acceptance of recycled plastics on packaging products¹⁰⁷.
- Lack of specific regulation promoting the use of recycled materials for food packaging. This is particularly relevant for Halal packaging which currently disallows the use of recycled material but enables self-regulation¹⁰⁸.

- With the advent of food delivery, there is a necessity to design delivery of plastic packaging to ensure its reuse and recyclability through the private sector and businesses.
- It is important to consider COVID-19 impacts in future interventions, especially as to medical waste and personal protective equipment, where phasing out SUPs may be challenging.

Additional cross-cutting issues and gaps:

Technical capacity and technology needs may include the following:

- Strengthening infrastructure planning and waste clearing measures to prevent marine litter;
- Research support for technological innovations for potential plastics alternatives and bio-materials, as well as eco-designed products and sustainable materials.

Data and Information needs may cover:

- Standardization of methodologies for measuring marine litter and leakage rates;
- Expanded public focus on plastic waste aside from plastic bags and plastic straws.

HOW TO ADDRESS GAPS

Addressing legal and regulatory gaps

Among the strategic actions, the short-term goal of preventing plastic pollution may have very significant impact on mitigating plastic leakage into the oceans. To ensure that a robust legal framework is in place, it is important for government to strengthen anti-litter regulations to encourage behavioral change for individuals on waste littering and cleaning surroundings. Recommendations to this end are as follows:

106 UNEP and WRI, *supra*.
 107 World Bank Group, *supra*.
 108 *Ibid.* See also Regulation 27, Food Regulation 1985

■ Anti-Littering Legislation Good Practice

In Australia, there are specific provisions on the laws on littering in various states. In Queensland, the Waste Reduction and Recycling Act 2011 No. 31 (Queensland) Act provides for a general littering provision, as well as an illegal dumping offense. The basic littering rule is that a person must not litter at a place, which is defined as depositing an amount of waste that is less than 200 L in volume. The illegal dumping offense is committed if the person deposits at the place an amount of waste that is more than 200L in volume. These provisions have exceptions, such as if the person is an occupier of the place; deposits with the consent of an occupier of the place; or places it in a bin or other container provided by an occupier or agreement of an occupier¹⁰⁹. These provisions provide specific anti-litter offenses using volume as well as exemptions, providing necessary specificity on littering in the state.

The Act also covers rules on strategic planning for waste reduction and recycling for waste management at three levels - regional and individual local government level, state government departmental level, and at business and industry level.

- Adopt clear and specific provisions on littering in the legal framework, either as amendments or subsidiary regulation into existing laws such as Act 672, or into prospective legislation such as the EPR framework.
- Strengthen the Environmental Quality Act and Act 672 by specifically adopting direct plastics and waste leakage references in the regulatory framework.
- Update or expand environmental pollution standards to include plastics pollution criteria.
- Harmonize and update anti-litter regulations for each of the states in a coordinated manner and in line with circular principles.
- For islands, marine parks and coastal areas, strengthen planning guidelines which should include the role of business and tourism industries in the collection and proper plastics waste management.
- Strengthen enforcement of zoning and establishment of buffer zones in river zones and wetland areas.

In addition, the introduction of these legal reforms necessitate the provision of facilities and enabling ecosystems to trigger lasting behavioral changes and societal practices.

To prevent plastic leakage into the oceans, a holistic approach should be taken to consider the sources and pathways which may be covered by other sectoral laws and regulations. Interventions should be coordinated to prevent plastic pollution from flowing into these streams, with recommendation such as:

- In rural and remote areas, coastal zones, marine protected areas and islands, develop guidance and support to improve collection and waste management possibly through a clustering system in collaboration among neighboring local governments¹¹⁰.



109 Footnote 107 to Section, 104, Queensland Waste Reduction and Recycling Act 2011. <https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-2011-031>. See Also UNEP, and WRI, *supra*

110 Johannes et al., *supra*.

Regulations can also be introduced on banning toxic additives which could be expanded to include products that contain microbeads and microplastic.

Single-use Plastics Regulation

The government has already taken strides along the right direction notably through its Roadmap towards Zero Single Use Plastics (SUPs) for the longer term goal of mainstreaming sustainability in plastics production and consumption. The policy seeks to address the issue by supporting plastic industry eco-design and sustainable products. It also addresses the lack of uniformity in tackling SUPs by providing a coherent policy direction. This is complemented by the Plastics Sustainability Roadmap which will further institutionalize circular economy principles on the management of plastics. These developments present a welcome opportunity to enhance the legal framework to address both SUPs and more systemic challenges in production and consumer societies.

Phase 2 of the Zero SUP Roadmap provides for the introduction of a legal framework on SUPs as an action point. In line with such a directive, the envisaged legal framework for SUPs could consist of different regulatory instruments, along with economic incentives. Such regulation could consist of uniform bans or restrictions with phaseouts at the federal level, with mechanisms for coordinated approach among the states¹¹¹. It is recommended for the instrument to contain the following key elements:

- Definitions;
- Targeted products;
- Targeted activities;
- Exemptions;
- Alternatives;
- Phase-out periods and effect dates;
- Enforcement and penalties.

The regulation would also be in line with the Plastics Sustainability Roadmap, which includes phasing out problematic SUPs as one of its key strategies to lessen the burden on waste management systems. It also emphasizes careful consideration of products put in the market, and thus phasing out of targeted products, in order to better achieve a circular economy for plastics.

