TACKLING EAST ASIA'S NEW ENVIRONMENTAL CHALLENGE

MARINE PLASTIC POLLUTION

Policy Report

June 2019

Lina Gong and Julius Cesar Trajano

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Executive Summary

Marine plastic pollution poses a serious threat to the global marine ecosystem, according to a recent UN report. Southeast Asia and the broader East Asia region are facing the toughest challenge in this regard. There has been growing momentum in East Asia and the international community to look for solutions, evidenced by the inclusion of the issue in the agenda of G20 Summit in Japan this year. This policy report argues that the solution should be comprehensive and multi-sectoral – that includes not only reduction in the use of single-use plastic products but also better waste management, technological solutions, and sustainable economic models. The political will and collective action of East Asian countries can have a global impact through multilateral channels like the UN system and G20 Summit.

Key Recommendations

- National institutional arrangements on marine plastic pollution need to be developed.
- A regional strategy or action plan on marine plastic pollution must be adopted in ASEAN.
- A “circular economy” strategy or action plan could serve as a sustainable approach to reduce plastic waste.
- Protection of rivers from plastic pollution and improvement of land-based waste management could significantly reduce ocean plastic pollution.
- Multi-stakeholder collaboration is critical in tackling marine plastic pollution.

Introduction

Marine plastic pollution has increasingly been recognised as a threat to the global environment and ecosystem. The issue was recently included as an agenda of the 4th Session of the UN Environment Assembly in Nairobi, Kenya in March 2019. In addition, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) released a landmark report in May 2019 that warned about the gap between the world's efforts and the rapid deterioration in global biodiversity and ecosystem.[1] Around 1 million plant and animal species are facing extinction, many within decades. Among the threatened species are almost 33 per cent of reef forming corals, sharks, and more than 33 per cent of marine mammals. It identified marine plastic pollution as one contributing factor and pointed out that the level of pollution in the oceans and seas has increased tenfold since 1980 and affected over 200 marine species.[2]

Southeast Asia and the broader East Asia region are facing the toughest challenge in this regard. China is the world's biggest contributor of plastic waste, responsible for 8.9 million metric tons annually, followed by five Southeast Asian countries, namely Indonesia, the Philippines, Vietnam, Thailand, and Malaysia. Collectively, the five countries generate 8.9 million metric tons of mismanaged plastic waste every year. Indonesia, for instance, contributes 3.22 metric million tons a year, with half ending up in the seas.[3] At the per-capita level, Japan ranks second globally.[4]

Marine plastic pollution can cause various non-traditional security threats, such as environmental and ecological degradation, food contamination, public health threats, and even economic insecurity.[5] Causes of marine plastic pollution are

[1] United Nations. "UN Report: Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'". May 6, 2019. www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/.

[2] IPBES Secretariat. "Summary for policymakers of the global assessment report on biodiversity and ecosystem services ...." May 6, 2019, pg 4. www.ipbes.net/system/tdf/spm_global_unedited_advance.pdf?file=1&type=node&id=35245.

[3] Ismail, Maizura. "Indonesia's plastic action." *The ASEAN Post*, November 19, 2018. https://theaseanpost.com/article/indonesias-plastic-action.

[4] Hussein, Sara. "Not so fantastic: Can Japan end its love affair with plastic?" *The Jakarta Post*, March 21, 2019. www.thejakartapost.com/life/2019/03/21/japan-plastic-waste-environment.html.

[5] "Dead whale in Philippines had 40kg of plastic in stomach." *The Straits Times*, March 18, 2019. www.straitstimes.com/asia/se-asia/dead-whale-in-philippines-had-40-kg-of-plastic-in-stomach; Teh, Cheryl. "Toxic bacteria found on plastics at beachese." *The Straits Times*, February 12, 2019. www.straitstimes.com/singapore/environment/toxic-bacteria-found-on-plastics-at-beaches; Department of Labor and Employment of the Philippines. "Over 8000 Workers Affected by Boracay Closure Receive Promised Aid." Accessed June 11, 2019. www.ble.dole.gov.ph/index.php/9-home-page-articles/238-over-8-000-workers-affected-by-boracay-closure-receive-promised-aid-from-dole.

multiple, ranging from unsustainable practices in marine economic sectors to ineffective waste management. Moreover, trade flows can also be a factor. With China's decision to not accept half of the world's plastic waste since January 2018, plastic scrap—primarily from industrialised economies—are re-routed to other developing countries, including some in Southeast Asia, like Malaysia, Thailand, and Vietnam.[6]

In view of the imminent threats posed by marine plastic pollution, it is imperative that countries in the region explore effective ways to curb and reverse the negative impacts of plastic waste on the marine environment and ecosystem in regional seas. Given the complex causes and consequences of the challenge, effective responses involve not only removing plastic debris from the seas but also waste management on land, economic transformation, and behavioural change. Therefore, a multi-sectoral approach is needed.

