

CASE STUDIES FROM ASIA:
**CITY-LEVEL
LEARNINGS FOR
THE GLOBAL PLASTIC
POLLUTION TREATY**

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About Plastic Smart Cities: Plastic Smart Cities is a global movement of cities committed to achieve zero plastic leakage in nature. Since 2018, the initiative has supported cities and coastal centres in taking bold action to stop plastic pollution, with a goal to reduce plastic leakage by 30% in the near term, and achieving no plastics in nature by 2030. Visit plasticsmartcities.org.

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Disclaimer: This report, commissioned by WWF and developed in collaboration with Accenture, analyzes city-level interventions from various cities across a range of Asian countries (People's Republic of China, India, Indonesia, Japan, Jordan, Malaysia, The Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, the UAE, and Vietnam).

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List of Abbreviations

BAU	Business-as-usual
EAD	Environment Agency – Abu Dhabi
ECF	Environment and Conservation Fund
EPR	Extended Producer Responsibility
FMCG	Fast Moving Consumer Goods
INC	Intergovernmental Negotiating Committee
IUCN	International Union for Conservation of Nature
MRF	Material Recovery Facility
PET	Polyethylene Terephthalate
PSC	Plastic Smart Cities
rPET	Recycled Polyethylene Terephthalate
RVM	Reverse Vending Machines
SUP	Single-use Plastics
UAE	United Arab Emirates
UN	United Nations
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
USAID	U.S. Agency for International Development

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Cover image:

Waste workers in Bali collect and transport household waste to sorting and recycling centres, known as TPS3R in Indonesia. These women have been trained by Delterra's Rethinking Recycling Academy, which worked with the village leadership, community leaders, operational managers and waste workers to transform operations at their TPS3R including community education and improving working conditions. Photo courtesy of Delterra.

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EXECUTIVE SUMMARY



As United Nations Member States gather to negotiate a historic global treaty on plastic pollution, this report aims to provide negotiators with policy recommendations derived from on-the-ground interventions from cities in Asia that are tackling plastic pollution.

Cities are typically the primary authorities responsible for urban waste management. With growing urban populations around the world, the majority of plastic waste is now generated in cities. **Thus, city-level authorities and interventions have a key role to play in tackling plastic pollution. While cities establish and maintain the critical infrastructure necessary for waste management, they also play a critical role in developing and implementing waste management regulations and policies tailored to their specific needs and challenges.**

Asian cities grappling with the escalating issue of mounting plastic waste are actively taking steps to address the crisis of plastic pollution. These initiatives, tailored to the specific conditions of each city, encompass the entire lifespan of plastic products. Despite notable successes, the persistent challenge lies in the cross-border nature of plastic products and plastic pollution, surpassing the capabilities of individual cities. To identify the specific opportunities presented by the plastic pollution treaty to support city authorities in addressing the plastic pollution crisis, this study analyzed city-level interventions from several countries in Asia (People's Republic of China, India, Indonesia, Japan, Jordan, Malaysia, the Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, the United Arab Emirates (UAE), and Vietnam) with an intent to answer the following questions:

1. What are the challenges faced by cities that go beyond a city or national level, which can be addressed by global rules in the plastic pollution treaty?
2. What are the opportunities to scale up and

accelerate city-level interventions in Asia through global rules in the plastic pollution treaty?

It is important to note that decisions regarding the design and production of plastic products are primarily controlled by entities beyond the influence of cities, either due to their international locations or the limited authority of local governments. Consequently, city officials often find themselves lacking resources and authority to effectively address challenges related to plastic design, production, reuse, refill, and recycling. The absence of standardized requirements and regulations concerning aspects such as design, content, safety, and hygiene for reuse and refill systems hinders the economic feasibility of such models and discourages potential investments. Given the globalized nature of plastic manufacturing and consumption, cities and national governments are constrained in their ability to address these issues and are frequently left to mitigate only the resulting impacts.

Despite these limitations, cities exert influence in shaping strategies for plastic waste management. Achieving an optimal balance between globally set regulations and locally driven initiatives is imperative. This entails recognizing the significance of grassroots efforts alongside overarching global standards, ensuring a comprehensive approach to tackling plastic pollution.

Through numerous case studies and samples taken from city-level plastic interventions, this report brings forward the need to highlight the importance of establishing the following global rules to be part of the treaty to end plastic pollution:

- (1) **Global ban on avoidable single-use plastics (SUPs) and high-risk plastic products:** City-level interventions underscore the challenges of managing non-recyclable plastic waste. A global ban on avoidable SUPs and high-risk plastic products, is

proposed to alleviate pressure on waste management systems, reduce environmental costs, and encourage the development of alternative solutions.

- (2) **Global requirements on product design and targets for reduction, reuse, and recycling:** Introducing global standards and requirements for product design and setting targets for reduction, reuse, and recycling can help to ensure that plastic products entering the economy are non-toxic, reusable, repairable, durable, and recyclable, increase recycled content and decrease non-recyclable from waste streams. These measures aim to optimize waste management practices and guide industry toward more sustainable solutions.
- (3) **Global obligations for economic instruments and extended producer responsibility (EPR)** Economic instruments are suggested to promote greater adoption of sustainable practices throughout the plastics value chain, encouraging better choices for the safe circulation and management of plastic products. Furthermore, a treaty that requires states to set up extended producer responsibility (EPR) regulations could help to shift the responsibility for the management of plastic waste from municipalities to producers.
- (4) **Global standards and requirements for segregation, collection and recycling:** binding global standards and requirements on how waste should be properly segregated, collected, sorted, and recycled can accelerate and improve waste management practices in cities and globally and increase the safe circulation and management of plastic products.
- (5) **Global minimum standards and requirements for disposal:** global minimum standards and requirements on disposal, which could be related to the operations of disposal facilities and disposal practices, are proposed to prevent the escape of plastic products

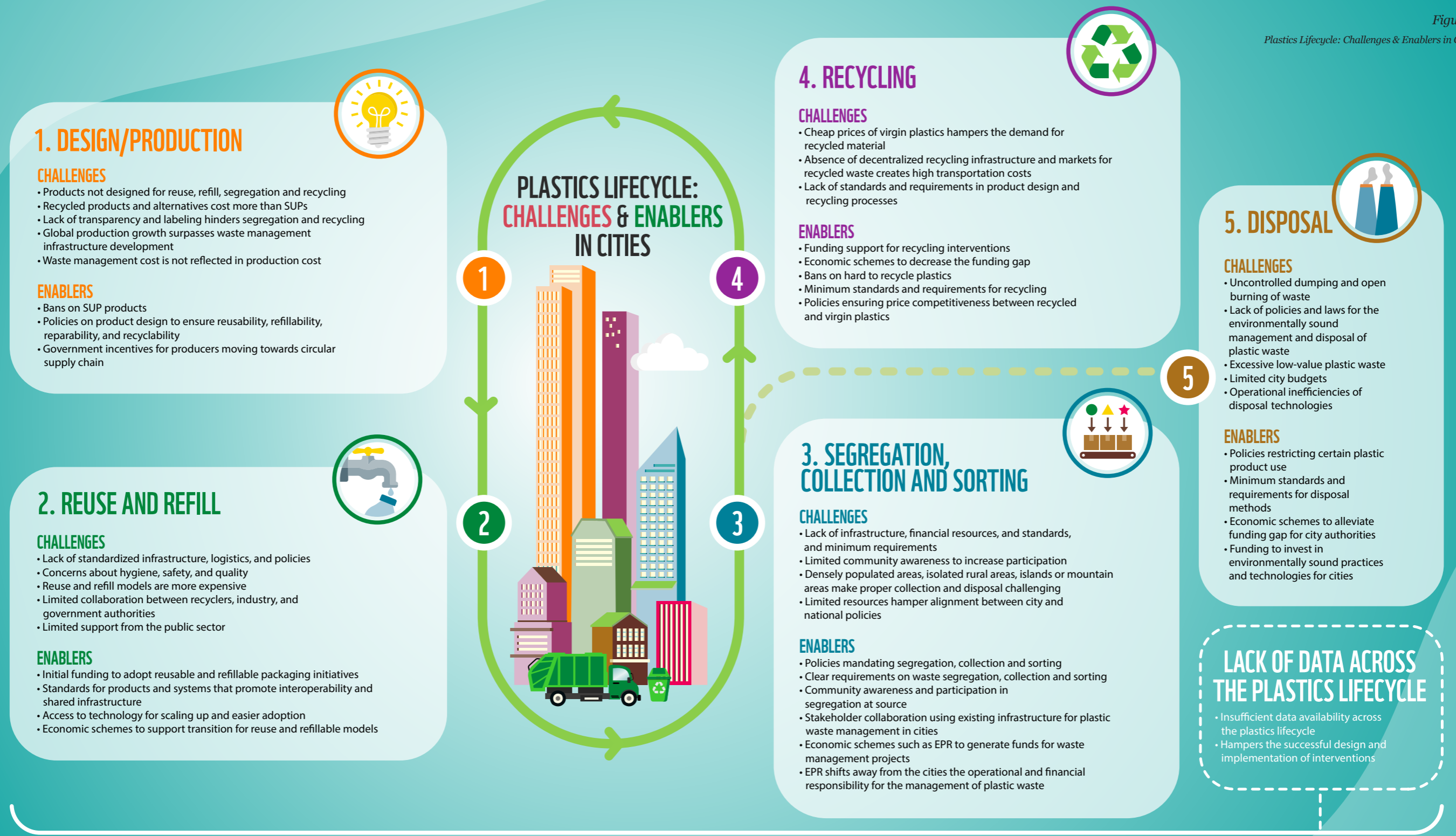
and materials in the environment, as well as associated negative environmental impacts, and ensure the environmentally sound management of plastic waste.

The report also proposes means of implementation that could take the form of treaty provisions such as provisions for capacity-building, funding, research and development, and technology transfer. These provisions will support states in implementing the core obligations of the instrument and, given the crucial role of city-level authorities in addressing plastic pollution, would most likely extend to the local level.

The plastic pollution treaty represents an opportunity to put in place a strong global mechanism that supports national and local implementation.

The key aspects of this report can be summarized as:

- **Challenges faced by Asian cities in addressing plastic pollution, which for most of them cannot be resolved at the standalone city or national level**
- **Enablers that helped cities implement interventions and solutions**
- **Policy recommendations in the form of global rules in the plastic pollution treaty that can address said challenges and accelerate and scale up solutions at the city level**



STRONG GLOBAL RULES EMPOWER CITIES TO MOVE TOWARDS PLASTIC CIRCULARITY

The plastic pollution treaty must have binding global rules to help cities to address challenges and accelerate or scale solutions.

SCALING SOLUTIONS, ADDRESSING CHALLENGES: BINDING GLOBAL RULES THROUGH THE PLASTIC POLLUTION TREATY HELP CITIES BECOME PLASTIC SMART

PRODUCT DESIGN AND TARGETS FOR REDUCTION, REUSE AND RECYCLING

Global requirements on product design and targets for reduction, reuse, and recycling aim to increase the safe circulation and management of plastic products

- Supports development of reuse, refill, and recycling options
- Reduces hard to recycle plastic products
- Promotes industry adoption of reusable, refillable and recycled plastics
- Generates green jobs
- Aims to ensure that plastic products entering the economy are non-toxic, reusable, repairable, durable, and recyclable

ECONOMIC INSTRUMENTS & EXTENDED PRODUCER RESPONSIBILITY (EPR)

Global obligation for economic instruments is suggested to promote greater adoption of sustainable practices throughout the plastics value chain, encouraging better choices for the safe circulation and management of plastic products. Furthermore, a treaty that requires states to set up EPR regulations could help to shift the responsibility for the management of plastic waste from municipalities to producers.

