

INSIGHT OUT

Expert Voices on China's Energy and Environmental Challenges



Turning the Tide: How Can Indonesia CLOSE THE LOOP on Plastic Waste?



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INSIGHTOUT is a China Environment Forum (CEF) publication series that began in 2014. Past issues have covered topics including closing the loop on wastewater in China, the coal-water risk in China, wastewater as a source of clean energy in the United States and China, and how energy efficiency can stem air pollution. This seventh issue, "How Can Indonesia Close the Loop on Plastic Waste?" is part of CEF's *Turning the Tide: Japanese-U.S. Partnerships to Slow Ocean Plastic Pollution in Asia*, a project carried out in partnership with the Institute of Developing Economies and made possible with generous support from the Japan Foundation's Center for Global Partnership. Issue 8 will focus on U.S. and Chinese opportunities to close the loop on plastic waste.

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China Environment Forum's Role as Convener and Catalyst for Action

Since 1997, the Woodrow Wilson Center's China Environment Forum (CEF) has carried out research and exchange projects that bring together American, Chinese, and other Asian experts to explore the most imperative environmental and sustainable development issues both inside China and in the greater Asian region. The networks built and knowledge gathered through meetings, publications, and research activities have established CEF as one of the most reliable sources for information on China/Asian environment trends and bolstered CEF's capability to undertake long-term and specialized projects on topics such as clean energy development in U.S. and China, water-energy confrontations, environmental justice, Japan-China-U.S. clean water networks, water conflict resolution, food safety, and environmental activism and green journalism in China. Our current initiatives:

- **Turning the Tide: Japanese-U.S. Partnerships to Slow Ocean Plastic Pollution in Asia** is a comprehensive two-year research and convening project to examine the sources and causes of plastic waste in China and Southeast Asia and identify possible innovative solutions through cooperation, technology, and policy. The Institute of Developing Economies and China Dialogue are project partners.
- **The Plastic Pipeline: A Serious Game for Plastic Reduction Education** is an educational video game project created in partnership with the Wilson Center's Serious Games Initiative that aims to bring the complex world of plastic policy to the fingertips of people around the world and to spread knowledge about the sources of and solutions to plastic waste leakage.
- **U.S.-China Energy and Climate Action** is an ongoing series of meetings and blogs that keep a finger on the pulse of emerging trends in clean energy and climate action in the world's two largest energy users.
- **Fishing for Solutions** is a research project in partnership with China Dialogue aimed at understanding the impacts of China's distant fishing fleets and outbound overseas investment on the fish stocks, societies, and environment in Latin America and Southeast Asia.

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A stylized illustration of palm trees in shades of teal and blue, set against a dark teal background. The trees are scattered across the page, with some in the foreground and others in the background, creating a sense of depth. The illustration is composed of simple lines and flat colors, giving it a graphic, modern feel.

INTRODUCTION

How Can Indonesia CLOSE THE LOOP on Plastic Waste?

By Eli J. Patton

Indonesia. Crystal blue waters, palm trees swaying in the wind, endless sandy beaches, lush tropical jungles, towering mountains, lakes, rivers, and more; all are images that may come to mind when you think of Indonesia. It is a democratic country made up of several large islands and countless small ones. The people, 270 million and growing, are as diverse as their islands with several distinct cultures, languages, and faiths. Like other Asian countries, Indonesia's booming development and increased consumption habits have generated an immense amount of waste, particularly single-use plastics that are leaking into the ocean. Before you dive into the articles that follow, here is a snapshot of the plastic waste challenge that the Indonesians are facing.



Image source: By Sergprophoto / Shutterstock.com

A Global Plastic Waste Challenge. Single-use plastics have saturated global supply chains over the last few decades due to low costs and versatile uses. However, in most nations, plastic recycling rates hover around a paltry 10 percent.¹ Meanwhile, plastic production is still growing globally, at around 3.8 percent each year.²

An Asian Plastic Waste Challenge. Decades of development-focused policies in countries throughout East and Southeast Asia have led to some of the fastest growing economies in the world. With this new economic prowess comes increased plastic consumption. Today, 43 percent of global plastics are consumed in Asia, and in many of these nations municipal waste systems manage less than half of all waste.³

An Indonesian Plastic Waste Challenge. Indonesia is now second behind China as a source of ocean plastic and responsible for 10 percent of global plastic leakage.⁴ In Indonesia, 15 percent of all domestic waste produced in the archipelago is plastic and only 12 percent of that is recycled.⁵ While local governments in Indonesia are nominally responsible for waste management, this is a difficult task when collection is spread across such a large island chain with limited available land and tax revenue.

From Tap to Trash. The bulk of Indonesia's plastic waste pollution comes from the following single-use items: food wrappers, straws, bottles and bottle caps, plastic bags, and small sachet pouches.⁶ Sachets, small flexible pouches made of multiple layers of plastic, are a particularly troublesome product. Due to their low value and challenges in Indonesia to collect and recycle, they account for 16 percent of plastic waste in the environment.⁷

Broader Pollution Impacts. Once-pristine endless coastlines along the Pacific rim are now inundated by a tide of plastic. Aside from clogging up waterways and beaches,

environmental plastic pollution has toxic impacts on the ocean and river ecosystems. Oftentimes, the fish we eat have eaten plastic. Global plastic consumption is currently on course to spend 15 percent of our remaining carbon budget.⁸ Currently in Indonesia 60 percent of plastic waste is mismanaged, 80 percent of which will end up being burned, releasing toxic fumes, or buried leaching out poisonous chemicals.⁹

Impacts Compounded from International Trade. After years as the world's largest plastic waste importer, China passed its National Sword Policy in 2018 and began banning all plastic waste imports. European, American, Canadian, and Australian plastic waste exports then rippled through the global plastic trade industry and resulted in a drastic increase in plastic waste exports to Southeast Asia, adding to the threats posed by domestic plastic consumption in Indonesia and other countries in the region.

Closing the Loop in Indonesia. Despite the plastic waste challenges, Indonesians at every level of society are stepping up to solve this problem. Armies of waste pickers travel daily to dump sites and collect plastic. Coastal fishermen collect plastic in their nets. Tourist hotspots have banned single-use plastics. Local grassroots activists have launched awareness campaigns resulting in reduced plastic consumption, as well as pushed for changes to the law and more enforcement. Corporations are exploring new packaging materials and refilling stations. Waste Banks where people can drop off plastic for recycling and earn cash now dot the nation. Japan and other countries are investing in incineration facilities that are able to drastically reduce the volume of nearly worthless plastics in Indonesia's landfills.

These efforts have been enshrined as the way forward since summer of 2020 when Indonesia's Ministry for Maritime Affairs and Investment worked with the World Economic Forum to produce a more comprehensive roadmap for Indonesia to reduce its plastic waste by 70 percent by 2025 and to reach net zero plastic waste by 2040.¹⁰

In the following articles you will hear from lawyers, volunteers, scientists, activists, corporate executives, government officials, fishermen, and more. Each of the stories included allows us a view of the solutions to the plastic waste problem in Indonesia, from the perspective of those fighting to end the crisis.

Notes

1. "Facts and Figures about Materials, Waste and Recycling" *US EPA*, accessed February 3, 2021. <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data>
2. "Plastic & Climate: The Hidden Costs of a Plastic Planet." *CIEL*, 2019. <https://www.ciel.org/plasticandclimate/>
3. "State of Plastics Waste in Asia and the Pacific: Issues, Challenges and Circular Economic Opportunities." *UN CRD*, 2019. <https://www.uncred.or.jp/content/documents/7838Report-State%20of%20Plastics-rev-20%20August%202019.pdf>
4. "DISCARDED: Communities on the Frontlines of the Global Plastic Crisis." *GAIA*, 2019. <https://wastetradestories.org/wp-content/uploads/2019/04/Discarded-Report-April-22.pdf>
5. "Country Profile: Indonesia." *Sea Circular*, 2020. <https://www.sea-circular.org/publications/sea-circular-country-profile-indonesia/>
6. "2020 International Coastal Cleanup Report." *Ocean Conservancy*, 2020. <https://oceanconservancy.org/trash-free-seas/international-coastal-cleanup/annual-data-release>
7. "Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership." *World Economic Forum*, 2020. https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April-2020.pdf
8. "Plastic & Climate: The Hidden Costs of a Plastic Planet." *CIEL*, 2019. <https://www.ciel.org/plasticandclimate/>
9. Ibid. *NPAP*, 2020.
10. Ibid. *NPAP*, 2020.





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INSIDE THIS ISSUE

By Hazel Ruyi Li

In this seventh issue of the China Environment Forum's *InsightOut* series, we cast our net broadly to gather diverse voices and insights into how Indonesia can close the loop on plastic waste. Among our Indonesian, Japanese, and U.S. authors we have government officials, grassroots activists, policy analysts, business representatives, journalists and even a fisherwoman. In our search for authors and experts in Indonesia we discovered a great many people leading work on plastic issues were women, so we interviewed 7 of them and created special Closed-Loop Innovator boxes along with longer blogposts online to share their stories.

SECTION 1: Policy Innovations to Close the Loop on Plastics

In this first set of articles, our authors lay out the scope and scale of the plastic waste problem facing Indonesia and how the national and city governments along with international organizations and domestic environmental groups are working to create innovative policy solutions to stop the plastic waste at the source and protect our oceans.

Mr. Basten Gokkon interviewed **Ms. Yuniati**, an Indonesian fisherwoman in Sulawesi on how plastic waste is threatening the livelihood in her remote fishing community. **Mr. Yobel Novian Putra** argues that in developing countries like Indonesia the plastic problems will not simply be solved by improving waste management but by upstream plastic reduction enforced by determined policies. **Mr. Ujang Solihin Sidik** focuses on upstream policies such as Indonesia's Enhanced Producer Responsibility roadmap and international partnerships to help eliminate plastic pollution in Indonesia. **Mr. Tsuji Keitaro** suggests

that policymakers need to understand the diversity of problems facing each type of city in Indonesia and target capacity building accordingly. **Mr. Michikazu Kojima** argues that Indonesia can draw on lessons from Japan to create national policies to incentivize and finance to establish intermunicipal cooperation on waste management that promotes collection and disposal for small cities and rural areas.

SECTION 2: New Partnerships for Enhancing Finance and Trade Solutions

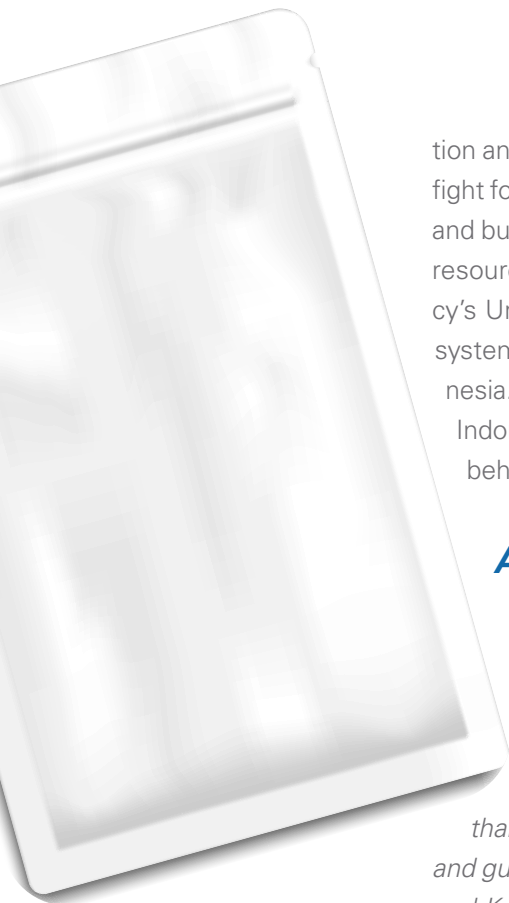
The authors in this section introduce new partnerships to stimulate collective action across the government, private sector and local communities in the fight against plastic pollution, finding ways to help internalize the social and environmental costs of plastic waste management.

First, Goldman Prize winner, **Mr. Prigi Arisandi** reveals weaknesses in global waste trade that have brought post-consumer single-use plastics hidden in imported paper bales bound for paper mills in Indonesia. **Ms. Clare Romanik** introduces USAID's Clean Cities Blue Ocean Initiative that launched in 2021 in Indonesia to build city waste management capacity, improve 3R investments and empower women leadership to combat plastic leakage. Zooming in on the financial side of the solutions, **Mr. William Handjaja** and **Mr. Alexandre Kremer** introduce SYSTEMIQ's engagement in Indonesia through Project STOP and contribution to the National Plastic Action Partnership to finance a system-wide approach to reduce plastic waste. COVID-19 has introduced new challenges for post-consumer plastic recycling in Indonesia and **Mr. Shintaro Higashi** points out how shifting the responsibility to the private sector might be the solution. **Ms. Susan Ruffo** and **Ms. Ellen Martin** from Circular Initiative highlight several technology startups forming partnerships within communities and industries to solve plastic waste issues, making Indonesia a model for the rest of the world.

SECTION 3: Bottom-Up Action to Reduce, Collect, and Recycle Plastic Waste

Solid waste management is the last chance to capture plastic waste and prevent its leakage into the ocean. However, waste collection and processing infrastructure around the world is severely underdeveloped. In this section, the authors open a window into the on-the-ground realities of the "end-of-life" for plastics.

Mr. Moh. Nurhadi and **Mr. Feri Prihantoro** draw on the lessons learned from the BINTARI Foundation's PILAH project and share how community-wide solid waste management in Indonesia can be integrated into public-private partnerships and promote shared responsibility. **Ms. Swietenia Puspa Lestari** & **Ms. Nadhira Afina Wardhani** share their incredible story of the youth-led grassroots initiative Divers Clean Action, whose educa-



tion and outreach has fostered broad community and local government collaboration to fight for a plastic-free ocean. **Mr. Tsukiji Makoto** discusses the importance of identifying and building a “localized circular economy system” that aligns with the locally available resources. **Ms. Keri Browder** and **Ms. Vien Tran** introduce how the Ocean Conservancy’s Urban Ocean initiative is improving municipal waste collection and management systems through science-based processes and partnership building in Vietnam and Indonesia. **Ms. Nurdiana Darus** and **Ms. Maya Tamimi** highlight their experience at Unilever Indonesia building waste banks and promoting bulk packaging to create incentives for behavioral changes towards plastic use and disposal.

Acknowledgements

As managing editors of this publication, we extend our deepest thanks to our patient authors, who have several combined lifetimes of experience. We are grateful for the insights they shared with us about how to turn the tide of plastic waste in Indonesia. We are indebted to the rest of the China Environment Forum (CEF) team, who helped review and edit the articles. Of course, we thank most especially CEF Director Dr. Jennifer L. Turner for her unwavering support and guidance. We also give a shout out to our creative graphic designers, Kerrin Cuison and Kathy Butterfield for transforming the written words into this beautifully laid out publication. Last but never least, we thank the Japan Foundation’s Center for Global Partnership for the support that made this publication possible.

Hazel Ruyi Li and Eli J. Patton



OUR AUTHORS



Mr. Prigi Arisandi initiated a local movement to stop industrial pollution from flowing into the Brantas river that provides drinking water to three million people in Surabaya city. He co-founded Ecological Observation and Wetlands Conservation (Ecoton) with his wife Daru Setyorini to protect the water resources and wetlands ecosystems of Indonesia. In 2007, Prigi and Ecoton made history when they took the regional government of East Java to court, and successfully changed the government policy regarding the release and monitoring of toxic materials into the Brantas. He has been an Ashoka Fellow since 2004 and he was awarded the Goldman Prize in 2011.



Ms. Keri Browder serves as Ocean Conservancy's Cities Project Director, bringing nearly ten years of experience supporting governance and water and sanitation projects in Africa, Asia, and Latin America to the role. She holds graduate and undergraduate degrees in Political Science from Universidad de Los Andes and the College of Charleston, respectively.



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Mr. Basten Gokkon is a full-time journalist who moonlights as an artist. He mainly writes with fierce passion about environmental issues, but his beats also include human rights, public health, and their intersections. He started in journalism in 2014 at an English-language Indonesian news publication and developed an interest in telling stories from his fascinating home country to the rest of the world. Basten is also an avid traveler who enjoys trekking and scuba diving. The latter has subsequently introduced him to the importance of marine conservation and sustainable fisheries. He currently writes for award-winning environmental news publication Mongabay.



Mr. William Handjaja is a project manager at SYSTEMIQ and led the Indonesia National Plastic Action Partnership team to establish the first Indonesia plastic leakage baseline. He has a Materials Science and Engineering background and worked in Packaging R&D for General Mills in the USA. Before joining SYSTEMIQ, he also earned an MBA degree from INSEAD, worked for Bain & Co., and was active in a waste management start-up in Indonesia.



Mr. Shintaro Higashi is the Manager at NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc, headquartered in Tokyo. He has 10 years of experience in researching and consulting on energy and environmental issues. He has worked on waste management projects in Asia and the Pacific, including Indonesia, as well as implemented renewable energy projects and created carbon credits in East Africa.



Mr. Tsuji Keitaro is an Environmental Policy Expert at the Japan International Cooperation Agency (JICA) and is currently working with the Ministry of Environment and Forestry Indonesia (KLHK) to support waste management policy formulation and waste treatment facilities projects. He served as Liaison Officer for the Minister of KLHK at the 2019 G20 Environmental Ministers Meeting. Prior to 2017, he served as Deputy Director of International Strategy Division at the Ministry of Environment Japan where he established the SDGs Stakeholders Platform in Japan and contributed to the environmental agenda for the G-7 conference when Japan hosted in 2016. He holds a Master of Public Policy from University of California, Los Angeles.



Mr. Michikazu Kojima is an economist specializing in environmental policy, especially waste management and recycling in Asian countries. Prior to joining the Economic Research Institute for ASEAN and East Asia in March 2018, he was a chief senior researcher at the Institute of Developing Economies in Japan. He has also contributed to the field of international cooperation around waste issues as a member of Expert Working Group of Environmentally Sound Management under the Basel Convention, a member of UNIDO's Technical Expert Committee for Green Industry Platform, and as course leader for JICA training on recycling policy. He holds a MSc in Agricultural and Resource Economics from University of California, Berkeley.



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Ms. Swietenia Puspa Lestari is an environmental engineer and graduate of Institut Teknologi Bandung. She is a 25-year old scuba diver who founded and has led Divers Clean Action (Yayasan Penyelam Lestari Indonesia) as the executive director since 2015. Swietenia was listed as Forbes 30 under 30 Asia in Social Entrepreneur 2020 List, and as BBC's World Top Influential 100 BBC Women in 2019.



Mr. Tsukiji Makoto is a waste management and pollution control professional with more than 10 years of experience working on solid and hazardous waste management in Asian and Pacific regions. He has implemented strategic planning and project design for more than 15 years including in Japan's Ministry of the Environment. Mr. Tsukiji is currently working as a consultant in projects led by UNEP, UNIDO, and JICA.



