SEA circular
solving plastic pollution at source

country profile

INDONESIA

Socio-economic profile

Indonesia is one of the largest economies in South-East Asia. The country is an archipelago between the Indian Ocean and the Pacific Ocean, with 16,058 islands. The total surface area of the country is 1,916,862.20 sq. km. It has a population of 265.015 million (in 2018), with an average population growth of 1.33% between 2010-2018. Approximately 56.6% of the population lives in urban areas.[i] As per 2017 estimates, the country's Gross Domestic Product (GDP) was US$1.015 trillion (2017 est.) with an annual growth of above 5% at constant 2005 prices. The sectoral contribution to the GDP in 2017 was 41% of services sector, 41% industry, and 13.7% agriculture.[ii] The Indonesian economy grew by 5.17% in 2018, and the GDP per capita in 2018 reached to $3,932.

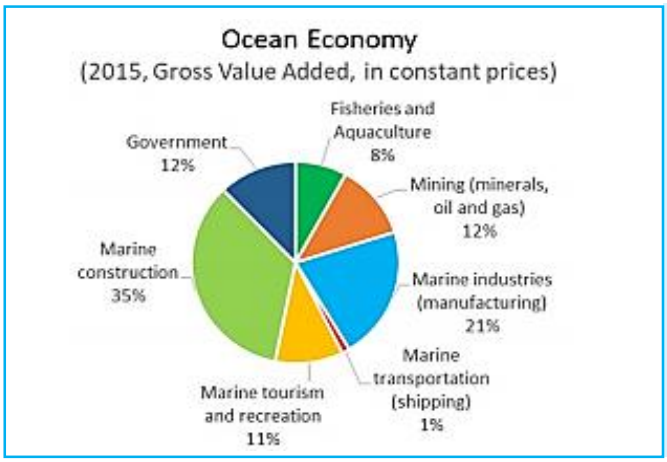
Coastal and marine ecosystem and economy

The coastline of Indonesia covers a total area of 95,181 km., and about 64% of the total population is the coastal population. Indonesia's coastline represents some of the world's most crucial marine ecosystems. It is home to 76% of coral species, vast mangrove forests and sea grass meadows.

As the world's largest archipelagic nation, Indonesia depends greatly on coastal and marine industries, which account for 25% of the country GDP and employ more than 15% of its workforce.[iii] These coastlines support fisheries and tourism industries as well as livelihoods for thousands of coastal people.

Indonesia's coastal and marine ecosystem faces various environmental issues such as marine and coastal pollution, climate change, overfishing, habitat destruction, and overexploitation of resources. Approximately 82% of Indonesia's reef area is at risk.

Marine plastic pollution is also one of the major threats to Indonesia's coastal and marine environment. Impacts of marine plastic pollution includes the negative socio-economic consequences on marine communities - as fishermen can lose their livelihood and tourism operators lose their customers. Conservative estimates show that the hidden economic costs of plastic bags to Indonesians amount to over US$2.92 billion each year.[v]



Fisheries and aquaculture[iv]
Contributed US$14.7 billion to GDP in 2015

Coastal and marine tourism
US$19.3 billion

Ports and shipping
Contributed US$2.2 billion

Oil and gas
State revenues US$11.9 billion

UN environment programme

COBSEA
COORDINATING BODY ON THE SEAS OF EAST ASIA

Sweden Sverige

Plastics and plastic packaging

Production and usage

Plastic production in Indonesia is growing at 4% annually and has increased from 2.3 million tonnes (2013) to 2.9 million tonnes (2017).