- With EPR schemes, the producers can be held responsible for the costs of end-of-life collection, sorting and recycling or disposal of their products
- EPR can reduce the burden on municipal budgets

BAN SINGLE-USE & HIGH-RISK PLASTICS

Global ban on avoidable single-use plastics and high-risk plastic products would eliminate and reduce plastics that are the most harmful for the environment, alleviate pressure on the waste management system and encourage alternative solutions.

- Reduces pressure on the waste management system and leakage into the environment
- Incentivizes alternatives solutions to SUPs such as reuse and refill, and innovations
- Generates green jobs
- Harmonizes the scope of plastic bans

SEGREGATE, COLLECT & RECYCLE

Global standards and requirements for segregation, collection and recycling can accelerate and improve waste management practices in cities globally and increase the safe circulation and management of plastic products.

- Ensures coherence between city and national plastic waste management policies
- Eliminates plastic waste leakage in the environment and increase the safe circularity and management of plastic products
- Catalyzes investments and development of infrastructure
- Generates green jobs

SAFE DISPOSAL

Global minimum standards and requirements for disposal relate to the operations of disposal facilities and practices and aim to prevent plastic from leaking into nature, limit the associated negative environmental impacts, and to ensure the environmentally sound management of plastic waste.

- Establishes safe and properly functioning infrastructure
- Safer jobs
- Cleaner and healthier environment for communities

MEANS OF IMPLEMENTATION

- Supports Member-States in implementing the control measures
- Assists city-level authorities and projects
- Implements a global mechanism that supports national and local implementation
- Ensures harmonized data collection, reporting, and monitoring of progress

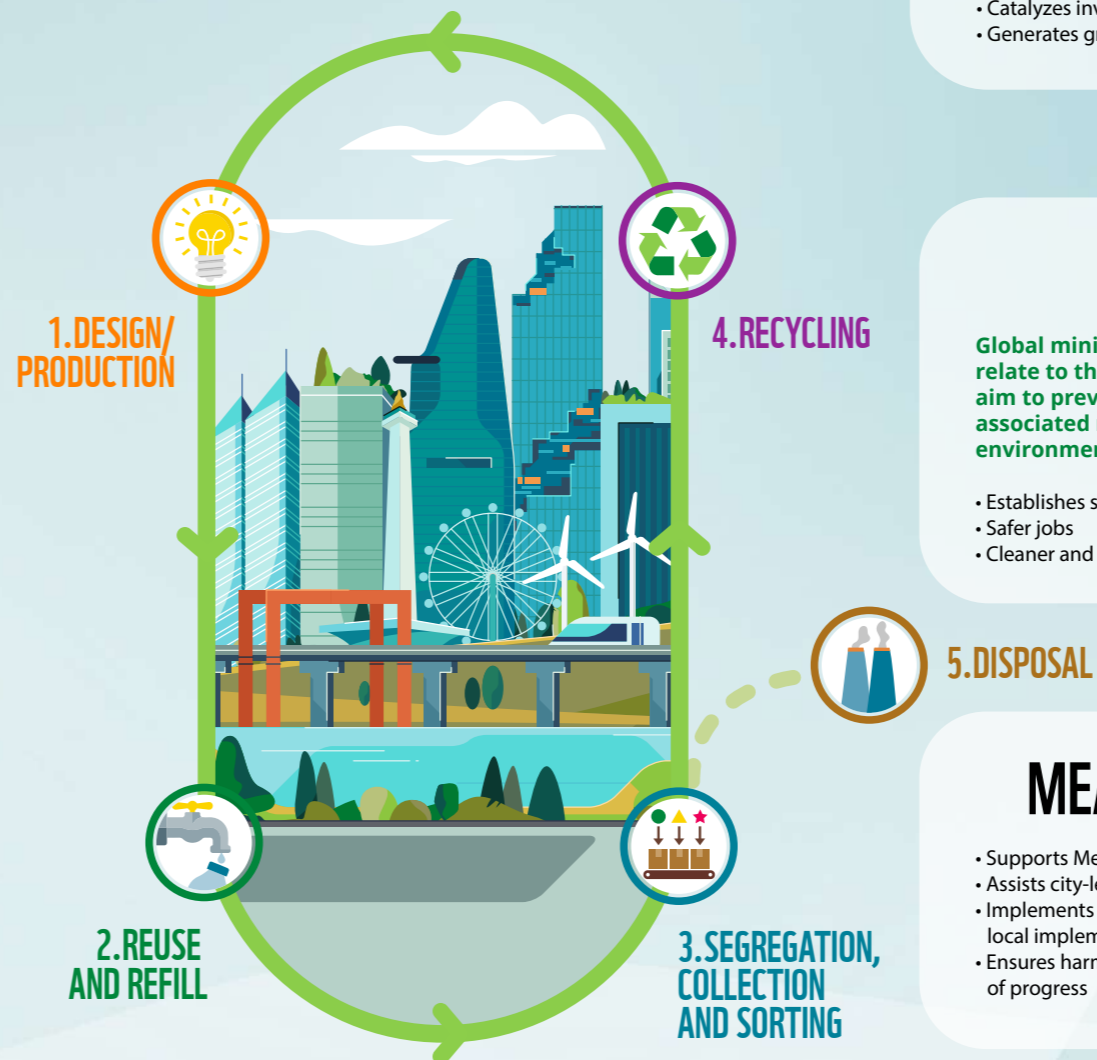


Figure 2
Binding Global Rules in the Plastic Pollution Treaty Can Help Cities Become Plastic Smart

OPPORTUNITY AT HAND

In a historic decision at the fifth United Nations Environment Assembly (UNEA) in March 2022, Member States agreed, through the Resolution 5/14 entitled “*End plastic pollution: towards an international legally binding instrument*”¹, to establish an intergovernmental negotiating committee (INC) to develop an international legally binding agreement on plastic pollution (hereinafter “the plastic pollution treaty”) by 2024.² The resolution addresses the full life cycle of plastic, including its production, design, and disposal, and seeks to comprehensively address plastic pollution, including in the marine environment. The ongoing negotiations for the plastic pollution treaty present Member States with a unique and pivotal opportunity to institute systemic changes in the global plastics economy through the establishment of global binding rules to tackle plastic pollution.

Cities, which includes local authorities, city-based project implementers, citizens, and informal waste workers, play a crucial role in addressing the issue of plastic pollution by virtue of their intricate involvement across the entire life cycle of plastics. In this section, we aim to understand the role of cities in tackling plastic pollution and subsequently establish the focus on cities in the context of the plastic pollution treaty.

1.1 CITIES: A KEY STAKEHOLDER GROUP IN TACKLING PLASTIC POLLUTION

Out of the 400 million tons of plastic waste generated worldwide each year, a staggering 75% originates from cities.³ In the business-as-usual scenario, with a recycling rate of only 9%, the amount of mismanaged plastic waste is further expected to increase as global plastic production is projected to reach 1100 million tons by 2050.⁴ Cities, particularly in low and middle-income countries, are grappling with this escalating generation of plastic waste. In the absence of mitigation measures, the plastic waste entering our oceans annually is expected to triple in the next twenty years.⁵ Simultaneously, rapid economic growth and the rise in consumerism have driven a surge in plastic consumption.⁶ Regarding international trade of plastic waste, the lower-income importing countries lack adequate infrastructure to handle domestically generated

plastic waste let alone cope with the additional burden of plastic waste exported by high income countries.⁷ Alarming, the current plastic waste generation and consumption are outpacing the development of infrastructure required to manage plastic waste. The increasing quantity of plastic waste is having adverse social, economic, and environmental impacts globally. In Asia, it is estimated that the average cleanup cost was USD 9.6 billion, with an average revenue loss of USD 1.2 billion in 2018 due to plastic pollution.⁸ Mismanaged plastic waste blocks drainage systems aggravating the risks of urban flooding and making it more severe. Roughly 218 million of the world’s poorest people are at risk of plastic-aggravated flooding globally.⁹ This has grave consequences on human health by affecting the access to clean water for drinking and other household purposes.

Only recently, a study found 240,000 nanoplastics in bottled water can enter into human blood, cells and brain.¹⁰ Plastic also contributes significantly to air pollution and greenhouse gas emissions.¹¹ If the current trends continue, plastics will use 10% to 13% of the remaining carbon budget to keep global warming below 1.5 degrees Celsius.¹² Plastic pollution also harms the environment and species, including marine animals that ingest or get entangled in marine plastic debris.¹³ To mitigate the adverse impacts of increasing plastic pollution, city-level authorities, as well as players from the non-profit and private sectors, have initiated multiple projects focusing on tackling plastic pollution. In this context, cities play an indispensable role in waste



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management, serving as the first line of defense against the environmental and public health threats posed by plastic waste. They handle plastic waste through their multifaceted involvement in waste management systems.

First and foremost, cities establish and maintain critical waste management infrastructure. This encompasses organizing waste collection services to gather and transport waste from residences, businesses, and public areas. In addition to ensuring accessible collection services, cities often invest in and oversee transfer stations, recycling facilities, and disposal sites, such as landfills or incineration plants.

Secondly, cities are pivotal in formulating waste management policies and enacting by-laws or ordinances tailored to their unique needs and challenges. City-level authorities may establish by-laws that encompass bans, waste segregation, recycling, and disposal, including hazardous waste, with robust enforcement mechanisms to ensure compliance. This regulatory framework not only aids in waste management but also fosters responsible waste practices by influencing public behavior.^{14 15}

1.2. OPPORTUNITY TO DERIVE LEARNINGS FROM ASIAN CITIES

With mounting plastic pollution, cities in Asia have sprung into action to find solutions to the plastic crisis. This has resulted in a spectrum of solutions that cater to the challenges of the region and cover the entire life cycle of plastic products. While the solutions to the plastic crisis have had their share of successes, owing to the transboundary nature of plastic pollution—both in the production and management of waste—certain challenges (as highlighted in Chapter-3) are beyond the scope of local policies and regulations.

The plastic pollution treaty, through harmonization and coordinated efforts, can play a crucial role in addressing the challenges, identified in this report, through global rules. As discussions evolve surrounding the treaty, the valuable lessons from city-level interventions in Asia become increasingly pertinent. Given the region is substantially impacted by plastic pollution and the array of challenges spanning the entire plastics lifecycle, from production to end-of-life, the region offers critical learnings relevant for the global context.¹⁶

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⁵ Visual Feature | [Pollution to Solution: Accessing marine litter and plastic pollution](https://www.unep.org/unepa/press-releases/2022/03/20220314-end-plastic-pollution). (2021, October 21). [Visual Feature | Pollution to Solution: Accessing marine litter and plastic pollution \(unep.org\)](https://www.unep.org/unepa/press-releases/2022/03/20220314-end-plastic-pollution)

⁶ "Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank, 'What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development, (2020), [What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050 \(worldbank.org\)](https://www.worldbank.org/publications/what-a-waste-2-0)

⁷ Break Free From Plastic, 'Waste Trade | Break free from plastic', [Waste Trade | Break Free From Plastic](https://www.breakfreefromplastic.org/)

⁸ Deloitte Netherlands, 'The price tag of plastic pollution' [The price tag of plastic pollution \(deloitte.com\)](https://www.deloitte.com/nl/en/issues/2020/01/plastic-pollution.html)

⁹ Tearfund Learn, 'Research reports: Plastic pollution and flooding.' [Research reports: Plastic pollution and flooding - Tearfund Learn](https://www.tearfund.org/research-reports/plastic-pollution-and-flooding/)

¹⁰ Qian, N., Gao, X., Lang, X., Deng, H., Bratu, T. M., Chen, Q., Stapleton, P. A., Yan, B., & Min, W. (2024). Rapid single-particle chemical imaging of nanoplastics by SRS microscopy. *Proceedings of the National Academy of Sciences of the United States of America*, 121(3). <https://doi.org/10.1073/pnas.2300582121>

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¹³ Think Tank | European Parliament, 'The environmental impacts of plastics and micro-plastics use, waste and pollution: EU and national measures' (2020) [The environmental impacts of plastics and micro-plastics use, waste and pollution: EU and national measures | Think Tank | European Parliament \(europa.eu\)](https://www.think-tank.europa.eu/publications/the-environmental-impacts-of-plastics-and-micro-plastics-use-waste-and-pollution-eu-and-national-measures)

¹⁴ Circulars, 'Cities in the Global Plastics Treaty (negotiations)' (2023), [Cities in the Global Plastics Treaty \(negotiations\) - Circulars \(iclei.org\)](https://www.circulars.eu/cities-in-the-global-plastics-treaty-negotiations)

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REPORT METHODOLOGY

This report, commissioned by WWF and developed in collaboration with Accenture, analyzes city-level interventions from various cities across a range of Asian countries (People’s Republic of China, India, Indonesia, Japan, Jordan, Malaysia, The Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, the UAE, and Vietnam).

