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TURNING THE TIDE ON SOUTHEAST ASIA'S PLASTIC POLLUTION CRISIS

Policy Report

February 2023

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Executive Summary

Plastic pollution in oceans and other bodies of water continues to worsen. The amount of plastic waste in the oceans is projected to approximately double by 2030 and even triple by 2040.[1] Marine plastic pollution poses a serious threat to the global marine ecosystem, and Southeast Asia is facing the toughest challenge in this regard. This report argues that a comprehensive and multi-sectoral approach to addressing this transboundary issue should go beyond reduction in the use of single-use plastic products. It should also cater to comprehensive capacity-building on waste management, mainstreaming scientific cooperation, boosting environmental education at the community level, and legally mandating Extended Producers' Responsibility. The active participation of both state and non-state actors, at the national and regional levels, would be essential.

[1] United Nations Environment Programme, *From Pollution to Solution: A global assessment of marine litter and plastic pollution* (Nairobi: UNEP, 2021).

Plastic Pollution in Southeast Asia

Southeast Asia is both a source and victim of plastic pollution in the Pacific Ocean, including the South China Sea, peripheral seas and rivers. Countries in the region are major contributors of the land-based plastic waste leaking into the world's oceans. Around 80% of marine plastic debris can be traced back to land-based plastic waste. Southeast Asia and the broader East Asia region are facing the toughest challenge in this regard. Kakuko Nagatani-Yoshida, UN Environment Programme (UNEP)'s Regional Coordinator for Chemicals and Waste, was quoted as saying that "Southeast Asia is a primary source and victim of plastic, where it is choking seas and threatening ecosystems and livelihoods. If we want to solve the marine litter problem globally, we have to solve it in this region."[2]

China is the world's biggest contributor of plastic waste, responsible for 8.9 million tonnes annually, followed by five Southeast Asian countries, namely Indonesia, the Philippines, Vietnam, Thailand, and Malaysia. Collectively, those five Southeast Asian countries generate 8.9 million tonnes of mismanaged plastic waste every year. Indonesia, for instance, contributes 3.22 million tonnes a year, with half ending up in the seas.[3]

Nonetheless, there has been growing momentum in Southeast Asia to partner with the international community to find tenable solutions, as evidenced by the inclusion of the plastic pollution issue in the ASEAN agenda. ASEAN member states have expressed their strongest commitment to tackling this escalating transboundary environmental issue through the adoption of the Bangkok Declaration on Combating Marine Debris in the ASEAN Region and the ASEAN Framework of Action on Marine Debris at the 34th ASEAN Summit in June 2019. As a follow up, the ASEAN Regional Action Plan for Combating Marine Debris was issued in 2021, proposing the phased implementation of a systematic and integrated response to the issue of marine plastic pollution in ASEAN.

Shared river systems and waterways are the conduits for ocean plastic pollution. The Bangkok Declaration and the ASEAN Framework of Action on Marine Debris have underscored the critical importance of protecting ASEAN's major river systems. The Mekong River, for example, is choked by about 37,000 tonnes of plastic bags and bottles near its mouth in southern Vietnam.[4] This is due mainly to inadequate waste management systems in countries through which the Mekong flows.

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[2] "UNEP report warns plastic policies lagging behind in Southeast Asia," UNEP Press Release, 13 November 2019, https://www.unep.org/news-and-stories/press-release/unep-report-warns-plastic-policies-lagging-behind-south-east-asia.

[3] Venkatachalam Anbumozhi, "Circular economy for plastics: What is at stake for ASEAN?", *Jakarta Post*, 13 September 2019, https://www.thejakartapost.com/academia/2019/09/13/circular-economy-for-plastics-what-is-at-stake-for-asean.html.

[4] Ibid.

Major rivers from Indonesia and the Philippines also carry large volumes of plastic waste. Manila's Pasig River, for instance, dumps over 63,000 tonnes of plastics into the ocean every year, making it the world's eighth largest contributor of ocean plastic. Four of Indonesia's rivers are among the 20 most polluted in the world due to mismanaged plastic waste.[5]

[5] Laurent C.M. Lebreton, et al., "River Plastic Emissions to the World's Oceans," *Nature Communications* 8, no. 15611 (2017).