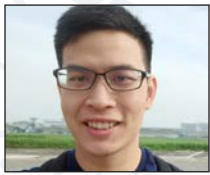
Ms. Ellen Martin is an advisor to The Circulate Initiative, focused on impact and insights emerging from solutions to address plastic pollution in the environment. She brings expertise in circular economy, recycling technologies, impact investing, business model innovations, inclusive supply chains, measurement and evaluation, and partnerships.



Mr. Moh. Nurhadi is a Knowledge Management and Business Development Manager at BINTARI Foundation, Indonesia. He holds a Bachelor's degree from Diponegoro University in Urban and Regional Planning and is currently enrolled in an Urban and Environmental Master's Program at Soegijapranata Catholic University. He has 15 years of development cooperation project management experience in solid waste management, waste-to-energy, and climate change.



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Ms. Clare Romanik is USAID's lead expert on preventing land-based sources of ocean plastic pollution who designed and manages USAID's global program "Clean Cities, Blue Ocean." Ms. Romanik regularly provides expert input on policy and legislation and is USAID's representative to the Inter-Agency Marine Debris Coordinating Committee. She has worked in thirty-five countries in Asia, Africa, Europe, Middle East, and Latin America/Caribbean, including when she was with The Urban Institute and United Nations Development Program. Ms. Romanik holds a Master's in Public Affairs with a focus on Economics and Public Policy from Princeton University's School of Public and International Affairs.



Ms. Susan Ruffo is Senior Advisor to The Circulate Initiative. She has led ocean- and climate-related programs at Ocean Conservancy, the White House Council on Environmental Quality, Bloomberg Philanthropies, and The Nature Conservancy.



Mr. Ujang Solihin "Uso" Sidik is the Deputy Director for Products and Packaging in the Indonesian Ministry of Environment and Forestry where he has worked to improve solid waste management and reduce the amount of packaging and other waste generated by retail, commercial, and industrial use. He has completed several learning tours abroad and published many works in Bahasa and English on partnerships and innovations in waste management and reduction, including official government strategy papers for Indonesia.



Ms. Maya Tamimi has been the Head of Sustainable Environment in the Unilever Indonesia Foundation since she joined Unilever in 2002. She has managed various sustainability programs including, environment, sustainable agriculture, and fisheries. In the last 7 years, her focus has been on plastic. Prior to her work at Unilever, she was an environmental consultant.



Ms. Vien Tran is the Vietnam Senior Manager at Ocean Conservancy, leading the organization's efforts to support Vietnam's fight against ocean plastic pollution. She brings more than 10 years of experience working in Vietnam, including in aquaculture, to the role. She holds an undergraduate degree in biotechnology and an MBA in international business.



Ms. Nadhira Afina Wardhani has extensive experience in leading development projects that emphasize waste reduction and the 3R (reduce, reuse and recycle) concept at the community scale, as well as promoting community development and behavior change with USAID's Municipal Waste Recycling Program, Danone-Aqua, the KEHATI Foundation, and others. Nadhira is a 25-year-old environmental engineer who has served as the sustainability manager of Divers Clean Action since 2017 and leads various projects and research on water and waste management, and the circular economy.



Mrs. Yuniati is a fisherwoman from Indonesia's Sulawesi Island. She started to learn fishing from her parents as a hobby when she was young. Her excitement would spark every time she scored a catch. Today, Yuniati helps her husband with drying his daily catch while also collecting shrimp. As fisheries play an essential part for the future of her livelihood and family, she believes protecting the ocean is key to guaranteeing sustainability.

Woodrow Wilson Center, China Environment Forum Team

(Top row (L to R): Jennifer Turner, Eli Patton, Karen Mancl. Bottom row (L to R): Clare Auld-Brokish, Hazel Ruyi Li, Tongxin Zhu)



SECTION 1

POLICY
INNOVATIONS
TO CLOSE
THE LOOP
ON PLASTICS

Plastic Challenges for Sulawesi's Fishing Communities

By Basten Gokkon and Yuniati

When young Yuniati walked home from school in Wandaeha village one afternoon, she saw a group of fishermen holding the lifeless body of a sea turtle by the beach. "It probably swallowed plastic," she recalled one of the men telling her.

It was Yuniati's first time witnessing the deadly effect of plastic pollution to the ocean, but unfortunately not the last. The beach of her village in the southeastern coast of Indonesia's Sulawesi island has become the final destination for countless marine animals that died from choking on plastics.

Sulawesi is located within the tropical marine waters of the Pacific Coral Triangle, considered the world's epicenter for marine biodiversity. The region is home to more than 600 global coral reef species and most of the households there are fishing communities.

The archipelagic country, the world's second biggest plastic polluter after China, has reported mounting incidents of rare whales, dolphins, and sea turtles washed ashore with stomachs full of plastic waste. Another tragedy is the impact plastic pollution is posing to Sulawesi fisheries and the traditional fishing communities.

Yuniati married a fisherman, and soon began helping her husband process his daily catch, their sole source of income. One day her husband came home very early with empty nets. Her husband had a fruitless day because his boat broke after its propeller became entangled with so much plastic garbage.

"It's actually very, very dangerous to fishers," she said.

“
Some fishers
have also noted a
significant decline
in catch as plastic
garbage piled up
on the beaches.

”

Image source: By nevodka / Shutterstock.com



“
The plastics we dump
now may not impact
us today, but later in
the next generation.”

What happened to Yuniati's husband is highly relatable to hundreds of thousands of small-scale fishers across Indonesia.

Another common issue is plastic garbage getting caught in their nets. In some extreme cases, mounting plastic waste has completely crowded their docking space, blocking them from going out to catch fish. Some fishers have also noted a significant decline in catch as plastic garbage piled up on the beaches.

But despite facing firsthand the damages caused by plastic pollution, Yuniati said it was almost impossible to be independent from any form of single-use plastics, including packaging for shampoo, detergent, and snacks.

For coastal communities, many other activities contribute to the ocean plastic waste that clogs their beaches and fisheries, such as boat travel, fishing, seaweed farming, and seasonal monsoons that bring large volumes of additional plastic marine debris.

Seeking Solutions for Remote Coastal Villages

In Yuniati's village, a homegrown solution to plastic pollution has been to reuse and clean up some of the waste. A weekly community clean-up was introduced by the village head some five years ago. But the residents usually end up burning the collected waste. Some fishers have even used plastic bottles as floating devices for their fishing gear.

Yuniati said the plastic waste in her village never went to a recycling facility or was collected by any official or private stakeholder.

“Maybe it's because of the remoteness of my village,” she said.

Mitigation efforts and proper management of plastic waste in Sulawesi's remote coastal areas are lacking. Waste in most coastal communities does not end up in a landfill or anywhere near a recycling facility. Residents either burn or dump it, either directly into the sea or in piles that can be washed away in heavy rains.





Image source: Bastian AS / Shutterstock.com

When it comes to the marine plastic crisis, coastal communities are thrown in a unique perpetual loop and are left to carry the burden of it. This highlights the urgent need for a concrete strategy to resolve the plastic crisis in remote coastal areas as marine plastic pollution is posing a growing threat to their livelihoods.

Indonesia produces about 6.8 million tons of plastic waste annually, according to a 2017 survey by the Indonesia National Plastic Action Partnership. In 2017, only 10 percent of that waste was recycled in the approximately 1,300 recycling centers operating in the country, while nearly the same amount, about 620,000 tons, wound up in the ocean.

At the national level there is an ambitious nationwide plan to reduce ocean plastic leakage by 70 percent by 2025. Beach cleanups are among the popular measures being carried out in Sulawesi and other coastal areas. Many local governments are also implementing efforts to reduce the consumption of single-use plastics, including outright bans, and pushing the private

sector to invest in sustainable alternatives. The national government also plans to make producers take greater responsibility for the waste generated by their products.

Companies that make plastic packaging and single-use consumables need to step up their work in solving the plastic waste problem in coastal communities. They can, for instance, provide and help finance post-retail recycling solutions in remote communities, as well as help the recycling market by boosting the percentage of recyclable content in their products and packaging.

For Yuniati, one key step is formally educating the youth of coastal communities about the plastic crisis and its solutions. She also urged the regional government and private stakeholders to establish a program to help better manage her village's plastic waste.

"We need to remind each other as well to not dump plastic waste into the ocean," she said. "The plastics we dump now may not impact us today, but later in the next generation."

The Plastic Among Us:

How Should the Plastic Pollution Crisis Be Solved?

By Yobel Novian Putra

For the last three years, I have adopted a zero waste lifestyle and my friends know it well. Aside from home composting, I always bring a cloth bag, a couple of reusable containers, a tumbler, and cutlery when I go out. Once, a friend asked: “Why do you have to be so hard on yourself to avoid plastic? The issue is with the plastics in our ocean. As long as we throw them in the right place it won’t do harm, right?” I immediately and vigorously responded that this is a crisis beyond littering and we cannot afford to waste time solving the wrong problem.

Indonesia, the world’s largest archipelagic country, is labelled the second largest ocean plastic polluter. With pictures of plastic waste choking marine life trending on social media, perhaps it is understandable to some extent for people to perceive the plastic pollution crisis as a littering problem. The plastics indus-

try is doing such a “great” job convincing people that littering is the problem. Moreover, Indonesia’s government also prioritizes citizen’s behavior change over upstream measures. Along with the industry, the government invests in educational programs and waste banks in hopes of increasing the overall recycling rate. Yet the scope of the crisis is really far larger.

The Story Behind the Story

If we illustrate the plastic pollution crisis as an iceberg, plastic waste is just the tip of it. We are living in a consumptive economic system. Within that system, people are driven to consume at an ever accelerating rate—including plastic. According to the National Geographic’s Plastic of Planet issue in 2018,



40 percent of plastic produced is packaging, used just once and then discarded.

In 2016, roughly 16 percent of waste in Indonesia was plastic.¹ In 2018, the plastic recycling rate was only 11 percent, or 1 out of 9.6 million tons of domestic plastic waste.² Raising the rate is very challenging, especially in developing countries where cities lack basic waste management systems. We also know that not all types of plastic waste are recycled. In reality, technically recyclable plastics might never get recycled due to the state of the market or the absence of infrastructure.

While the Indonesian government pledges a target to reduce 30 percent of waste by 2025, it keeps supporting the development of new petrochemical plants. In fact, the government has even awarded tax holidays to those plants.³ This doesn't add up. How can you stop a flooding bathtub, without turning off the water?

A September 2020 report by the Carbon Tracker Initiative found that plastics impose a massive untaxed externality upon society. About \$1,000 per ton (\$350bn a year) externalized cost from carbon dioxide, health impacts, collection costs, and ocean pollution.⁴ That cost is indirectly billed to developing countries like Indonesia, where we get sick from toxic additives in plastic, pay taxes to manage the plastic pollution, and suffer the loss of biodiversity and livelihood.

The Changing Market Foundation revealed the systematic efforts made by the oil industry and fast-moving consumer goods companies to keep plastic circulating in the market. They distract, delay, and derail any progressive legislation that could lead to the true solution.⁵ Hence, consumers and governments must stop buying into their empty promises and false solutions to solve the plastic waste problem. Plastic producers and companies selling goods in single-use packaging must quickly shift their problematic business model away from fossil fuels and towards renewable/circular solutions by investing in decentralized and reusable systems (such as deposit refund schemes, refill stations, etc).

Solving the Wrong Problem

Indonesia is flooded with millions of tons of domestically generated single-use plastic products and plastic waste sent from developed countries. With most landfills soon to exceed their capacity, the government has made hasty investments in end-of-pipe technological fixes. We know that the crisis is beyond littering. It is a part of climate and social justice. Waste management alone won't solve the problem. Without phasing out plastic production, plastic recycling simply won't be enough and the crisis won't end.





So-called solutions include burning technologies such as waste-to-energy incinerators, plastic-to-fuel facilities, and refuse-derived fuels. But, the notion of eliminating waste by burning—both directly and indirectly—is just outrageous. burning waste produces toxic ash, ultra-fine particles, and many other toxic substances, including the notorious dioxin and furan. Unimpressively, the Indonesian government only requires dioxin and furan monitoring once every five years. Evidence suggests that communities living near incinerators suffer from chronic lung diseases.⁶ By investing in incineration technologies, we misspend our limited time and energy moving waste from one place to another place. Most importantly, it doesn't stop the source of the problem.

The True Solution to this Problem

Make LESS plastic. It's that simple. Banning single-use plastics (SUPs) is the low-hanging fruit. There are many localities in Indonesia that have adopted such bans, such as Banjarmasin City, Balikpapan City, Bogor City, Bali Province, and Jakarta Province—the nation's capital and other cities are expected to follow. Civil society organizations such as the Alliance for Zero Waste Indonesia also assist the government to accelerate this progress towards Zero Waste Cities.⁷

Indonesia has a national waste reduction roadmap mandating the phaseout of selected plastic items by 2030. But, researchers have found loopholes and suggested this plan is not ambitious enough.⁸ Many large sources of plastic waste, such as diapers and sanitary products, remain unregulated. However, the government has the ability to stop both the production and distribution of many problematic plastics such as multi-layered plastics, oxo-degradable plastic, and microbeads.

Aside from banning SUPs, the government can create a more drastic change by providing support and incentives to plastic-free business models and local innovation for non-plastic products. More progressive legislation that imposes higher taxes to oil and petrochemical companies will also accelerate the process. At this point, it is no longer a question of where, who or how, but rather "when" Indonesia will scale up the true solution. Now is the best time to strip away the label of the largest ocean plastic polluter and adopt a new label: "Indonesia, the home of solutions to the plastic crisis."

Acknowledgements

The author would like to thank the GAIA Asia Pacific team for their support and assistance in writing this Op-Ed.

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Image source: By Alba_alioth / Shutterstock.com





Image source: USAID, 2019

Redesigning Policies and Programs to Combat Plastic Pollution in Indonesia

By Ujang Solihin “Uso” Sidik

“
In 2020, national waste generation in Indonesia was estimated at 68 tons; —which equates to about 270 million footballs of plastic thrown out daily.
”

Just one generation ago, Indonesia’s rivers and beaches had little to no plastic. However, now after decades of development and the economics of disposable plastic, once pristine natural spaces are now being inundated by a rising tide of plastic waste. The impacts of plastic waste in Indonesia are deeper than the aesthetics of the landscape. Fish are eating it, which means people are eating it. It is burned and buried, both of which poison land. In 2020, national waste generation in Indonesia was estimated at 68 tons; this is equivalent to about 1.5 pounds per person—which equates to about 270 million footballs of plastic thrown out daily. These numbers are still growing.

Cities generate the majority of Indonesia’s waste. Based on our data, cities with more than 1 million inhabitants generate nearly three times as much waste as smaller cities (1,300 tons/day avg vs. 480 tons/day).¹ By volume, the most dominant solid waste is food waste (42 percent),² with plastic waste also making up a significant proportion (15 percent). (See Figure 1. for more trends).

A 2017 study conducted by Danone Aqua Indonesia and Sustainable Waste Indonesia, supported by Directorate of Solid Waste Management MOEF,³ showed that across Indonesia 69 percent of waste is landfilled and 25 percent is unmanaged. To date, the recycling rate stands at barely 5 percent. SYSTEMIQ’s analysis in Indonesia’s National Plastic Action Partnership estimated that nearly half of the year’s 6.8 million tons of plastic waste is dumped or burned, while up to 10 percent of all used plastics will leak into the water ecosystem.⁴

While these plastic problems are formidable, Indonesia can close the loop on plastic waste if it strengthens national legislation and partnerships with companies, regional, and international organizations.

“
...across Indonesia
69 percent of
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and 25 percent is
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”

A Legal Foundation for the National Plastic Action Plan

Waste management policy in Indonesia is based on two pieces of legislation, Number 18 (2008) Solid Waste Management and Law and No. 32 (2009) Environmental Protection and Management, which focus on municipal and industrial waste, respectively. Since 2009, the Indonesian government has created more targeted legislation, regulations, and plans to address plastic waste. (See Timeline). Presidential Regulation No. 83/2018 set up a collaborative action plan involving 16 ministries working to reduce marine plastic litter by 70 percent by 2025. (See Table 1 below.) The action plan consists of five strategies: (1) a national awareness movement; (2) land-based management of waste; (3) sea-based management of waste; (4) funding mechanism, institutional strengthening, monitoring and law enforcement; and (5) research and development.

In 2019, the Ministry of Environment and Forestry’s (MOEF) Regulation No. P.75 became Indonesia’s Enhanced Producer Responsibility (EPR) roadmap. The roadmap is a guide for manufacturers, importers, retailers, and the food and beverage service industry to take responsibility for reducing waste generated from their goods, packaging, and services. Its core strategies include:

1. replacing single-use plastics with redesigned packaging that is more recyclable, durable, refillable and contains more recycled content;
2. eliminating unnecessary and over-packaged products; and,
3. taking back post-consumer products and packaging for reuse and recycling.

TABLE 1.

National Targets on Solid Waste Reduction (201– 2025)
(In Million Tons and Percentage Change)

Indicator	2018	2019	2020	2021	2022	2023	2024	2025
Waste Generation	66.5	67.1	67.8	68.5	69.2	69.9	70.6	70.8
Waste Reduction Target	12 (18%)	13.4 (20%)	14 (22%)	16.4 (24%)	17.99 (26%)	18.9 (27%)	19.7 (28%)	20.9 (30%)
Waste Handling Target	48.5 (73%)	50.3 (75%)	50.8 (75%)	50.7 (74%)	50.5 (73%)	50.3 (72%)	50.1 (71%)	49.9 (70%)

Source: Presidential Regulation No. 97/2017 concerning National Policy and Strategy in Solid Waste Management (JAKSTRANAS)

Timeline of Indonesian Plastic Action

2019

- MOEF Regulation No. P.75**– Indonesia EPR Roadmap
- Signed** ASEAN Framework of Action on Marine Debris
- Signed** G20 Implementation Framework for Actions on Marine Plastics Litter
- Ratified** Basel Convention Amendment
- Launched** National Plastic Action Partnership

2017

- Presidential Regulation No. 97**– National Waste Management Policy and Strategy
- Established** Regional Capacity Center for Clean Seas in Bali

2012

- National Regulation No. 81**– Management of Household Waste

2008

- National Law No. 18**– Solid Waste Management Act

2018

- Launched** National Plan of Action for Reducing Marine Litter
- Presidential Regulation No. 83**– Plan of Action on Marine Plastic Debris
- Presidential Regulation No. 35**– Development of Waste-to-Energy Environmentally Friendly Plants
- Presidential Regulation No. 15**– Restoration of Citarum River Catchment Area

2016

- MOT Regulation No. 31**– Import of Non-Hazardous Waste

2009

- National Law No. 32**– Environmental Protection and Management Act

Implementing The EPR Roadmap

One major line of action to reduce single-use plastics has been bans. As of October 2020, 2 provinces (Bali and Jakarta) and 38 cities/regencies have banned single-use plastic shopping bags, plastic straws, and plastic foam containers. These actions also help to lay the foundation for Indonesia’s goal of creating a robust EPR system.