Cities, as emphasized in the above chapter, play a pivotal role in the fight against plastic pollution. Their significance will remain essential even when the plastic pollution treaty is already being implemented to ensure the objectives of the treaty are met. Therefore, it is imperative to draw valuable insights from city-level interventions to discern effective strategies, supportive measures, and necessary steps for achieving an inclusive circular economy and environmentally sustainable waste management. These insights are vital for identifying key control measures that must be incorporated into the plastic pollution treaty, ensuring its effectiveness in addressing the crisis at hand. The Asia region offers significant insights for global applicability as it is substantially impacted by plastic pollution.

To achieve this objective, it is imperative to address the two primary research questions outlined in this report:



What are the challenges faced by cities that go beyond a city or national level, which can be addressed by global rules in the plastic pollution treaty?



What are the opportunities to scale up and accelerate city-level interventions in Asia through global rules in the plastic pollution treaty?

To determine which city-level interventions in Asia to analyze for addressing these two questions, several representative cases were chosen based on their alignment with the following design parameters:

- 01 | REDUCE PLASTIC PRODUCTION:**
Reduce plastics placed on the market
- 02 | REDUCE LEAKAGE OF PLASTICS:**
Reduce leakage of plastics across the value chain ending up in the environment
- 03 | IMPROVE PLASTIC WASTE MANAGEMENT SYSTEM:**
Contribute to an efficient plastic waste management system, including source segregation, collection, sorting, recycling, and/or use of secondary raw material
- 04 | DECENTRALIZED COMMUNITY-BASED INTERVENTIONS:**
Engage the community to develop best practices in waste management
- 05 | STAKEHOLDER COLLABORATION:**
Encourage collaboration across stakeholders such as governments, the private sector, civil society, and communities
- 06 | INFORMAL WASTE SECTOR:**
Collaborate with the informal waste workers in the plastic waste management projects
- 07 | ENDORSEMENT BY CITY MAYORS/MUNICIPALITIES/ LOCAL LEADERS:**
Receive support and endorsement from the local government authorities.
- 08 | POLICY INTERVENTION:**
Enable implementation of innovative projects through the backing of policy interventions in the form of a national-level policy or city by-laws

The above-stated design parameters were informed by the “Potential options for elements towards an international legally binding instrument, based on a comprehensive approach that addresses the full life cycle of plastics as called for by UNEA resolution 5/14” document released on April 13, 2023 (“April 2023 Options Paper”). Additionally, the discussions were subsequently refined in light of the Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment released on September 4, 2023 (“September 2023 Zero Draft”),¹⁸ and the Revised draft text of the international legally binding instrument on plastic pollution, including in the marine environment released on December 28, 2023 (“December 2023 Revised Draft”).¹⁹ The design parameters were also based on characteristics existent in city-level interventions that qualify as desirable in tackling plastic pollution as per various literature.²⁰

Consequently, the Asia city-level interventions analyzed in this report consists of six deep dive representative cases supplemented by additional sample cases (refer Chapter-3). Each of these cases serves as an illustration of local-level efforts, possessing features that inherently position them for

success. In addition to the city-level interventions analyzed and discussed in this report there are several other successful city-level interventions being implemented across Asia. However, to have a more focused analysis we have selected a few of the interventions that align with the design parameters mentioned above.

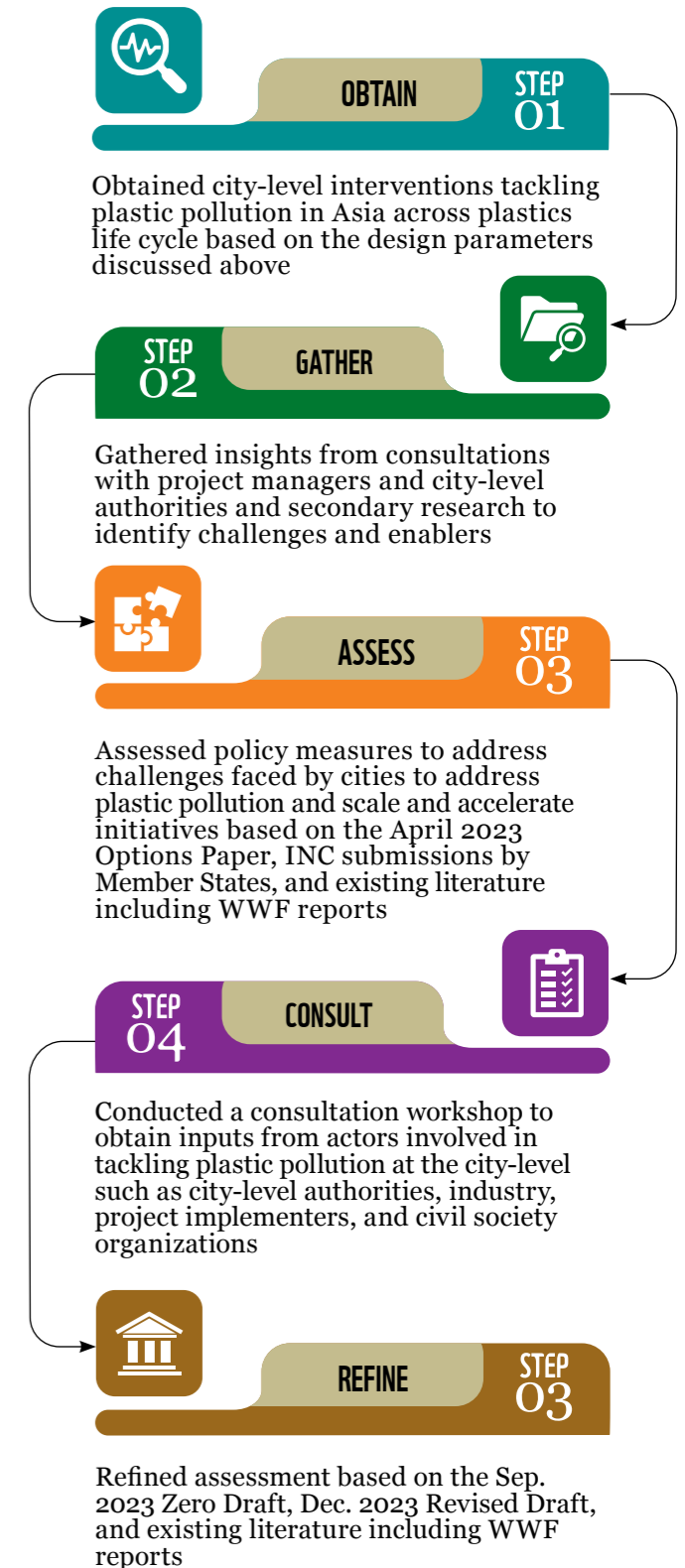
Furthermore, additional perspectives on challenges faced by city-level authorities in managing plastic pollution were gathered during a consultation workshop in August 2023 with representatives from municipalities and city-level departments working on plastic waste management projects across Asia.

The applied methodology helped in addressing the primary research questions stated earlier. By providing in-depth

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- ³ UN-Habitat, 'Leaving no one behind: How a global instrument to end plastic pollution can enable a just transition for the people informally collecting and recovering waste' (Retrieved September 15, 2023), from un-habitat_niva_report_leaving_no_one_behind.pdf (unhabitat.org)
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- ⁵ Visual Feature | Pollution to Solution: Accessing marine litter and plastic pollution. (2021, October 21). Visual Feature | Pollution to Solution: Accessing marine litter and plastic pollution (unep.org)
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- ¹⁸ UNEP, 'Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment' (2023), ZERODRAFT.pdf (unep.org)
- ¹⁹ UNEP, 'Revised draft text of the international legally binding instrument on plastic pollution, including in the marine environment (2023), RevisedZeroDraftText.pdf (unep.org)
- ²⁰ See best practice case studies on: Best Practice Approaches - Plastic Smart Cities; Niti Aayog-UNDP, 'Handbook on Sustainable Urban Plastic Waste Management' (2021), Final_Handbook_PWM_10112021.pdf (niti.gov.in); How Cities are Leading in the Fight Against Plastic Pollution | UrbanShift (shiftcities.org); and Refer 12 key principles on: Waste Wise Cities | UN-HABITAT Regional Office for Asia and the Pacific (Fukuoka) (unhabitat.org)

responses to these questions, the report aims to inspire INC delegates to glean lessons from effective local solutions, guiding the formulation of the plastic pollution treaty. Furthermore, the report furnishes local authorities with a deeper understanding of highlighted interventions, underscoring the potential benefits for cities arising from the implementation of global regulations within the plastic pollution treaty framework.