111 Ling, S. T, Karamuddin, H. & Hoe, L.. 2020. Externalities of business entities from plastic pollution at Perhentian island, Malaysia. *Opción*, 36(91): 1380-1404.



Single Use Plastic Regulation Good Practice

In Jamaica, the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order of 2018 and the Trade (Plastic Packaging Materials Prohibition) Order of 2018 imposes a ban on single-use plastics including single-use plastic bags, packaging and drinking straws. The regulation provides that single-use plastic bags under the ban are those with dimensions not exceeding 610 x 610 mm, with a thickness of 0.03 mm by 1 January 2021, and of 0.06 mm to be banned on or after 1 January 2021, regardless of claimed label and biodegradability of the bag.¹¹²

In addition to regulations, a more holistic approach would include the integration of eco-design and eventual shift away from SUPs as part of the EPR framework. This would ensure that producers and manufacturers of single-use plastics internalize the costs of these packaging materials.

Eco-design and Upstream EPR Legislation

Eco-design performs a key role in reducing the potential impacts of plastic products in the oceans. Upstream design choices can directly influence the environmental threat such products pose by adopting end-of-life management of products. This includes ensuring the durability and recyclability of packaging, as well as their capacity to be reused and repaired. Such eco-design can address other resource issues as well, such as input of virgin materials and use of toxic substances¹¹³. In adapting the legal framework on the upstream component, the following recommendations can be taken into consideration:

- Develop guidelines for consumption and use of alternative materials such as biodegradable, compostable and bio-based plastics.
- Adopt economic incentives such as tax rebates or subsidies for the innovation and development of alternative 'circular' products.
- Minimize input of virgin materials and resins and increase recycled content to promote resource-efficiency.

Notably, improving product design is one of the key strategies under the Plastics Sustainability Roadmap, which guidance prescribes consideration of its hazard, exposure, energy used during the material extraction, manufacturing, consumption and end-of-life management. The roadmap also provides direction towards simplifying products to be mono-material as an alternative to flexible packaging, using recycled resin as material input, as well as designing out problematic material.

It is important to note that this upstream component of the EPR legislation should be integrated with the downstream side which ensures that producers take responsibility for waste generated from their products.

Aside from the production responsibilities at the design stage, policy reforms to change consumption patterns could start the shift in society's linear approach to plastics. Recommendations in this regard may include the following:

- Promote behavioral changes in consumption through product optimization and reuse design such as using high quality materials for longer circulation.
- Promote reuse models and incentivize business such as restaurants and delivery services to adopt adequate reuse mechanisms (e.g. refill or returns at home or on the go)¹¹⁴.
- Allow recycled content in Halal packaging through clear regulation and standards for production¹¹⁵.
- Provide incentives for traditionally non-receptive industries to recycling content (e.g. cosmetics) to shift towards circular principles.
- Ensure that labelling standards and claims of compliance are effectively monitored with enforcement measures in place.

Lastly, drawing from lessons learned during the COVID-19 pandemic and to future-proof in case of situations which may lead to an unprecedented surge of healthcare waste and plastics, the government should seek to clarify roles and responsibilities in collection and management as integrated in the policy framework¹¹⁶.

Addressing other related gaps

The needs in terms of technical capacity and technology may be addressed by the following:

112 UNEP and WRI, *supra*.

113 *Ibid*.

114 Chang, J et al. 2021. Reducing Land-Based Marine Litter Leakage: How Online Food Delivery can Achieve Circular Packaging. Circular Five Team Action Plan Report.

115 World Bank Group, *supra*.

116 UNEP and IGES. 2020. Waste Management during the COVID-19 Pandemic, From Response to Recovery. https://www.iges.or.jp/en/publication_documents/pub/policyreport/en/10950/Waste+Management+during+the+COVID-19+Pandemic_web_20201202.pdf

- Adopt incentives for technological innovation for alternative materials, while avoiding hazardous or toxic components.
- Provide guidance for infrastructure planning which best prevent plastic litter through optimal design and location e.g. garbage bins and infrastructure to sift and catch plastic waste.
- Adopt incentives and guidelines for producers to adopt technology such as using barcodes to facilitate traceability.

Data and Information:

- Incorporate more community-based monitoring and assessment of plastic waste leakage.
- Promote standardized evaluation methods such as the Clean Cost Index that can be scaled up in line with available resources.
- Strengthen assessment and monitoring of plastic litter leakage pathways, waste leakage hotspots and plastic material flows, as well as less studied sources including transboundary marine debris and microplastics.
- Increase communication, education and public awareness initiatives on preventing plastic waste across different sectors of society, especially consumers and enterprises.

part of plastic pollution may be attributable to waste generated from sea-based sources such as ships, fisheries and aquaculture operations, and offshore platforms. In Malaysia, clean ups and beach assessments have yielded high quantities of plastic debris from marine activities including fishing gears, nets, as well as boat fragments¹¹⁷. However, plastic pollution from these sources have oftentimes been overlooked as the interventions adopted have focused on preventing land-based leakage. The lack of focus to address sea-based plastic litter has been raised in recent consultations among government and stakeholders¹¹⁸. Hence, among the issues, this has been one of the evident gaps where more government intervention is needed.