Plastics as a Climate Problem

Plastic pollution is clearly a climate problem as well. For example, in 2015, greenhouse gas emissions from the production, use, and disposal of fossil fuel-based plastics were equivalent to 1.7 gigatonnes of CO2. By 2050, these emissions will rise to approximately 6.5 gigatonnes, accounting for 15% of the global carbon budget, i.e. the permissible level of greenhouse gas emissions to keep warming below the temperature goal set by the Paris Agreement. Current waste management practices, which include inadequate waste collection, uncontrolled dumping, and burning of waste, account for another 5% of global greenhouse gas emissions.[6] Plastic pollution in our oceans also exacerbates global warming. When exposed to sunlight and heat, discarded plastics emit methane and ethylene, two potent greenhouse gases that increase the rate of climate change, and thus, perpetuating the cycle.

[6] UNEP, *From Pollution to Solution*.

Policy Gaps and Limitations

1. The need to implement and strengthen national laws and standards

The UNEP report of Southeast Asian countries' plastic waste policies pointed out that limited packaging-related policies and inadequate enforcement are exacerbating the plastic-pollution problem in the region.[7] Table 1 lists the current legislative and regulatory frameworks on packaging and managing waste in Southeast Asia. The list highlights the fragmented nature of the efforts, and the lack of a comprehensive approach in any single country to address the problem.

Table 1: Summary of Plastic Packaging Regulations and Standards in ASEAN[8]

Legislation	BN	KH	ID	LA	MY	MM	PHL	SG	TH	VN
Municipal solid waste	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marine litter			✓		✓		✓	✓	✓	✓
Anti-litter	✓			✓	✓	✓	✓	✓	✓	✓
Plastic bag restrictions or a charging model for plastic carrier bags			✓		✓		✓	✓	✓	
Single use plastic limit			✓			✓	Under Review		✓	
Biodegradable plastic requirement					✓					
Oxo-biodegradable plastic requirement					✓					
Source separation		✓	✓	✓	✓		✓			✓
National targets for recycling/recovery	✓		✓		✓	✓		✓	✓	✓
Reduction of waste to landfill		✓	✓		✓	✓	✓		✓	
Waste-to-energy			✓		✓			✓	✓	✓
Legal framework Extended Producer Responsibility (Packaging)			✓		✓					
Import restrictions of scrap plastics			✓		✓				✓	✓
Green procurement plan-recycled content for packaging							✓			
Green procurement plan-alternative materials for packaging			✓						Under Review	

BRUNEI (BN) CAMBODIA (KH) INDONESIA (ID) LAO PDR (LA) MALAYSIA (MY) MYANMAR (MM) PHILIPPINES (PHL) SINGAPORE (SG) THAILAND (TH) VIETNAM (VN)

[7] UNEP, *The Role of Packaging Regulations and Standards in Driving the Circular Economy* (2019), http://sos2019.sea-circular.org/wp-content/uploads/2019/11/FINAL_THE-ROLE-OF-PACKAGING-REGULATIONS-AND-STANDARDS-IN-DRIVING-THE-CIRCULAR-ECONOMY.pdf.

[8] Ibid. Author's additional research input.

Policy and standards impacting packaging waste in each of the ASEAN countries vary in scope, impact, and priority. While all nations have some form of a solid waste management regulation, the legislation and enforcement of a comprehensive legal framework for source separation and separate collection of packaging waste have been inadequate, with no progress made in some instances.

At various ASEAN conferences and roundtable consultations on plastic pollution, experts and practitioners have pointed out that the weak enforcement mechanism besets the region's effort to reduce marine plastic debris. Another common issue in the majority of Southeast Asian states is the lack of implementing regulations pertaining to plastic waste and the use of single-use plastics, even though key legislative and regulatory frameworks on solid waste management are in place.

The high consumption of single-use plastics is a major concern, due to the significant amount of waste they generate after a relatively short lifespan. More policy efforts are needed to address the issue of single-use plastic items, including the root causes that have engendered the culture and habits of using disposable items. While a few Southeast Asian countries have adopted some sort of single-use plastic regulations, especially concerning plastic bags, none have implemented outright bans or penalties. However, a number of Southeast Asian cities and provinces have implemented ordinances to manage plastic bags and other single-use plastics within their jurisdiction.[9]

2. The need to increase public awareness and boost public education

Intensive public education campaigns to boost awareness and institutionalise behavioural changes are essential to reducing plastic waste. Currently, several civil society organisations, including environmental groups, conduct grassroots campaigns on sustainable consumption and waste reduction systems, especially in coastal cities and communities.