Figure 3
Approach adopted to gather and analyze city-level interventions for recommendations for the plastic pollution treaty



CITY-LEVEL INTERVENTIONS ADDRESSING PLASTIC POLLUTION IN ASIA

To tackle the colossal challenge of plastic pollution, stakeholders across the plastics value chain have initiated measures. Asia, as a region, is witnessing the emergence of multiple city-level interventions that address various facets of plastic pollution, grounded in the realities of the region. While some interventions aim to effectively circulate and manage the plastic that has been put on the market or converted into waste, others are striving to reduce the amount of plastic introduced to the market in the first instance (Figure 3).²¹

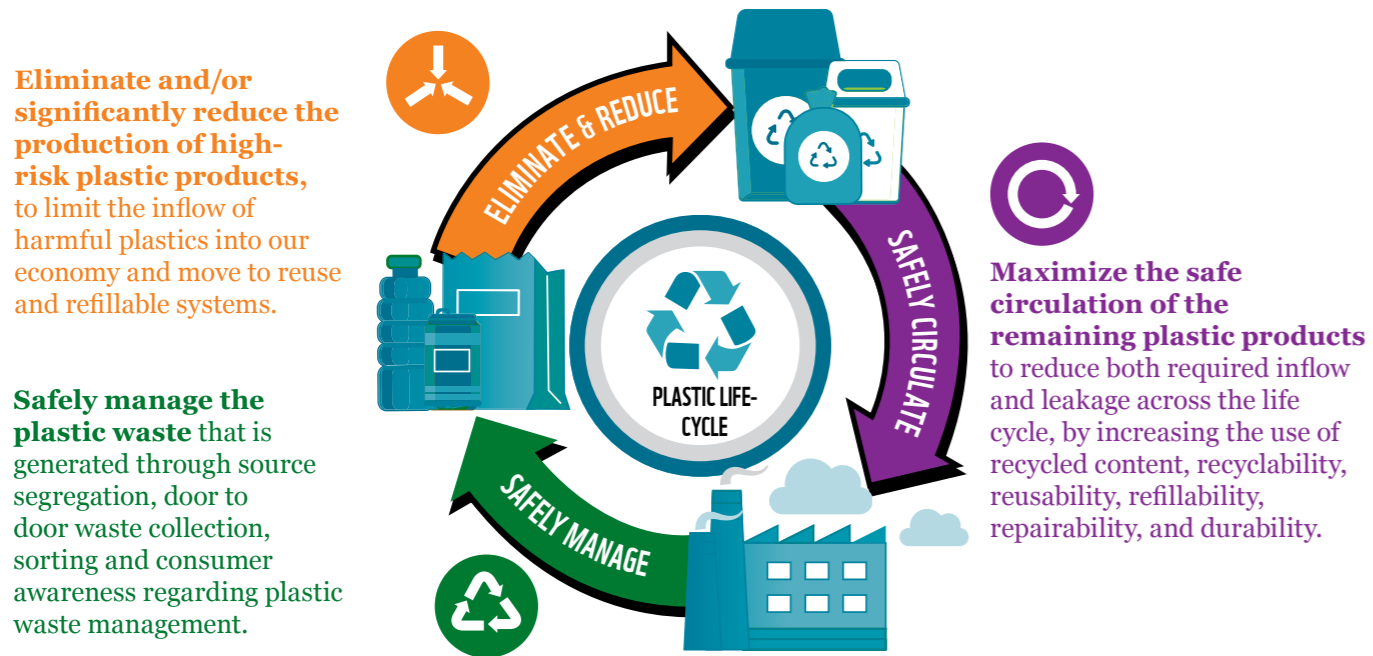
According to the UNEP report ‘Turning off the tap’, plastic pollution could be reduced by 80% by 2040 if we eliminate unnecessary and problematic plastics and accelerate the market transformation towards three shifts: 1) reuse; 2) recycle and 3) reorient and diversify the market for sustainable and safe alternatives; and deal with plastic pollution legacy.²² To achieve this state, city-level interventions, combined with strong global rules, can and will play a crucial role.

To ensure that the city level interventions analysed in this report are holistic and covers key theme relevant for tackling plastic pollution, we mapped city level interventions with the eight design parameters presented in Chapter 2. Table 1 presents a summary of the city level interventions aimed at reducing plastic pollution that have been studied in this report – fulfilling one or several of the eight design parameters.

²¹ The figure and the 3 strategies - Elimination and reduction, safe circulation, and management - follow the framework of the WWF & Eunomia (2023) reports “Breaking down high-risk plastic products” and “Regulating high-risk plastic products”. The reports identify high-risk plastic product groups that need urgent action, based on an assessment of the product group’s pollution risk.

²² UNEP, “Turning off the Tap: How the world can end plastic pollution and create a circular economy” (2023), [Turning off the Tap: How the world can end plastic pollution and create a circular economy | UNEP - UN Environment Programme](#).

Figure 4
The plastic lifecycle and breaking down the plastic pollution problem into specific categories for regulation. (Inspired by WWF & Eunomia report²¹)



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MAPPING OF CITY-LEVEL INTERVENTIONS WITH THE DESIGN PARAMETERS

Project details	Design parameters							
	Reduce plastic production	Reduce leakage of plastics	Improve plastic waste management system	Decentralized community-based interventions	Stakeholder collaboration	Informal waste sector	Endorsed by city mayors/municipalities/local leaders	Policy intervention
IUCN – the Koh Yao	✓			✓	✓		✓	✓
Hasiru Dala	✓			✓	✓			
Environment and Conservation Fund: Choose to Reuse	✓			✓	✓			✓
Green Joy	✓			✓	✓			
QYOS		✓	✓	✓	✓	✓	✓	✓
Kuha sa Tingi	✓			✓	✓			
Muuse: Reusable containers	✓			✓	✓		✓	
Reusable containers in China	✓			✓	✓		✓	
Oysterable: RVMs		✓	✓		✓		✓	✓
Use of rPET in Thailand	✓			✓	✓			
RVMs in UAE		✓	✓		✓		✓	
Delterra: Rethinking Recycling		✓	✓	✓	✓	✓	✓	
Zero waste community in Japan		✓	✓	✓	✓	✓	✓	
Separate collection and treatment of recyclables in Jordan		✓	✓		✓		✓	
EPR Scheme in Malaysia		✓	✓		✓		✓	
Public-private partnership for EPR in Sri Lanka		✓	✓		✓		✓	
Waste collection and segregation in Vietnam		✓	✓		✓		✓	

The map shows six city-level interventions as sample case studies that provided insights into the challenges faced and the enablers that accelerated or scaled-up the interventions

Figure 5 presents a map of six deep dive city-level interventions aimed at reducing plastic pollution across Asia. Stakeholder consultations and interviews with project implementers were conducted to identify the challenges and enablers for successfully scaling the six city-level interventions. Additional perspectives on challenges faced by city-level authorities in managing plastic pollution were gathered during a consultation workshop with representatives from municipalities and city-level departments working on plastic waste management projects across Asia.

Figure 5: Analysis of six-city level interventions tackling plastic pollution in Asia



INDIA

Bengaluru - Hasiru Dala

Stakeholders: Hasiru Dala collaborated with Bengaluru municipality and played a key role in ensuring the handling of dry waste of Bengaluru city by waste pickers.

Project Description:

Works with informal waste pickers to develop a socially inclusive model for effective plastic waste management.

Timeline: Started in 2011, the project has issued 11,380 occupational identity cards, authorized by the city. These cards serve as official residential proof, enabling access to social security benefits.

Impact: The success of the model led to the local municipality of Bengaluru assigning the responsibility of the entire dry waste management, starting from collection to recycling to waste pickers and women's self-help groups. Saved 0.24 million cubic meters of landfill area by diverting plastic waste and currently sustains 33 dry waste collection centers in Bengaluru.

[\(Read more\)](#)



CHINA

Hongkong - Environment and Conservation Fund (ECF): Choose to Reuse

Stakeholders: WWF-Hong Kong and foodpanda Hong Kong with the support by local government funding: Environment and Conservation Fund to facilitate the proposed ban on disposable plastic tableware for takeaway and dine-in options

Project Description:

- Offers reusable packaging as an alternative to SUP for food delivery in the city
- Customers receive reusable containers and can return them to collection points with their reverse vending machines or foodpanda couriers, receiving in exchange for the HK\$10 deposit and an e-voucher

Timeline: Started in August 2022, WWF-Hong Kong and foodpanda Hong Kong with the support by local government funding: Environment and Conservation Fund to facilitate the proposed ban on disposable plastic tableware for takeaway and dine-in options.

Impact: Since its launch, the project replaced more than 25,500 SUP delivery packages with reusable containers across a 19-month period.

[\(Read more\)](#)



THAILAND

IUCN – the Koh Yao

Stakeholders: IUCN collaborated with the community to enhance source segregation and recycling and partnered with city authorities to strengthen policies and utilize existing infrastructure.

Project Description:

Developed a city waste management plan (including plastic waste) to promote proper recycling and reduce the amount of solid waste transported to the landfill by 30% compared to baseline data gathered in 2018.

Timeline: Started in 2018, the project's outcomes informed policymakers about the community's crucial role in effective plastic waste management.

Impact: Within three years of implementation, the project expanded to 3 sub-districts and the collected recyclable material increased almost 8 times from 116,319 kilograms in 2019 to 898, 816 kilograms in 2022.

[\(Read more\)](#)



VIETNAM

Phu Quoc - Green Joy

Stakeholders: Green Joy collaborated with local authorities in Phu Quoc such as Phu Quoc Provincial People's Committee, Phu Quoc Department of Natural Resources and Environment, Women's Union, Farmers' Union, Youth Union, hospitality sectors, local residents, and tourists to promote and create a market for their products aiming to reduce single-use plastic straws and bags in Phu Quoc.

Project Description:

- Replaces low-value and non-recyclable plastics with locally sourced biobased alternative made of local grass, Lepronia (native to the Mekong Delta region)
- Produces compostable straws and cutlery, which decompose in four to six weeks and are reusable three to five times

Timeline: Started in October 2018, currently Green Joy is operating in 4 Vietnamese cities and exporting to over 25 countries.

Impact: It has replaced 1 million plastic straws and reduced 11 tons of plastic and provided employment to 30 rural women in Phu Quoc.

[\(Read more\)](#)



INDONESIA

Jakarta - QYOS

Stakeholders: QYOS collaborated with FMCGs like Unilever, KAO, and Nestle to offer retailers and residential buildings refill solution projects in Jakarta.

Project Description:

- Provides reuse and refillable solutions for FMCG products
- Consumers use QYOS smart reusable containers at refill kiosks, selecting the quantity and making online payments
- An RFID tag tracks the purchase history and provides information on the environmental contribution of the reusable packaging



PHILIPPINES

Quezon City & San Juan City - Kuha Sa Tingi

Stakeholders: Implemented in San Juan and Quezon City through a memorandum of understanding with the respective city Mayors, Greenpeace Philippines, and Impact Hub Manila, the products, produced locally, are available at a lower price compared to conventional sachets.

Project Description:

- Provides affordable refill stations at Sari-Sari Stores (neighborhood retail stores)
- Consumers can bring their reusable containers to refill basic commodities such as liquid detergent, fabric conditioner, and dishwashing liquid

Timeline: First pilot started in November 2022 with 10 partner Sari-Sari stores in San Juan City. After this success, a second pilot initiated in Quezon City in June 2023 with 30 partner Sari-Sari stores. It has already scaled to 1000 stores by Jan 2024 with further plans to scale upto 5000 stores in Quezon city.

Impact: In San Juan, replaced 8,453 SUP sachets within a six-week period from 10 stores. In Quezon city, the project replaced 47,601 sachets over a period of eight weeks from 30 stores.




[\(Read more\)](#)

Timeline: Started in 2020, they initiated collaborative projects with four FMCG companies, to offer household care products in QYOS reusable containers. Partnerships and learnings from QYOS have been transferred to another reuse venture called [Alnert](#).

Impact: Saved more than 100kg plastics and achieved a return rate of 61% to refill from the present 10 locations.

[\(Read more\)](#)

To complement primary data collection, additional interventions across Asia were analyzed through desktop research. These eleven city-level interventions offer additional perspectives on challenges and enablers for successfully scaling projects aimed at eliminating, reducing, safely circulating, and managing plastic waste.

-  **ELIMINATE & REDUCE**
-  **SAFELY CIRCULATE**
-  **SAFELY MANAGE**

JORDAN

Separate collection and treatment of recyclables

City: Amman

Stakeholders: GIZ and Greater Amman Municipality

Project Description: Aligned with the National Solid Waste Management Strategy and Greater Amman Municipality's waste plan, the project enhances separate collection and treatment of recyclables; Executed by the municipality, it ran from 2017 to 2021, testing various treatment options such as recycling.

PEOPLE'S REPUBLIC OF CHINA

Reusable containers

City: Qingdao City, Shandong Province

Stakeholders: Qingdao Junshengmingshi Logistics Packaging Company, GIZ and Expertise France

Project Description: Replacement of SUP packaging used in the transportation of fruits and vegetables into the city with food safety-grade reusable containers; 60,000 SUP containers replaced in the pilot thereby reducing 120 kilograms of plastics per container annually; Reduced the fruits and vegetables damage rate from 35% to almost zero.