To address sea-based marine litter, the priority is to mitigate the leakage of sea-based plastic into the oceans. Under this strategy, actions must improve prevention measures from sea-based industries and activities to avoid marine litter generation. These interventions are preferable as all other measures that are predicated focus on litter being already in the marine environment. The second strategy is to prevent further damage from sea-based sources already at sea through curative and recovery efforts. This includes measures to reduce their environmental or socioeconomic impacts and those that target their recovery, removal and disposal.

ADDRESSING SEA-BASED SOURCES OF MARINE LITTER

GAP ANALYSIS AND NEEDS ASSESSMENT

Legal and regulatory gaps

Although land-based inputs contribute the majority of marine litter leakage into the oceans, a sizeable

SHORT-TERM STRATEGY: MITIGATE PLASTIC LEAKAGE INTO THE ENVIRONMENT

STRATEGIC ACTION: PREVENT SEA-BASED PLASTIC POLLUTION

Interventions ¹¹⁹	Regulation/ Legislation	Economic instruments	Voluntary	Awareness / Education	Status	Responsible Party
Green ports	✓				■	🏛️
Reception facilities and onshore disposal incentives	✓				■	🏛️🔧
Port inspection/ port state measures	✓				■	🏛️
Gear marking	✓		✓		●	🏛️
Requiring tracking devices	✓		✓		●	🏛️
Spatial management/ zoning schemes	✓	✓		✓	■	🏛️🔧
Retooling subsidies	✓	✓			■	🏛️
Early warning systems	✓			✓	●	🏛️
Broader management measures and improving monitoring and control of vessels	✓			✓	■	🏛️

STATUS: ■ = full, ■ = partial, ● = none

RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 🧑 = Civil Society, ◆ = All

117 Fauziah,H, Liyana, IA & Agamuthu, P. 2015. Plastic debris in the coastal environment: The invincible threat? Abundance of buried plastic debris on Malaysian beaches. Waste Management and Research 33:9 812-821.

118 See UNEP COBSEA SEA Circular's Malaysia National Stakeholder Consultation on Marine Litter – Solving Plastic Pollution at Source, *supra*.

119 Interventions and priorities derived from the Best Practice Framework (2021) of the Global Ghost Gear Initiative [https://www.ghostgear.org/news/2021/6/25/best-practice-framework-refresh-and-Status,-Trends-and-Best-Management-Practices-for-ALDFG-in-Asia-Pacific-by-Guzman,-R.-in-Marine-Plastic-Pollution-and-the-Rule-of-Law-\(2021\),-Asia-Pacific-Center-for-Environmental-Law](https://www.ghostgear.org/news/2021/6/25/best-practice-framework-refresh-and-Status,-Trends-and-Best-Management-Practices-for-ALDFG-in-Asia-Pacific-by-Guzman,-R.-in-Marine-Plastic-Pollution-and-the-Rule-of-Law-(2021),-Asia-Pacific-Center-for-Environmental-Law)

Prevention of sea-based sources from entering the oceans covers a wide range of interventions from different sectors working in marine industries. Many measures applicable to land-based sources also apply, especially regarding the adoption of circular economy approaches. However, some interventions differ from land-based waste management due to challenges specific to the nature of the industries or activities involved. The gaps to address within this strategy include the following:

- The need to tailor measures which address sea-based plastic sources rather than having measures lumped together with the interventions to manage the plastics value chain for land-based litter.
- Necessity to adopt more legal measures to specifically address marine activity and vessel-based plastic pollution, especially those which draw from international standards on addressing sea-based sources such as shipping and fisheries e.g. Food and Agriculture Organization (FAO) voluntary guidelines and codes of conduct.
- The management of sea-based sources of plastic waste has typically taken very sectoral approaches depending on the activity involved (e.g. shipping, fisheries, ports) which may pose difficulties in harmonizing management measures.
- The fragmented approach can be marked as local governments and port authorities operate within their own jurisdiction.

- Lack of the legal frameworks adopting circularity principles, especially as applied in gear or equipment-focused design, recovery, recycling as well as port collection.
- There is a need to focus on rural coastal areas where small ports and docks for small-scale vessels may not have access to adequate waste management infrastructure.

Industry-specific gaps are further assessed as follows:

For shipping, merchant shipping, ferries, naval vessels, research, pleasure crafts

- The need to further implement requirements of Annex V MARPOL on garbage management to prevent discharges from ships into the sea.
- The necessity to establish more port reception facilities to adequately meet the needs of ships without causing undue delay.

For ports

- The need to address limited approaches and standards to environmental management in ports including waste.
- Laxity of ports and need for improved inspections.
- The necessity to upgrade systems and use technology for detection and monitoring pollution.

For fisheries and aquaculture

- Lack of national and localized regulations adopting best management practices to manage abandoned, lost and otherwise discarded fishing gear (ALDFG).
- Necessity to consider ALDFG in the entirety of fisheries management measures as well as enforcement against illegal, unreported and unregulated fishing vessels which are more likely to leave gear at sea.
- The need to involve more fishing communities from preventing and managing ALDFG.