For example, from 2020 to 2022, the Save Andaman Network conducted the project "Rethinking Plastics: Circular Economy Solutions to Marine Litter" in eight villages in Trang, a southern province in Thailand. Through collaboration with local stakeholders and communities, the project has led to improved waste management formats and policies.[10]

[9] Jonathan Schachter and Rachel Karasik, "Plastic Pollution Policy Country Profile: Philippines," NI PB 22-10. (Durham, NC: Duke University, 2022). https://nicholasinstitute.duke.edu/sites/default/files/projects/Plastic-Pollution-Policy-Country-Profile-Philippines.pdf.

[10] Save Andaman Network, "Rethinking Plastics: Circular economy solutions to marine litter," n.d., accessed February 2023, https://saveandamannetwork.org/iucn-rethinking-plastics-circular-economy-solutions-to-marine-litter/.

Separately, the Filipino environmental group Mother Earth Foundation assisted several city governments in Metro Manila and northern Philippines through community-based initiatives like “Zero Waste Academy”. The assistance was aimed at improving waste management programmes and public awareness campaigns on plastic recycling and segregation.[11] Other NGOs have partnered with local governments and businesses to create modules for schools and public workshops, to educate students, teachers, and parents on waste segregation and recycling. These efforts have empowered coastal communities to make better decisions in combating plastic pollution.[12]

3. The need to broaden scientific research on microplastic to inform evidence-based policy making

Many studies have documented the impact of large plastic debris on the marine environment. However, further studies are needed to provide reliable and accurate assessment of the potential damage caused by microplastics which can be ingested by marine animals, including fish. Toxic chemicals that have accumulated on microplastics can be transferred through the food chain and ingested by humans through the consumption of seafood. This has been identified as a health hazard, although the impacts remain inadequately researched. The major challenge for scientists and policymakers dealing with ocean plastic pollution is the lack of knowledge on the exact concentration of microplastics in the oceans and the marine food chain. In Southeast Asia, the microplastic impacts and solutions are not fully conveyed from scientists to policymakers and more importantly to the public.

Furthermore, scientific cooperation to assess and mitigate the problem of ocean plastic pollution in the region is still in its infancy. Coordinated marine scientific research remains problematic in the South China Sea as the countries that generate much ocean plastic waste also have overlapping maritime and territorial claims. Marine scientists have pointed out that the current geopolitical environment is not conducive to joint scientific research, as it has been heavily politicised in recent years. While scientists from several claimant states have initiated marine plastic pollution assessment in their respective waters, there is currently no collaborative platform for research or information sharing across the South China Sea. Thus, joint marine scientific research would be essential to measuring the level of microplastic contamination in different locations of the South China Sea, in the quest for effective solutions.[13]

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[11] Mother Earth Foundation, “Navotas on the Road to Zero Waste,” n.d., accessed February 2023, https://virtualtour.zerowaste.asia/navotas/.

[12] Teach for Philippines, “Bringing Environmental Educational Closer to Public School Students,” 11 December 2020, https://teachforthephilippines.com/our_press/bringing-environmental-educational-closer-public-school-students/.

[13] Discussions at the ASEANO webinar titled “Local Knowledge for Regional Development and Solutions to a Global Problem: Building Capacity for Reducing Plastic Pollution in the ASEAN Region,” 23 March 2022.

How Can We Clean Up Our Oceans and Rivers?

1. Capacity-building cooperation on plastic waste mitigation measures must address land-river-sea nexus

The example of Southeast Asia demonstrates that capacity-building support, as well as technical and financial assistance from extra-regional and donor countries, should be welcomed and integrated into the wider regional strategy for reducing marine plastic pollution.

The US$3 million ASEAN-Norway Cooperation Project on Local Capacity Building for Reducing Plastic Pollution in the ASEAN Region (ASEANO) was initiated in 2019. It is led by the Norwegian Institute for Water Research (NIVA) and the Center for Southeast Asian Studies in Indonesia (CSEAS), in collaboration with Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and the ASEAN secretariat. ASEANO's focus is to develop capacity and knowledge in tackling plastic pollution in the ASEAN region, with initial case studies on Indonesia, Vietnam and the Philippines. It also facilitates capacity-building projects for local governments, coastal/riverine communities, and universities in the three countries by crafting community-based plastic waste reduction strategies, river protection measures, science-based local solutions, and encouraging robust grassroots participation.[14]

The ASEANO initiatives with CSEAS include knowledge transfers from Norway to local actors in Southeast Asia on how to monitor the volume, sources, concentration areas, and types of plastic debris. To expedite results, CSEAS also partners with grassroots NGOs on changing the socio-cultural mindsets and behaviours of local communities. Among ASEANO's key contributions are the training programmes to equip local public schoolteachers to effectively teach the issues of sustainability and plastic waste pollution to the young generation. The training programme has been launched in selected Indonesian and Philippine communities where heavily polluted rivers are located.[15]

[14] Ibid.
[15] Ibid.