THAILAND

Use of rPET

City: Bangkok

Stakeholders: Suntory PepsiCo Beverage (Thailand)

Project Description: Manufacture of plastic bottles made from 100% recycled PET by collecting PET bottles through customized recycling collection bins in the city to achieve "Bottle to Bottle" recycling

SRI LANKA

Public-private partnership for EPR

City: Cities of Western Province

Stakeholders: USAID, Ceylon Chamber of Commerce, Ministry of Environment

Project Description: Established a Public-Private Partnership model to enable EPR implementation involving plastic producers, national and local governments, recyclers, and consumers; While city authorities are responsible for collecting, sorting and recycling of waste, the private sector through EPR is responsible for providing funding; As of June 2023, private companies had invested nearly \$290,000 to setup twelve MRF, which resulted in recycling of 1,586 tons of collected plastic waste

JAPAN

Zero waste community

City: Kamikatsu-cho

Stakeholders: Kamikatsu-cho town administration

Project Description: Established the Zero Waste Center facility, which allows residents to separate their household waste into 13 types and 45 categories such as PET bottles, plastic caps, plastic containers and packaging etc.; Kamikatsu-cho was the first town in Japan to commit to a Zero Waste Declaration in 2003 and achieved a recycling rate of 80% in 2020

MALAYSIA

EPR Scheme

City: Petaling Jaya

Stakeholders: Nestlé Malaysia, Petaling Jaya City Council

Project Description: Introduction of formalized door to door collection and recycling program which increased the recycling rate; This was achieved through a partnership between the city government (Petaling Jaya City Council) responsible for ensuring collection, sorting and recycling and the private sector (Nestlé Malaysia and its partners) which ensured availability of funds via a voluntary EPR scheme.

VIETNAM

Waste collection and segregation

City: Tan An City, Long An Province

Stakeholders: People's Committee of Long An Province and WWF

Project Description: Focuses on adopting a context specific waste collection method developed by the city authorities to increase source segregation and recovery rates; This approach influenced solid waste policy, source segregation and achieved over 60% diversion of total waste (including recyclables) from landfilling; The project, launched in August 2020 is still ongoing

UNITED ARAB EMIRATES

Reverse vending machines (RVM)

City: Abu Dhabi

Stakeholders: Veolia, Environment Agency - Abu Dhabi (EAD)

Project Description: Rewards consumers for recycling plastics through its app by returning recyclables at smart deposit machines, or plastic bottles at reverse vending machines; Implemented in partnership with city authorities, brands, and communities and has collected over 1,000 tons of recyclables including 34 million PET bottles and 1 million PET trays since 2020.

REPUBLIC OF KOREA

Reverse vending machines (RVM)

City: Seoul

Stakeholders: Oysterable, Korean Ministry of Environment, Seoul Metropolitan Government

Project Description: Aims to facilitate the ban on dumping municipal waste (including plastics) in landfills by 2026 by providing reverse vending machines (RVM) called Lalaloop; Recycling provides user with reward points or digital credits; Oysterable has collaborated with 24 local governments to set up 600 RVMs for PET bottle recycling in residential neighborhoods.

SINGAPORE

Reusable container

City: Singapore

Stakeholders: Muuse and Ministry of Sustainability and the Environment

Project Description: Operates a data-driven reuse system; received funding from the Environment Ministry's SG Eco Fund to launch a reusable container rental system pilot with the Hawkers centres operating in community and commercial areas; The consumer can borrow the container by scanning a QR code and the same can also be returned at designated centres by scanning the location's QR code; Till date, the company has diverted over 200,000 SUPs from landfills.

INDONESIA

Rethinking Recycling

City: Denpasar, Bali

Stakeholders: Delterra and city authorities

Project Description: Aims to create self-sustaining community-led waste management, the project collaborates with city authorities, waste collectors, and industry to transform Material Recovery Facilities (TPS3R); The pilot in Sanur Kauh, Denpasar, initiated in 2019, saw the TPS3R facility become profitable and self-sustainable within four months, diverting over 50% of waste from landfills

Figure 6:
Additional city-level interventions in other parts of Asia (Chapter 3: City-level Interventions Addressing Plastic Pollution in Asia)

3.1 CHALLENGES IN ADDRESSING THE PLASTIC POLLUTION CRISIS FACED BY ASIAN CITIES THAT GO BEYOND A CITY OR NATIONAL LEVEL

1. **Design and production:** Plastic products are seldom designed for reuse, refilling, segregation and recycling. Multilayered packaging, especially those combining aluminum, paper, and various types of plastics, poses challenges in terms of separating and recycling plastic waste. City-level authorities and interventions such as **Hasiru Dala** and **Koh Yao** community waste management project consistently mentioned the availability and high volumes of non-recyclable and non-reusable plastics as a key challenge in addressing plastic pollution.

Interventions such as **Kuha sa Tingi** and **Green Joy**, which offer alternatives to SUPs, underscore the struggle to compete with the ubiquitous availability of non-recyclable plastic options with low prices that do not consider the true cost of plastic.

On the design front, the **Hasiru Dala** and **Koh Yao** community waste management project highlighted the absence of uniform product standards as a reason for the excessive use of non-recyclable plastics in packaging, especially in emerging economies. Non-recyclable plastics have low market value, limiting the economic and technical possibilities for recycling. They also highlighted the lack of transparency and labeling regarding the use of problematic plastics and chemicals in plastic products, as it complicates recycling and reuse.

City-level authorities, during the stakeholder consultation, expressed concerns about the current and future global growth in plastic production, which is outpacing the speed of developing sufficient waste management infrastructure across Asian cities.

2. **Reuse and refill:** **QYOS** and **Kuha sa Tingi**, both of which offer reuse and refillable solutions for Fast Moving Consumer Goods (FMCG) products, emphasized several challenges with scaling circular business models. With recycling being the primary focus for both policymakers and the industry, there is little to no development of reuse and refill infrastructure, logistics, and supply chain. Low awareness among consumers and businesses is limiting the adoption rate and favors SUP products with low prices that do not consider the true cost of plastic. Although reuse and refill packaging present numerous advantages, including a decrease in plastic production and the creation of green jobs, the absence of standardized regulations raises concerns regarding operational hygiene, product safety, and product quality.²⁵

City level authorities, during stakeholder consultations also highlighted that in the absence of targets for reduction and reuse, there is a lack of collaborative effort among recyclers, industry, and local authorities, causing an uncoordinated and excessive use of flexible

SUPs. The lack of regulations and standards triggers practical challenges limiting the implementation of reuse and refill solutions and their economic viability. It hampers partnerships with FMCG companies, as each company adheres to different standards. This was highlighted by **Kuha sa Tingi** because of which they have partnered mostly with small scale local manufacturers. Standards for reusable plastic products and packaging, and reuse and refill models in general are not coordinated in terms of development and supervision among environmental authorities, food health regulators, and regional authorities.

This fragmented approach creates a sense of policy and regulatory support deficiency for waste management companies looking to expand their operations. For example, **QYOS** highlighted that due to the lack of standardization, rigorous quality assessments are needed, which require very high costs. In the absence of standardization, FMCG companies design stock keeping units (SKUs) without considering the uniform size of SKU required in reuse and refillable machines.

Packaging for food products remains a tremendous challenge due to conflicting health and safety standards across regions and markets. The returnable food containers project, undertaken as part of **ECF: Choose to Reuse by WWF-Hong Kong and foodpanda**, sheds light on the challenge of onboarding new restaurants. The challenge stems from the increased cost associated with the necessity of the additional workforce required to manage the operations of returnable containers. Consequently, these factors collectively restrict the economic viability of the business model in the prevailing business environment. Transforming existing practices to circular models will require an upfront investment in capacity building and accurate infrastructure.

“SUP alternatives are often expensive and necessitate a shift in consumer behavior for adoption. In Quezon City, we are exploring several projects, including reuse and refill solutions, aimed at reducing plastic pollution, specifically for SUP and sachets.”

Vanessa Claire B. Vinarao, Supervising Environmental Management Specialist, Climate Change Adaptation Division, Climate Change and Environmental Sustainability Department, Quezon City, The Philippines

3. **Segregation, collection, and sorting:** City-level authorities and interventions working on managing plastic waste generated in cities highlighted multiple challenges in effectively segregating, collecting, and sorting waste. There is a lack of adequate infrastructure and financial resources for implementing source segregation, collection, and sorting—especially in densely populated urban areas such as slums and challenging-to-access regions like hilly areas or small and remote islands. The **Long An waste collection and segregation** project emphasizes ensuring regular waste collection at a reasonable cost as one of the main challenges in establishing an effective plastic waste management system. These challenges, coupled with limited community participation and awareness of source segregation, result in the contamination of plastic waste that could otherwise be recycled.

“The main challenges that cities face in plastic waste management include the lack of dedicated funds for waste collection, lack of segregation of high-value plastic materials, and lack of local market opportunities for recyclable materials.”

Boonyok Thanyupa, Head of Public Health and Environment Division, Tambon Koh Yao Yai Municipality

City authorities informed that while there are city-level policies mandating waste management practices, there is a recognized necessity for enhanced alignment between city-specific and national-level policies. City-level authorities and implementers such as **Hasiru Dala** also cited that effective implementation of plastic waste management projects requires overcoming challenges arising from administrative rules and procedures.

4. **Recycling:** City-based recycling interventions, such as **Hasiru Dala** and the **Koh Yao** community waste management project, identified several challenges that impede the progress of recycling efforts at the city level. One such challenge arises from the artificially low cost of virgin plastics, influenced by global oil price fluctuations. These price variations have a direct impact on the demand for secondary raw materials and can affect the economic feasibility of recycling interventions. This is particularly a barrier in scaling rPET initiatives as to ensure competitiveness with virgin plastics its price should be lower. The challenge arises from the BAU scenario where artificially low prices of virgin plastics fail to consider environmental and social costs. This dynamic poses difficulties in fostering market development for rPET, as the pricing structure doesn't accurately reflect the holistic impact

of plastic production on the environment and society. Additionally, the absence of decentralized recycling infrastructure and local markets for recycled plastic waste results in increased expenses associated with transporting waste to other cities, and at times, even to other countries. The lack of standardization in product design and material choices is also limiting the opportunities to recycle plastic waste.

5. **Disposal:** The disposal of plastic waste, especially in specific cities across Asia, presents a formidable challenge. City-level authorities and interventions, such as the **Koh Yao** community waste management project, have reported the disposal of large amounts of low-value plastic waste to landfills as a significant challenge. The same issue has been highlighted in the findings from the **EPR scheme project in Malaysia**, where the local municipality - Petaling Jaya City Council - has to cope with a significant amount of plastic waste in the landfill.

Furthermore, interventions like Koh Yao community waste management emphasized the existence of improper practices, such as open burning and open dumping, as well as the lack of requirements for disposal systems and operations. These practices have substantial adverse effects on the environment and human health. In addition, city-level authorities have highlighted budget constraints as one of the reasons that hinder investments in environmentally sound technologies and disposal methods.

6. **Lack of data across the plastics life cycle:** In addition to the above-mentioned challenges, there is a lack of data availability across the plastics life cycle, including the amount and type of plastics in the market and the volumes of recycled plastics. This concern was raised by local authorities as well as implementors of city-level interventions, as it hampers the successful design and implementation of action plans, policies, and regulations to tackle plastic pollution at the city level.²⁸ **QYOS** mentioned the need of harmonized data reporting and monitoring to perfect the ecosystem, for easier compliance with regulations across countries and to properly measure of impact. **Hasiru Dala** similarly emphasized on the need of data reporting requirements on the type of material used in plastic products.