MEDIUM TERM STRATEGY: INCREASE PLASTIC WASTE RECOVERY

STRATEGIC ACTION: IMPROVE SEA-BASED PLASTIC RECOVERY AND RECYCLING

Interventions	Regulation/ Legislation	Economic instruments	Voluntary	Awareness / Education	Status	Responsible parties
Support to biodegradable equipment and gear	✓	✓			●	🏛️
Vessel and gear innovation	✓	✓			●	◆
Reporting system	✓		✓	✓	■	◆
Focused recovery in hotspots	✓		✓	✓	■	◆
Quick response assistance	✓		✓	✓	■	◆
Recycling initiatives	✓	✓	✓	✓	■	◆
Coastal community involvement	✓		✓	✓	■	🏠🔧

STATUS: ■ = full, ■ = partial, ● = none

RESPONSIBLE PARTY: 🏛️ = government, 🔧 = industry, 👤 = Civil Society, ◆ = All

The second set of interventions for the medium-term strategy consists of recovery and recycling measures. These may cover interventions to ensure that once at sea, gear or equipment avoid further destruction of marine habitats and marine species' inadvertent entanglement or ingestion. Gaps in this regard are as follows:

- Lack of guidance and incentives to innovate in the design of gear and equipment for better recovery and to avoid further damage (e.g. biodegradable gear).
- At the moment, reporting and recovery are not institutionalized and are undertaken in a limited scale on clean-ups and ad-hoc events.
- There is currently no systematic collection of sea-based litter such as derelict gear in collection facilities to be recycled to other productive uses.
- The need to capitalize on coastal community-led recovery and collection to minimize costs.
- The need to address limitations on recycling multi-material equipment such as aquaculture pens at the community level and in areas without adequate infrastructure.

Additional cross-cutting issues and gaps:

Technical capacity and technology needs include the following:

- Capacity development on the implementation of guidelines and standards from international instruments such as MARPOL and FAO instruments.
- Support to develop technology and other innovations to address pollution from sea-based sectors.
- Opportunities for dialogue and exchange of best management practices from other jurisdictions.

Data and information needs that should be addressed include the following:

- Further research in Malaysia on the sea-based marine litter.
- Data on the cost and extent of damages from marine plastic litter to specific sectors such as shipping, tourism and fisheries.
- Communication, education and awareness campaigns, especially to target sectors such as ship, fishing vessels and aquaculture operators.

HOW TO ADDRESS GAPS

Legal and Regulatory Gaps

To address sea-based sources of marine litter, it is important to adopt policies and regulations from established best management practices. In line with

the land-based marine litter interventions, it is also crucial to adopt circular economy principles in sea-based activities. This includes minimizing waste materials that could be brought on board, circular packaging in gear and equipment, and having clear garbage management and procedures aboard vessels. Vessel and offshore waste management should be an integrated system with touchpoints on land such as port reception facilities. This would incorporate sea-based waste in existing solid waste management system as in other types of waste. Recommendations are provided specific for each activity as sea-based marine litter encompass different sectors.

To prevent sea-based plastic pollution from shipping, which covers all types of boats and vessels as well as offshore platforms:

- Implement guidelines for MARPOL Annexes to prevent vessel-source waste, institutionalizing garbage management record and segregation.
- Introduce ship waste management manuals which seek to restrict the discharge of garbage at sea.
- Issue directives for ship-owners and operators to minimize onboarding waste material.
- Scale up good practices such as banning single-use plastics on board vessels.
- Boost inspection activities to verify the garbage management record or the logbook of the vessel.

To facilitate marine litter prevention from ports, there are opportunities to include waste management in the port system and to expand and upgrade it. This may be through integrating innovations and sustainability measures into existing port infrastructure and 'greening' the port system through the following:

- Set common environmental standards for ports that include proper solid waste management and disposal efforts.
- Upgrade port reception facilities to include best management practices for waste management to include segregation and access to recycling.
- Develop guidelines in line with the Revised Consolidated Guidance for port reception facility providers and users¹²⁰ to adapt to the Malaysian context.
- Implement a uniform advance notification system across Malaysian ports to assist the reception facility operator in receiving waste materials from ships and vessels.

120 See <https://www.wcdn.imo.org/localresources/en/OurWork/Environment/Documents/MEPC.1-Circ.834-Rev.1.pdf>

Best Practice Framework for the Management of Fishing Gear

The Global Ghost Gear Initiative, a cross sectoral and multi-stakeholder alliance working to address derelict fishing gear, has published the Best Practice Framework for the Management of Fishing Gear. This guidance is intended for the use of different stakeholders such as gear manufacturers, fishers from commercial and artisanal subsectors, government through port and fisheries management authorities as well as other interested parties. It provides a risk analysis by gear type to consider attributes such as likelihood of loss and impact to the environment once lost, as well as corresponding management options from prevention, mitigation and remediation.¹²²

- Where cost recovery may be necessary, charges should be integrated in general fees instead of being a separate payment.
- Increase monitoring and surveillance efforts in ports through regular inspections and surveillance to detect possible waste crimes.

As to fisheries and aquaculture sourced marine litter, best management practices should be translated into appropriate implementation mechanisms and tailor-fit to Malaysian conditions, discussed further as follows:

- Enact regulation for gear marking and unique identification by integrating the requirement as a condition for the grant of fisheries licenses.
- Adopt international standards for gear management to address ALDFG e.g. FAO Voluntary Guidelines for the Marking of Fishing Gear¹¹⁹.
- Explore the requirement of cost-effective tracking technology on certain fishing and aquaculture equipment such as transponders in buoys or floats.
- Adopt zoning schemes and spatial management measures through thorough Marine Spatial Planning (MSP) to avoid gear conflict that causes derelict ALDFG.
- Conduct regular port inspection of fishing gear and vessel waste management conditions.