To implement Indonesia’s EPR Roadmap, in August 2020 the six multinational and national companies in Indonesia within the Packaging and Recycling Association for Indonesia’s Sustainable Environment (PRAISE) Alliance launched the Indonesia Packaging Recovery Organisation (IPRO), a nonprofit organisation designated to carry out a take-back scheme of post-consumer packaging for recycling. This voluntary action by companies will be strengthened by five strategies the Indonesian government is pursuing to develop better and proper solid waste management. Strategies include:

1. developing strong regulations, standards, and enforcement at the national and local levels;
2. strengthening local solid waste capacity and infrastructure through subsidies, pilot projects, and better monitoring;
3. raising community awareness, engagement, and education;
4. implementing and enforcing the EPR roadmap;
5. building international cooperation and partnerships to tackle marine plastic pollution.

TABLE 2.
National Policy and Strategy in Solid Waste Management (JAKSTRANAS)

30% REDUCTION BY 2025	Indicators: <ol style="list-style-type: none"> 1. Decreasing waste generation per capita 2. Reducing waste at the source (community based 3R) 3. Reducing waste leakage into environment 	Leads to 70% Reduced Marine Plastic by 2025
70% HANDLING BY 2025	Indicators: <ol style="list-style-type: none"> 1. Increasing treated waste (recycling, composting, biogas, thermal recovery, RDF, etc.) 2. Reducing landfilled waste 3. Reducing waste leakage into environment 	

Source: Presidential Regulation No. 97/2017

Indonesian Regional and Global Partnership Solutions

In 2017, Indonesia hosted the Intergovernmental Review Meeting on the Implementation of the Global Program of Action for the Protection of the Marine Environment from Land-Based Activities (IGR-4) and established the Regional Capacity Center for Clean Seas in Bali. Indonesia also is actively involved in the development of a regional action plan for combating plastics pollution in the ASEAN Framework of Action in Marine Debris and the G20 Implementation Framework for Actions on Marine Plastics Litter. These domestic and international commitments to combat marine plastic litter have rightly gained recognition from various UN agencies and ASEAN.

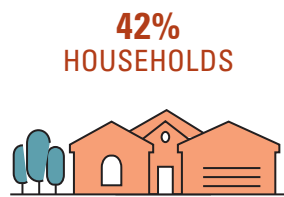
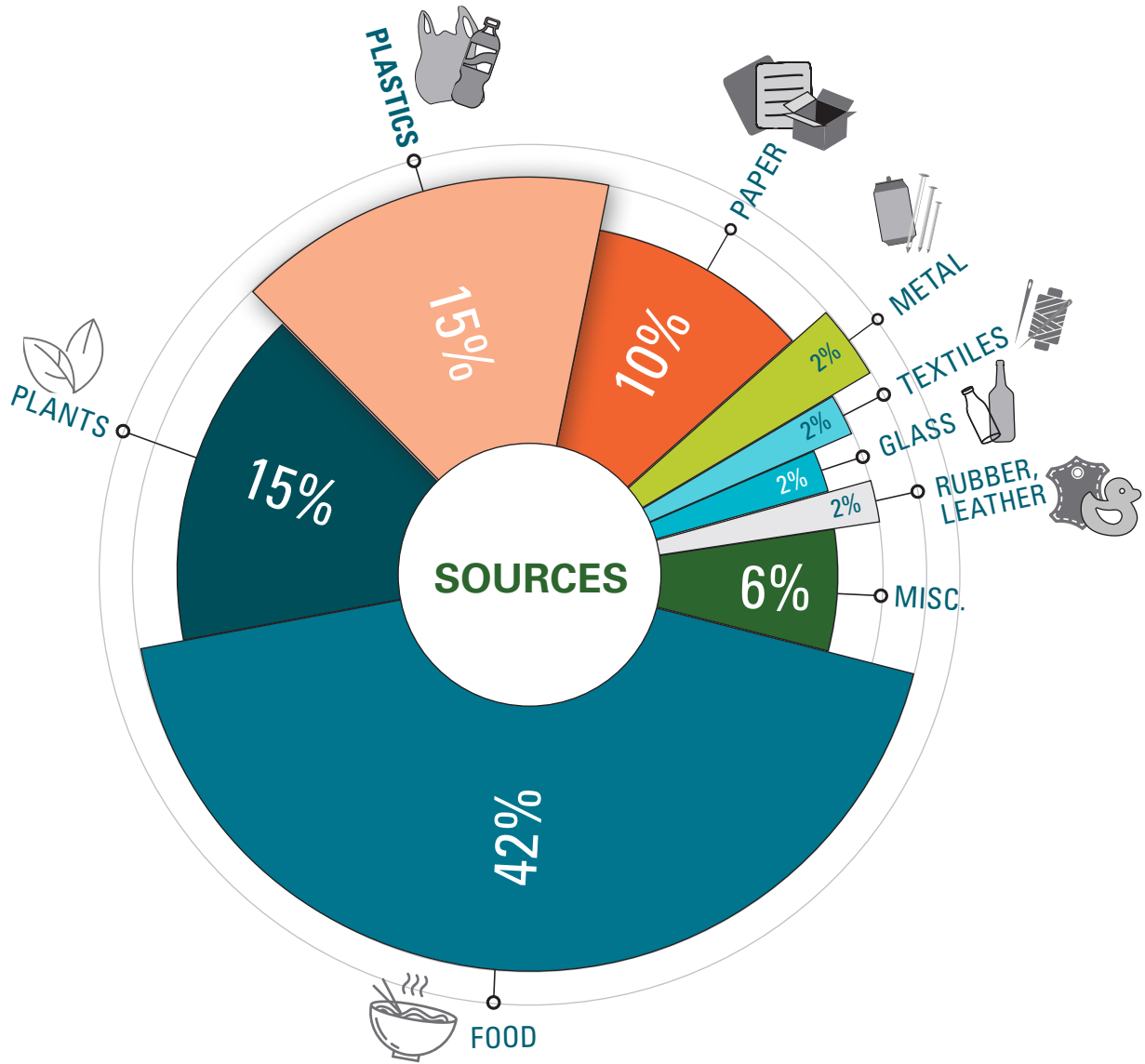
Indonesia ratified the recent amendment to the Basel Convention that governs trans-boundary movement of plastics waste. It came into force on January 1, 2021. In order to halt illegal imports of plastic, hazardous, and toxic waste, the Indonesian government has investigated and re-exported nearly 1,000 containers from Australia, the EU, and North America. President Joko Widodo has assigned the Ministry of Environment and Forestry (MOEF) as the Basel convention's focal point to monitor and halt illegal waste entering Indonesia.

MOEF, in collaboration with the Ministry of Commerce and Ministry of Industry and Indonesian recyclers, is formulating a roadmap of domestic self-sufficiency of raw materials for the recycling industry. Indonesia joined the Global Plastic Action Partnership in 2019 to launch the Indonesia National Plastic Action Partnership, the first multi-national and public-private partnership aimed at eliminating plastic pollution. While there is a long way to go, Indonesia is enhancing its national plastic waste laws and actions with regional and global partnerships to solve the plastic waste crisis.

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Solid Waste in Indonesia



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BIG or SMALL, Indonesian Cities Face Growing Waste Issues:

An Overview of Holistic Approach on Waste Management

By Tsuji Keitaro

“Weekend getaway destinations like coastal villas may include a high tide of plastic...”

When you live on an Indonesian island there are only so many places you can send the waste. Cities may have some collection systems, but the citizens of the fourth largest population country in the world generate mountains of waste that overwhelm the waste infrastructure. Weekend getaway destinations like coastal villas may include a high tide of plastic waste with their breathtaking sunsets because remote towns and smaller islands that simply have nowhere to put the waste. As such, it is not surprising that Indonesia is considered the second largest marine plastics polluter in the world; China remains number one. According to the Indonesian government, 3.2 million tons of plastic waste leaked into their coastal waters in 2019 — and unfortunately the number is growing.¹

For a country with 514 cities and regencies spread across 34 provinces and thousands of islands, there is no silver bullet to the underlying waste management problem. Differences in population density, budget, and industry determine the priorities of waste management policies for each city. In designing effective measures to reduce the mountains of waste, policymakers need to carefully assess this diversity of waste challenges. This article analyzes the diverse cities by categorized framework.

No Cookie Cutter Solution for Indonesia's Cities

The best way to grapple with the problem of plastic waste leakage in Indonesia, or anywhere, is to identify both the characteristics of the cities themselves and waste challenges. In Indonesia, waste management challenges can be clustered into three categories of cities; 1) large urban areas,

2) medium-sized tourist hotspots, and 3) remote towns. Each has unique characteristics and therefore needs a solution tailored to local conditions.

Category 1: Large cities with severe land limitation. The larger the population, the higher the municipal waste generation and greater the need for landfilling. Simply put: more people equals more waste. City governments tend to prioritize reducing the volume of waste to be sent to the landfill. And as the economic and social value of land in urban areas can be quite high, reduction of waste volume to save space for landfill is the priority need for category 1 cities. Waste management in large cities is not only an environmental issue, but also an economic constraint.

The most proven technology worldwide for significant volume reduction in waste (more than 80-90 percent) is using incineration to convert waste into energy. In 2018, all twelve of the Indonesian cities designated by Presidential Decree to promote waste to energy were these large cities. The population in nine cities out of the twelve are listed in the Top 10 biggest cities of Indonesia and each has more than one million people. Tackling waste issues in Category 1 cities requires investments in large scale treatment facilities. While these cities have

strong financial capacity, the central government still needs to develop the regulations and systems including government guarantee to encourage these investments. One example of this type of project is a transaction advisory for Public Private Partnership Waste Treatment Facility project at metropolitan Bandung by JICA (Japan International Cooperation Agency) and IFC (International Finance Corporation).²

Category 2: Island and coastal and lake-side cities. As the largest archipelago in the world, Indonesia has thousands of islands and regions near lakes. In many of these areas, the major industry is often tourism, and being clean has value not only socially and environmentally, but also economically for attracting tourists. In the case of Bali, the number of tourists in 2019 dropped 35 percent, partly due to international perception of Bali's increasingly polluted beaches.³ Thus, for these areas the focus of waste management has largely been on removing waste, especially plastic waste. Single-use plastic bans on bags and beach clean-up events are typical measures in the category 2 regions.⁴

Because Category 2 cities put relatively high priority on waste management policy, some, like Phuket in Thailand—which is one

“For a country with 514 cities and regencies spread across 34 provinces and thousands of islands, there is no silver bullet to the underlying waste management problem.”



of the most popular tourist destinations in ASEAN — have introduced waste to energy as a means of combating waste pollution. In Phuket, the municipal waste incineration power plant has eliminated 700 tons of waste per day since 2012.⁵ One of the examples of donor support in category 2 in Indonesia is the project to improve plastic waste management in the Lake Toba Basin. Lake Toba is one of the most popular tourist destinations on Sumatra Island and the recycling center there is supported by the Government of Japan and UNEP (United Nations Environment Programme).

Category 3: Mid and small sized cities and towns. This category generally has large amounts of available land space, but extremely limited local government budgets. In these smaller cities, the priority of waste management policy is usually to properly handle and sanitize waste, and to increase the collection rate. According to Indonesia’s Ministry of Environment and Forestry, smaller municipalities in rural areas tend to collect a smaller percentage of their waste. The ministry’s research data states that the average waste collection rate in Indonesia’s big cities is 75 percent, while in smaller cities it is only 59 percent.⁶

The JICA-supported 3R project in Balikpapan and Palembang focuses on source segregation and collection improvement methods. This project allows for a trial of a new system for waste management in Indonesia. The central government will then disseminate lessons learned to other regions.

FIGURE 1:

Framework of City Categorization on Waste Management

	CITIES	PRIORITY NEEDS	EFFECTIVE MEASURES	DONOR PROJECT EXAMPLES
Category I: Big cities with severe land limitation	Jakarta, Surabaya, Bandung & Bekasi	Waste volume reduction	Treatment facility that can significantly reduce volume, such as thermal treatment	Waste treatment facility development in Bandung region (JICA and IFC)
Category II: Island and beach side, lakeside cities	Bali, Lombok, Pulau Seribu & Municipalities around Lake Toba	Cleaning up, reducing plastic waste	Plastic waste management, clean- up activities	Plastic waste improvement in Lake Toba (Government of Japan and UNEP)
Category III: Middle/small cities / countryside	Balikpapan, Palembang, Sorong, Kupang, Palu, Ruteng & Buol	Improving sanitation & waste collection rates	Efficient waste collection, landfill management, trial projects for new technologies or systems	3R project in Balikpapan and Palembang focusing on source segregation and collection improvement (JICA)

Source: made by the author.

Overcoming the Risk of Landfill Overcapacity through Intermediate Treatment

A 2015 study by Jenna Jambeck estimated that 80 percent of marine plastic debris originates from land-based human activities. Therefore, improving the collection rate of waste is imperative to slowing the marine plastic litter issue. However, improving collection is not easy for most local governments in emerging countries, including Indonesia. While this low collection rate is primarily due to budgetary constraints, lack of landfill space is another reason. In my fieldwork in Indonesia, when I asked city officials about landfill capacity, they always answered “almost full.” Cities are discouraged from collecting more waste to prevent landfill further overflows. In this situation, if the volume to be sent to landfill is decreased by intermediate treatment, cities may have incentive to collect more waste, preventing pollution. The lack of intermediate treatment facilities to reduce the volume of waste is a critical hidden bottleneck in the marine plastic litter issue.



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Image source: By Hasnia / Shutterstock.com

A Roadmap to Expanding Waste Collection and Disposal in Indonesia's Small Cities and Rural Areas

by Michikazu Kojima

“
...rural areas
and small cities
account for 90
percent of plastic
leakage across
the Indonesian
archipelago.
”

While Indonesia is regarded as one of the major sources of marine plastic debris, the Indonesian government has put forth notable efforts to reduce plastic waste leakage.¹ A Presidential Regulation on Marine Debris Management was issued in September 2018, which included an action plan to reduce the leakage of plastic debris. The Action Plan identifies more than 57 activities including hosting various awareness raising programs, constructing waste receiving facilities in every public port, promoting the plastic recycling industry, and developing industrial standards for biodegradable plastics. One thing noticeably lacking in the Action Plan is the expansion of waste collection services and proper disposal. Especially overlooked are collection and disposal services plans for areas outside major cities.

In 2020, a World Economic Forum National Plastic Action Plan (NPAP) report cited three distinct sources of plastic waste leakage into Indonesia's lakes, rivers, and seas: mega cities, medium and small cities, and rural and remote areas.² The NPAP report estimated small and medium cities mismanaged 58 percent of all plastic waste and that nearly 100 percent of all plastic was untreated in rural and remote areas. While most of the recent pilots and programs in Indonesia focus on larger cities, it is the rural/remote areas and small to medium cities that account for about 90 percent of plastic leakage across the Indonesian archipelago. To reduce Indonesia's plastic waste leakage, it will be crucial to expand waste collection and disposal services in these places lacking infrastructure.

Past Lessons in Expanding Waste Management in Asia

Historically, waste management services by governments were started in urban areas to mitigate infectious diseases, such as cholera and plague. For example, the first national act on waste management in Japan was enacted in 1900, during a disease outbreak. The act, notably, required only city governments to conduct waste collection and disposal, not rural areas.

But as waste problems in rural Japan increased over the subsequent decades, local policymakers began establishing intermunicipal cooperation on waste in the 1960s, and launched a vital mechanism to spread waste collection and disposal services to rural areas. This municipal collaboration to serve rural and urban areas helped create economies of scale in the construction of sanitary landfill and waste incineration plants. In Japan, the number of intermunicipal cooperatives dealing with waste increased from 21 in 1960 to 588 in 1980, a full two-thirds of municipalities. Some local governments constructed transfer stations, where waste is compacted and loaded to bigger trucks, to reduce transportation cost. Over time, market and governmental pressure helped these intermunicipal associations adjust to provide efficient waste service at a lower cost.

Today, a number of other Asian countries have already realized the importance of intermunicipal cooperation and regional management for urban and rural solid waste. The Indian Ministry of Urban Development issued a guidance document³ on regional waste management in 2011 and in 2016 published a manual highlighting best practices from some Indian regions.⁴ Thailand adopted a clustering policy on waste management in 2014 in which the Department of Local Administration in the Ministry of Interior encouraged local administrative regions to join forces to set up shared waste collection and disposal infrastructure. An October 2020 ERIA study observed that the larger local clusters were much more successful in forming public-private partnerships than smaller and more rural ones. This trend underscores the ongoing need for bigger government support for waste infrastructure in more remote and smaller regions.⁵

Another model for full municipal and rural waste management coverage is from Malaysia, where the central government took responsibility for municipal waste management, collection, and disposal from local governments on the Malay Peninsula. The central government grouped the peninsula into three areas and contracted private companies to provide collection and disposal services. Such a centralized system may not be considered intermunicipal cooperation, but can produce similar



outcomes. Indonesia is a vast island nation and a blended system with both government and business-led regional waste cooperatives would be ideal to provide more rural areas coverage.

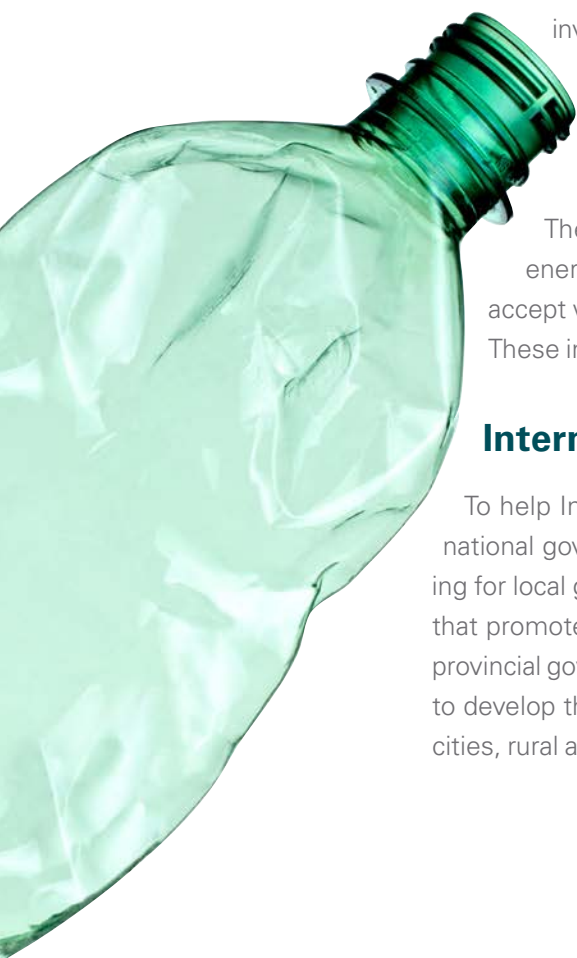
More Solutions on the Horizon

In some countries such as India, the Philippines, and Thailand, private companies invest in landfill sites and waste-to-energy plants, and accept solid waste from various municipalities. But such facilities are typically developed near large, populated, and economically developed cities that can pay for the services. One example of intermunicipal cooperation in rural areas in Southeast Asia that could be a model for Indonesia is in South Cotabato, in Mindanao, the Philippines. Here, a private company is serving the region and making it more economically viable to collect waste. It was estimated that the investment cost of constructing one sanitary landfill to serve 6 municipalities would be less than 30 percent of the cost for constructing six sanitary landfills for each of the six municipalities.⁶

In Indonesia, there are only a few cases of intermunicipal cooperation and private investment in waste disposal facilities that treat and dispose of solid waste generated across multiple municipalities. In central Java, Piyungan Landfill in Bantul Regency was jointly commissioned by Yogyakarta City, Sleman Regency, and Bantul Regency. Suwung Landfill in Denpasar, Bali was developed in 1984 and also receives waste generated in Badung Regency. The provincial government of West Java has a plan to develop a waste-to-energy plant in Legok Nangka with investment from a private company. It will accept waste generated from Bandung city and five municipalities near Bandung. These initiatives are locally developed by the provincial government of West Jawa.