²³ Statista, 'Plastic production worldwide 2021' (2023, August 29), [Global plastic production 2021 | Statista](https://www.statista.com/statistics/1182240346/global-plastic-production-2021/)

²⁴ Coelho, P. M., Corona, B., Klooster, R. T., & Worrell, E, 'Sustainability of reusable packaging—Current situation and trends. Resources Conservation & Recycling X, 6, 100037 (2020)', [Sustainability of reusable packaging—Current situation and trends - ScienceDirect](https://www.sciencedirect.com/science/article/pii/S2468245420300037)

²⁵ Copar. 'Reuse and refill: success, challenges, and learnings. Packaging Europe (n.d.)', [Reuse and refill: success, challenges, and learnings | Article | Packaging Europe](https://www.packagingeurope.com/en/reuse-and-refill-success-challenges-and-learnings)

²⁶ APEC. (2023). Enhancing Labor-Intensive Separate Waste Collection and Utilization in APEC Economies. [223_ofwg_enhancing-labor-intensive-separate-waste-collection-and-utilization-in-apec-economies.pdf](https://www.apec.org/Assets/223/223_ofwg_enhancing-labor-intensive-separate-waste-collection-and-utilization-in-apec-economies.pdf)

²⁷ 3R (Reduce, Reuse, Recycle) Initiatives: Solving Plastic Pollution at Source - Petaling Jaya's Assessment Tax Rebate Scheme. Malaysia Case Study, UNEP (2021), <https://wedocs.unep.org/20.500.11822/40346>

²⁸ Ruffo, S., & Martin, E, 'Measuring Our Success: How Better Data Can Help Keep Plastic Out of the Ocean. The Circulate Initiative' (2020), [3988c2df74ce4d99891ddf388c99c62b.pdf \(thecirculateinitiative.org\)](https://www.circulateinitiative.org/wp-content/uploads/2020/05/3988c2df74ce4d99891ddf388c99c62b.pdf)

3.2 ENABLERS ACCELERATING ASIA CITY-LEVEL INTERVENTIONS

Though there are significant challenges faced by city-level interventions and authorities in addressing plastic pollution, several enablers and opportunities have supported the scale-up of city-level interventions in tackling plastic pollution. Some of them are discussed below:

- 1. Policy and regulatory support:** Policies and legislation often provide the necessary impetus to initiate new city-level interventions, garnering interest from stakeholders in both the private and public sectors. For instance, regulations introduced at the city and national levels, such as the ban on SUPs in Vietnam, enabled the development of **Greenjoy** by providing an opportunity to create a market for biobased alternatives. Similarly, a by-law introduced by city-level authorities in Bengaluru mandated the inclusion of informal waste pickers in the case of **Hasiru Dala**, thereby providing an opportunity for waste pickers to form cooperatives and get formally registered through local authorities.
- 2. Funding support:** Funding support provided through subsidies, grants, investments, and low-interest loans helps overcome initial financial barriers and reduces risks for entities implementing interventions to reduce plastic pollution. Initial funding support provided by **Kuha sa Tingi** to community stores enabled micro enterprises to adopt the refilling model without any risk or need for additional capital. Similarly, funding support provided to the **ECF: Choose to Reuse** returnable food container initiative allowed them to subsidize project costs, passing the benefit to consumers in the form of lower prices for reusable containers. Access to funds often supports the implementation of systems and infrastructure for plastic waste management, such as door-to-door collection, sorting, and recycling centers.
- 3. Stakeholder collaboration:** Collaboration across city government and industry leaders is often needed to orchestrate the collective expertise, resources, and influence needed for long-term success. Strategic partnerships with global players have also been emphasized as an enabler in mobilizing capacity, research and development, and technology transfer to help cities across Asia develop abilities to tackle plastic pollution. For example, by collaborating with FMCG companies, **QYOS** has been able to leverage the technical expertise of the industry and jointly implement reusable and refillable solutions. Similarly, collaborating with the local authorities of the **Koh Yao District of the Phang Nga Province**, IUCN has been able to leverage the existing infrastructure for plastic waste management.
- 4. Use of Technology:** The rapid integration of cutting-edge technologies, including AI, mobile

phone applications, and blockchain, has increased the effectiveness of city-level initiatives, as exemplified by the successful implementation of **Reverse Vending Machines (RVMs)** by Oysterable in Republic of Korea and Veolia in the UAE. Additionally, interventions in reusable systems, such as **QYOS**, **Muuse** and **ECF: Choose to Reuse** returnable food containers, have harnessed QR codes to facilitate seamless identification and reuse of containers.

- 5. Consumer demand and acceptance:** The success of new business models as well as door-to-door waste collection systems is dependent on consumer/citizen acceptance. With an increase in consumer awareness of environmental sustainability in Asia citizens are showing increased acceptance for new circular business models, such as reusable and returnable systems, as well as increased participation in segregation at source and door-to-door waste collection programs. This has been exemplified by successful initiatives like **QYOS**, **Reusable containers by Muuse**, and the **Voluntary EPR scheme in Malaysia**.
- 6. Economic schemes and EPR:** EPR policies by holding the producers responsible for the costs of end-of-life, collection, sorting and recycling or disposal of their products have shown to provide impetus and reduce the funding gap for municipalities. Projects

such as **Hasiru Dala** and **PPP Partnership in Sri Lanka** have leveraged EPR schemes to generate funding for waste management projects, supporting the professionalization of informal waste workers and increasing the efficiency of plastic waste management projects, respectively.

- 7. Waste separation, collection and sorting:** requirements for waste segregation, collection and sorting mechanisms play a pivotal role in the success of waste management programs. The **Long An waste collection and segregation** project implemented in Vietnam serves as a successful illustration, underscoring the significance of strategic waste segregation and sorting practices in increasing recovery rates.

Despite ambitious actions at the city level across Asia, challenges to reduce plastic pollution remain. As the previous paragraphs reflect, challenges range from the continued global production of non-recyclable and multilayered packaging to the absence and conflicting product standards and a lack of capacity and funding. Most of these challenges cannot be addressed by cities alone due to the transboundary nature of the entire plastic value chain, from production to pollution. This involves global trade in raw materials, product manufacture, and the management of plastic waste. This means

that the impacts of the actions of cities are limited. Decisions pertaining to the design of plastic products and their production are predominantly made by entities over which cities have no control, either because they are located in different countries or because cities have no influence over their decisions. Consequently, local governments and city officials in the region find themselves with limited resources and power to address the issue and tackle challenges related to design, production, reuse, refill, and recycling. Furthermore, the lack of harmonized requirements and standards related to elements such as the design, content, safety, and hygiene for reuse and refill systems and products restricts the economic viability of the business model and impedes potential investments. Given the globalized nature of plastic product manufacturing and consumption, cities and national governments are unable to tackle these issues in isolation and are often left to mitigate only the resulting impacts.

Moreover, the volatility in the price of virgin plastics, driven by fluctuations in global oil prices, and the pricing dynamics for secondary raw materials cannot be solely influenced by cities and national governments. Meaningful changes can only be brought about through decisions made at the international level. While cities play a role in raising awareness and encouraging households and businesses to improve waste segregation, the effective collection, sorting, recycling, and proper disposal of waste are heavily contingent on the financial resources allocated to municipalities and the level of investments. Cities, typically constrained by limited budgets and limited avenues for augmentation, often find themselves unable to adequately confront these challenges.

They are also faced with a lack of coordination at a national and international level, limiting their ability to implement coordinated and scalable solutions across different parts of the plastics value chain. These challenges are compounded by the nature of city-level interventions in that they are fragmented, led by individual actors, and rely on voluntary action where incentives are often lacking. Therefore, it is important to acknowledge that while city-level interventions play a significant role in addressing the plastic crisis, actions at the city, national, or regional level alone are not sufficient to tackle the plastic crisis. The complexities identified above highlight the need for a global response with internationally agreed-upon and mandatory rules. This would be instrumental in enabling an environment where city-level authorities and businesses can invest in solutions to reduce plastic pollution, and consumers feel safe about the quality of plastic product standards.



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²⁹ Feber, D., Granskog, A., Lingqvist, O., & Nordigården, D. (2021, March 8). Sustainability in packaging: Consumer views in emerging Asia. McKinsey & Company, [Sustainable packaging in Asia | McKinsey](#)

ACHIEVING THE OPTIMUM SCENARIO OF PLASTIC SMART CITIES

The preceding chapters summarize our findings and aim to enhance the understanding of the challenges in addressing plastic pollution at the city level, as well as the enablers that have propelled city-level interventions forward. These challenges and enablers offer insights into the required global action, thus informing the negotiations of the plastic pollution treaty.



The new treaty is mandated to address the full life cycle of plastics³⁰, and the proposed substantive and supporting provisions can be organized into two main components: (1) core obligations and control measures to achieve the overall objective and (2) implementation measures to ensure core obligations are effectively implemented by states. This report aims to support discussions on both.

Our findings underscore the necessity for the plastic pollution treaty to have common and binding global rules applicable to all parties instead of leaving it to the Member States to shape their responses in isolation. Plastic pollution is a transboundary issue, and the root causes of the problem are global, meaning that no country or city will be able to solve the problem alone. The growing plastic pollution crisis demands policy measures that go beyond the voluntary model that has been in place for the last three decades. Without a comprehensive set of binding global rules, mismanaged plastic volumes globally would almost double.³¹ This projection shows that a new treaty with purely voluntary actions will not help cities to end plastic pollution. The pollution level would instead most likely see an exponential growth. For this reason, common global binding rules are



needed to help cities to address plastic pollution and create the needed change at the local level. This report demonstrates how cities are not only dependent on national and regional action but also on binding global rules to solve the problems connected to plastic pollution in their cities. Common and binding global rules are needed to address the challenges and to be able to scale up city-based projects and create systemic shifts at the local level in the region.

Five control measures, and the need for them to become legally binding core obligations, are highlighted and explained in further detail below.

4.1 GLOBAL BAN ON AVOIDABLE SUPS AND HIGH-RISK PLASTIC PRODUCTS³²

City-level interventions involved in managing plastic waste, such as collection, sorting, and recycling such as **Hasiru Dala** and **Koh Yao** community waste management program, have highlighted the challenges faced in handling non-recyclable plastic waste. As seen in the case of waste management in **Petaling Jaya City Council in Malaysia**, non-recyclable waste forms the major composition in municipal waste stream which is a significant cost and burden on the available infrastructure. A significant portion of local funds is spent on managing waste arising from SUPs, as they are often littered or landfilled due to the lack of recycling or treatment avenues. While some cities and countries have issued laws and regulations restricting the use of SUPs, these measures continue to face challenges. The choice of plastic types is often determined by companies at the national or global level, while the consequences of the resulting plastic waste fall on cities where consumers purchase, or businesses sell these products. This creates a challenge for cities in managing the waste generated by market activities. Therefore, experiences from city-level interventions and local authorities indicate that a ban on avoidable SUPs and

other high-risk plastic products³³ should be part of global rules to eliminate and reduce plastics and chemicals that are the most harmful for the environment and reduce some of the non-recyclables in the waste stream. This approach would help city-level authorities reduce pressure on the entire waste management system and budget including landfills and prevent the dumping of plastic waste in the open environment, thereby reducing the social, economic, and environmental costs of mismanaged plastic waste.