Key Recommendations

Developing national institutional arrangements and policy frameworks

East Asia is producing plastic waste faster than any other region in the world, contributing 60 per cent of global plastic waste.[7] Governments across the region, including in ASEAN, are waking up to the overwhelming ecological and financial costs of plastic-polluted rivers and oceans. Plastic pollution has been a grave threat to the region's marine environment, fisheries, tourism industry, and public health. Consequently, in recent years, some ASEAN member states have individually launched national policy initiatives to address marine plastic debris issues. Indonesia, the Philippines, Vietnam, Thailand, and Malaysia have developed or are developing their national action plans to lessen plastic waste, and are setting specific reduction targets for non-biodegradable plastic bags by next decade.[8] Indonesia and Thailand are promoting a paradigm shift within their

[6] "Southeast Asia: Stop Sending us Mountains of Plastic Waste." *Voice of America*, May 5, 2019. https://learningenglish.voanews.com/a/southeast-asia-stop-sending-us-mountains-of-plastic-waste-/4901374.html.

[7] Jambeck, Jenna R., Roland Geyer, Chris Wilcox, Theodore R. Siegler, Miriam Perryman, Anthony Andrady, Ramani Narayan, and Kara Lavender Law. "Plastic waste inputs from land into the ocean." *Science* 347 (2015): 768-71. Doi: 10.1126/science.1260352.

[8] The Global Partnership on Marine Litter Platform. "Indonesia's Plan of Action on Marine Plastic Debris: 2017-2025." Accessed June 11, 2019. http://marinelitternetwork.com/wp-content/uploads/2018/04/NAP-Marine-Plastic-Debris-Indonesia_Summary.pdf; "Vietnam takes action to reduce plastic waste." *Vietnam.net*, February 12, 2019.

society towards sustainably cutting plastic waste through public education and campaigns. Malaysia tries to advance the country's sustainable development while balancing economic growth and environmental protection, simultaneously. It is therefore imperative for other regional states to develop and adopt relevant policy frameworks on combatting plastic pollution.

Adopting a regional strategy or action plan

The full implementation of national action plans is crucial in reversing plastic pollution within national waters. These strategies may serve as pillars of collaborative action among states. However, these would not be adequate to address transboundary plastic pollution. There is need for a regional strategy or action plan on marine litter which recognises the transboundary nature of the problem, and the need for regional coordination mechanisms. ASEAN has recently begun building regional frameworks on transboundary marine plastic pollution.

In March 2019, Thailand convened the first Special ASEAN Ministerial Meeting on Marine Debris "*to provide ASEAN a platform to explore and pursue concrete actions on combating marine debris and strengthen collaboration between ASEAN and supportive partners* …."[9] ASEAN ministers in principle approved to move forward the *Bangkok Declaration on Combating Marine Debris in the ASEAN Region* as well as the *ASEAN Framework of Action on Marine Debri*s for consideration and adoption by ASEAN leaders at the next ASEAN summit. The Bangkok Declaration reaffirms ASEAN's commitment to conserve the marine environment and strengthen regional cooperation in addressing marine debris issues. It likewise espouses the intention of ASEAN member states to mitigate improperly-managed refuse and stop the flow of garbage into the sea.[10]

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https://english.vietnamnet.vn/fms/environment/217557/vietnam-takes-action-to-reduce-plastic-waste.html; The World Bank. "Opening Remarks by Agata E. Pawlowska at the Marine Plastics Conference in the Philippines." April 4, 2019. www.worldbank.org/en/news/speech/2019/04/04/opening-remarks-by-agata-e-pawlowska-at-the-marine-plastics-conference-in-the-philippines; Ministry of Energy, Science, Technology, Environment & Climate Change. "Malaysia's Roadmap Towards Zero Single-Use Plastics: 2018-2030." Accessed June 11, 2019. www.mestecc.gov.my/web/en/announcements-banner/malaysias-roadmap-to-zero-single-use-plastic/.

[9] Association of Southeast Asian Nations. "Joint Media Statement of the Special ASEAN Ministerial Meeting on Marine Debris." March 5, 2019. https://asean.org/joint-media-statement-special-asean-ministerial-meeting-marine-debris/.