Intermunicipal Cooperation is the Key

To help Indonesia meet its ambitious goals of limiting ocean plastic leakage, the national government needs to fill a policy gap and help create incentives and financing for local governments to create intermunicipal cooperation on waste management that promotes collection and disposal for small cities and rural areas. The central and provincial governments can draw on lessons from Indonesia, Southeast Asia, and Japan to develop the policies. By expanding waste collection services to medium and small cities, rural and remote areas, leakage of plastics to the ocean can and will be reduced.



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Image source: USAID



CLOSED-LOOP INNOVATORS

TIZA MAFIRA: Putting Indonesia on a Plastic Bag Diet

Photo courtesy of Tiza Mafira



“What bothers me is that people tend to look at these rivers and these polluted beaches and think ‘somebody needs to clean it up’—that’s just completely wrong, it is almost impossible and inefficient, and it’s really not the solution. The solution is prevention.”

A recent Wageningen University study found the Ci Liwung River that flows through Indonesia’s capital city, Jakarta, was among the most polluted rivers in the world—20,000 pieces of plastic waste flow from the river into the ocean per hour! The study also calculated the annual plastic emissions from the Ci Liwung and 12 other rivers in Jakarta totaled 2.1 million kilograms, equal to the weight of 1,000 Tesla Model S cars.

For Tiza, who was born and raised in Jakarta, seeing her hometown being “conquered” by plastic pollution has been heartbreaking. Tiza has always been an environmental activist, from childhood, through her years at Harvard Law School and career as a corporate lawyer, and now as the co-founder and executive director of Gerakan Indonesia Diet Kantong Plastik (DKP), the Indonesia Plastic Bag Diet Movement.

This movement aims to inspire and empower people to stop using plastic bags. Tiza and her colleagues know consumers alone cannot solve the problem, governments and corporations also need to act. So Tiza’s

team designed a three-pronged effort: providing education and outreach to communities, pushing for better legislation, and building cooperation between plastic producers and other stakeholders.

In 2013, the early days of their movement, they initiated the “#pay4plastics” petition that called on the government to tax plastic bags. Within three months, trials were launched in 27 cities across Indonesia. Seven years later, plastic bag taxes have expanded to total bans on plastic bags in 34 Indonesian cities. In another campaign, “the Plastic Robber,” volunteers “rob” consumers carrying plastic bags by exchanging them for free reusable bags. For individuals who are skeptical about the dangers of plastic bags, DKP hosts “plastic tours” to guide people to trash-clogged rivers where they can witness the dangers of plastic bags.

“Single-use plastics need to be phased out. We are aiming for a world where everything is circular. Every product should be designed valuable enough to be recycled at economies of scale, but the truth is that all these plastics are just too poorly designed to be recycled. Single-use plastic bans are paving the way for that transition.”



BEAU BACONGUIS:

Leading on Zero-Waste and Environmental Justice

Photo courtesy of Beau Baconguis

“I was like the ‘whip’ for all the organizations I worked with, telling people ‘you cannot bring plastics in, we are an environmental organization.’ I was very keen on making sure that the organizations I worked with were serious about waste management and plastics.” Beau Baconguis is an influential environmental activist with more than two decades of advocacy on environmental justice issues. Her home country, the Philippines, is ranked third in the world for failing to deal with its used plastic, with a stunning 81 percent mismanaged.

Beau started her career as a science researcher in environmental law at the Haribon Foundation, where she worked with communities from across the Philippines on environmental justice issues from logging and illegal fishing to mining. At Haribon, she worked for a woman, a passionate environmental lawyer, who galvanized Beau’s lifetime devotion to the environment. She lived up to her calling—four and half years later, she joined Greenpeace and became the Genetic Engineering Campaigner and Toxics Campaigner.

Most recently, her focus zeroed in on environmental and social injustices linked to plastics as the Asian Pacific Coordinator at Break Free From Plastic (BFFP) and the Asia Pacific Plastics Campaigner at Global Alliance for Incinerator Alternatives (GAIA).

From community surveys, Beau realized consumers often can only afford to purchase the items they need in sachets or plastic. It was clear to Beau and her BFFP colleagues that corporate campaigns are fundamen-

tal for any packaging materials revolution, especially around sachets. Sachets are the most pressing plastic waste problem in the Philippines where consumers throw away a staggering 60 billion a year—enough to cover 130,000 soccer fields. In response to the serious sachet problem Beau and her team at BFFP started doing brand audits of waste in 2016 and working hard to help companies choose the right packaging materials and avoid plastics where possible.

In practice, while the Philippines has enacted national laws guiding solid waste management, the responsibility to implement the law still falls to local governments. Thus, instead of a cookie cutter campaign, Beau and her BFFP team tailored their methods, messaging, and action to each region. Due in part to BFFP’s work, today there are more than 30 local governments in the Philippines working toward becoming “zero waste” communities and over 10 cities and provinces have already enacted bans on some single-use plastics.

“With the zero waste work that Break Free From Plastics and other organizations have been doing, I am hopeful that we will see positive changes in the coming years. We just need to be able to document them and tell their stories. We need to see the communities themselves telling their own stories.”

SECTION 2

NEW
PARTNERSHIPS
FOR ENHANCING
FINANCE
AND TRADE
SOLUTIONS

Overflow of Imported Plastic Waste in the Brantas River

By Prigi Arisandi

The Brantas River—the largest river in East Java—holds a special place in my heart and for many people in my village. The river is our primary water source and was a place for swimming and playing when I was young. The river brought joy into our lives. This all changed with the arrival of the paper industry to my sub-district. Now, the river is plagued with bad smells and paper fiber pollution. The dirty water has even triggered frequent mass die-offs of fish.

This heartbreaking change in my river inspired me to study biology and later set up—in partnership with my wife Daru—the nonprofit research and riverkeeper group, Ecological Observation and Wetlands Conservation (Ecoton). We work to better understand the source of river pollution in the Brantas and other local rivers and its impact on biodiversity. To stem Indonesia’s flow of plastic waste into the oceans, it is vital to focus on river protection. Research and advocacy to increase transparency of information around the different ways plastic leaking into rivers is a key tool to help policymakers and communities take action and hold polluters accountable.

Smuggled Plastic Waste

While most single-use plastic waste that flows into our rivers is generated domestically, there is a serious challenge coming from illegally imported plastic wastes. While researching the water pollution from paper mills along the Brantas, we discovered that the paper mills were also a surprising source of plastic waste pollution.

In our investigations of various paper mills in the Brantas River Basin, Ecoton uncovered plastic waste being smuggled into the country mixed in with imported paper waste that is used as raw materials in the paper mills.

I also examined the microplastic content in the wastewater coming from

“While most single-use plastic waste that flows into our rivers is generated domestically, there is a serious challenge coming from illegally imported plastic wastes.”



the paper mills, and found thousands of microplastic particles in just 100 liters of wastewater. If no one else can stop this pollution and these companies from cheating us out of our river, then it is up to me. I don't want Indonesia to become a trash can, nor my beloved river to be polluted by microplastics from the recycling process of distant developed countries.

According to the article, "Clean up our act and plastic can be fantastic" in The Sunday Telegraph Newspaper on December 23, 2018, the United Kingdom exported 85 thousand tons of plastic waste to China in 2017. However, when China banned the importation of plastic waste in 2018, David Beckham's country diverted these exports to Southeast Asia instead. By the first quarter of 2018, Indonesia became the second most common destination for UK plastic waste.

Weak Supervision & Import Expansion

We at Ecoton learned from observation, research, and field surveys that imported plastic is often hidden in bales of paper waste bound for paper mills in East Java. The paper

industry in East Java requires so much raw material that it must import these materials to meet demand. Even though 2.5 million tons per day can be sourced locally, each of the eight mills require four million tons per day to operate, and the extra raw materials must be imported from highly developed nations such as Canada, the United States, Australia, etc. When the paper mills import paper bales, they purchase old newspaper, wastepaper, and used crafting paper products, however the paper bales often include post-consumer single-use plastics that can account for up to 60 percent of the weight of the bale.

Unwanted plastics in the imported bales are dumped and independent workers then pick through the waste looking for valuable plastics such as PET bottles. The oldest paper mill in Mojokerto is capable of processing up to 900 shipping containers every month. Now imagine what it would be like if there were ten more of these mills. That would be 10,000 containers half full of plastic waste, monthly. Our investigative analysis indicates the trend will





Image source: Ecoton

continue increasing as garbage importers take actions in anticipation of an increase in the volume of paper, and therefore plastic, waste that enters Indonesia.

Data collected by Ecoton’s field monitoring and interviews with scrap sorters in Jasem Village indicates an increase in the import capacity of paper/plastic waste. There are continuing increases in semi-trailers and plastic processing machines—machines that leak microplastics into the environment. Additionally, the decrease in consumption and expensive production costs has led to less and less virgin pulp wood being used as the recycled paper imports are more economical for the paper mills. For example, PT Tjiwi Kimia and PT Adiprima Suraprinta (the largest newspaper paper producers in East Java) have installed a plastic processing machine because their imported paper waste contains 60 percent plastic.

There have also been expansions to land cleared for the dumping of plastics. Most recently, since November 2018, two companies have expanded the industrial


area and added dumping locations on the banks of the Porong River. Businesses are accommodating the plastic instead of refusing it.

Polluting the air, soil, water, and people

More plastic imports equals more pollution. Currently, East Java does not have a sludge waste treatment plant so the sludge from the paper mills is generally disposed of in open dumping on ex-excavated land, or agricultural land and military areas. The potential risk of this pollution damaging the quality of soil and underground water is very high. In Sumengko Village, Wringinanom Subdistrict, former excavation C, land that had been dumped with sludge was then used for settlement. In Sumberame Village, Wringinanom Gresik, the sludge is mixed with moorland. In Paciran, sludge is piled up in the holes of old disused limestone excavation sites.

Based on our research, plastic wrappers that cannot be recycled eventually become

“
...80 percent of the fish taken downstream of the Brantas River¹ had microplastics inside their stomach.
”



steam furnace heating fuel in small cracker and tofu-making industries. In the village of Tropodo, there are 50 such small industries that make tofu this way. This combustion process creates black smoke containing dioxin, and on most mornings, people are smothered with smoke like fog.

Flakes of microplastic smaller than 4.8 mm have been found in the waste water flowing out of the PT Mekabox International company and into the Brantas river. In July 2018, Ecoton released research findings that 80 percent of the fish taken downstream of the Brantas River¹ had microplastics inside their stomach. Additional investigation by Ecoton in the lower Brantas river water in Kali, Surabaya in late 2018 also found microplastics in the water.² In samples taken in November of 2018, Ecoton discovered that effluent or wastewater originating from multiple paper factory outlets contained microplastic in the form of fiber, film, fragments, and macroplastics, indicating widespread contamination.

Government Action Needed Now

From the findings above, Ecoton encourages the government to evaluate the practice of loading paper imports with high plastic content by volume (60-70 percent) and to properly treat plastic imports because the current situation in East Java has caused microplastic contamination in the Brantas River. The government should not condone actions that benefit very few people while causing dangers to millions of citizens in Surabaya, Gresik, Sidoarjo, and Mojokerto, and lead to harmful air and land pollution.

Notes

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Clean Cities Blue Ocean:



United States Agency for International Development in Indonesia

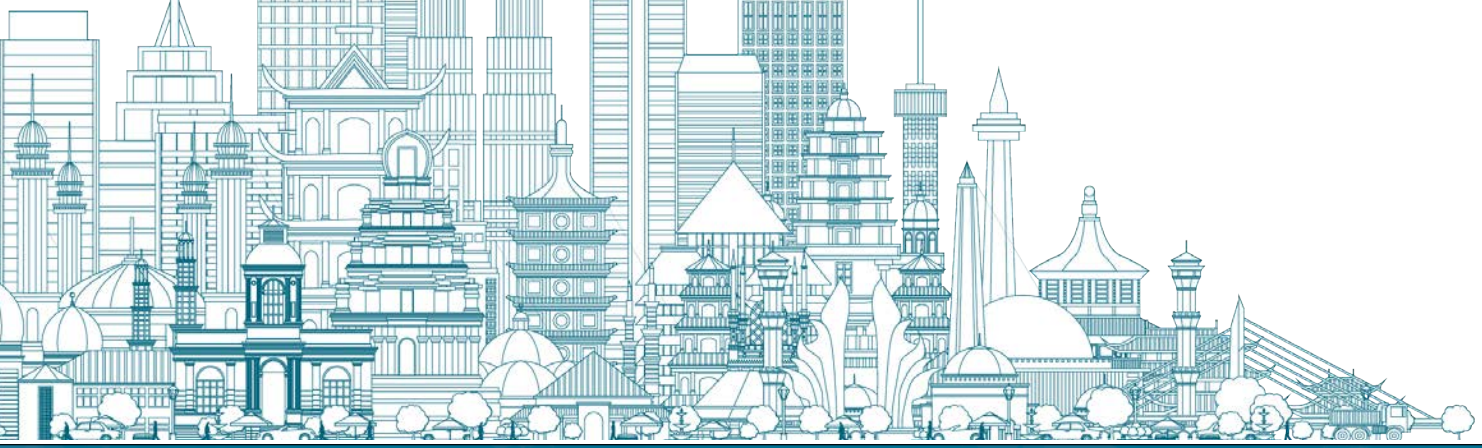
By **Clare Romanik**

Through its new program, Clean Cities Blue Ocean, USAID will help Indonesia to improve waste management and to prevent plastic waste from leaking into the marine environment. By 2025, the Government of Indonesia aims to reduce the amount of plastics leaking into the ocean by 70 percent. The National Medium-Term Development Plan (2020-2024) has set twin goals of reducing the amount of waste generated in urban areas by 20 percent by 2024 and managing 100 percent of the remaining amount of waste.¹ These are ambitious goals for any country, but especially for a country whose unique geography of thousands of islands extending over five thousand kilometers increases the cost and difficulty of managing waste and recycling plastics.

Tackling Plastic Waste in Indonesian Cities

With a fast-growing economy and urban population, Indonesia is experiencing an exponential growth in waste generated, particularly from plastic packaging. Waste generation in Indonesia is expected to continue to increase, from 105,000 metric tons/day today to 150,000 metric tons/day in 2025.² Although the urban collection rate at 60 percent is higher than in rural areas, urban areas are a priority because they generate more waste per person and because plastic is a larger percent of the waste stream (up to 20 percent).³ Much of this is due to the increase of single-use plastic applications that include straws, shopping and carrier bags, food containers, and sachets as demand for pre-packaged food and products increases.

This challenge of managing solid waste is pushed to district and city governments that have insufficient resources.⁴ It is estimated that \$5 billion of investment is required to achieve Indonesia's waste management goals, and the national government will only be able to fund about 10 percent of these investments. This will necessitate a large influx of private sector investment that so far has been absent because of complex require-



ments, an unattractive tariff structure, and a disconnect with the large informal sector that includes 3.5 million informal waste workers throughout the country.⁵

Beginning in 2021, in coordination with Indonesia's Ministry of National Development Planning (Bappenas), USAID's Clean Cities Blue Ocean program will begin implementation in three Indonesian cities. The program will build on the achievements of USAID/Washington's Municipal Waste Recycling Program, which since 2018 has been supporting Indonesian organizations in testing innovative approaches to strengthening solid waste management and the 3Rs (reduce, reuse, recycle). The Clean Cities Blue Ocean program work also draws on USAID's 2020 Rapid Assessment of the Municipal Solid Waste Management Sector in Indonesia, as well as consultations with Bappenas and relevant Technical Ministries on national priorities laid out in the National Medium-Term Development Plan (2020-2024).

Building Local Capacity to Improve Solid Waste Management

At the core of this process, we will help partner cities to create or strengthen their long-range solid waste management (SWM) plan together with local stakeholders. The baseline research for the plan will detail current waste volumes and types, as well as describe the current system and its major gaps for managing the waste. This includes evaluating the suitability of the current final waste destinations as well as analyzing the systems for collecting, transporting and recycling waste, its financing, and participation by the informal sector. Using this information, we will help partner cities develop and implement a robust, unified approach to the 3Rs and waste management that will keep pace with continued growth.

Another major focus in the first year will be introducing a SWM Capacity Index that will allow local governments to measure initial status and then progress over time on all aspects of 3R/SWM. Frequent changes in local government representation and staffing have made it difficult to build sustained institutional knowledge. The index will assess capacity for policy and planning, financial management/ revenue generation, human resources, service delivery, community engagement, private and informal sector engage-

“...\$5 billion of investment is required to achieve Indonesia's waste management goals, and the national government will only be able to fund about 10 percent of these investments.”



Image source: USAID

“
The 3Rs also
cannot be achieved
without social and
behavior change.”

ment, and gender equity. The city-specific results will provide a roadmap for improvements in the key capacity areas, providing valuable information to the local governments on needed training, as well as policy and operational changes.

Key informants in USAID’s 2020 study noted that SWM expenditures for some local governments are only 1 percent of their budget. The problem stems from poor revenue collection overall in terms of local taxes and fees as well as low tariffs. In addition to increasing tariffs for collection, it will be necessary to expand funding options from other sources like financial investors, plastic producers, and brand companies. Clean Cities Blue Ocean will help our partner cities to develop transparent procurement procedures and improve enforcement of payments and compliance with rules and regulations to make investment in the municipal waste sector more attractive.

Improving the Investment Climate for the 3Rs (Reduce, Reuse, Recycle)

Drawing upon USAID’s reputation as a neutral convener, Clean Cities Blue Ocean will engage the public and private sector in dialogue around how to improve the policy and legislative framework for the 3Rs. We will also promote the 3Rs through local business models, such as zero waste stores and waste banks. Since most waste banks do not have the efficiency or scale needed to be financially sustainable, we will connect them to waste generators, manufacturing corporations, and brand companies that can help them scale up and withstand market volatility.

To strengthen recycling systems, which today are economically infeasible outside of capital cities and a few industrial areas, we will assess which technology and infrastructure solutions can be locally tailored and right-sized based on challenges around contamination and pre-processing of material, reliability of feedstock, and proximity to end markets.