The Indonesia plastics market is expected to witness a compound annual growth rate (CAGR) of 6.23% during the forecast period, 2018 to 2023.[vi] Nonetheless, the country still relies on 40% imports from Malaysia, Thailand, Singapore, Europe and the US to meet local demand. The imports of plastic finished goods is in the range of US$2 billion or worth 800,000 tonnes each year.[vii]

Indonesia is one of the top plastic producers in the ASEAN, but in terms of consumption, it is behind its fellow ASEAN member States. Based on data from the Indonesia Olefin, Aromatic and Plastic Industry Association (INAPLAS), the country's plastic consumption of 17 kg/capita/year, and about 40 plastic bags per capita/year. The Ministry of Environment & Forest estimates out of approx. 9.8 billion plastic bags consumed in 2016 (in 90,000 modern retail outlets), 95% became waste.[viii]

In terms of sectoral consumption, Packaging accounts for the largest application segment (49.6%) in the Indonesian plastics market, 16% construction, 6.8% automotive, 5% electrical, electronic and telecom while 22.6% is consumed by other sectors.

The Indonesian packaging industry is projected to grow 130.3 billion units in 2021 from 1.1 billion units in 2016, registering a CAGR of 5.2%, according to a Global Data report. It will boost demand for flexible and rigid packaging.

Packaging industries in Indonesia grow in-line with its applied industries. The food and beverage industry is its biggest consumers that almost 70% of total packaging supplies.[ix]

According to Transparency Market Research, Indonesia is predicted to lead in the flexible packaging market in the region, with food packaging accounting for 70% of plastic consumption. Flexible packaging occupied a market share of 42% in 2016, accounting for 42 billion units in 2016, and is forecast to reach 52 billion units in 2021, at a CAGR of 4.3% during 2016-2021.

Similarly, rigid packaging also had a market share accounting for nearly 25% of the market in 2016, and is expected to grow at a CAGR of 7.7% by 2021.[x]

According to the Indonesian Packaging Federation,[xi] packaging material segment in Indonesia is as follows: flexible packaging(42%), paperboard packaging (28%), rigid plastic packaging (14%), woven polyolefin sack (6%), metal cans packaging (5%), glass container packaging (3%), and others (2%).

Solid waste management

According to the Ministry of Forest and Environment (MOEF), in 2018, Indonesia generated 65.79 million tonnes of municipal solid waste (MSW), of which 44% was food waste, followed by 15% plastics, 13% yard waste/branches/leaves, 11% paper, 3% textile, 2% each of metal, rubber, glasses, and remaining 8% others.[xii]

City and district governments are responsible for solid waste management. Neighborhood and community organizations collect and transport waste to Temporary Disposal Sites (TPS) or Intermediate Transfer Facilities (TPST).

Transport of waste from the TPS/TPST to the Landfill (TPA) is the responsibility of local government. There are 521 final disposal sites, out of which 24 are sanitary / engineered landfill facilities (20 owned by municipalities) and 52 are controlled dumpsites. Both formal and informal sector are involved in waste collection and recycling. Waste Banks / Bank Sampah are successful model of informal community-based establishments for collecting sorted inorganic/recyclable waste in Indonesia. Waste Banks are set up in neighborhoods typically for 1000 residents, wherein residents bring recyclable wastes like a deposit, and the deposits are transformed into money.

Marine litter is part of the broader problem of inadequate waste management. Plastic spillage into Indonesian into waste water, seas and oceans is largely contributed to the lack of adequate and efficient collection, transportation and disposal system. Of the total waste generated, 72% of waste was managed through various mechanisms including landfilling 69%, recycling 12%, composting 8%, waste management via waste banks 4%, fuel resources 3% and others 4%. The remaining 28% of total waste generated remains unmanaged.[xiii] Although the market potential for recycled plastics in the country is extensive, plastic recycling in Indonesia is limited. According to the Indonesian Plastic Recycling Association (ADUPI), out of the 4.6 million tonnes of domestic plastic consumption in 2016, 600,000 tonnes was recycled plastic. ADUPI's data shows that only 360 industries were involved in plastic recycling in 2018.[xiv]

Marine litter status

Globally Indonesia is the second biggest contributor to marine plastic litter worldwide after China, with a leakage of 0.48-1.29 million tonnes per year, which accounts for 10% of the world's marine pollution.[xv] The enormous quantities of plastic waste have also taken a toll on marine life as animals often get entangled in the plastic waste and die. Mismanaged and inadequate waste management, overfilled landfill are clogging rivers and canals in the with plastic waste and are contributing significant amounts of land-derived debris into oceans.