Furthermore, it is important to improve general fisheries management measures, transparency, and enforcement to avoid illegal fishing, which is often associated with vessels likely to abandon gear. In this regard, Malaysia may also consider acceding to the Port State Measures Agreement (PSMA) to counter IUU fishing vessels from utilizing Malaysian ports.

Aside from sector-specific measures to prevent plastic pollution, the medium-term strategy should prescribe measures to recover and recycle sea-based marine litter already at sea. This includes the following mechanisms:

- Adopt an online ship waste notification and cost recovery system in line with MARPOL whereby

seafarers are encouraged to recover garbage from the sea in routine operations.

- Promote the use of biodegradable fishing gear and vessel equipment such as those made from native materials e.g. palm fronds.
- Support initiatives for vessel design and equipment innovation through incentives.
- Establish reporting system for sea-based marine litter in each sector.
- Extend the requirement of reporting of ALDFG to existing reportorial obligations such as catch documentation systems and observer programs.

Similar to land-based sources of marine litter, it is important for sea-based plastic management to adopt circular economy principles that would promote behavioral and system changes among stakeholders in the industries involved. These may include crafting the enabling framework to address sea-based sources to include the following interventions:

- Adopt recycling buy-back schemes specific to each industry e.g. fishers, aquaculture operators.
- Mandatory deposit on new gear to be returned upon delivery to reception facilities.
- Maximize reuse of plastic to promote longevity and reuse of vessel equipment and fishing gear.
- Prioritize high specification materials as opposed to single-use alternatives such as reusable coverings instead of plastic sheets.
- Promote efficient designs for stowage and cargo such as allocating space to store garbage in the vessel configuration.

Addressing other related gaps:

The technical capacity and technology needs can be addressed as follows:

- Incentivize technological innovation on materials and equipment such as on-board treatment, compactors and biodegradable gears, as well as mechanisms to improve monitoring and tracking waste.
- Digitize port systems to integrate compliance to international standards and ship notifications.

¹²¹ See <http://www.fao.org/documents/card/en/c/CA3546T/>

¹²² See <https://www.ghostgear.org/news/2021/6/25/best-practice-framework-refresh>

- Guide government and industry on best practices framework to address sea-based marine litters as applied to specific sector.
- Involve local and international experts in training and dialogues to learn from jurisdictions with established good practices.

Data and Information needs may be addressed by the following:

- Information and education campaigns, especially on reporting and recovery, for target groups as well as the general public or coastal communities at large.
- Undertake more research on the causes and impacts of sea-based marine litter in Malaysia to identify additional appropriate interventions.

CURBING WASTE CRIME AND ILLEGAL IMPORTATION

Transboundary waste crime has been major issue in Malaysia since the rerouting of plastic waste exports to Southeast Asia in response to China's waste import restrictions in 2018¹²³. Malaysia, in particular, became the top plastic waste export destination the same year. This surge of foreign plastic waste has given rise to issues concerning transboundary waste crime and challenges in managing the importation value chain. Gaps in policy, enforcement and compliance have led for opportunities for waste crime to proliferate, which have exacerbated risks of such plastics being introduced into the environment.

The nature of plastic waste crime is particularly characterized by difficulties in proving its elements, as it includes broad networks of actors across

different jurisdictions¹²⁵. Hence, the suite of necessary interventions should cover detection, investigation and case building for successful prosecution¹²⁶. Furthermore, cooperation among relevant governments is necessary to disrupt international criminal operations. Gaps are further discussed as follows:

- Difficulty of authorities to obtain proper information and properly identifying waste for investigation. This issue is connected to prevalent fraud in the system, commonly made by false declarations and increasingly complex schemes to misrepresent imports as non-hazardous through use of different codes for importing waste¹²⁷.
- Although Malaysia has expanded guidelines and safeguards, there is a need to boost guidance and mandates for the conduct of financial and criminal investigation.
- There is also a need to address the veil of legality being used by illegal operations, such as using licensed recycling facilities as a front for illegal importers.

Furthermore, transparency measures are necessary to enhance detection, inspections, monitoring or flagging of criminal activity. Further down the line, there is a need to provide guidance for authorities on proven methodology to gather evidence for successful prosecution. Notably, addressing the gaps related to the systemic issues of Malaysian recycling industry is important, such as its heavy reliance on imported high quality scrap plastic, rather than any other domestic waste or recyclables.

In relation to the implementation of the Basel Ban Plastic Waste Amendments, Malaysia will need to improve international cooperation to address transboundary waste crime and illicit networks

MEDIUM-TERM STRATEGY: STRENGTHEN ENFORCEMENT AND COMPLIANCE TO CURB WASTE CRIME STRATEGIC ACTION: IMPROVE CRIMINAL ENFORCEMENT AND COMPLIANCE

Interventions ¹²⁴	Regulatory	Economic	Voluntary Guidance	Awareness / Education	Status	Responsible Party
Strengthen investigations and detection of waste crime	✓				■	🏛️
Enhance inter-agency responses to overcome limitations of power	✓				■	🏛️
Enhance international waste traceability	✓				■	🏛️

STATUS: ■ = full, ■ = partial, ● = none
RESPONSIBLE PARTY: 🏛️ = government, 🏭 = industry, 👤 = Civil Society, ◆ = All

123 INTERPOL, *supra*.

124 Interventions and prioritization derived from INTERPOL Strategic Analysis Report: Emerging criminal trends in the global plastic waste market since January 2018 (2021).

125 *Ibid*.