The human element is equally important. Informal waste collectors face stigma even as they play a critical role. We will help to improve their livelihoods and safety as we seek to integrate them into the formal waste management system.⁷

The 3Rs also cannot be achieved without social and behavior change (SBC). A missing element in traditional SBC campaigns is formative research and community engagement to establish that the requested behavior is indeed feasible and supported by the SWM system. By mentoring organizations with deep ties in the local community on participatory research approaches like ‘trials of practice,’ USAID aims for sustained behavior change around practices like waste segregation and consumer-driven demand for less plastic packaging.

Women in Waste’s Economic Empowerment

Clean Cities Blue Ocean will establish a new support and incubator network for women in the SWM and recycling sectors that will provide training, mentorship, coaching, and access to start-up capital to support women entrepreneurs. This will reach women at the lowest level of the SWM value chain as well as successful women who wish to grow their businesses. USAID already has in place a partnership that is providing a \$35 million, 50-percent loan-portfolio guarantee with Circulate Capital that is mobilizing private investment for waste management and recycling businesses in South and Southeast Asia. The first loan made by Circulate Capital in 2020 was to Tridi Oasis, a women-owned recycling firm in Indonesia.⁸

Image source: USAID



Conclusion

Tackling a challenge this complex requires a holistic approach. Through Clean Cities Blue Ocean, USAID is delivering state-of-the-art technical expertise to cities, working with the private sector to mobilize resources for 3R business models and needed waste management infrastructure, and also providing grants to local organizations to pilot solutions that are fit to the local context. These are not separate efforts but are rather carefully implemented together to create an efficient, closed-loop system in which circular economy initiatives can thrive and our oceans can become free from plastic pollution.

Notes

1. "Solid Waste Management System Platform." *Ministry of National Development Planning/Bappenas*. October 2020.
2. "Indonesia Marine Debris Hotspot: Rapid Assessment Synthesis Report." *The World Bank Group, et. al.* April, 2018.
3. "Rapid Assessment of the Municipal Solid Waste Management Sector in Indonesia: Opportunities for Engagement." *USAID*. April, 2020.
4. 2008 Waste Management Law (No. 18). 2012 Regulation No. 81 specifies that district/city governments must prepare ten-year master plan documents and feasibility studies on household waste management, from reducing waste generation to funding.
5. *USAID*, *Ibid.*
6. *Ibid.*
7. McTarnaghan, S. and Williams, J. L. "Case Study: Behavior Change in Local Systems to Mitigate Ocean Plastic Pollution." *The Urban Institute*, 2020.
8. USAID Partner Circulate Capital Announces Inaugural Investments in India and Indonesia. <https://urban-links.org/insight/usaaid-partner-circulate-capital-announces-inaugural-investments-in-india-and-indonesia/>



Changing the System to Tackle Ocean Plastic in Indonesia

By William Handjaja and Alexandre Kremer

Satelit Beach is the heart of the coastal fishing village of Muncar, in East Java's Banyuwangi Regency. On a recent fact-finding trip for SYSTEMIQ, we were standing on the beach surveying the depth and breadth of plastic waste—primarily single-use sachets and bags. As we gazed at this litter that for many years has been covering every inch of sand and clogging fishermen's nets, a single question came to mind: where and how do we start to solve this crisis?

“
The community
is at the heart
of our work.
”

With a population of 130,000 residents, and as one of Indonesia's largest fishing hubs, Muncar captures the challenges that many Asian countries are facing as their economies boom: non-existent or fragile waste management infrastructure that is unable to keep pace. Every year in Muncar, residents have had no option to dispose of their 2,000 metric tons of plastic waste other than directly into the environment, affecting lives and livelihoods.

The regional government constructed a small sorting facility and encouraged Muncar communities to recycle. However, these efforts to combat plastic pollution have yet to scale as operational funding relies on selling sorted plastics to a limited market. Thus, regular waste collection reaches less than 10 percent of the population. Without supporting regulation, the long-standing tradition of water-based waste disposal remains. Overall, these challenges represent a system level failure where multiple elements together pose a substantial hurdle to solving the plastic waste issue.



FIGURE 1

Muncar beach (left) shows significant levels of pollution due to lack of waste management infrastructure in the region. Village-operated MRF (below) was not sorting waste optimally before project STOP.



Photos courtesy of Project STOP.

A Systems Change Approach

SYSTEMIQ, a systems change company, partnered with Borealis, an Austrian chemical company and plastics producer, and made a commitment: working closely with local, regional and national government partners to help cities achieve zero ocean plastic leakage. This commitment spawned Project STOP, which designs, implements, and scales circular economy solutions to prevent plastic pollution in Southeast Asia.

The community is at the heart of our work. The main strength of the initiative is its ability to not only fund and procure waste management equipment—such as multiple waste bins for households and businesses, tricycles for collecting waste, sorting facility renovation, and conveyor belts—but also to provide capacity and training in Muncar to establish a governance structure that can manage system operations and resolve issues. Door-to-door behavior change campaigns ensure we have buy-in and engagement from the community on the importance of sorting and managing waste.

The team also set out to find more recycling markets for the sorted recyclable materials. Additionally, the Project STOP team works hand in hand with the government on multiple levels, undertaking considerable planning and policy work at the national level with the Ministry of Environment and Forestry along two principal axes:

1. Funding the waste management system (government funding versus mandatory retribution from household); and,
2. designing adequate waste system governance (including village-level led system or BUMDesMa vs agency-led system or BLUD/UPTD).

At the regional level, the Banyuwangi government together with the Banyuwangi envi-

“Door-to-door behavior change campaigns ensure we have buy-in and engagement from the community on the importance of sorting and managing waste.”

ronmental agency and the Project STOP team is leading the way by piloting those new regulations locally.

Two years since it was established in Muncar, Project STOP is today serving more than 90,000 people and is well on its way to achieving its objectives. Two more cities—Pasuruan in East Java, and Jembrana in Bali—now hope to replicate the program. By the end of 2022, Project STOP hopes to reach 450,000 people across these three cities and collect 45,500 tons of waste (5,700 tons of plastic waste) annually.¹

FIGURE 2

Project STOP Muncar achievements as of September 2020 since program start. The program has added door-to-door collection activities, as well as renovated and added MRF capacity to process both organic and non-organic waste.

Muncar impact to date: September 2020

Waste Collection ¹	Waste Collection ¹	Jobs Creation	Jobs Creation
6,415	92,000	114	701
tons (844 tons plastic) waste collected by stop program to date	residents connected with waste management service, most for 1st time	people employed full-time, all coming from local muncar, lekok and negara communities	tons plastic waste leakage into the environment avoided to date

Figures courtesy of Project STOP.

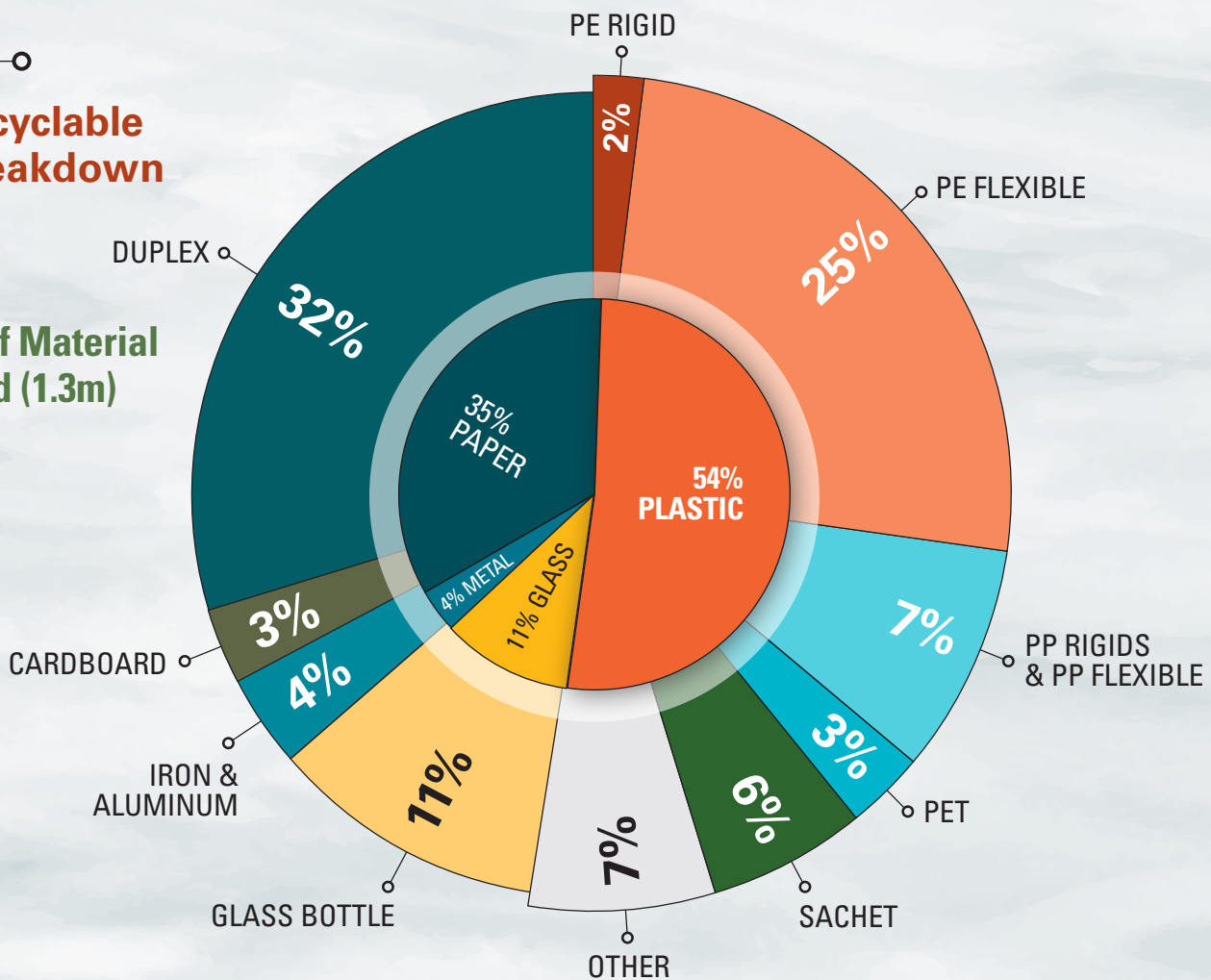
Capitalizing on National Government Leadership

With more than 260 million people in Indonesia, scaling efforts nationally remains a challenge. To address this, together with the Government of Indonesia and World Economic Forum, SYSTEMIQ contributed to Indonesia's National Plastic Action Partnership (NPAP). NPAP is a comprehensive platform to address waste management that brings together civil society, industry, and academia with the goal of reducing ocean plastic pollution by 70 percent by 2025.

NPAP started with extensive data analysis to establish a baseline of the ocean plastic pollution and provide a holistic picture of the waste situation in Indonesia. Results show that more than half the population does not have access to regular waste management

Recyclable Breakdown

% of Material Sold (1.3m)

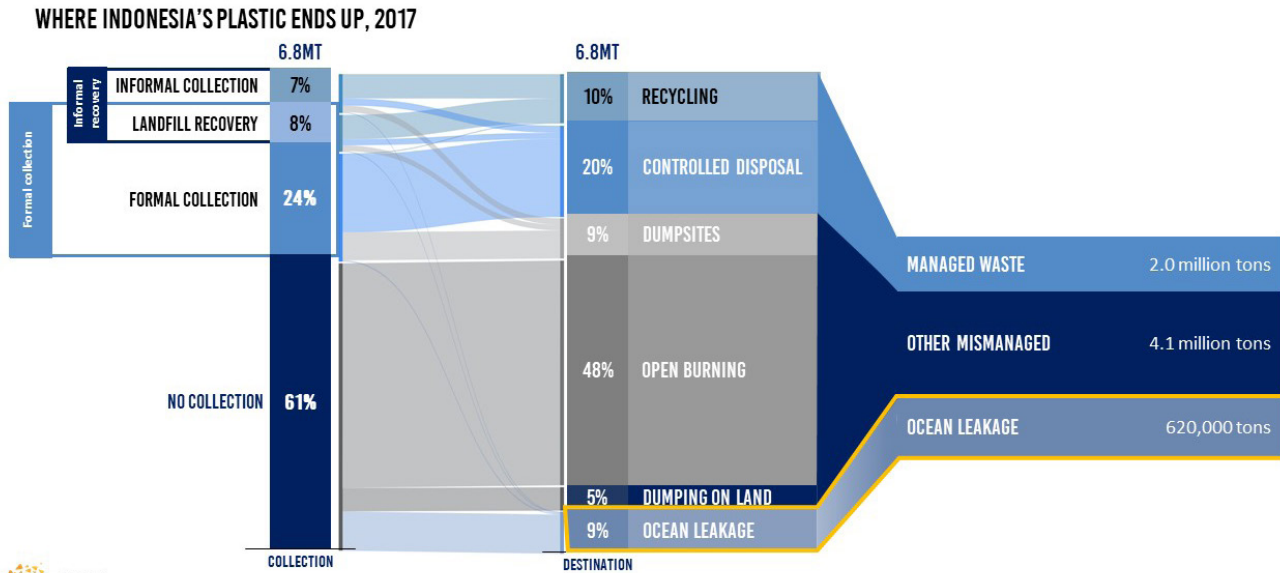


services. The gap in collection is spread out across many rural areas like Muncar that together contribute two-thirds of the 620,000 tons of plastic leakage every year.

FIGURE 3

Indonesia plastic waste flow analysis conducted by NPAP shows significant gap in collection, leading to significant environment leakage, including 620,000 tons into the ocean annually.

Indonesia records 6.8MT of plastic waste each year; 61% is not collected, causing pollution through leakage into oceans and waste burning.



Figures courtesy of NPAP.

To achieve the goals of NPAP, Indonesia needs to first decouple economic growth from single-use plastic consumption growth. Waste reduction and/or material substitution through new delivery models (e.g., returnable container schemes); new materials; and long-term-use goods are needed. The private sector and industry also need to collaborate for the development of more durable and highly circular materials for use in daily life.

Then, Indonesia needs to accelerate infrastructure investment to catch up on waste management capacity expansion. NPAP estimates that more than US\$20 billion in infrastructure investments is needed to expand waste collection, recycling, and disposal, and most of this funding will have to come from the Indonesian government. However, NPAP also brings in other potential funders, such as private sectors, development banks, and international institutions that can help accelerate the plan.

The private sector and civil society can also support through capacity building, training, public engagement, and behavior change campaigns to create demand for better waste management services. As demand grows, new innovations and emerging solutions may appear that can be incubated, creating more efficient waste management systems.

Regulation is the Best Way Forward

Ultimately, the government needs to implement regulations that ensure continuous operational funding to put Indonesia firmly on the path toward systems change and other governance-related policies may help guide local governments in implementing efficient waste systems locally.

In its recommendations, NPAP urged that none of the above actions alone can achieve a zero ocean plastic waste target. Rather, only an integrated approach that uses a combination of regulations, increased investments in collection and recycling infrastructure, re-education and substitution models, and behavior change, can fully address the issue.

Together with our partners, the combination of initiatives such as Project STOP and NPAP shows that it is feasible to address the challenge of ocean plastic pollution by taking a systems change approach. Moving forward, broader collaboration through partnerships between thought leadership projects and on-the-ground implementation can help accelerate implementation throughout the country and achieve our shared objective to end plastic pollution while protecting the lives and livelihoods of Indonesian communities.

Acknowledgements

Project STOP involves the Ministry of Environment and Forestry, Coordinating Ministry of Maritime Affairs, Ministry of National Development Planning, Ministry of Public Works, the Banyuwangi government and environmental agency, local village leaders in Muncar, Pasuruan and Jembrana regional government and environmental agencies, and local village leaders in both regencies, also with the support from our strategic partners, co-founders Borealis and SYSTEMIQ, the Norwegian Ministry of Foreign Affairs, Nova Chemicals, Nestlé, Alliance to End Plastic Waste, Borouge and Siegwerk, including support from our technical partners Veolia, Schwarz, Sustainable Waste Indonesia and HP. We're grateful to all of our partners and their commitment to tackling ocean plastic pollution.

NPAP Indonesia is supported by the Coordinating Ministry of Maritime Affairs and Ministry of Environment and Forestry. It is the first national pilot launched by the Global Plastic Action Partnership, a platform created by the World Economic Forum in collaboration with public, private and international institutions.. The national platform model has since been expanded to more countries.



The gap in collection is spread out across many rural areas like Muncar that together contribute two-thirds of the 620,000 tons of plastic leakage every year.



Notes

1. ProjectSTOP, accessed February 2, 2021. https://www.stopoceanplastics.com/en_gb/muncar/



Post-Consumer Plastics in a Post-COVID World

By Shintaro Higashi

The year 2020 may forever be remembered as the year of COVID-19 for the various impacts it had on people's health, economies, trade, and environment, around the world. Waste management, garbage collection, sorting, recycling, and trade systems around the world were also forced to cope with a new reality brought on by the global pandemic. Indonesia and other Southeast Asian countries that are still in the process of building out waste infrastructure and struggling with plastic waste mountains, can use this crisis as an opportunity to accelerate policies and public-private partnerships to shift more responsibility to plastic producers to reduce plastic packaging and finance management of post-consumer plastic.

Non-recyclable plastic waste had spiked in Indonesia and Southeast Asia well before 2020 and COVID-19 has helped to exacerbate this waste crisis. For example, personal protective equipment (PPE) such as masks and gowns are now a matter of life and death for doctors and nurses as hospitals treating COVID-19 patients. During the early months of the pandemic in Southeast Asia, this type of infectious waste grew nearly everywhere and varied by nation from 10 percent in Cambodia to 60 percent in Thailand.¹ In Indonesia, 70 percent of its 150 million urban dwellers wear masks, this is among the highest percentage for all of East and Southeast Asia.²

Not only have consumers in lockdown increased household waste from single-use plastics and packaging from food and e-commerce deliveries, but the recycling industry has also faced serious input shortages, price drops, and shutdowns.³ In a post-COVID-19 world, the increase in "non-recyclable plastic waste" leakage into the ocean is seemingly inevitable.

Ripple Effect of Pandemic on Plastics

Since the outbreak of the virus, researchers at the Jakarta-based Economic Research Institute for ASEAN and East Asia (ERIA) estimated that infectious waste from masks and gowns has increased by 30 percent.⁴ Shockingly, due to the lack of specialized disposal facilities such as incinerators, in many places the PPE waste ends up being treated as general waste. In addition, in many parts of Indonesia and the rest of the world, households use their regular trash bin to throw out used masks. Not only is this a health risk for waste workers, but masks and mask filters contain plastic fibers that do not biodegrade. As such, this waste is considered to be non-recyclable plastic waste that simply goes to regular dumpsites. For example, one of the large dumpsites near Indonesia's capital city of Jakarta, TPA Bantrgebang, is accepting masks from hospitals and households⁵

Much of this plastic waste is made up of packaging materials that are of little value and difficult to recycle.⁶ Recycling rates are also falling around the world due to the recent drop in oil prices. Crude oil prices were around \$50 a barrel in March 2020 when COVID-19 began to spread globally the economic stagnation it sparked caused oil prices to plummet to around \$20. When the price of oil falls, the price of virgin plastics falls as well. Meanwhile, the shrinking economy has decreased demand for collected and recycled plastics, so even if plastics are collected, there are no markets, and even if they can be sold, the value is unprecedentedly low.