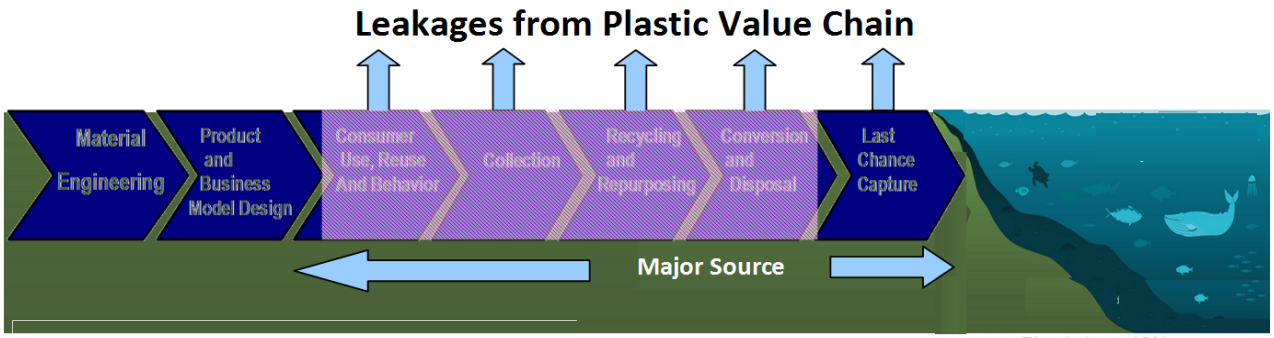
Four rivers in Indonesia (Brantas, Solo, Serayu, Progo) rank among the 20 most polluted in the world in terms of mismanaged plastic waste. It has been reported that majority of the plastic waste comes from rivers and streams, mainly from Java and Sumatra, and popular tourist islands. According to recent research by the provincial government of Bali, the island generates 1.6 million tonnes of waste a year, 19.6% of which is plastic, and some 33,000 tonnes of plastic (11% of total plastic waste) ends up in the island's waterways and seas every year. Approximately 48% of Bali's waste is responsibly managed either through recycling or landfill. However, a significant portion of collected waste never reaches a recycling facility or any of Bali's 10 official landfills. Seven percent of Bali's plastic waste is collected for recycling, with 20% of household leveraging the informal sector to recycle their waste, and 6% using waste banks.[xvi]

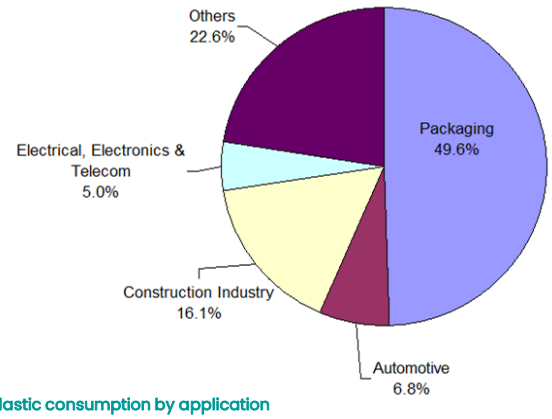
At a national scale, according to the Indonesian Institute of Sciences (LIPI), 0.27 to 0.9 million tonnes of waste enters the oceans every year through river flows with plastic bags and polystyrene foam (Styrofoam) the most common items found in the ocean.[xvii] The Marine Debris Hotspot Rapid Assessment conduced by the World Bank in 2018[xviii] in 15 cities in Western and Central Indonesia – Bali (Denspar) Lombok (Mataram), Java (Jakarta, Semarang, Surabaya, Yogyakarta), Kalimantan (Balikapapan, Pontianak), Sulawsi (Bitung, Makassar, Manado), Sumatra (Bandar Lampung, Batam, Medan, Padang) revealed that plastics is a significant portion of debris extracted from waterways in all cities, ranging from 20 to 38%. The most prevalent type of plastics found in the samples from waste extracted from waterways were plastic bags, at an average across all cities of 16%.