[10] Rujivanarom, Pratch. "Bangkok Declaration must wait until June." *The Nation, 6* March,2019. www.nationmultimedia.com/detail/national/30365256.

As ASEAN is about to adopt the first framework for cooperation on marine plastic pollution, the next step must be the crafting of a more detailed regional plan of action and strategy which provides for (i) regional and national marine litter monitoring programmes, (ii) implementation guidelines, (iii) reporting mechanisms, and (iv) a regional database. The plan of action must put a system in place to improve data collection and reporting on the status of marine litter in the region. Due to the lack of systematic data collection and reporting in the region, the proportion of marine litter sources is unknown and the impacts have yet to be studied in-depth.[11] Data collection may be done through national monitoring mechanisms and regular surveys of beaches, surface waters, rivers, and inland waterways to determine litter types and quantities.[12] Data collected at the national level could be processed and analysed by a regional data centre on marine debris. In this regard, ASEAN plans to establish the Knowledge Centre on ASEAN Marine Debris in Indonesia with technological and financial support from Japan. It will be the central agency for gathering information about marine garbage pollution in the region and developing innovative solutions and measures to reduce plastic litter leaking into the sea.[13] Such a centre could definitely serve as a platform for information-sharing and systematic reporting among ASEAN member states.

Furthermore, this report also recommends the establishment of a Regional Cooperation Platform on Marine Litter. The Knowledge Centre could be attached as an essential unit of such a platform. Establishing a regional coordinating platform specialising on marine litter is among the best practices in managing other regional seas, particularly the Mediterranean Sea.[14] It will be an instrumental institution in providing coordinated support and guidance to the implementation of a regional plan of action on marine litter.

[11] UN Environment/COBSEA. "Regional Review of Marine litter in the East Asian Seas Region, zero-draft." April 23, 2018. www.cobsea.org/3.%20COBSEA%20IGM%20EO-2%20INF%206%20Regional%20ML%20review%20180422.pdf.

[12] Ibid.

[13] Rujivanarom, Pratch. "Bangkok Declaration must wait until June." *The Nation,* March 6, 2019. www.nationmultimedia.com/detail/national/30365256.

[14] International Union for Conservation of Nature. "Moving forward the Mediterranean Regional Cooperation Platform on Marine Litter." November 20, 2017. www.iucn.org/news/mediterranean/201711/moving-forward-mediterranean-regional-cooperation-platform-marine-litter.

Reducing waste inputs from river and land

Shared river systems and waterways are the conduits for ocean plastic pollution. Ten rivers in the world contribute 90 per cent of plastic waste washed to the oceans, eight of which are in Asia.[15] The Mekong River is among these plastic-polluted rivers mainly due to inadequate waste management systems in countries where the Mekong flows. However, the Mekong River Commission, that promotes joint management of the shared water resources and sustainable development in the countries of the Mekong River basin, has various coordinating instruments but does not include initiatives to address transboundary plastic pollution. Riparian countries should consider joint plastic waste reduction in transboundary rivers as part of their environmental cooperation. In this regard, adequate national efforts should be made to reduce plastic waste leakage to oceans through rivers. Collective efforts should not just focus solely on regional seas but also on the protection of rivers from plastic pollution.

Apart from cleaning up rivers, good management of land-based waste is key to reducing plastic pollution. In January 2019, China launched a pilot project, "Zero Waste City", in selected cities to significantly cut urban waste, including plastics. The project targets the entire cycle from waste generation and recycling to safe disposal in landfills. Currently, at least three quarters of the land-based plastic waste across the globe are uncollected.[16] The lack of proper disposal facilities has contributed to the piling of garbage, including plastics, in the Philippines, much of which has spilled into the seas.[17] It is therefore essential to improve waste management at national and sub-national levels.

Supporting the transition towards a circular economy

Marine plastic pollution is a result of waste mismanagement problem and land-based pollution. In fact, 80 per cent of ocean plastic waste comes from land-based sources.[18] In this regard, a comprehensive approach is needed to address

[15] World Economic Forum. "90% of plastic polluting our oceans comes from just 10 rivers." June 8, 2018. www.weforum.org/agenda/2018/06/90-of-plastic-polluting-our-oceans-comes-from-just-10-rivers/.
[16] World Economic Forum. "We must stop choking the ocean with plastic waste. Here's how." January 9, 2019. www.weforum.org/agenda/2019/01/we-can-stop-choking-our-oceans-with-plastic-waste-heres-how/.
[17] Sarmiento, Bong. "Philippines central government on solving plastic trash problem: 'We've done all we can'." *Eco-Business*, October 12, 2018. www.eco-business.com/news/philippines-central-government-on-solving-plastic-trash-problem-weve-done-all-we-can/.
[18] Eunomia. "Plastics in the Marine Environment." June 1, 2016. www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/.