In Indonesia, the plastic recycling industry provides employment for 120,000 official workers and 3.3 million informal workers, such as scavengers and waste pickers. After the outbreak of COVID-19, 63,000 official workers, or more than half, lost their jobs.⁷ Indonesian media estimates some 1.6 million waste pickers also lost their income source. Even though the market for recycled plastics has shrunk, plastic waste has not disappeared; rather it is piling up more than ever. Plastics considered to hold no value are treated as mixed waste and transported to final disposal sites to remain plastics forever. Some of this improperly treated waste will end up in rivers and oceans.

Shifting Responsibility to the Private Sector

Policies to stem the tide of plastic waste leakage in Indonesia are not new. In 2019, the government passed a Ministerial Regulation for EPR (Extended Producer Responsibility). This regulation requires plastic producing companies to reduce and recycle the majority of plastic packaging materials linked to their products. Beyond such expectations of the government, plastic producers are showing eagerness to implement new technologies for incorporating post-consumer recycled plastics into their products.

Concepts such as minimum recycled content have successfully increased the usage of post-consumer recycled plastics in Europe and elsewhere. As a result, recycled plastic is utilized for materials regardless of crude oil price trends and buyers of waste plastic

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In a post-COVID-19 world, the increase in “non-recyclable plastic waste” leakage into the ocean is seemingly inevitable.
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elsewhere.”

maintain the market value even in the event of an economic recession or pandemic. It is no exaggeration to say that plastic waste is being recognized for its value independent of the economics of crude oil. From the perspective of environmental, social, and corporate governance, investors are now beginning to evaluate companies' work toward reducing waste plastics and as a result many companies consider the waste plastic problem a positive business opportunity.

Expectations for Private Companies

Indonesia's private sector has made many contributions to waste management, for example, the concept of "bank sampah" (waste banks) which provide residents with drop off points where they can turn plastic in for credit demonstrates one of the best collection practices in Asia. Private companies such as Unilever, Danone, Nestle, and Indofood have also reached out to waste pickers who have lost income due to COVID-19 in attempts to ameliorate the damages to this informal economy, demonstrating an awareness of the role of waste pickers in collecting one million tons of recyclable plastics per year.⁸

Private companies are keen on increasing PCR usage in Indonesia. For example, Unilever recently constructed a pilot recycling factory in East Java which was designed to recover single-use sachets.⁹ AQUA Group, known as the pioneer of bottled water, released 100 percent recycled bottles designed to be 100 percent recyclable.¹⁰ H&M and AQUA also began an initiative to introduce garments for kids made from plastic bottles.¹¹ Likewise, from Japan, CLOMA (Japan Clean Ocean Material Alliance) has been preparing some projects to enhance plastic recycling in Indonesia. CLOMA consists of various companies which have strong intentions to contribute to plastic issues in Indonesia by introducing the "Japan model" of improving and promoting 3R, utilizing alternative materials, and constructing recycling infrastructure.¹²

A New Future for PCR Plastics?

COVID-19 has posed a pressing challenge to waste management systems that shows the world cannot afford to limit our view of plastic recycling to the economic value of the materials. We have to avoid situations such as the stagnation of the waste plastic recycling market due to low crude oil prices and reduced demand for plastics that results in improper management and increased outflow to the ocean. Therefore, we should increase focus on private sector usage of PCR (post consumer recycled) plastics in new products. The private sector can, and is, leading the way in proper waste management and contributes to reducing plastic leakage in Indonesia by actively engaging in PCR plastics.





Image source: USAID

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Image source: The Circulate Initiative

What Indonesia's Pioneering Work on Ocean Plastic Can Teach the Rest of the World

By Susan Ruffo and Ellen Martin

“Indonesia is both a source of and directly impacted by ocean plastic. It was also one of the first countries to commit to taking action.”

Well before the ocean plastic crisis was widely recognized, Indonesia was on the frontlines. As a nation with over 17,000 islands and a growing population and economy, Indonesia is both a source of and directly impacted by ocean plastic. It was also one of the first countries to commit to taking action. In 2017, Luhut Binsar Pandjaitan, Indonesia's Coordinating Minister for Maritime Affairs, pledged to cut marine plastic pollution by 70 percent by 2025, kicking off a process that has led to a national marine debris action plan, the Indonesia National Plastic Action Partnership (NPAP),¹ and multisectoral partnerships designed to reduce plastic use, redesign products and materials, and improve waste management. Indonesia's experience provides valuable lessons for governments, NGOs, businesses, and investors focused on reducing ocean plastic and advancing the circular economy.

Indonesia recognized early on that the ocean plastic crisis is not just about the ocean, but also about people. Plastic waste in the environment is a health and safety hazard, particularly in the time of COVID-19. It also threatens critical economic sectors. For example, before the COVID-19 pandemic, tourism made up over 50 percent of Bali's economy,² driven by its famed beaches. But in 2018, Bali declared a “garbage emergency” after some of its most popular beaches were overrun with plastic,³ putting lives and livelihoods at risk. Clearly, reducing impacts to people had to be factored into any solutions. Likewise, those “solutions” could not compound existing problems for communities.

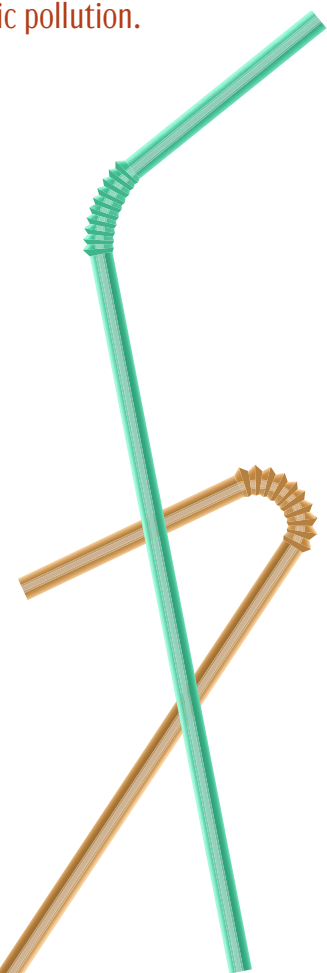
Indonesia's response shows that it is possible to design solutions to ocean plastic that have significant benefits for people, including contributing to long-term economic development. Partnerships are a critical piece of this, bringing together the public and private sectors and civil society. For example, through The Incubation Network (TIN),⁴ The Circulate Initiative and its partner SecondMuse are working with local incubators, accelerators, and NGOs to uncover locally developed circular solutions. TIN supports entrepreneurs across Indonesia who are testing new business models that can help end plastic pollution. Examples include businesses such as Siklus,⁵ which allows micro-entrepreneurs to sell products like shampoo or coffee through mobile refill stations; Growing Plastic,⁶ which aims to revolutionize packaging materials through products like Bana-Wrap that performs like bubble wrap but is made of banana peels and is compostable at home; or Robries, which manufactures creatively designed furniture from recycled plastic.

The Incubation Network is also helping businesses from around the globe that are creating innovative ocean plastic prevention products or services to enter Indonesia through its Ocean Plastic Prevention Accelerator (OPPA)⁷ in Surabaya. For example, OPPIA is helping Dutch company Umincorp bring its technology for recycling mixed plastic to Surabaya, where there is a need to process post-consumer plastics into higher quality products. These programs bring investment and jobs to communities while also addressing mismanaged waste and stopping the flow of plastic—and other materials—into the ocean. Innovation can be cross-sectoral as well. McKinsey.org's Rethinking Recycling program has been working with a community in Bali to create a self-sustaining waste center that creates awareness and provides good paying jobs to vulnerable waste workers, demonstrating how recycling can deliver both economic and environmental impact. They are now building an academy to teach other communities how to replicate this model.

Indonesia's focus on reducing ocean plastic pollution also highlights the critical role of some of the country's most entrepreneurial but vulnerable people—informal waste collectors. Nearly two million people work as waste pickers, or *Pemulung*, in Indonesia.⁸ They are an effective and efficient final point of capture for ocean plastic, picking up 35 percent of plastic waste that could otherwise leak into the environment. They are a core part of the waste management system, but are often unseen and unappreciated, and thus vulnerable to change inside or outside the system. For example, the COVID-19 pandemic has forced many of these workers to stay home or has shut down the businesses that normally buy what they collect, leaving them without income and often without access to even basic services. Any investments in "good waste management" to prevent ocean plastic need to consider these people. This requires partnership among governments, businesses, and civil society. For example, the Indonesian NGO Vital Ocean has been working with corporate partners and the Indonesian Waste Pickers Association to ensure informal collectors are provided with personal protective equipment and basic necessities as they grapple with changing waste streams and markets as a result of the pandemic.



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TIN supports entrepreneurs across Indonesia who are testing new business models that can help end plastic pollution.
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Indonesia’s efforts highlight critical questions that everyone working to end plastic pollution must address. First, we are still trying to get a sense of the real magnitude of the problem at an actionable scale—how much plastic pollution comes from a given city? What is it? Where does it escape? Then we need to measure the impact of solutions such as those above. Are our efforts actually reducing plastic leakage? By how much? What are their other effects—positive or negative—on the lives of people involved? How do we measure other impacts they might have, such as greenhouse gas emissions? Without this critical information, it is nearly impossible for policymakers, entrepreneurs, and NGOs to make decisions about where to put always limited resources.

Indonesia’s work to solve the ocean plastic crisis can set an example for other countries, and also shed light on challenges that remain. The many partnerships that have formed to support Indonesia’s efforts—from NPAP and TIN to Rethinking Recycling—also show how different sectors can and must come together to solve this complex issue, and can serve as examples that can be adapted in other countries. The global plastic pollution crisis is eminently solvable, if we apply these lessons more broadly.

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CLOSED-LOOP INNOVATORS

Dini Trisyanti:

Transforming Plastic Waste Management in Indonesia

Photo courtesy of Dini Trisyanti



Along riverbanks throughout Indonesia, countless informal waste pickers scour towering open dump sites for any valuable plastics that can be sold to recyclers. For an engineer like Dini Trisyanti who believes sound waste management systems are the backbone of the solution, these open dump sites represent a systems failure. Dumps not only pose a threat to the environment and economy, but also to the workers who depend upon them. “There have been many stories of waste landslides killing people—this is a time bomb!”

Dini is the Deputy for Capacity Building and Technical Assistance, a Board Member of the Indonesia Solid Waste Association, and the Director of Sustainable Waste Indonesia. Dedicated to bringing about a circular economy, she understands that the first step to addressing the plastic waste problem is finding out exactly what the waste is and where it is coming from. Research by Dini and her colleagues uncovered that just 10 percent of plastic is recycled in Indonesia. Instead of advocating for a plastic ban, she believes that better recycling systems and more recycled content in plastic products are the solution. This is not without its challenges, as the plastic producers have seen profits soar from selling disposable packaging marked as recyclable in a country without a well-functioning recycling system.

These plastic trends sparked Dini to start her first company in 2014, the Packaging and Recycling Association for Indonesia Sustainable Environment (PRAISE).

Dini and her team at PRAISE seek to transform packaging waste into high-value resources that can provide economic, social, and environmental benefits for Indonesians. One expert alone cannot move the mountains of waste; for Dini, the answer is an alliance of like-minded international and Indonesian companies working in concert to provide economic leverage in markets that can move plastics away from single-use and toward renewable and reusable options. In 2018, PRAISE attracted partnerships with incubators such as McKinsey that helped raise awareness of Indonesia’s plastic waste crisis and bring together stakeholders.

Moving forward, Dini and her waste management organizations will continue to pursue a circular economy in Indonesia. She recently co-founded Vital Ocean, another solutions-driven organization that conducts field research, pilots, and gives recommendations on collecting and recycling plastics. Serving as the “glue” of the waste management industry, Dini uses data to build trust and strengthen collaboration among stakeholders.

“I know it is hard for local governments to transform. A lot of people say, ‘my solution is best’ or ‘we should say no to plastic’ or ‘burn it for energy’—but it is actually about supply and demand. I try to speak out for people who work with me, please try to view the waste management system as a whole, not the plastic itself!”



Virly Yuriken:

Empowering Communities to Combat Plastic Waste

Photo courtesy of Virly Yuriken

Virly never thought she would be working in the plastic waste management industry. That changed when she was inspired by a woman she met while working at the Misool Foundation, a conservation NGO in Sorong City, West Papua. At Misool, Virly was working with groups of women who recycle plastic—making wallets and bags from used sachets.

During this stint of community outreach, Virly met a woman who used to work for the government and this immediately raised her curiosity. Why would anyone want to leave a decent civil service job? The woman explained, “when I die, I don’t want to be buried in a land of trash.” Virly was deeply inspired and has been ceaselessly working on the plastic recycling challenge ever since. Over several years at Misool, she has taken this message further and centered all her work around that revelation: in order for the next generation to not become buried under a mountain of trash, Indonesians (and people everywhere) cannot continue to consume and landfill plastic.

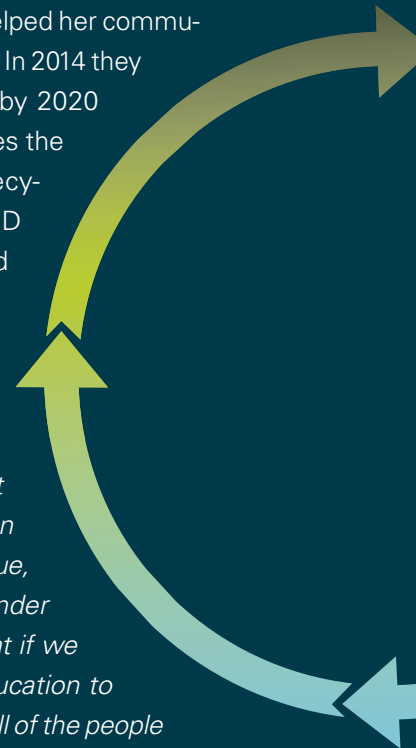
Virly and her colleagues started collecting sachets, and processing them. And while they are able to sell PET, LDPE, HDPE, and PP plastics to recycling factories in Java, sachets do not make economic sense due to the low value of sachets and high transportation costs, and it would not reduce plastic consumption. They also recognized a problem when people have a recycling center nearby, they tend to consume more plastic, proving solutions to the plastic waste crisis are not simple and extend beyond collection and recycling.

Virly, together with her team at Misool Foundation, have a strong message for their community: “We have

to reduce plastic consumption.” One particularly heart-warming story comes from the traditional fishermen in Supau village who learned about Misool Foundation’s Bank Sampah project (Community Waste Recycling Program) and took the initiative to collect floating plastic debris while they were out to sea.

Through education and awareness campaigns, Virly and her colleagues are trying to encourage their community to reduce, reuse, and recycle. Over Virly’s tenure at Misool, she has successfully helped her community to fully adopt waste sorting. In 2014 they had 12 collection points, but by 2020 they had 115. Virly now manages the Misool Foundation Central Recycling Center. In 2018, USAID started funding Misool to expand their existing Bank Sampah project and support their education and outreach efforts.

“We employ women as leaders, helping women support their families. Initially when we were addressing this issue, we did not have a clear gender target. Later we realized that if we taught a lesson or gave education to women, they will influence all of the people in their household. The next generation will be a better generation.”



April Crow: Championing Change Through Solid Data and Science to Reduce Plastic Leakage

Photo courtesy of April Crow



“We are trying to build an on-ramp for investment,” says April Crow who works at Circulate Capital, an impact-focused investment fund working to demonstrate the value of sustainable and investable projects in countries like Indonesia to stop the flow of plastics to the environment.



Back in 2005, as a part of the Environmental Team for The Coca-Cola Company, April was a pioneer working on the concept of sustainable plastic packaging. In the mid-2000s, despite stories on the great pacific garbage patch, ocean plastic waste was not high on policy or corporate agendas. April believed this was due to a lack of scientific data on the scale and threat of plastic waste. To fill this gap, April’s team partnered with Ocean Conservancy to work with marine scientists. Their research found the majority of marine plastic pollution stems from five countries because of a lack of waste management infrastructure, which if fully in place, could reduce leakage by 45 percent. This insight raised the challenging question—how can companies and aid agencies bring funding to these markets to facilitate better infrastructure and prevent plastic leakage?

Going further to answer this question and drive real change, April left Coca-Cola and helped launch Circulate Capital in 2018 where she now leads the Investor Relations and External Affairs office. Circulate Capital works in five countries including Indonesia, the Philip-

pinas, and India. Based on the concept of catalytic capital, April and her team look for investable opportunities to achieve sustainable waste value chains, investing in waste collection systems, processing technology, and the creation of a “second life” for post-consumer plastic materials. April and her colleagues are expecting the first round of investment to prevent five million tons of plastic from leaking into the ocean.

April believes one solution to plastic leakage is building sustainable financial models. Beyond supplying funds, they also help local companies purchase equipment, enforce quality standards, analyze market trends, and plan for long-term development in the future. There is not a one-size-fits-all solution so the team engages with local communities and receives first-hand information about where future opportunities lie.

“I started working on the plastic leakage issue when there was missing information. The turning point was when we saw science and data came together. A decade ago, there were hardly any academics active in this field. Then we started to know Jenna Jambeck, as well as other academics like Kara Lavender Law and Chelsea Rochman and others. These women are all the game changers leading us down a path and bringing the industries and societies to action. It is really difficult to champion any change without the scientific data based research. With the help of solid information, you can have a really intelligent science and business driven conversations which lead to solutions.”



BOTTOM-UP
ACTION TO
REDUCE, COLLECT,
AND RECYCLE
PLASTIC WASTE



Image source: USAID

Improving Plastic Waste Recycling Capacity:

Indonesian Cities Needs and the Agenda Forward

By Moh. Nurhadi and Feri Prihantoro

At first, Haryono, an operator of a waste bank in Semarang City, didn't know anything about how waste could lead to cash. That was until he attended a training organized by BINTARI, an NGO funded by the United States Agency for International Development (USAID) to reduce marine plastic pollution in Indonesia. Through the training, he learned that collecting, sorting, and selling waste can translate into cash and help improve the environment. "Now, we can manage solid waste, and our environment becomes cleaner—not to mention the economic benefit from this activity," he says.

The BINTARI Foundation's project, called Improving Recycle Capacity of Waste Management Stakeholder through Integration of Extended Stakeholder Responsibility (PILAH, or 'sort' in Indonesian), was launched in October 2018 under a multi-country, USAID-funded program—the Municipal Waste Recycling Program. The PILAH project has benefited poor families by enabling them to earn additional income from sorting and collecting recyclable waste while reducing the amount of plastic waste illegally dumped into landfills and waterways. BINTARI's approach to reducing plastic waste leakage through strengthening the capacity of the Semarang City government was three-pronged. The project focused

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 This partnership
 between community
 residents and
 the municipal
 government has
 led to a 300
 percent increase
 in recyclable
 material collection
 and significant
 improvements
 in operational
 sustainability of
 waste banks ...
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on strengthening recycling policies while building waste bank and TPS 3R¹ (neighborhood facilities that process collected waste and recover recyclable materials) unit capacity and greater public-private collaboration.