Table 1: International coastal clean-up efforts and[iv] marine litter items (number) found in Indonesia[xxi]

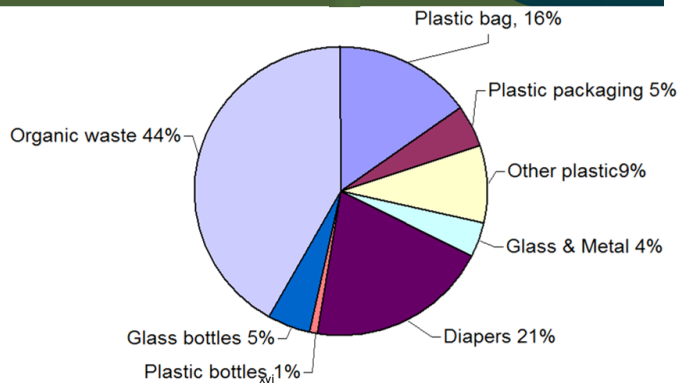
Country / location						People	KG	KM of coast	Total items collected
Indonesia						10,081	9,182	345.9	139,137
Cigarette butts	Food wrappers (candy etc.)	Straws stirrers	Plastic forks Knives spoons	Plastic beverage bottles	Plastic bottle caps	Plastic grocery bags	Other plastic bags	Plastic lids	Plastic cups plates
33,760	10,920	10,704	2,061	8,837	7,867	4,279	6,048	3,789	3,084

Figure 1: Leakages from the plastic value chain





Plastic consumption by application



Marine litter composition
(Source: World Bank. (2018). Indonesia – Marine debris assessment: Synthesis Report).

Another study on marine debris release at nine river outlets into Jakarta Bay in the Greater Jakarta area, conducted Indonesia between June 2015-June 2016 also shows that plastics as the most common debris entering Jakarta Bay representing 59% (abundance) or 37% (weight) of the total collected debris, and Styrofoam as the dominating among plastic debris.[xix] Styrofoam (polystyrene) is widely used for packaging foods, replacing the traditional use of organic food wraps such as banana leaves. Similar study conducted western and southern Aceh, Indonesia also indicated that marine debris was dominated by plastic (86.6%). The highest of debris density (0.145 items/m2) were found in southwestern Aceh and South Aceh Regency. Shoreline and recreational activities have known as the largest source of marine debris (74.8 %), followed by medical/personal hygiene activities (10.8%) dumping activities (85 items, 9.2%), smoking or related activities (4.1%) and activities related to ocean/waterway (1.1%).[xx] Table 1 above provides an insight into the types of marine plastic litter collected during coastal clean-ups.

Action on marine litter: Key stakeholders

Government

Department of Environment and Degradation Control, under Ministry of Environment and Forestry is a nodal agency for development, implementation, enforcement and monitoring of policy, regulations related to water, waste water and waste. Ministry of Public Works and Housing provides technical advice, promotes pilot projects, constructs and supervises large-scale off-site waste management facilities (such as landfills). Ministry of Home Affairs works towards strengthening and building capacities of municipalities in implementing MSW management. At local level, as mandated by the Waste Management Act, city and district governments are ultimately responsible for solid waste management. The Municipal Planning Agency and Cleansing Services Unit are the main local government Agencies responsible for planning and implementing solid waste management. The City Environmental Agency is responsible for monitoring of MSW and coordinating the 3R program with local communities, NGOs & the private sector. MSW management is typically done by the City Cleansing Department (Seksi Kebersihan) of each district.

Coordinating the Ministry of Maritime Affairs is at the forefront of the country's battle with plastic waste. The Department of Coastal and Marine Pollution and Degradation Control under the Ministry of Environment and Forestry is responsible for development, implementation, enforcement and monitoring of policy, regulations related to marine pollution and degradation control. It also serves as the contact point for the Coordinating Body on the Seas of East Asia (COBSEA). The National regulator / Ministry of Environment is responsible for addressing pollution, policy, regulations and standards as well as monitoring and control for MSW, hazardous waste and emerging waste stream as well serve as COBSEA focal point.