126 See generally WasteForce Materials for recent guidance on waste crime: [unep.org/resources/assessment/waste-force](https://www.unep.org/resources/assessment/waste-force): UNEP, 2021. Guidance for Prosecutors of Waste Crime and Best Practices in repatriation of illegal waste shipments from Asia to Europe

127 Wong, *supra*.

through intergovernmental responses, discussed as follows:

- Cooperation with other countries may pose challenges, especially with exporting countries where Malaysia has no standard notification mechanisms installed.
- Although updated customs regulations have provided better safeguards for documentation, clearer requirements are needed for traceability from export down to the Malaysian value chain.
- A gap which may complicate efforts against waste crime arise with dealings from other states which are not party to the Basel Ban Plastic Waste Amendments, making it legal for them to export such wastes.

Additional cross-cutting issues and gaps:

Needs in terms of technical capacity and technology include the following:

- Capacity to enhance investigations, especially in information and evidence gathering to obtain essential elements for the prosecution of waste crimes, through training and exchange of best practices.
- Support for technologies that ensure traceability of imports, possibly using big data and blockchain techniques.

Data and information needs cover the following:

- Cost benefit analyses and assessments on the role of foreign wastes imports in the recycling industry¹²⁸.
- Investigations on the disposal of illegal waste imports after the shutdowns.
- Market share studies of smuggled and unregistered import in relation to legal operations.

HOW TO ADDRESS GAPS

Addressing legal and regulatory gaps

To curb waste crime, a number of encompassing interventions should be introduced by the government that would curb criminal activity from export down to the Malaysian value chain. This includes improving investigations, detection and inter-agency cooperation to successfully prosecute cases. Gaps to address are as follows:

- Promote guidelines for enforcement and compliance to the import regulations, requirements and safeguards.

- Develop tools and methodologies for forensics that would enhance investigation and detection¹²⁹.
- Standardize the licensing system of waste importation and related recycling facilities nationwide (e.g. standard requirements and allocations of types of permissible waste and activities per facility).
- Examine the prospects of a national quota, if a ban is not possible, to prevent further surges in plastic waste imports¹³⁰.

In all of these interventions, it is important to institutionalize transparency to shed light on illicit operations. This would facilitate traceability and enable better monitoring of imports, thus deterring potential perpetrators of illegal waste trade. These may include the following governance and policy measures:

- Require guidelines for traceability and monitoring using technology to secure Prior Informed Consent.
- Make information on imports and trade publicly accessible at any given time across the waste importation value chain¹³¹.
- Communicate databases of activities and permissions of licensed facilities to exporting countries' authorities for clearing¹³², potentially through further enhancement of the Electronic Scheduled Waste Information System (eSWIS).

Addressing other related gaps:

Technical capacity and technology needs may be addressed as follows:

- Boost capacities of enforcers and investigators from various government agencies through trainings and exposure to best practices.
- Building networks for investigators on waste trade within Malaysia and with other countries for expedited cooperation and collaboration.
- Update prosecutors and judges with developments on the illegal waste trade.
- Support innovation, development and use of appropriate technology to enhance transparency and traceability.

Data and information needs may be addressed through the following:

- Standardize data collection methods for clearinghouses of information.
- Undertake investigations of abandoned dumps from illegal waste importers in open dumpsites

128 *Ibid.*

129 See Wasteforce, *supra*.

130 *Id.*

131 Zero-Waste Europe. 2021. European waste trade impacts on Malaysia's zero waste future - Case study. https://zerowasteurope.eu/wp-content/uploads/2021/01/zwe_case-study_european-waste-trade-impacts-on-malysias-zero-waste-future_en.pdf.

132 INTERPOL, *supra*.

or near rivers that may be highly susceptible for leakage.

- Conduct market studies and cost benefit analysis on foreign waste imports vis-a-vis the policy directions towards circularity¹³³.
- Assess extent of market reach of smuggled and unregistered products for proper disposition on 'orphan' products.

Environmental Governance

Interventions to address marine litter encompass not only plastic and waste-specific policies but must operate within an enabling environmental governance framework. The gap analysis focuses on two themes that would ensure that legal frameworks to address marine litter are backed by strong institutions, and interventions uphold environmental and human rights.

JURISDICTIONAL AND INSTITUTIONAL ISSUES

GAP ANALYSIS AND NEEDS ASSESSMENT

Legal and regulatory gaps

Plastics pollution governance will benefit through a systematic and coordinated approach within government to achieve policy coherence. A review of institutional issues to enhance overall environmental governance would facilitate interventions to combat plastic pollution and guide stakeholders in the long term.

LONG-TERM STRATEGY: IMPROVE ENVIRONMENTAL GOVERNANCE OF PLASTICS

STRATEGIC ACTION: STRENGTHEN INSTITUTIONS

Goals

Uniform regulatory framework and consistent application
Coordinated approach and clear mandates for government agencies involved
Sustainable funding, budget and technical support

The main gap in plastics pollution governance is the asynchronous response to specific issues coming from different sectors and parts of the value chain. There currently exists inconsistencies among policies and regulation among the states, owing in part to the federal government system of Malaysia. Because of the non-uniformity of policy, state and federal governments have responded differently with different interventions across different stages of the value chain. This has caused varying performance in plastics issues¹³⁴. Examples of these include:

- States impose different interventions such as pollution charges, plastic bag bans, or a no-straw policy with varying modes of operation.
- National waste collection and management such as separation at source for households as well as federal-sanctioned third-party collection concessionaire do not apply to non-Act 672 states¹³⁵.