the land-water-waste nexus. The *East Asia Summit Leaders' Statement on Combating Marine Plastic Debris*, adopted in Singapore during the ASEAN Summit in 2018, recommends the promotion of environmentally sound management of plastic waste and resource efficiency, including the circular economy.[19] The circular economy model offers a fundamental and crucial alternative to the linear take of a – "make – consume – dispose" economic model that is currently prevalent in Southeast Asian economies. The circular economy model is simple: minimise the disposal of waste and the need for raw materials by reducing, reusing, recycling, refurbishing, and remanufacturing materials (5R) in production, distribution, and consumption processes. In many ASEAN countries, resource-use policy is usually anchored on 3R: reuse, reduce, recycle.[20]

There are compelling reasons why the principles of a circular economy are relevant for the region. At the national level, countries can bolster industrial competitiveness through a paradigm shift towards a new industrial approach that cuts waste of precious resources, mitigates overproduction of waste, and focuses instead on resource recovery. The flawed linear economic model is no longer fit for ASEAN, which has also become the fastest growing region in terms of resource consumption,[21] consequently generating more plastic waste. Compared to ASEAN countries, companies and governments in Japan, Europe, and the United States have taken a more proactive approach to embrace the circular economy model. National and local governments in the region should consider adopting their respective masterplans on sustainable consumption, production, and waste management. Singapore and Thailand, for instance, are in the process of developing their circular economy masterplans.[22] ASEAN may also consider a regional strategy on circular economy, emulating *The European Union Strategy for Plastics in a Circular Economy*.[23]

Instituting a comprehensive policy framework that supports the development of the circular economy in an integrated manner should include sustainable consumption and production goals. A circular economy strategy or action plan

[19] Association of Southeast Asian Nations. "East Asia Summit Leaders' Statement on Combating Marine Plastic Debris." November 15, 2018. https://asean.org/east-asia-summit-leaders-statement-combating-marine-plastic-debris/.

[20] Anbumozhi, Venkatachalam, and Fukunari Kimura. "Industry 4.0: What Does It Mean for the Circular Economy in ASEAN?" In *Industry 4.0: Empowering ASEAN for the Circular Economy*, edited by Venkatachalam Anbumozhi, and Fukunari Kimura. Jakarta: Economic Research Institute for ASEAN and East Asia, 2018.

[21] Ibid.

[22] Apisitniran, Lamonphet. "Circular model going to cabinet." *Bangkok Post*, September 11, 2018. www.bangkokpost.com/business/news/1537718/circular-model-going-to-cabinet.

[23] European Commission. "A European Strategy for Plastics in a Circular Economy." January 16, 2018. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN.

could serve as a starting point for identifying all relevant policy areas with time-bound and measurable objectives. Besides the involvement of the private sector, governments, especially at the sub-national/local level, should educate consumers on the importance of sustainable consumption and production practices. It could be done through formal education, environmental labelling practices, and public information campaigns.[24]

Mobilising various stakeholders

Support and contribution from different stakeholders are critical in tackling marine plastic pollution. Restriction on single-use plastic products inevitably leads to rise in cost for businesses and inconvenience for consumers, temporarily at least. Awareness-raising and incentives are needed for promoting changes in business practice and consumer behaviour. Hope has been placed on the scientific community to present alternative materials and technologies to reduce our plastic pollution. In Malaysia, replacement of single-use plastics with alternative eco-friendly products such as bioplastics and reusable straws has been promoted by local scientific research initiatives such as the Microplastics Research Interest Group (MRIG), comprising experts from various fields of studies.[25] However, it is also necessary to recognise the difficulty in developing ideal materials that are environmentally friendly and suitable for commercialisation.[26] In addition, concerns may arise over the unintended negative impacts of new technologies and materials which may need further improvement.[27] Campaign initiatives can be helpful to gain understanding and support from across society for continuing innovation.