Private sector

Private sector (formal and informal) is involved significantly in collection, transportation, recycling and disposal of municipal plastic waste in Indonesia. The Government of Indonesia has in recent years enacted key policies such as the waste management law and energy policy, which further drive the private sector participation in the waste sector.

There are many private sector associations taking actions in plastic and marine plastic sector: Indonesian Olefins, Aromatics and Plastics Association (INAPLAS), Indonesian Packaging Federation (IPF) / Indonesian Association for Flexible Packaging / Indonesian Association of Downstream Plastics Industries, Indonesia Plastic Recycling Association (ADUPI), Packaging and Recycling Association for Indonesia Sustainable Environment / Association for Sustainable Packaging & Recycling for Indonesia (PRAISE).

The Indonesia National Plastic Action Partnership (NPAP) is a multi-stakeholder collaboration that brings Indonesia's leading policymakers, experts, businesses, entrepreneurs, and civil society organizations together in the effort to achieve 70% reduction in marine plastic debris by 2025 and to become plastic pollution-free by 2040.

The World Resources Institute (WRI) Indonesia serves as a secretariat for the NPAP. NPAP is a collaboration between Global Plastic Action Partnership (GPAP) and the Government of Indonesia. GPAP is a global public-private platform for collaboration to help translate political and corporate commitment to address plastic pollution into tangible strategies and investible action plans to avert plastic pollution from source to sea by 2025, by fast-tracking circular economy solutions. GPAP is hosted by the World Economic Forum and supported internationally by the governments of Canada and the United Kingdom, The Coca-Cola Company, Dow, PepsiCo and Nestlé in collaboration with the World Resources Institute, the World Bank, Pew Charitable Trusts, SYSTEMIQ, the Platform for Accelerating the Circular Economy, Friends of Ocean Action and others. To date, the NPAP has engaged 9 government ministries, 4 regional governments, 12 leading Indonesian companies, and more than 100 leaders across the public, private, and civil society sectors.

The NPAP's key pillars include: Policy, Investments and sustainable finance, Innovation (Research, technology/development, business models, markets), Public awareness and behavior change, and Metrics (Transparency and Accountability).

Policy frameworks on MSW and marine litter

Global frameworks on marine litter

Indonesia is a Party to a number of conventions, treaties and regulations related to coastal and marine environment protection including:

United Nations Convention on the Law of the Sea (UNCLOS)

Indonesia has been the State Party of UNCLOS since the Resolution of the ratification of the National Assembly on 3 February 1986. Part XII of UNCLOS deals with 'Protection and preservation of the marine environment' and requires states to take all measures necessary to prevent, reduce and control pollution of the marine environment from any source. These measures aim to minimize to the fullest possible extent the release of toxic, harmful or noxious substances.

International Convention for the Prevention of Pollution from Ships (MARPOL)

Indonesia has ratified the Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) in 1997 (date of entry into force or succession from 24 November 2012). MARPOL is the key international agreement to prevent marine environment pollution caused by ships' operational and unintended activities. Annex V, enforced since 31 December 1988, specifically addresses the issue of plastic dumping from ships: 'The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited'. Besides prohibition of plastic waste disposal, Regulation 3 number 2 of the Convention also calls for stricter regulations on mixed garbage discharge.

Basel Convention on the Control of transboundary Movements of hazardous Wastes and Their Disposal and the Ban Amendment

On 20 September 1993 Indonesia acceded to the Basel Convention. The Basel Convention was designed to eliminate the risks from transboundary movements of hazardous and other wastes. In its initial version, the Convention covered several categories of waste, including wastes collected from households, but did not include the movement of solid plastic waste (including scrap plastic of non-halogenated polymers and co-polymers, cured waste resins or condensation products, and fluorinated polymer wastes) as listed in B3010 of Annex IX. In 1995, the Ban Amendment was adopted by the third meeting of the Conference of the Parties. Indonesia has also ratified the Basel Convention Ban Amendment on 24 October 2005. The 14th Meeting of the Conference of Parties to the Basel Convention in May 2019 agreed to include mixed, unrecyclable and contaminated plastic waste exports into the control regime that requires the consent of importing countries before waste exports can proceed. The amendment will be effective in January 2021. Subsequently, the Basel Convention Plastic Waste Partnership (PWP) was established by the Conference of the Parties to the Basel Convention through its decision BC-14/13 adopted during its fourteenth meeting held in April/May 2019 and was launched officially on 12 November 2019 in Palais Eynard in Geneva. The PWP aims to improve and promote the environmentally sound management of plastic waste at the global, regional and national levels and in the long-term, to eliminate the discharge of plastic waste and microplastics into the environment, in particular the marine environment. Membership to the Plastic Waste Partnership working group is open to Parties to the Basel Convention and other stakeholders dealing with the different aspects of prevention, minimization and management of plastic waste.