Additionally, interventions working on providing alternatives to SUPs, such as circular economy business models, face challenges in competing with the ubiquitous availability of non-recyclable plastics sold at low prices, despite existing literature on the true costs of plastics.³⁴ Global prohibitions may accelerate innovations, as has been seen under other multilateral environmental agreements.³⁵ Global, binding rules will send a strong market signal, creating a harmonized, predictable regulatory landscape towards directing business investments and innovations away from harmful products and substances, and towards goods and services with fewer environmental impacts. A ban on avoidable SUPs and other high-risk plastic products, therefore, can support projects such as **Green Joy**, which work on providing bio-based alternatives. It can also benefit projects providing **reusable containers in China** for fruits and vegetables or initiatives like

³³ A methodology which could be employed to determine which types of items should be considered for a ban had previously been proposed in the WWF & Eunomia (2023) reports "Breaking down high-risk plastic products" and "Regulating high-risk plastic products: [wvf_breaking_down_high_risk_plastic_products.pdf](#) (panda.org) and [wvf_regulating_high_risk_plastic_products.pdf](#) (panda.org)

³⁴ WWF, 'Societal cost of plastic produced just in 2019 revealed at US\$3.7 trillion' (2021), [Societal cost of plastic produced just in 2019 revealed at US\\$3.7 trillion: more than the GDP of India | WWF](#) (panda.org)

³⁵ Through global bans, the [Montreal Protocol has phased out more than 99% of ozone-depleting substances](#) and set the ozone layer on a gradual but definite path to recovery. After the Protocol entered into force, leading industry companies developed substitutes much earlier, and with [1.4–2.5 times lower costs than expected](#) – indicating the benefits of a harmonised, predictable regulatory landscape towards directing business investments and innovations.

Kuha sa Tingi, focusing on developing alternative circular business models of reuse and refillable systems. Reuse systems are known to create a significant number of safe job opportunities.³⁶ A ban on avoidable SUPs and other high-risk plastic products in the plastic pollution treaty will create a thriving ecosystem for businesses to develop reuse models thereby generating job opportunities at the city level. Bans can serve as catalysts for entire industries to prioritize research and development efforts towards reuse and refill solutions. This, in turn, encourages increased investment in alternative distribution systems centered around refilling and reuse, ultimately fostering economic growth.

4.2 GLOBAL REQUIREMENTS ON PRODUCT DESIGN AND TARGETS FOR REDUCTION, REUSE, AND RECYCLING

Global standards and requirements for product design are crucial to make sure that plastic products entering the economy are non-toxic, reusable, repairable, durable, and recyclable. Products that do not meet these standards should be effectively prohibited from the market. In the case of cities, challenges related to the handling of non-recyclable plastics are emphasized across interventions in Asia. Introducing global minimum requirements and standards on product design will reduce the presence of non-recyclable plastic in municipal waste streams, increase recycled content in products, increase reuse options and limit the costs linked to their management, as well as the impact on the environment. Standards regarding the segregation and collection of plastic waste and recycling will

“[We] want to reduce virgin plastics by promoting reuse systems and including recycled content in packaging. However, virgin SUPs are cheaper and widely available. To scale up such initiatives, we need global targets for reuse and recycled content. Without these targets, a collaborative effort among stakeholders such as brands, manufacturers, and retailers remain limited.”

Takanobu Iwasaki, Deputy Director for Planning, Sustainable Material Management Division, Bureau of Environment, Tokyo Metropolitan Government



also reduce contamination and increase recycling rates. This will support city level interventions such as **Hasiru Dala** and **Koh Yao** community waste management projects which largely deal in collection, sorting and recycling of plastic waste by standardizing waste management processes.

Similarly, interventions providing reusable and refillable alternatives (**QYOS**, **Kuha sa Tingi**) highlighted the lack of standardization as one of the challenges in scaling their business models. Setting standards at the city level will not be enough, given the transboundary nature of plastic products; standards should be set at the international level. Global rules and standards for reuse and refill systems, including aspects such as size and shape, material, labeling, washing, and required hygiene levels, will ensure the interoperability of systems across cities, limit costs, and enable economies of scale.

International and mandatory standards will increase consumer acceptance by providing reassurance on health and safety aspects and promoting the acceptance of reusable and recycled products. Reducing risks for both big FMCGs and small businesses will increase investor confidence, laying out a clear pathway for scaling reuse systems in cities. Standardization can also help scale up **RVMs**, such as the one being implemented in the UAE and Republic of Korea (Figure 5), by mandating minimum design standards for plastic products that can be easily collected and recycled. City-level authorities, during stakeholder consultation, highlighted the absence of reduction targets as a key factor

“Economic instruments such as incentives, rewards, and taxes can be an accelerator for business entities and local governments when collaborating to reduce single-use plastics on a global and national scale. Technical and financial assistance can help us in meeting the regional waste management needs, which cannot be financed with a limited government budget.”

Safri Burhanuddin, Ex-Deputy Minister, Indonesia's Co-ordinating Ministry for Maritime Affairs and Investments

contributing to the widespread use of flexible non-recyclable plastics as packaging. Additionally, they noted the lack of targets for reuse and the utilization of recycled content as challenges in transitioning to reuse and promoting recycling systems. Implementing global targets on reduction, reuse, and recycling will either eliminate or significantly reduce the prevalence of flexible and hard-to-recycle plastic products, as well as material mixes in waste streams. This, in turn, will support municipalities and waste management operators in optimizing waste management practices. The establishment of global targets will guide the industry toward adopting reusable and refillable models for their products and create incentives for markets to incorporate recycled content, thus promoting a more sustainable approach to plastic products.

4.3 GLOBAL OBLIGATIONS FOR ECONOMIC INSTRUMENTS AND EPR

Almost all city-level interventions highlighted the need for financial support for scaling up their projects. City-level authorities and interventions are impacted by the change in prices of virgin plastics as it impacts the demand for secondary raw materials as well as alternatives. A plastic tax at the national level, therefore, will increase the price of virgin plastics and thus increase the price competitiveness of recycled plastics, giving impetus to recycling systems. It will also have a steering effect towards design for recycling to generate high-quality recycle to meet the demand for low-cost secondary raw material. This will support plastic recycling projects such as **RVMs of Republic of Korea and the UAE, rPET project in Thailand and Rethinking Recycling (Delterra)**.

In addition to supporting plastic recycling projects, a plastic tax at the national level will also support projects working

on developing alternatives to plastics such as **Green Joy** by increasing the price of plastic products to reflect the true environmental and social costs of plastics. Additionally, national governments should consider taking appropriate legal, administrative and other measures to remove subsidies that either artificially reduce the market price of plastic polymers, or incentivize demand for virgin polymers over recycled polymers or other sustainable substitutes.

Furthermore, EPR is a policy measure which could help shift the financial burden away from city authorities. EPR is a policy approach where producers are held responsible for the costs of end-of-life collection, sorting and recycling or disposal of their products. The plastic pollution treaty could require states to set up EPR regulations that are mandatory for certain product groups, or even specific products within those groups, and set out minimum requirements for EPR schemes. This type of provision, that leaves room for specific and context-dependent setups and operations of EPR schemes, could ensure that the schemes across states are designed to maximize effectiveness. The possible funds generated through EPR fees could be used to improve the existing plastic waste management systems by increasing the collection coverage and development of sorting and recycling facilities. A binding obligation to establish mandatory EPR schemes would be an opportunity to generate additional funds for the local authorities to better manage the plastic waste produced and reduce the burden on municipal budgets. It will support interventions such as the voluntary **EPR schemes of Sri Lanka and Malaysia** (Figure 5) and help in the transition towards a mandatory national EPR scheme.

In addition to improving downstream plastic waste management, EPR for instance through eco-modulation of fees (lower fees for plastics that have lower environmental impact) can also play a key role in reducing the quantity of non-recyclable plastics put on the market. Through eco-modulation, the EPR fees for non-recyclable packaging tend to be higher as compared to recyclable packaging as the cost of handling non-recyclable packaging is higher due to a lack of market demand.³⁷ EPR will increase the accountability of the producers to manage the plastic waste produced from their products across the supply chains. Additionally, producers will have to ensure compliance with the standards, targets, and timeframe.³⁸ This will provide support to city-level interventions operating across various stages of the plastics value chain by ensuring that the plastic products put in the market meet the design and material standards as well as ensure proper management once they turn into waste.

³⁶ Reuse, 'Briefing on job creation potential in the re-use sector' (2015), [Final-briefing-on-reuse-jobs-website-2.pdf \(reuse.org\)](#)

³⁷ Sachdeva, Anurodh; Ariel Araujo and Martin Hirschnitz-Garbers, 'Extended Producer Responsibility and Ecomodulation of Fees. Opportunity: Ecomodulation of Fees as a Way Forward for Waste Prevention (2021), [Extended Producer Responsibility and Ecomodulation of Fees | Ecologic Institute](#).³⁸ WWF, 'INC-3: TIME TO RAISE AMBITION: Recommendations on the Third Negotiation Meeting of the Plastic Pollution Treaty' (2023), [wvf-extended-brief-inc3-time-to-raise-ambition-english.pdf \(panda.org\)](#)

The impact will only be achieved on the mandatory requirement of economic instruments and EPR through global binding rules. It will ensure consistency, effective implementation, and a level playing field globally, addressing the transboundary nature of plastic pollution. Binding rules also provide accountability, stronger incentives for compliance, and a stable foundation for long-term solutions, mitigating the risk of free-riding and promoting collective commitment to tackling plastic waste.

4.4 GLOBAL STANDARDS AND REQUIREMENTS FOR SEGREGATION, COLLECTION AND RECYCLING

National and city-level policies that mandate waste management practices, including source segregation and door-to-door waste collection, have proven to be instrumental in supporting projects across Asia. Notable examples include the **Zero Waste Japan and Long An waste collection and segregation** (Figure 5). The Zero Waste Japan project, implemented in the town of Kamikatsu-cho, operates under a zero waste policy requiring citizens to segregate waste into 13 types and 45 categories. This policy has significantly contributed to the progress of the Zero Waste Japan project.³⁹ Binding global standards and requirements in the treaty on plastic pollution on how waste can be properly segregated, collected, sorted, and recycled will continue to accelerate and improve waste management practices on a global level and increase the safe circularity and management of plastic products. By establishing uniform rules, for instance on the availability of and access to waste collection for all households, and on the

“There are still areas where waste is left uncollected – especially in rural areas. We also have to take into consideration the people who are currently involved in the collection and disposal, particularly the informal waste pickers. Local governments are also constrained with their budget capacity and don’t have enough resources to manage the increasing quantities of plastic waste.”

Jean Rose Cadag, Local Government Unit, Donsol, The Philippines

range of materials that should be collected and the degree to which they should be collected separately from one another, an international instrument can create coherence between the city and national level policies, thereby facilitating the development of plastic waste management systems.

Considering the vulnerability of the informal waste sector, city-level interventions underscored the importance of recognizing the informal sector in the treaty. As seen in the case of Hasiru Dala, solid waste management by-laws published by the city-level authorities of Bengaluru city (Bruhat Bengaluru Mahanagara Palike) supported the integration of waste pickers into a formal system for collection of dry waste.⁴⁰ Global rules should have provisions for just transition for vulnerable groups in the plastics value chain, including the informal waste sector.⁴¹

4.5 GLOBAL MINIMUM STANDARDS AND REQUIREMENTS FOR DISPOSAL

Communities across Asia are grappling with the impact of unsafe disposal methods such as open dumping in the environment, poorly maintained landfills resulting in leachate leakage into the environment, adversely affecting soil and water resources, or unsafe operations of incinerators or waste to energy plants resulting in release of harmful dioxins in the atmosphere.⁴³ This is due to the absence of rules and strict adherence to standards related to disposal which poses an additional cost to human health and the environment. Global minimum standards and requirements on disposal, which could be related to the operations of disposal facilities and disposal practices, will be important to prevent the escape of plastic products and materials, as well as associated negative environmental impacts, and ensure the environmentally sound management of waste. Implementing minimum standards for waste disposal methods, covering aspects like location, size, operations and standards, along with the prohibition of high risk disposal practices such as open dumping and open burning of plastic waste, can help curtail plastic waste leakage into the environment. Moreover, it ensures safe working conditions for individuals employed in these facilities. This will support waste management projects such as the **Koh Yao** community waste management project which has faced challenges with recyclable waste ending up in open dumping sites. Additionally, it will aid in establishing the groundwork for zero-waste cities, akin to the **Kamikatsu-cho Zero Waste City** in Japan, by setting conditions and standards for waste disposal.