2. States should establish scientific cooperation and consortiums for baseline studies in the region

Currently, scientists in several Southeast Asian countries are attempting to fill the knowledge gap in methodology and measurement standards for the volume, sources, concentration areas, and types of plastic debris in the major seas and rivers. This is because the published studies on plastic waste volume from Southeast Asia were based on estimation.

To standardise marine plastic pollution assessment, regional marine scientists have formed a consortium and initiated a project titled "Microbial Transformation of Plastics in Southeast Asian Seas: A Hazard and a Solution" (MicroSEAP) in 2020. The consortium comprises scientists from universities in Singapore, Indonesia, Malaysia, Vietnam, Thailand and the Philippines. Their role is to conduct research on the microbes on plastic waste found in the region, the threats caused by plastic pollution, and possible solutions to the plastic waste problem. The consortium is also conducting research on "Understanding the Impact of Plastic Pollution on Marine Ecosystems in Southeast Asia", a project under the Southeast Asia Plastics (SEAP) programme which began in October 2020.[16]

In addition, the Regional Capacity Centre for Clean Seas based in Indonesia is exploring a model to monitor marine litter transboundary movement. Given that 95% of plastic in our ocean is transported by 10 major rivers, eight of which are in Asia, the Centre aims to address this challenge by leveraging smart technology (remote sensing) and crowdsourcing data from the ground to track the leakage of plastic waste into coastal and marine areas. It also aims to determine the hotspots in order to drive significant improvements through waste management reforms.

This growing scientific research cooperation bridges the significant gap in evidence-based policy making. It also highlights the role of non-state stakeholders like scientists in advancing regional cooperation and research frameworks in Southeast Asia. However, as marine scientific cooperation in the region is still in the early stages, extensive government funding would be needed to support the measuring and monitoring of plastic waste pollution from the river systems to regional bodies of water.

[16] UK Research and Innovation, "Impacts of marine plastic pollution in Southeast Asia researched," 22 October 2020, https://www.ukri.org/news/impacts-of-marine-plastic-pollution-in-south-east-asia-researched/.

3. Producers' responsibility should extend beyond recycling alliances

In recent years, the private sector has been a major driver in the growth of the recycling ecosystem in Southeast Asia. National recycling associations and alliances are being set up and funded mostly by major food and beverage companies in Singapore, Malaysia, Vietnam, the Philippines, Vietnam, and Indonesia, to ramp up recycling efforts and reduce plastic packaging waste. These associations have implemented various programmes with the common aim to (i) build a system to recycle polyethylene terephthalate (PET) typically used in plastic bottles; (ii) comprehensively improve plastic waste management; (iii) fund technological innovations in plastic recycling by national universities; and (iv) increase the number of plastic waste recovery and recycling facilities; across Southeast Asia.[17]

While the current approach to recycling and reducing plastic packaging is voluntary, this should progressively move towards a legally mandated Extended Producer Responsibility (EPR) framework. The Philippines has just enacted the EPR Act of 2022, whereas Singapore has embarked on the Mandatory Packaging Reporting (MPR) scheme, which will formalise the EPR scheme for packaging waste management by 2025.

Still, a majority of Southeast Asian countries have adopted a voluntary EPR system, which is based on agreements between some market actors and the government, or by market actors alone. A mandatory EPR system would require all producers and suppliers of plastic packaging and products to be responsible for the collection and proper disposal of their products at the end of the product lifecycle. As such, it will lessen the environmental and economic burdens of plastic waste management for municipalities.[18]

[17] Packaging Recycling Organization Vietnam, "Nine companies join hands to set up a packaging recycling alliance in Vietnam," 12 May 2021, https://provietnam.com.vn/en/news/signing-ceremony-of-viet-nam-packaging-recycling-alliance-pro-viet-nam/; A Muh and Ibni Aqil, "Companies establish organization to combat growing plastic waste," 27 August 2021, https://www.thejakartapost.com/news/2020/08/27/companies-establish-organization-to-combat-growing-plastic-waste.html; MAREA, "Making a Difference in Consumer Packaging Waste, https://www.marea.com.my/.

[18] World Bank, *The Role of Extended Producer Responsibility Schemes for Packaging towards Circular Economies in APEC* (Washington, D.C. World Bank Group, 2022).

About the Author

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