Aside from states, there could also be overlapping jurisdictions or unclear mandates of different government agencies especially on sectoral issues over land, water, local government and finances. There have been advances in building institutions such as the National EPR Advisory Council and steering committee under the Zero SUPs Roadmap. However, some agencies may still operate in silos within their areas of competence.

Furthermore, funding is a key issue especially in municipal solid waste management where resources are limited. Although there may be opportunities to boost finance through economic instruments and EPR, on a general sense, government must still address inadequacies in the budgets of states and local authorities, which are mostly derived from local fees, license payments and assessment taxes¹³⁶.

HOW TO ADDRESS GAPS

Legal and Regulatory Gaps

An integrated approach with robust institutional structures makes for effective environmental governance to prevent marine litter. This would require a coherent and coordinated approach to policy and regulation, as well as improved communication lines across different sectors and parts of the value chain. To address the inconsistencies and gaps, the following recommendations may be considered:

- Ensure policy coherence through the implementation of a uniform institutional approach to address plastic pollution pursuant to the National Marine Litter Policy and Action Plan.
- Establish platforms and mechanisms to encourage non-Act states, through dialogue and exchange, to introduce bylaws and consistent ordinances.
- Improve data cooperation among states and agencies as well as resource sharing through a standardized reporting system.

133 Wong, *supra*.

134 Kamaruddin et al. *supra*.

135 World Bank Group, *supra*.

136 Ho, *supra*.

- Strengthen inter-ministerial mechanisms, capitalizing on the Joint Ministerial Committee and the Joint Steering Committee already established in the Zero SUP Roadmap, to include implementation of action points in the further roadmaps and action plans.

While economic instruments and EPR can fill in the gaps on securing funding support, government institutions must be further strengthened. Recommendations to help close the gap include:

- Assess and scope challenges of local authorities in finances and manpower through dialogue with stakeholders.
- Strengthen financial outlays through legislation or special funds to assist waste collection and management in states and local authorities¹³⁷.

ENVIRONMENTAL AND HUMAN RIGHTS

GAP ANALYSIS AND NEEDS ASSESSMENT

Legal and regulatory gaps

In developing legal frameworks, it is important to examine the nexus between environmental and human rights and plastic pollution as marine litter threatens people's rights to a healthy environment and oceans. Understanding gender considerations and implications is also essential in environmental governance of plastics. Furthermore, as procedural environmental rights may also be overlooked as Malaysia develops its regulatory framework on marine litter. This includes the right to access information, public participation in environmental decision making, and effective remedies¹³⁸.

LONG-TERM STRATEGY: IMPROVE ENVIRONMENTAL GOVERNANCE OF PLASTICS

STRATEGIC ACTION: UPHOLD ENVIRONMENTAL AND HUMAN RIGHTS

Goals

Strengthened procedural environmental rights
Integrated gender considerations in plastic pollution
Business and human rights and the environment as applied to the plastics industry

Procedural environmental rights or the so-called 'access rights' are sometimes brushed aside, especially in cases where pollution has affected communities, or there is question of possible unlawful act which are cloaked by a lack of transparency. This directly impinges on the access right to environmental information and the enabling environment to exercise such rights. There are reports of lack of transparency¹³⁹ especially on potential waste crime or pollution affecting the well-being of communities due to non-disclosure of information, where such info is claimed as proprietary or a trade secret¹⁴⁰.

Furthermore, hurdles on the right to public participation and to access effective remedies must also be addressed, especially as there is a need to create a conducive environment for public participation through dialogue and exchange among stakeholders, particularly those who are disproportionately affected. Local communities are sometimes not officially recognized as stakeholders in the regulatory framework.

Furthermore, gender equality is vital to uphold human rights in the context of plastic pollution¹⁴¹, especially as environmental risks due to marine litter could cause lopsided impacts on women due to social gender roles. Although there are advances in the integration of gender in the conversation, some issues remain:

- Lack of targeted approaches to integrate gender considerations in developing policies and management measures, as well as monitoring and evaluation.
- Need to meaningfully engage women as essential stakeholders in dialogues and opportunities for public participation.

Lastly, although the business, human rights and the environment (BHRE)¹⁴² initiative is still at its nascent stages in Malaysia, it is critical to already engage industries involved in addressing weaknesses in due regard to human rights, and thus cultivate corporate attitude to respect environmental standards and due diligence procedures.

137 Fauziah et al. *supra*.

138 See generally, Principle 10, Rio Declaration https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf and the Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters (Bali Guidelines) <https://www.unep.org/civil-society-engagement/partnerships/principle-10>

139 Wong, *supra*.

140 Invoking Section 50 of the EQA, which provides "Any person who discloses any information obtained by him in connection with the administration or execution of this Act or the regulations made thereunder in relation to any manufacturing process or trade secret used in carrying on any particular trade, industry or process (with exceptions) shall be liable to a fine not exceeding ten thousand ringgit or to imprisonment for a period not exceeding five years or to both."