In addition, entities working on city-level interventions on recycling as well as city authorities reported the disposal of low-value plastic waste to landfills as a significant challenge. The previously mentioned rules on ban of avoidable SUPs and high-risk plastic products, will reduce the amount of plastic products going to waste disposal facilities and reduce the expenses for cities.

MEANS OF IMPLEMENTATION AND IMPLEMENTATION MEASURES: A STRONG GLOBAL MECHANISM SUPPORTING NATIONAL AND LOCAL IMPLEMENTATION

The above-discussed policy recommendations in the form of binding global rules in the treaty will play a crucial role in scaling or accelerating city-level interventions and addressing challenges that go beyond the city or national level. As regards to means of implementation, there may be treaty provisions such as capacity-building, funding including for infrastructure development, research and development, and technology transfer that will directly support Member States in implementing the core obligations of the instrument, along with specific control measures. Given the crucial role of city-level authorities in addressing plastic pollution, such means of implementation would most likely extend to the local level. The plastic pollution treaty is a chance to put in place a strong global mechanism that supports national and local implementation, as shown in this report.

For example, funding from the Hong Kong Government, the Environment and Conservation Fund, helped in initiating the project of **ECF: Choose to Reuse** on returnable containers and funding from SG Eco Fund helped in launching a reusable container rental system pilot with

Hawker centers by **Muuse** in Singapore. Similarly, funding and technical support from different stakeholders, both private and public sector, helped in initiating and scaling **Delterra’s Rethinking Recycling Initiative**.

As highlighted in Chapter 3, technology played a crucial role in the success of interventions like **RVMs in Republic of Korea and the UAE**. Extending these advanced technological solutions, through technology transfer, to other regions will be instrumental in scaling similar initiatives. This effort, coupled with capacity-building programs aimed at, for instance, empowering technology users, will guarantee that the implementation of new technologies in diverse geographical areas attains the desired level of success.

While the local authorities are well placed to understand the local needs for managing plastic waste, priority should be given to projects at the top of the waste hierarchy. Additionally, local authorities may also be supported in implementing new business models and technologies which in otherwise BAU scenarios would be difficult to implement, for example, due to the funding support received for implementing **Kuha sa Tingi** project, the implementers were able to avoid passing on the extra costs of providing the reuse solutions to the consumer. This initial support increased consumer acceptability, helping to scale up the project and subsequently reduce costs.

Finally, to enable smooth data collection, reporting, and monitoring of the progress under the plastic pollution treaty, the provisions should include a harmonized and standardized framework to gather uniform data and track the progress and effectiveness of control measures. The same was highlighted by city authorities during the stakeholder consultations.

To grasp the potential of a plastic pollution treaty in tackling the challenges faced by the cities and enable the opportunities available through control measures, kindly refer to Figure 7. This illustration portrays a plastic smart city, empowered by the plastic pollution treaty, to address challenges extending beyond the city or national scope and to scale enablers across the entire plastics life cycle.



³⁹ zwtk.jp. (n.d.). zwtk.jp. <https://zwtk.jp/en/>

⁴⁰ Hasiru Dala. (2022, November 29). Our story - Hasiru Dala. [Our Story - Hasiru Dala](#)

⁴¹ See footnote 34

⁴² Moon, D., 'Zero Waste to Zero Emissions: How Reducing Waste Is a Climate Gamechanger (GAIA)' (2022). [Seoul.pdf \(no-burn.org\)](#)

⁴³ Siddiqua, A., Hahladakis, J. N., & Al-Attia, W. a. K. A., 'An overview of the environmental pollution and health effects associated with waste landfilling and open dumping. Environmental Science and Pollution Research, 29(39), 58514–58536' (2022). [An overview of the environmental pollution and health effects associated with waste landfilling and open dumping. | Environmental Science and Pollution Research \(springer.com\)](#)

⁴⁴ For hierarchy, kindly refer to [First Things First: Avoid, Reduce ... and only after that - Compensate | WWF \(panda.org\)](#)

CHALLENGES

- Products not designed for reuse, refill, segregation and recycling
- Recycled products and alternatives cost more than SUPs
- Lack of transparency and labeling hinders segregation and recycling
- Global production growth surpasses waste management infrastructure development
- Waste management cost is not reflected in production cost

ENABLERS

- Bans on SUP products
- Policies on reusable, refillable, recyclable product design
- Government incentives for producers moving towards circular supply chain

2. REUSE AND REFILL

CHALLENGES

- Lack of standardized infrastructure, logistics, and policies
- Concerns about hygiene, safety, and quality
- Reuse and refill models are more expensive
- Limited collaboration between recyclers, industry, and government authorities
- Limited support from the public sector

ENABLERS

- Initial funding to adopt reusable and refillable packaging initiatives
- Standards for products and systems that promote interoperability and shared infrastructure
- Access to technology for scaling up and easier adoption
- Economic schemes to support transition for reuse and refillable solutions

Figure 7
This illustration portrays a plastic smart city, empowered by the plastic pollution treaty, to address challenges extending beyond the city or national scope and to scale enablers across the entire plastics life cycle.

1. DESIGN/ PRODUCTION

A PLASTIC SMART CITY EMPOWERED BY BINDING GLOBAL RULES IN THE PLASTIC POLLUTION TREATY TO ADDRESS CHALLENGES AND SCALE UP SOLUTIONS

GLOBAL BAN ON AVOIDABLE SUPS AND HIGH-RISK PLASTIC PRODUCTS

- Reduces pressure on the waste management system and leakage into the environment
- Incentivizes alternatives solutions to SUPs such as reuse and refill and innovations
 - Generates green jobs
- Harmonizes the scope of plastic bans

GLOBAL REQUIREMENTS ON PRODUCT DESIGN AND TARGETS FOR REDUCTION, REUSE, AND RECYCLING

- Supports development of reuse, refill, and recycling options
- Reduces hard to recycle plastic products
- Promotes industry adoption of reusable, repairable, durable and recyclable plastic products
 - Generates green jobs



MEANS OF IMPLEMENTATION

- Supports Member States in implementing the control measures
 - Assists city-level authorities and projects
 - Implements a global mechanism that supports national and local implementation
 - Ensures harmonized data collection, reporting, and monitoring of progress

GLOBAL MINIMUM STANDARDS & REQUIREMENTS FOR DISPOSAL

- Establishes safe and properly functioning infrastructure
- Safer jobs
- Ensures environmentally sound waste disposal of plastic waste

GLOBAL STANDARDS AND REQUIREMENTS FOR SEGREGATION, COLLECTION AND RECYCLING

- Ensures coherence between city and national plastic waste management policies
- Reduces plastic waste leakage in the environment and increase the safe circulation and management of plastic products
- Catalyzes investments and development of infrastructure
- Generates green jobs

GLOBAL OBLIGATIONS FOR ECONOMIC INSTRUMENTS AND EPR

- With EPR schemes, the producers can be held responsible for the costs of end-of-life collection, sorting and recycling or disposal of their products.
- EPR can reduce the burden on municipal budgets.

LACK OF DATA ACROSS THE PLASTICS LIFECYCLE

- Insufficient data availability across the plastics lifecycle
- Hampers the successful design and implementation of interventions

Figure 7
A Plastic Smart City, empowered by the plastic pollution treaty, to address challenges extending beyond the city or national scope and to scale enablers across the entire plastics life cycle.

CHALLENGES

- Uncontrolled dumping and open burning of waste
- Lack of policies and laws for the environmentally sound management and disposal of plastic waste
- Excessive low-value plastic waste
- Limited city budgets
- Operational inefficiencies of disposal technologies

ENABLERS

- Policies restricting certain plastic product use
- Minimum standards and requirements for disposal methods
- Economic schemes to alleviate funding gap for city authorities
- Funding to invest in environmentally sound practices and technologies for cities

4. RECYCLING

CHALLENGES

- Cheap prices of virgin plastics hampers the demand for recycled material
- Absence of decentralized recycling infrastructure and markets for recycled waste creates high transportation costs
- Lack of standards and requirements in product design and material and for recycling processes

ENABLERS

- Funding support for recycling interventions
- Economic schemes to decrease the funding gap
- Bans on hard to recycle plastics
- Minimum standards and design requirements for recycling
- Policies ensuring price competitiveness b/w recycled and virgin plastics

3. SEGREGATION, COLLECTION, AND SORTING

CHALLENGES

- Lack of infrastructure, financial resources, and standards, and minimum requirements
- Limited community awareness to increase participation
- Densely populated areas, isolated rural areas, islands or mountain areas make proper collection and disposal challenging
- Limited resources hamper alignment between city and national policies

ENABLERS

- Policies mandating segregation, collection and sorting
- Clear requirements on waste segregation, collection and sorting
- Community awareness and participation in segregation at source
- Stakeholder collaboration using existing infrastructure for plastic waste management in cities
- Economic schemes such as EPR to generate funds for waste management projects
- EPR shifts away from the cities the operational and financial responsibility for the management of plastic waste

THE WAY FORWARD:

GLOBALLY BINDING RULES TO ADDRESS CHALLENGES AND SCALE UP CITY-LEVEL INTERVENTIONS

Despite the commendable efforts by city-level authorities and interventions in addressing plastic pollution, this report underscores the presence of challenges that transcend the scope of individual cities or national efforts. The effective resolution of these challenges centers upon the establishment of universal, binding global rules within the framework of a plastic pollution treaty. Plastic production and management, as well as plastic pollution, are transboundary and will thus need global rules to solve the global challenges as highlighted by the analysis of the selected city-

level interventions. Additionally, global rules in the plastic pollution treaty offer opportunities to scale up or accelerate city-level interventions based in Asia.

Given the projections indicating a potential 15% increase (~35 million metric tons)⁴⁵ in plastic pollution in the ocean over the two years of treaty negotiations, the necessity for a plastic pollution treaty with global rules as discussed in this report becomes abundantly clear. Recent modeling⁴⁶ confirms that without a comprehensive set of binding global rules, mismanaged plastic volumes

would almost double, from 110 Mt in 2019, to 205 Mt by 2040, and would clearly result in harmful effects to our environments, economies, and health.

Member States are therefore urged to support the development and adoption of a legally binding instrument to end plastic pollution that includes the necessary common binding rules, such as global bans on the most high-risk plastic products, chemicals, and polymers of concern, global requirements for products and systems to ensure a non-toxic plastic circular economy, and a strong implementation support mechanism.

These recommendations are grounded in the insights from city-level interventions for consideration by the Member States for this once-in-a-generation opportunity to drive systemic change to end plastic pollution. It gives importance to the roles, needs, and perspectives of cities and local governments and stakeholders.

⁴⁵ Forecast extrapolated from Geyer et al., 'Production, use, and fate of all plastics ever made' [2017]), <https://www.science.org/doi/10.1126/sciadv.1700782>

⁴⁶ SystemIQ (2023). Towards Ending Plastic Pollution. Nordic Council of Ministers. <https://www.norden.org/en/publication/towards-ending-plastic-pollution>



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