Haryono lives in Central Java’s Semarang City, one of five marine plastic hotspots in western Indonesia.² With a population of 1.9 million, Semarang City generates an estimated 1,200 tons of waste every day. Around 850-950 tons of waste are collected and transported to the landfill while the remaining amount is recycled, openly burned, or disposed of in illegal dumps.³ Following the Presidential Regulation No. 97/2017 on national waste management policy and strategy, Semarang City set a target to reduce the amount of waste going to landfills by 70 percent and to increase the recycling of plastic waste by 30 percent.⁴ To combat plastic waste leakage, Semarang banned the use of straws, plastic bags, and Styrofoam in hotels, restaurants, and department stores.⁵ Waste recycling in the community was promoted

through organizing waste banks (neighbourhood recycling groups) and TPS 3R units. The performance of waste banks and TPS 3R units has been weak due to inadequate business strategies, market linkages, and technical capacity.

Through BINTARI-led public consultations and policy dialogues with the Semarang Environment Agency, the city agreed to draft new policies, which included ensuring waste banks were part of a market-based recycling system; synergizing waste banks with informal waste traders; promoting greater involvement of men; and assisting waste bank members with equipment, training, and technical assistance to facilitate sustainable operations.

Prior to BINTARI’s project, Semarang City had provided equipment and infrastructure to establish 200 waste banks and 38 TPS 3R units, but a year later, only half of the waste banks and six TPS 3R units were fully operational. Many closed soon after

Image source: USAID






Children at public education session for bank sampah. Image source: USAID

being set up due to insufficient training and support. The needs of the volunteers were neglected at the waste banks and 3R TPS units. Waste management involved households bringing their trash to the waste bank and then to the TPS 3R with transportation of residual waste from the TPS 3R to landfill the responsibility of the municipal government.⁶ Waste banks and TPS 3R units struggled to cover their operating costs because they served a relatively small number of households and had low collection rates. They had only a modest understanding of the types of waste and their values. The city government had organized a hierarchical waste bank system that functioned along neighbourhood, village, district, and city levels, rendering the waste banks and TPS 3R units uncompetitive due to their distance from the larger market actors.

With BINTARI's cooperation, the city government assigned staff to provide coaching to 50+ waste banks and two TPS 3R units on how to generate greater community participation and to sort, pre-treat, clean, and market the collected materials to traders/recycling firms. City

staff regularly monitor their progress. The waste banks are becoming more entrepreneurial and business-oriented, no longer focusing on the recruitment of new members by appealing solely to volunteerism. Membership is growing as waste banks have expanded their services, which include access to microfinance loans, gold savings plans, and utility payments through a public sector bank. This partnership between community residents and the municipal government has led to a 300 percent increase in recyclable material collection and significant improvements in operational sustainability of waste banks and TPS 3R units. Mr. Haryono, a waste bank leader in the peri-urban Polaman community, Notes "that the environment is cleaner and we are seeing economic benefits from our efforts."

Even as plastic recycling has grown in Semarang in recent years, it is low compared to the recycling of other materials. BINTARI Notes that some plastic materials have no or very little economic value. For instance, multi-layer plastic packaging—found in many processed items,



such as instant beverages, personal care products, and other fast-moving consumer goods—is considered low-value.⁷ The primary stakeholders in the plastic waste recycling value chain are not interested in collecting multi-layer plastic packaging due to its high collection cost and low price. To address this challenge, BINTARI secured a partnership with a large national food manufacturer PT Indofood, building on the Indonesian Ministry of Environment and Forestry’s Extended Producer Responsibility (EPR) regulations⁸ to reduce single-use plastic waste. BINTARI worked with PT Indofood to establish a ‘take back’ pilot initiative for its low-value noodle product packaging, which incentivized 70 participating retail and noodle stall owners with small subsidies.

BINTARI has drawn various lessons from its work with Indonesian companies on recycling and reusing low-value plastic waste. These include:

Design and Manufacture. Food producers place product safety as their foremost priority and multi-layer plastic packaging has proven to be both safe and inexpensive. Multi-layer plastics consisting of the same or different combinations of plastics can be recycled whereas the combination of plastic and non-plastic materials cannot be processed and recycled in a cost-effective manner. Food producers/retailers recognize the importance of transitioning to alternative packaging materials that have less environmental impacts and intensive research and development efforts to identify alternatives are taking place.

Low-Value Plastic Waste. The challenge with collection of low-value plastic waste is not only about the composition, but also related to size and weight and competitiveness with other material prices. If the price gap is high, informal waste collectors will opt to collect other more valuable materials. Thus, some form of economic incentive (such as a subsidy) would encourage these collectors to include low-value plastic waste in their economic activities.

Waste Recycling and Reuse. Recycled multilayer plastic packaging can be used to produce craft and souvenir items such as laptop cases, bags, book covers, etc. Community residents can be trained in ‘upscaling’ this low-value plastic waste, though these products tend to fall into a small, niche market and likely will require some form of financial incentive.

BINTARI considers that a sound municipal waste recycling policy should integrate solid waste management stakeholders into a public-private partnership structure that promotes shared responsibilities among community residents, city government, and the private sector. Feri Prihantoro, PILAH’s project coordinator

Notes “that learnings from this pilot initiative will go a long way to helping producers and consumers become more responsible in their use of plastics.” The city government needs to assume a coordinating role through setting up a policy and regulatory framework that fosters community participation and engagement with the private sector. The city Environmental Agency needs the private sector to reduce their consumption of single-use plastics and provide financial incentives to achieve citywide plastic waste reduction targets.

Acknowledgements

The PILAH Project of BINTARI Foundation is funded by the USAID Municipal Waste Recycling Program (MWRP) from 2018-2020.

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Next Generation:

A Youth-led Initiative to Stop Ocean Plastics

By Swietenia Puspa Lestari and Nadhira Afina Wardhani

An awful thing for scuba divers to find at the bottom of the sea is piles of trash, varying from small things like single-use plastics and textiles to obscure things like bed frames, fans, and refrigerators. These discoveries spurred Swietenia Puspa Lestari (Tenia) to create Divers Clean Action (DCA) in 2015. An environmental engineering student and diver who grew up on a small Indonesian island, Tenia realized that small islands were severely impacted by marine debris and that improving the waste management system could be important to combating ocean plastic pollution.

DCA is a youth-led foundation that has grown into thousands of volunteers across Indonesia and Southeast Asia working together to make the oceans free of trash. At the beginning of its quest, following guidelines developed by several universities and the Indonesian government, DCA generated data from the marine

debris collected on beaches, underwater, and in coastal areas. By conducting fieldwork, DCA identified many challenges that led it to produce citizen science research and organize public information campaigns and workshops. DCA recognized the importance of working closely with community residents, the local government, and the private sector through corporate social responsibility and extended producer responsibility (EPR) programs.

DCA targeted its integrated community development approach to Kepulauan Seribu, a cluster of 110 islands located off the coast of Indonesia's capital, Jakarta. There are 11 inhabited islands in the cluster with 27,000 residents. Fishing was always the foundation of the local economy, but tourism has grown rapidly with thousands of visitors coming for diving and camping. Island residents have adapted by creating microcenter-





Image source: Divers Clean Action (DCA)

prises offering services such as tour boats, guest houses, and restaurants. Like many coastal areas in the world, Kepulauan Seribu's once pristine beaches suffer from surging amounts of inorganic waste which drift ashore from the mainland and surrounding islands. The waste management systems on the Kepulauan Seribu Islands do not collect all the trash contributing to a worsening environment.

Before diving deep into the causes of the problem, DCA needed to take a step back to look at the data. From 2017 to 2019, 63 percent of the discarded waste was single-use plastics. In response, DCA initiated a #NoStrawMovement campaign targeting restaurants in collaboration with KFC Indonesia, an international restaurant chain with 500 outlets in Indonesia. Within a year, the #NoStrawMovement campaign led to a 91 percent reduction of single-use plastic straws consumed nationally, inspiring other restaurants to eliminate their use of plastic straws.

DCA has learned that affecting waste management service delivery is easier in

large cities where there is sufficient infrastructure and facilities to accommodate the massive volumes of waste. Small islands, however, have limited available land, and it is difficult to build a new waste management facility when other public facilities, such as schools, community health centers, sport fields, and parks compete for the scarce vacant land. DCA concluded that the solutions to eliminate waste leakage from each island included implementing waste reduction, recycling, and composting programs with the community and improving public sector waste management. With help from the KEHATI Foundation and Danone-Aqua, DCA's program found ways to complement the local government's efforts and budget.

DCA's primary role has been to foster collaboration among community residents, local government, private sector donors, and the fishing and tourism sectors. DCA has worked with stakeholders to identify needs and issues and provided human and financial resources. Since 2019, through the Save Our Oceans and Small Islands (SOSIS) project supported by the United States Agency

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for International Development Municipal Waste Recycling Program (USAID MWRP), DCA has assembled a multi-disciplinary team of youth and scaled up its activities on five inhabited islands. The DCA project emphasizes strengthening the capacity of the local government's solid waste management unit and raising awareness of community residents. With support from the Regional Environmental Agency (Sudin LH) and the Regent of Kepulauan Seribu, household waste segregation at the source and a segregated waste collection system were introduced in the islands. This approach ensures that the 230 metric tons of waste generated monthly can be recycled effectively onsite through composting organics and closed-loop recycling systems with help from neighborhood waste banks and the informal sector. The remaining residual waste is transported to a landfill, while sellable recyclables are sent to a recycling center, both located on the mainland, using a government boat twice monthly. DCA secured private sector financial support

for the island-based recyclers by involving Danone-Aqua, which purchases the plastic waste materials at a subsidized price.

Ijat, a community leader from the Untung Jawa community, Notes:

“Through the DCA program, we have learned that our waste has value and [we have learned] how to conduct door-to-door education campaigns. Most of us have never seen the massive Jakarta landfill to really understand the urgency of our solid waste management problem. We want to convert the government's budget allocated for collecting and transporting mixed waste into investments in the community. We make sure that waste is separated into simple bins in each house, organics are reutilized for composting and fish and chicken feed, and that no recyclable plastic is being wasted.”

Despite efforts to promote recycling in the islands, our data shows that only 26 percent of total plastic waste is rigid mono-material

Image source: Divers Clean Action (DCA)



plastic which can be recycled by the informal sector. The rest is considered “residual” plastic waste, mostly flexible multilayer plastic that is costly to recycle. These plastics are cheap and sanitary, much of them used for packaging basic necessities in small packets suitable for daily consumption by a population with limited disposable income. Many members of the fishing community live day-to-day, selling their catch to cover daily expenses. Household surveys revealed that island residents prefer the low cost, small packet items instead of brands perceived as having higher quality.

This situation motivated DCA to form a social enterprise (the *Cura* bulk store) so island residents could purchase their daily necessities and reduce their consumption of single-use plastics and multilayer flexible plastic packaging. After a campaign to raise community awareness, DCA opened the bulk store to sell high-volume household and personal care products such as detergent, dishwashing liquid, shampoo, and soap. DCA collaborated with The Body Shop Indonesia to scale up its operation, providing employment for local residents and reducing plastic sachet usage by 3,000 per month. Asmawiyah, a waste bank leader from Kelapa Island, noted: “We need to multiply the number of similar stores to

those currently being operated in Pramuka and Harapan Islands. The community is enthusiastic and wants to collaborate by buying quality products without packaging and solving the plastic waste problem.”

DCA’s experiences have shown that while community outreach campaigns on waste reduction at the source promoted greater community participation, the most consequential factor was an effective integrated waste management system. DCA has learned the value of collaboration and joint ownership in addressing difficult challenges by bringing together grassroots community support with provincial government stakeholders, and microenterprises with national companies from upstream to downstream, from reduction to recycling solutions. DCA facilitates bimonthly multi-stakeholder meetings to track program progress and stakeholders’ commitments to produce long-term, sustainable solutions for small islands combating marine debris issues. This program shows that there are viable approaches for recycling plastic waste on these islands in an effective way. DCA’s findings and lessons learned have the potential to unlock more opportunities across Indonesia’s 17,000 islands to use the circular economy as a means to achieve improved health and protection of our seas and environment.

Acknowledgement:

1. *USAID MWRP*
2. *Government of DKI Jakarta (Sudin LH Kepulauan Seribu, Dinas LH DKI Jakarta, Kabupaten Kepulauan Seribu, Kepulauan Seribu National Park)*
3. *National park of Kepulauan Seribu*
4. *SOSIS supporters and donors*
5. *Divers Clean Action volunteers and staffs*



Sustainable Actions for a Local Circular Economy

By Tsukiji Makoto

“...medium and rural areas in Indonesia are responsible for 72 percent of mismanaged waste potentially leaked into waterways due to a lack of collection services and improper disposal site management.”

Lake Toba is one of the great natural wonders of the world. At the center of this massive crater lake is an island about the size of Singapore. The scenery of Lake Toba is unforgettable, it looks more like an ocean than a lake. As soon as I arrived on my first visit, I felt all the worries of the world disappear in front of those beautiful mountainous landscapes facing the cool and clear lake. That day, we had arrived to visit the recycling center at Humbang Hasundutan Regency and on the hilltop, the view from the car window brought back nostalgia. The atmosphere is similar to my childhood hometown, or perhaps like a scene from a Hayao Miyazak animated film.

Even in such a beautiful place, however, local and national media reported on more than ten temporary waste disposal sites where the garbage was growing ever closer to the lake.

A Case Study in Lake Toba, Indonesia

“Our team arrived in 2019 to initiate operation of the Balige Recycling Center, a collaboration between the United Nations Environment Program International Environmental Technology Centre (UNEP-IETC), the Japanese organization IGES, local NGOs Kementerian Lingkungan Hidup dan Kehutanan (KLHK) and Institut Teknologi Bandung (ITB), and the local regency government. Similar to other TPS-3R design Material Recovery Facilities (MRFs) already in use in Indonesia, the project’s goal was to effectively mobilize local resources to improve municipal solid waste (MSW) handling (collection, transport, treatment, and disposal), and recovery of valuable materials and energy.”

The process of achieving final approval for the government-owned MRF included many factors. For example, stakeholders such as the Head of Regency, a local member of parliament, needed to sign approval. Also, the community needed to approve the land usage, because the available land on the island was limited near the community. In addition, the facility had to adhere to environmental standards and not leak out the leachate water byproduct from recycling plastic.

A successful MRF ultimately requires the participation of the community. This led the Regency Government to promote the creation of waste banks throughout the city where residents could take their waste to be transported to the Balige Recycling Center. One such facility is called “Beautiful Harmonious Toba” and the employees there are trained on site. Like all of these Waste Banks it is not owned by the government but rather by the community.

After several rounds of consultation, much preparation, plan modifications, and local stakeholder participation, the Balige Recycling Center was officially opened in March 2020. By the end of April 2020, about four tons of recyclables had been collected by the pilot project.

Myriad Vulnerabilities in Rural Waste Management

The characteristics of waste management differ according to a nation’s income level. Open dumping is the primary waste management option in low/lower-middle income countries, while landfilling is more common in upper-middle/high income countries. Incineration and recycling

options are often only promoted in higher income countries.

Neglected and given a lower priority in most developing countries, inconsistent waste management is the most basic issue with plastic leakage, and must be addressed first. Even for many developed countries, the simple problem of waste collection has been addressed in just the last few decades. However, global awareness of plastic pollution is rising and stakeholders everywhere are looking seriously at basic waste management.

In Indonesia, the size and location of the town or city often dictates the fate of plastic waste, as demonstrated by the National Plastic Action Partnership (NPAP).¹ The NPAP revealed that medium and rural areas in Indonesia are responsible for 72 percent of mismanaged waste potentially leaked into waterways due to a lack of collection services and improper disposal site management. This means the larger the city, the more waste collection residents have access to; while the more remote the town, the more citizens engage in open burning, which leads to public health risks for nearby communities, such as vector-borne disease, air pollution, and water contamination.

Some municipalities provide waste collection services, but this is still rather limited outside of large cities. In addition, most open dumpsites lack operational management and even basic equipment, such as fencing, heavy machinery to move waste, and leachate treatment systems. Some municipalities are able to assign workers equipment, but they typically just push waste to the corner of the site and burn it.



In rural and remote areas of Indonesia, waste is rarely separated at the source. And only a limited amount of recyclable materials, such as scrap metal and PET bottles, are taken to collection sites. Other types of mixed waste are often burned by the consumer at their residence, buried at a communal open dump site, or simply tossed into the environment.

seeks to address the plastic waste issue regionally and in the environment where the leakage happens. For plastic pollution control as well as waste management in rural and remote areas, the concept of the regional CES is critical, and comprehensive approaches that include local circularity and sustainable consumption and production within the region are key to plastic pollution control and waste management.

Necessity of “Bottom-up” Approach

When we fight against plastic pollution, it may be helpful to break down global concepts such as marine debris/pollution and climate change into local issues and on-the-ground contexts. These include air pollution, water contamination, and public health risks, as well as economic damages (tourism, fisheries, agriculture, etc.) to the communities.

Like most developing countries, plastic pollution outside of Indonesia’s cities is mostly caused by vulnerabilities in the waste management system and a lack of awareness within the communities. Local governments in these areas are facing many challenges to waste management including a lack of human resources, technology, infrastructure; and challenges to budgeting due to the scale of the economy, population, and market. The most important step is to identify a “localized circular economy system” aligned with locally available resources.

Japan is promoting the establishment of the “Regional Circular and Ecological Sphere (CES)”² which

Now, we need to focus on the local resources and systems in place as well as the interlinkage within regions, which also serves to build broader networks for proper waste management that include natural connections (among forests, countrysides, rivers, and the sea) and economic connections (composed of human resources, funds, and others) that complement each other and generate synergy.

The “bottom-up” approach is a key solution for fighting plastic pollution. Stakeholders, including donors, should seek the sustainable option to promote the local circular economy. A paradigm shift in funding may be required, to support not only the waste management technology and infrastructure, but also to develop the IoT system including a “token economy” and collaboration among local, national, and international stakeholders to establish local circular economies.



Notes

1. "Indonesia National Plastic Action Partnership." *World Economic Forum*, 2020. https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April-2020.pdf
2. "Creation of a Regional Circular and Ecological Sphere (Regional CES) to Address Local Challenges." *Ministry of the Environment Government of Japan*, 2018. <https://www.env.go.jp/en/wpaper/2018/pdf/04.pdf>

Disposal site in rural areas in Indonesia. Image source: Author, 2019





Image source: By Motortion Films / Shutterstock.com

To Curb Ocean Plastic Pollution, Empower City Leaders with Tailored, Science-Based Solutions

By Keri Browder and Vien Tran

Efforts to address the ocean plastics crisis generally fall into three buckets: cut plastic production (by banning certain plastic products or switching to alternative materials); improve waste collection and recycling; and clean up plastics that do end up in the ocean.

Different groups and sectors often stake out a single one of these buckets as the primary solution to the crisis. Activists lobby to ban plastic bags and straws; manufacturers embrace the waste management approach, pledging to use more recycled content in their products or make their packaging more easily recyclable; and engineers dream up new ways of removing plastic from our ocean—ranging from fancy trash skimmers to “plastic-eating bacteria.”