141 UNEP COBSEA and Stockholm Environment Institute, *supra*.

142 See generally <https://bizhumanrights.asia-pacific.undp.org/content/bizhumanrights/en/home/knowledge-hub0.html>



Photo by Joshua J. Cotten (<https://unsplash.com/@jcotten>) on Unsplash (<https://unsplash.com/photos/-b5RSev8qWU>)

HOW TO ADDRESS GAPS

Legal and regulatory gaps

Protecting the health and rights to a healthy environment of the local communities entails safeguarding of human rights and gender equality across the regulatory framework and at all levels of the plastics life cycle. The development of any legal framework would need to integrate human rights and gender considerations in the identification of issues and throughout the decision-making process. Recommendations in this regard include the following:

- Strengthen freedom of information (FOI) laws at a national scale to ensure accountability of actors across all stages of the plastics value chain.
- Enhance the regulatory framework for transparency across all levels of government for public access to environmental information at any point in the plastics value chain.
- Promote public participation and remedies, through the administrative and court system if necessary, for violations of environmental rights and promote accountability for environmental harm caused by plastic pollution¹⁴³.

Opportunities such as amendments to the Right to Information Act or the Whistleblower Protection Act 2010 may provide avenues for improved access to information, public participation and redress against potential breaches of rights.

Furthermore, gender considerations should be mainstreamed at all levels of policy development and participation, which may include the following considerations:

- Conduct gender analyses and include gender concerns in policy development as well as in monitoring and evaluation.
- Ensure that women are represented in consultations and policy development processes.
- Boost capacity of government to become gender-inclusive in its approaches and to remove any biases that may exist.

Hence, it is important to include gender considerations and women's roles on upcoming roadmaps and action plans on marine litter and circular economy, as well as any prospective legislation and regulation such as the EPR framework.

Lastly, Malaysia's development of a BHRE framework provides an opportunity to align with global best practices. Recommendations to strengthen BHRE principles in the plastics and waste industry include the following:

- Ensure that due diligence processes effectively identify, avoid, and address potential adverse impacts of plastic pollution.
- Boost capacity of government and industry on human rights and the environment, including social and governance standards to include in environmental protection.
- Undertake social and economic impacts assessments of marine pollution to identify vulnerable groups¹⁴⁴.

This may be addressed through a National Action Plan on Business and Human Rights which would mainstream environmental due diligence standards, in addition to relevant human rights principles, across the plastics and waste industries.

¹⁴³ UNEP COBSEA and Stockholm Environment Institute, *supra*.

¹⁴⁴ *Ibid.*



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Synthesis and Conclusion

There are numerous laws and regulations in place in Malaysia on waste management and addressing pollution in various sectors which impact the disposition of marine litter. This has been further complemented by policy roadmaps and action plans which seek to systems towards a circular economy approach. recent approaches have focused on prompting regulatory reform and behavioral changes to address the challenges and gaps in the plastics value chain and marine litter governance. This also includes interventions to deter waste crime and targetted approaches to address sea-based waste sources.

The recently launched marine litter and plastic sustainability roadmap provides an opportunity for policy coherence and addresses challenges in waste management and plastic pollution. Institutional issues must also be addressed by improving overall environmental governance through sthrenghened legal framework to address the marine litter problem:

1. In the short term, mitigate plastic waste leakage by preventing plastic pollution from land and sea-based sources as well as improving waste collection, transportation and final disposal sites.
2. In the medium term, increase plastic waste recovery by strengthening waste separation at source, recovery and recycling waste from land and sea-based sources, and improving enforcement to curb waste crime.
3. In the long term, adopt sustainability in production and consumption by promoting eco-design and addressing single-use plastics.
4. In the long term, improve environmental governance of plastics by strengthening institutions and upholding environmental and human rights.

Plastics and Marine Litter Governance		
Short-term Strategy	Medium-term Strategy	Long-term Strategy
Mitigate plastic leakage into the environment	Increase plastic waste recovery	Adopt sustainability in production and consumption
Managing the Plastic Value Chain and Waste		
Improve waste collection, transfer and transportation	Introduce plastic waste separation at source	
Improve final disposal sites	Improve plastic waste recovery and recycling	
Promoting Systemic Changes on Production and Consumption		
Prevent plastic pollution		Promote eco-design and address single-use plastics
Addressing Sea-based Sources of Marine Litter		
Prevent sea-based plastic pollution	Improve sea-based plastic recovery and recycling	
Curbing Waste Crime and Illegal Importation		
	Strengthen enforcement and compliance to curb waste crime	

Environmental Governance		
Short-term Strategy	Medium-term Strategy	Long-term Strategy
		Improve environmental governance of plastics
Jurisdictional and Institutional		
		Strengthen institutions
Environmental and Human Rights		
		Uphold environmental and human rights



Other opportunities for strengthening the legal frameworks include the prospective EPR legislation, which would provide a platform for dialogue and exchange among stakeholders and players in the value chain, along with specific legal measures to prevent, manage and recover waste. Regulations should aim to pave the way for sustainability in the Malaysian production processes and consumer behaviors. Furthermore, other specific issues, such as transboundary waste crime and sea-based source, need targeted measures to stem their flow as potential sources of marine litter.

As the Malaysian government works in collaboration with stakeholders to adopt best management practices and model frameworks to address marine litter, institutions must be strengthened through improved inter-ministerial and cross-jurisdictional coordination and communication. For all interventions, government must uphold environmental and human rights and achieve a gender-inclusive and rights-based framework to address plastic pollution.

Malaysia is well on its way in creating the enabling environment to sustainably manage waste and prevent plastic litter. Ultimately, the development of policy and legal frameworks in accord with priorities and needs is envisaged to address the problem of marine pollution, and contribute to building a green and sustainable Malaysian economy.

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