As seen in the above examples, technological advancement, that makes the degrading of plastic less harmful for the environment and creates bioplastics made up of organic materials,[28] contributes to the solution. According to a recent report, the most common finds during international coastal cleanups are various

[24] Asia-Europe Foundation. "Implementation experience in ASEM member countries with the Sustainable Development Goal 12 on Sustainable Consumption and Production." September 2018. www.asef.org/images/docs/SCP%20in%20ASEM_draft_17%20October.pdf.
[25] Sani, Rozana. "Dealing with marine plastic pollution." *New Straits Times*, April 24, 2019. www.nst.com.my/education/2019/04/482487/dealing-marine-plastic-pollution.
[26] Cabinet Office of Japan. "New Biodegradable Material Reduces Plastic Waste." Accessed June 11, 2019. www.japan.go.jp/tomodachi/2019/winter2019/new_biodegradable_material_reduces.html.
[27] Laville, Sandra. "'Biodegradable' plastic bags survive three years in soil and sea." *The Guardian*, April 29, 2019. www.theguardian.com/environment/2019/apr/29/biodegradable-plastic-bags-survive-three-years-in-soil-and-sea.
[28] They are derived from renewable resources, such as cornstarch, cassava roots, chips or starch (mostly in Asia), or sugarcane.

forms of plastic waste.[29] Coastal cleanup activities alone are not enough. Plastic waste leakage must be blocked at all points in the pollution pathway through technological advancement. In this regard, the immediate introduction of bioplastics to coastal communities, particularly in heavily commercialised coastal areas due to tourism, could significantly reduce coastal plastic pollution. This technological advancement could be backed up by innovative local laws requiring not just local residents but also hotels and tourism-related facilities to replace single-use plastics with bioplastics. In addition, international cruise operators are catching up with consumer demands for plastic-free travel. Hence, exploring sustainability initiatives on-board cruise ships, including the use of bioplastics, must be aggressively done by the shipping industry.

Financing and entrepreneurship are enabling factors to effectively combat marine plastic waste. Financial support is needed for constructing the infrastructure for waste management, from proper landfills to treatment facilities. In the aforementioned pilot project in China, some of the funding is from state-owned banks.[30] Veolia Services Indonesia, a France-based transnational company, recently unveiled the largest bottle recycling and reprocessing factory in Indonesia, which contributes to the Indonesian government's effort to increase recycling and building a circular economy.[31] The Indonesian government is collaborating with the Global Plastic Action Partnership (GPAP)[32] in applying digital technology to deal with plastic waste.[33] As countries in East Asia have different strengths, cooperation between governments, businesses, and universities across the region should be promoted to enhance the regions joint aim to curb marine plastic pollution.

[29] Ocean Conservancy. "International Costal Cleanup 2017 Report." Accessed June 11, 2019. https://oceanconservancy.org/wp-content/uploads/2017/06/International-Coastal-Cleanup_2017-Report.pdf.

[30] Liqiang, Hou. "Pilot project to eradicate urban waste gets underway in 16 cities." *China Daily*, May 14, 2019. www.chinadaily.com.cn/a/201905/14/WS5cd9fe7ca3104842260bb625.html.

[31] "Veolia Indonesia Builds the Largest Bottle to Bottle Recycling Factory in the Country." *Jakarta Globe*, May 10, 2019. https://jakartaglobe.id/context/veolia-indonesia-builds-the-largest-bottle-to-bottle-recycling-factory-in-the-country.

[32] Global Plastic Action Partnership (GPAP) was initiated by the World Economic Forum in 2018, with the aim to reverse the trend of growing global plastic pollution by 2025. The mechanism brings together governments, regional and international organisations, business sector, epistemic community and civil society to explore solutions to the global challenge of marine and river plastic pollution. World Economic Forum. "Beyond Bags, Bottles and Straws: New Partnership to Tackle Plastic Waste from Source to Sea." September 24, 2018, www.weforum.org/press/2018/09/beyond-bags-bottles-and-straws-new-partnership-to-tackle-plastic-waste-from-source-to-sea/.

[33] World Economic Forum. "Indonesia has a plan to deal with its plastic waste problem." March 13, 2019. www.weforum.org/agenda/2019/03/indonesia-has-a-plan-to-deal-with-its-plastic-waste-problem/.

Conclusion: Going Beyond East Asia

As the region hosts the world's major contributors of marine plastic waste, the political will and action of East Asian countries can have a global impact, given that marine environmental pollution is borderless. It is reported that the Japanese government will propose a solution to the global challenge of marine plastic waste at the G20 Summit in Osaka in June 2019.[34] Given that Indonesia, China, and Japan are members of the grouping, this is a good opportunity to contribute East Asian perspectives into the global solution, particularly the concerns and challenges of developing regional countries. ASEAN may consider strengthening exchanges and even building partnerships with other regional organisations to combat transboundary plastic pollution.

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[34] "Japan to Propose Marine Plastic Waste Solution at G20 in Osaka", *The Sankei Shimbun*, July 18, 2018. https://japan-forward.com/japan-to-propose-marine-plastic-waste-solution-at-g20-in-osaka/.

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