The reality is that to make a serious dent in this crisis, the math tells us we need to pursue all three approaches. The real question is: how and where do we get started?

At Ocean Conservancy we believe those best positioned to tackle the plastic pollution challenge are those most impacted by it, and those who must make decisions on how to solve it. In this regard, cities and city leaders stand out.

Consider that over half of the world’s population now lives in cities, and nearly 70 percent of the world’s population is projected to live in urban areas by 2050. Meanwhile, cities

generally have a leading role in building and running water, sanitation, and waste management systems and have interconnected policy priorities that lead them to prioritize investments in these areas, including public health, economic growth, and job creation. Cities are also key actors in citizen education and awareness. Furthermore, many parts of the world most impacted by plastic pollution, including Southeast Asia, are rapidly urbanizing. In Indonesia, for example, a majority of citizens already live in urban areas.

At Ocean Conservancy, we have taken this to heart. In early 2019, together with partners, we announced the launch of **Urban Ocean**, an initiative to engage cities in the fight for clean, healthy seas by improving municipal waste collection and management systems.

The idea is that it can't be one-size-fits-all. Every city, every watershed is a little different. To be sustainable and effective, we need to customize. This is why Urban Ocean has adopted a science-based process, beginning with an assessment followed by incubation and acceleration support. The assessment consists of two separate tools. The first is University of Georgia's New Materials Institute's Circularity Assessment Protocol (CAP), which entails monitoring and categorizing plastic waste and litter across the city as well as conducting interviews with citizens, retailers, and public officials across the plastics and waste management value chain to identify strengths and weaknesses in the city's waste management systems. The second tool, Systems Studio, administered by Resilient Cities Network, uses the infor-

mation provided by the CAP to help cities clearly identify tailored opportunities and prioritize appropriate interventions.

To incubate and accelerate support, the Urban Ocean partnership has created a larger waste management Community of Practice, where city leaders, companies, and advocacy groups can share best practices and resources on topics ranging from litter trap devices to preventing and addressing abandoned, lost or discarded fishing gear.

In June 2020, the Urban Ocean team, including Ocean Conservancy, Resilient Cities Network, and The Circulate Initiative, announced the first cohort of five cities—Can Tho, Vietnam; Melaka, Malaysia; Semarang, Indonesia; Pune, India; and Panama City, Panama. These cities were selected because of their commitment to improving waste management as part of resilience-building efforts and their potential to provide solutions in geographies with high waste leakage rates (“learning cities”), or because they are leading the way in the fight against river and ocean plastic or implementing circular economy approaches (“mentor cities”). Three of the five “learning cities” are in Southeast Asia where ocean plastic leakage has been growing.

Indeed Vietnam, a country of over 98 million people, is, like Indonesia, growing rapidly and an ocean plastic hotspot. Nearly 40 percent of the population lives in urban areas, and that number is rising. Meanwhile, the country's trash collection system is complex and includes state-owned companies, joint-ventures, private sector actors, cooperatives, and independent waste collectors (commonly known



as waste pickers). Due to the decentralized nature of waste management in Vietnam, tracking trash is difficult. Without concentrated effort, Vietnam's continued economic growth and population shifts will further strain its waste management system, with plastic pollution the result.

Fortunately, Vietnam has risen to the challenge of combating marine plastic. It is continuing to advance the Bangkok Declaration on Combating Marine Debris in ASEAN Region by elevating it to a national priority and by partnering with

local and international NGOs. Critically, the country adopted a National Action Plan for Management of Marine Plastic Litter by 2030 in 2019, and implementation is underway. This includes a national public awareness campaign encouraging alternatives to single-use plastics.

Across the country, local and regional governments and retailers have heard the call: government employees of Central Thua Thien-Hue province are prohibited from using plastic bags

and disposable wipes, while Ho Chi Minh City has required retailers to replace plastic bags with more sustainable alternatives by next year, among other examples.

Through Urban Ocean as well as a separate, dedicated Vietnam program, Ocean Conservancy is working to assist Vietnam in implementing its National Action Plan. One of our goals is to expand the availability of Vietnam-specific data on plastic waste generation and collection to inform policymaking and identify interventions to reduce ocean plastic pollution. To that end, we are working closely with scientists at the forefront of global marine debris research as well as local experts, including Vietnamese NGOs, universities, and government agencies. Like Vietnam, Indonesia too could benefit from dedicated science support, and our hope is that the assessment in Semarang will be the first of many such interventions.

Recognizing the urgency of the plastic pollution crisis, the good news is that there's a menu of options for city leaders in Vietnam, Indonesia, and beyond to choose from to tackle the issue; it's important we empower them to choose what's best for them.

Acknowledgements

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URBAN OCEAN PROJECT LOCATIONS





Image source: Unilever

Removing Plastics from the Environment:

Creating Incentives for Behavioral Change

By Nurdiana “Ade” Darus and Maya Tamimi

Plastic is an integral part of our lives. Its use ranges from providing safety and protection for us during the COVID-19 pandemic to improving human lives with the availability of prosthetic arms and legs. The benefits of plastics to humankind are undeniable. Unfortunately, plastics have been at the receiving end of a bad reputation as the culprit for environmental damage, when it should be directed towards irresponsible human behavior in using and disposing of plastics.

Indonesia is on an accelerated development path, aspiring to become one of the world’s top five largest economies and to reach high-income status by 2045. Fuelled by its demographic dividend, the projected population by then would surpass 310 million people, 14 percent greater than today. With such population increase comes challenges to the preservation of a clean and healthy environment. In 2015, Indonesia was notoriously crowned as the second-largest marine plastic polluter in the world, after China.¹ In 2018, the Indonesian Central Bureau of Statistics estimated that only 28 percent of the population cared about proper waste disposal. Subsequently, the government has established a target of reducing plastic marine litter by 70 percent by 2025—a very ambitious, yet achievable goal with the right change in behavior across all elements of society. However, if the populace does not change its behavior towards plastics in the near term, Indonesia may end up having more plastics than fish in its ocean.

“...\$5 billion of investment is required to achieve Indonesia’s waste management goals, and the national government will only be able to fund about 10 percent of these investments.”

So how do we change people's behavior towards plastics use and disposal? We have seen how humans throw plastic away as if there was no more value after use. Unknown to most, plastic holds its economic value, no matter how small, throughout its lifetime. Post-consumer plastic packaging or instruments could be monetized further if they were properly handled, disposed of, and recycled.

Monetizing Post-consumer Plastics Through Waste Banks

The community-managed waste banks throughout Indonesia are real examples of how people at the grassroots are monetizing the economic value of plastic waste. Since 2008, Unilever Indonesia has assisted neighborhoods across 18 cities to develop almost 4,000 waste banks with training, tools, and systems to collect and sell plastic waste. These waste banks provide monetary incentives for their members to segregate and bring in recyclable waste, including plastic waste. This model provides an additional income stream for its members. They hold waste bank books that record every transaction, and when the collected value has become substantial, individuals can draw cash out from "the bank." In 2019, Unilever Indonesia-supported waste banks delivered a total turnover of \$1.2 million from 12,500 tons of recyclable waste, of which 4,000 tons were plastic.

Women manage most of the waste banks. They are motivated by a concern for a clean and healthy environment for their children's growth and the opportunity to make additional income. These women's grit to successfully run the waste banks has resulted in the even greater collection and sales of recyclable plastics waste during this pandemic. We have seen the doubling of plastic waste volume collected through our waste banks in 2020 compared to 2019. This phenomenal growth is a testament to an incentive struc-

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Image source: Unilever



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By 2025, Unilever globally is committed to ensuring that 100 percent of its plastic packaging is recyclable, reusable, or ; to reduce its use of virgin plastic by 50 percent; and to collect and process more plastics than it sells.
”

ture that works and a business model that is worth replicating more broadly. The scheme underscores the power of public, private, and people partnerships. The program has the potential to be scaled-up to the national level and achieve economies of scale to make an even bigger positive impact on the environment.

Recently Unilever Indonesia even made many of its waste banks available and accessible via the Google My Business platform that enables anyone to access the location of nearby waste banks directly on Google Maps, with the aim to positively influence changes in people’s behavior to dispose of plastic waste responsibly.

Incentivizing Segregation and Better, Less, and No Plastic Packaging Use

Waste segregation at home is another key element to accelerate more successful plastic waste management. If more households separate their organic, paper, glass, and plastic wastes into different containers, this simple change in behavior would help to preserve the significant economic value of recyclable plastic waste, as clean and separated waste has higher value than mixed waste.

Companies are equally as responsible for the production and provision of plastic packaging in the market as their consumers are responsible for disposing of them properly. Plastic packaging in the market needs to be recyclable, reusable, or compostable while companies need to innovate for better, less, and even no plastic packaging of their products. By 2025, Unilever globally is committed to ensuring that 100 percent of its plastic packaging is recyclable, reusable, or compostable; to reduce its use of virgin plastic by 50 percent; and to collect and process more plastics than it sells.

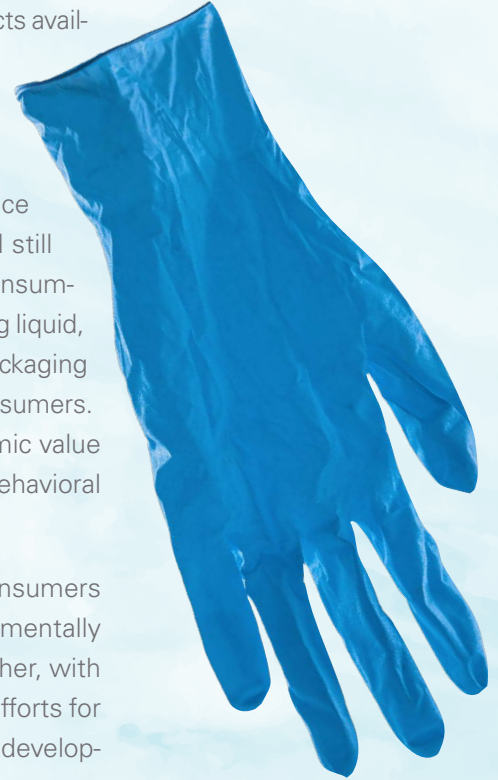
Image source: Unilever



Early in 2020, just before the pandemic began, Unilever Indonesia and eleven of its brands—ranging from shampoo, to detergent, to sweet soy sauce—launched its pilot refill program in Jakarta’s Saruga Bulk Store. Being true to its name, the retail store sells bulk quantities of basic ingredients, such as rice, sugar, flour, among other condiments. By partnering with Unilever, they have added a colorful selection of health, hygiene, and food products for their eco-conscious consumers. For Unilever, making its products available in refill stations—hence no plastic—not only resonated with its eco-conscious consumers, but also encouraged all its consumers to make refills the new normal. This is another successful effort to promote behavioral change.

Unilever Indonesia has also made some of its packaging lighter and shorter, hence less plastic. Its Rinso detergent brand uses less plastic in its packaging and still ensures the necessary security and safety of the product until it reaches the consumer’s home. Other brands, such as Bango sweet soy sauce, Sunlight dishwashing liquid, and Love & Beauty Planet personal care products have even switched their packaging from virgin plastic to 100 percent recycled plastic, without additional costs to consumers. Driving up the demand for recycled plastic in packaging increases the economic value for clean and segregated plastic waste, and provides additional incentives for behavioral change towards proper plastic waste handling.

When efforts to promote sustainable behaviors of plastic disposal among consumers are coupled with commitments of producers to innovate and produce environmentally friendly plastic packaging, humanity can live more sustainably and grow together, with plastics. As Indonesia aspires to reach its high-income status by 2045, these efforts for the environment aim to deliver an even stronger, prosperous, and sustainable development for the country and its people.



Notes

1. Jambeck, et al. “Plastic Waste Inputs from Land into the Ocean.” *Science (American Association for the Advancement of Science)* 347, no. 6223 (February 13, 2015): 768—771.

CLOSED-LOOP INNOVATORS

Daru Setyorini:

Uniting Communities to Protect and Speak for the Rivers



Inspired by Rachel Carson who spoke for the trees and the birds, Daru and her husband Prigi speak for the butterflies, plankton, fish, and rivers: “Why are you sick?” they ask. The Brantas, a wide river flowing through the heart of East Java, is choking on plastic trash. As the leader of the Brantas River Waterkeepers, a community movement that promotes integrated river basin management through research, education, and advocacy, Daru and her volunteers often sail the river to monitor its health. Daru’s team once mapped nearly 360 open dump sites along a 41-kilometer stretch of the river. Their mapping and monitoring aims to help protect the drinking water for downstream residents of the major city of Surabaya.

Daru with Prigi co-founded a conservation research club called Ecoton while they were still at university. The organization originally worked to protect mangrove forests at the mouth of the Brantas, but they quickly redirected their focus to pollution in the river after discovering it was a major source of pollution in the mangroves. Ecoton is now a nationally influential NGO that seeks to restore river environments in East Java.

“If you don’t know it, you don’t love it.” Supported by evidence they collected and by scientific analysis, Daru and her colleagues have brought five class action

lawsuits against the Indonesian government and 10 polluting companies for not doing enough to solve the plastic leakage issue. However, Daru is not alone, as more than 40 women were motivated by the plastic crisis to come together and form the “River Defender Women’s Group.” Daru and her fellow waterkeepers hold meetings to provide residents with knowledge about environmental law, and especially how it applies to the river. Their hard work has seen some of their litigation taken up by the supreme court and this has earned them national attention.

Plastic leakage is still an uphill battle because the river needs strong government regulations to ban single-use plastics and improve waste management, but Daru is not giving up.

“When there is a pollution incident happening, the local communities have the most experience with the issue. We need to reach out and visit these women, children, and pollution victims, and try to get them to speak out at universities, at government hearings, and on the radio. The most important matter is access to information. We need to build their confidence and encourage them to make an organization like our organization. We believe that we are stronger together.”



Swietenia “Tenia” Puspa Lestari:

Rallying a Generation to Address the Ocean Plastic Crisis

Photo courtesy of Tenia Puspa Lestari

“I grew up as a scuba diver and every year I found more and more trash that I needed to put in the pockets of my diving suit to bring it back to a waste bin. We don’t have a proper waste management system and I don’t want to dive with trash anymore.”

Tenia has witnessed the deteriorating state of our oceans from plastic pollution. She translated her passion for the environment by founding Divers Clean Action (DCA), a youth-led NGO that strives to prevent and combat marine debris in 2015 shortly after graduating from college. Today she oversees more than 1,500 volunteers across Southeast Asia as the Executive Director. Tenia and her DCA colleagues promote a sustainable lifestyle through their four main programs—data collection, citizen science support, educational campaigns, and workshops. They also conduct monthly beach clean-ups and waste sorting for recycling.

Most of the single-use plastics in Indonesia can’t be collected and recycled because they have low economic value. DCA collaborates with stores on the islands to sell necessities like soap and detergent in bulk or reusable packaging in order to reduce sachet waste. In one campaign, two coastal shops over a period of nine months successfully avoided the use of approximately 30,000 sachets. Aside from single-use plastics, Tenia and her colleagues also work to recover and divert waste that holds economic value or can be recycled from being dumped.

Transportation between the islands also adds difficulty and cost to the plastic waste problem. However, the USAID MWRP Indonesia funded project Save our Small Islands, overseen by Tenia, has been trying to solve this issue. They are trying to bridge the private sector, governments, and communities to link informal waste collectors with their local recycling systems.

Tenia and Divers Clean Action have successfully teamed up with big names like KFC and Danone Aqua to promote single-use plastic bans. In 2016, they launched the #NoStraw-Movement with KFC Indonesia that encouraged people to avoid plastic straws through infographics detailing the harm of single-use plastics. What started in one store, later spread to all of the nearly 500 KFC stores in Indonesia. Tenia and her DCA colleagues also conducted research and collected data on plastic straws through a brief study with USAID, which has received attention from the Indonesian national media.

“Initially, the government thought we were just a bunch of youngsters who were collecting trash for a while and then would just move on. To gain their serious attention was a major challenge for us. Reliable data has helped to gain the trust of stakeholders. Still, it takes a lot of time for these movements to become more effective and integrated.”

CONCLUSION

Indonesia's Path Forward on Plastic Waste

By Hazel Ruyi Li and Eli J. Patton



Eli J. Patton
Managing Editor

Woodrow Wilson Center,
China Environment Forum

Single-use plastic waste leaks into the environment at every stage in the value chain and this waste is a growing threat to the health of ocean ecosystems. If we continue on our present course, the amount of plastic in the oceans will triple by 2040.¹ Yet, while plastic production and consumption are increasing around the world, so is awareness. The United Nations, the Ocean Conservancy, PEW, and Duke University experts, all agree that national policy is needed in every step of the plastics pipeline.



Hazel Ruyi Li
Managing Editor

Woodrow Wilson Center,
China Environment Forum

We now see nations around the world stepping up their commitments. Japan, with the most plastic packaging waste per capita after the United States,² has laid out ambitious targets including a reduction of single-use plastic wastes by 25 percent and a 60 percent reuse or recycling of plastic containers and packaging by 2030.³ In the United States, President Joe Biden announced on January 27, 2021, that the United States will commit to protect 30 percent of its land and ocean by 2030.⁴ In the EU, too, policies are becoming more stringent. Indeed, around the world countries with different comparative advantages in technology, local governance, and business models are working together to form partnerships and build a global value chain with a “rush to the top” toward circularity.

In Indonesia, the successes are beginning to accumulate. NGOs are winning in court. Better, newer packaging materials are being introduced and minimum recycled content is increasing. Bulk stores have opened. Waste banks are diverting plastic from landfills. Riverkeepers are collecting data and gathering volunteers to perform cleanups. New technologies are tracking sources of leakage to plug the information gaps. Education campaigns are teaching people the dangers of single-use plastics and how to avoid using them. So many more successes have already happened in Indonesia, and all of them are enabling further learning and progress.

From each of the inspiring stories included in this publication, our team hopes that you see not only the plastic crisis in Indonesia, and the world, but also the research being conducted, the rich partnerships being formed, and the innovative policies being tested. The growing plastic pollution problem cannot wait until 2040 for a solution and the progress that has been made in Indonesia clearly demonstrates that humans can end plastic waste and create a truly circular economy.

Notes

1. "Breaking the Plastic Wave." *PEW*, 2020. https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_report.pdf
2. "Asia Produces Half the Plastic in the World." *Statista*, June, 2020. <https://www.statista.com/chart/17564/annual-per-capita-production-of-plastic-by-region>
3. "Revealing the intersectoral material flow of plastic containers and packaging in Japan." *Proceedings of the National Academy of Sciences of the United States of America*, August, 2020. <https://www.pnas.org/content/117/33/19844>
4. "President Biden's 30% Conservation Commitment Is Good News for People, Too." *Pew*, January, 2021. <https://www.pewtrusts.org/en/research-and-analysis/articles/2021/01/27/president-bidens-30-percent-conservation-commitment-is-good-news-for-people-too>





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