Regional frameworks on marine litter

Indonesia as the ASEAN member State has adopted "the Bangkok Declaration on Combating Marine Debris in the ASEAN Region" and "the Framework of Action on Marine Debris" in 2019

The ASEAN Framework of Action on Marine Debris

The Framework of Action on Marine Debris The Framework was developed to act on the recommendations from the ASEAN Conference on Reducing Marine Debris in ASEAN Region in Phuket in November 2017, taking into account the East Asia Summit (EAS) Conference on Combating Marine Plastic Debris in Bali in September 2017. The Framework comprises four (4) priority areas namely: (i) Policy Support and Planning; (ii) Research, Innovation, and Capacity Building; (iii) Public Awareness, Education, and Outreach; and (iv) Private Sector Engagement. Each priority area consists of actions and suggested activities for further collaboration in ASEAN region and among ASEAN and its partners in combating marine debris.

Bangkok Declaration on Combating marine debris in ASEAN region

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

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

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

National policy frameworks on municipal (plastic) waste management

Indonesia has a number of policy / regulation, "under Solid Waste Management" addressing plastic waste.

Indonesia has adopted the Solid Waste Management Law of 2008 (No. 18/2008), which mandates all stakeholders to take part and contribute in improving overall waste collection and management.

Presidential Regulation No. 97/2017 Solid Waste Management National Policy and Strategy (2017- 2025) targets to reduce waste by 30% and to manage waste properly by 70% of total waste generation in 2025.

Other decrees, programmes, policies and strategies on MSW: Ministerial Decree No. 13/2012 3R and Waste Bank; Ministerial Decree No 53/2016 ADIPURA; Clean Indonesia Programme Year 2020; The National Medium Term Development Plan's "100-0-100" target of eliminating all slums and providing universal access to water and sanitation, including solid waste, by 2019; Presidential Decree No. 58/2017 regarding Amendments to Presidential Decree No. 3/2016 on the Acceleration of the Implementation of the National Strategic Project includes waste-to-energy projects in Jakarta, Tangerang, Bandung, Semarang, Surakarta, Surabaya, Denpasar, and Makassar in national strategic projects, Presidential Decree No. 35/2018 on the Acceleration of the Development of Waste-to-Energy Installations with Environmental-based Technology, implementation of Single use plastic bag fee policy for modern retails and shops, phasing out single-use plastic, there are 2 provincial governments and 19 cities/regencies have banned and have planned to ban plastic shopping bag, plastic straws and Styrofoam etc.

Indonesia has introduced Extended Producer Responsibility (EPR) in the waste management sector, stipulated in Act 18/2008 and PP 81/2012. Products and product groups targeted by EPR nationally include consumer goods packaging and food and beverage packaging

National policy frameworks on marine litter

The Government of Indonesia set the ambitious target in tackling plastic pollution within the country. The Presidential Decree of the Republic of Indonesia Number 83 Year 2018 on Marine Debris Management, launched in September 2018, oversees marine debris management. The Decree has created the National Coordination Team on Marine Debris Management with 14 ministers, cabinet secretaries, and the head of the Maritime Security Agency as members. The team is chaired by the Coordinating Minister for Maritime Affairs and the Minister of Environment and Forestry, who serves as the daily chairman.

The National Action Plan for Marine Debris Management for 2018–2025 is attached in the presidential regulation, which calls for efforts to reduce 70% of its plastic debris (from 2017 baseline) by the end 2025. The three critical aspects of this plan are: (a) Coordination between institutions responsible for waste management; (b) Application of Technology to control plastic debris – including Science-Based Management system; and (c) Significant importance of societal efforts to reduce, reuse, recycle. The Action Plan specifies each ministry's role. For example, the Ministry of Industry is in charge of encouraging the growth of the recycling industry and the industry to produce degradable plastics. The Ministry of Maritime and Fisheries Affairs is in charge of, for example, constructing waste-handling facilities at fishing ports and organizing movements to clean up beaches and seas. The Ministry of Public Works and Housing is in charge of waste collection infrastructure on river and waste management facilities, and stipulation of plastic waste usage as additive in road construction. The five pillars of the National Action Plan are: (a) Improving behavioral change; (b) Reducing land-based leakage; (c) Reducing sea-based leakage; (d) Industrial sector; and (e) Research and development. Indonesia is structuring a budget to address the land-based management of waste in four years with finance of up to one billion USD (Indonesian oceans policy, 2017). Development agencies such as World Bank, ADB, AusAid, KfW, GIZ, JICA support the Indonesian government in the waste sector.

Fiscal incentives

The Government of Indonesia has provided financial schemes to improve local government's capacity in waste management, including: National budget allocation to construct new landfills or rehabilitate existing landfills; Special budget allocation to construct solid waste management facilities such as composting facility, waste bank facility, collection and transportation vehicle, and recycling facility; Special budget subsidy allocation for local government to pay additional tipping fee operating and maintaining WTE facility;

National incentive budget for local government that succeed to prevent and reduce plastic waste generation. The Presidential Decree No. 38/2015 on "Cooperation between Government and Business Entity in Procurement of Infrastructure" guides the Public Private Participation (PPP) in Indonesia. Government of Indonesia has established various organizations such as Indonesia Infrastructure Guarantee Fund (IIGF), Sarana Multi Infrastruktur (PT SMI), and Indonesia Infrastructure Finance (PT IIF) to provide guarantees and financing for PPP projects. Indonesian government has pledged to spend up to US$1 billion a year on cleaning up its rivers and seas.

In February 2016, Indonesia tried to reduce plastic use by introducing a US$0.02 tax on single-use plastic bags in 22 cities (initiated by Indonesia's Ministry for the Environment and Forestry). But, later that year, the country's retailers' association stopped charging for plastic bags citing lack of legal grounds. A few provinces like Jakarta and Bali have announced a ban on plastic bags. Now, in 2020, the House of Representatives has approved a proposal from the Finance Ministry on the imposition of excise tax on plastic bags (Rp 30,000 or US$2.10 per kilogram of plastic bags) in the country that would reduce plastic consumption by up to 50 percent, and the government would likely receive an excise of Rp 1.6 trillion (US$116.6 million) each year. The proposal specifically targets plastic bags less than 75 microns thick.[xxii] The government has been planning to impose an excise on plastics since 2017 but has yet to receive approval from lawmakers.

Conclusions

The increasing plastics production and consumption (mostly single use plastic packaging) coupled with mismanaged plastic waste owing to inadequate waste management services and facilities are driving the marine plastic pollution in Indonesia.

As the second biggest contributors to global marine litter and a rapidly growing economies of the ASEAN with rising production and demand for plastic and plastics packaging products and services, Indonesia is a key player to reduce plastic waste regionally and globally.

Indonesia's garbage problem has provided a wakeup call to the government and tackling solid waste management is now high on the national agenda. Indonesia offers opportunities to develop comprehensive policy, programme, plan/strategy, projects, strengthen technical skills and financial resources of local governments to implement and enforce national waste management laws and policies with specific attention to municipal and marine plastic pollution.

The ambitious National Action Plan on Marine Litter aiming to reduce 70% of its plastic debris by the end of 2025 (from the baseline of 2017), pledging US$1 billion per year, and welcoming collaboration from strategic partners in various ways shows Indonesia's commitment towards reducing marine plastic pollution.

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