UNPACKING REUSE IN ASIA

A BRIEF REPORT FEATURING SELECT CASE STUDIES ON REUSE SYSTEMS FOR PACKAGING

ABRIDGED VERSION

gaia

#Break Free From Plastic

dietplastik indonesia

asia reuse consortium

GAIA is a global network of more than 800 grassroots groups, networks, NGOs, and individuals. We envision a just, Zero Waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped. We work to catalyze a global shift towards ecological and environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution.

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ABOUT THE REPORT

This abridged report presents a collection of case studies on pioneering reuse initiatives across Asia, shedding light on diverse approaches to reducing waste in the region. It serves as a practical guide for policymakers, and other stakeholders seeking to implement effective reuse strategies.

ABOUT OUR PARTNERS

The **#BreakFreeFromPlastic (BFFP)** Movement is a global movement envisioning a future free from plastic pollution. Since its launch in 2016, more than 12,000 organizations and individual supporters from across the world have joined the #BreakFreeFromPlastic movement to demand massive reductions in single-use plastics and to push for lasting solutions to the plastic pollution crisis. www.breakfreefromplastic.org

Dietplastik Indonesia
Plasticdiet Indonesia (with previous name Indonesian Plastic Bag Diet Movement) is a non-profit organization that focuses on advocating for policies to reduce single-use plastic waste in Indonesia. Plasticdiet Indonesia succeeded in encouraging more than 100 cities to ban the use of single-use plastic after initiating the #Pay4Plastic regulation trial in 2016 with the Ministry of Environment and Forestry. Plasticdiet Indonesia collaborates with stakeholders such as the government, business sectors and community groups in carrying out waste reduction efforts that are solutive and impactful. The flagship programs initiated by Plasticdiet Indonesia are Plastic Free Market and Reuse Movement. Plasticdiet Indonesia has received various awards for what it has done and covered in two documentary films, namely The Story of Plastic (2019) which has won the Emmy Awards and Pulau Plastik/Plastic Island (2021).

Asia Reuse Consortium (ARC) is a first cross-sectoral association representing civil society organizations, enterprises and local governments to facilitate learning and collaboration and advocate for reuse solutions against the plastic pollution crisis in Asia. ARC was founded in Jakarta on 11 January 2024 by members of GAIA-BFFP network and local governments and enterprises from Indonesia, Philippines, Thailand, Vietnam, and India. ARC is co-convened by Break Free From Plastic, Asia Pacific (BFFP Asia Pacific), Dietplastik Indonesia, and GAIA Asia Pacific.

ACKNOWLEDGEMENTS

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1.1 BACKGROUND

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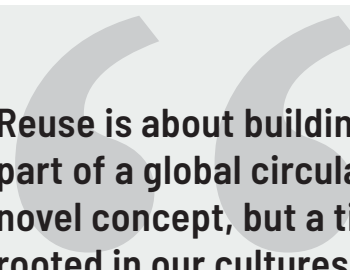
Over the past decades, plastic production has been growing exponentially and is on a pathway to continue to grow. According to the Global Plastics Outlook: Policy Scenarios to 2060, global plastics use is projected to almost triple between 2019 and 2060 in the baseline scenario, increasing from 460 million tonnes (Mt) to 1,231 Mt yearly (OECD, 2022). This upward trend implies that the plastic pollution crisis will inevitably get increasingly challenging.

The problems of plastic pollution have been articulated in many reports and research studies. According to a 2023 report under the business-as-usual scenario, the annual levels of mismanaged plastics would continue to rise and could almost double, from 110 Mt in 2019 to 205 Mt by 2040—an 86% increase (Nordic Council of Ministers, 2023). The plastic crisis is also a climate crisis as 99% of plastics are made from fossil feedstocks. A 2019 report by the Center for International Environmental Law (CIEL) states that "If plastic production and use grow as currently planned, by 2030, these emissions could reach 1.34 gigatons per year—equivalent to the emissions released by more than 295 new 500-megawatt coal-fired power plants" (Howarth, 2019).

Apart from environmental impacts, latest reports also highlight the health impacts associated with plastics—microplastics in human blood (Carrington, 2022), in breast milk (Carrington, 2022), in testicles (Carrington, 2024), and microplastics infiltrating brain tissue (Main, 2024). There have been other studies that have shown plastic ingestion by fish and other marine mammals, by insects and birds, apart from studies that have shown that plastic is also in our water and food (Carrington, 2017). For a long time, recycling has been pushed as the only way out of the plastic pollution crisis. It is now well known, and often quoted, that we cannot recycle our way out of the plastic pollution crisis with only 9% of plastic ever created has been recycled. The narratives with single-use plastics pollution have always targeted consumers as the creator of the problem—or countries' inability to manage the waste.

Bans have been pushed as a solution to counter some problematic single-use plastics such as plastic bags, plastic straws, etc. But these are just the tip of the iceberg. For decades now, there have been tactics employed to deter, delay, and side track issues around plastic pollution—greenwashing, promotion of false solutions such as waste-to-energy projects, chemical recycling, or advanced recycling, among others (Chandran, 2023).

The problem continues to persist. While policy tools such as Extended Producer Responsibility (EPR) schemes are gaining ground, it is extremely critical that EPR schemes are looked at more holistically—going beyond mandating recycling and end-of-life disposal targets, to also mandating waste reduction, product redesign, and reuse targets. Each aspect needs to be articulated clearly to address the issues of plastic pollution.

> **Reuse is about building new systems as part of a global circular economy. It is not a novel concept, but a time-honored practice rooted in our cultures, which we have lost over time, and just needs to be rediscovered, renewed, made accessible again to everyone, and scaled.**

Many countries are now in alignment on the need to move away from a linear system (take-make-waste economy based models) to a circular economy system that is regenerative and restorative to reduce the usage of plastics—so that it can be prevented from becoming pollution in the first place. This includes shifting to materials that can be recycled, reused, refilled, or repaired. Along with this, the calls for reducing plastic production at source to end plastic pollution to stay below the 1.5 °C target, tackle the triple planetary crisis, and create a safe and just future for all.

Plastic Waste Issues and Plastic Policies in Asia[1]

Each country and region within Asia has its own background and characteristics in relation to plastic waste management and material-cycles policy, even though they share the same global region (Terazono et al., 2005, 477–498). Asia's diverse economic and political landscape, aspirations, presence of large informal workers, and geopolitical importance also means that each country has different priorities and approaches when dealing with the plastic pollution problems.

Many Asian countries have limitations in waste management services including poor levels of collection and segregation, inadequate recycling infrastructure, lack of capacity, and lack of adequate finances. These, coupled with the growing reliance on single-use plastic, and on false solutions such as large-scale waste-to-energy projects, have only compounded the problems. In addition, Asian countries are also currently dealing with the world's plastic addiction—an addiction fueled by companies.

It is important to clarify that Asian countries are NOT the top marine plastic polluters (Break Free From Plastic, 2023)—the waste trade from the Global North significantly exacerbates the problem. We must recognize and acknowledge

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[1] We have used the groupings used by the United Nations, which counts 83 regions as part of the Asia and Oceania region, with some exceptions. However, for the purpose of this report, we have have omitted Iran and countries in the UN's Western Asia grouping that includes Saudi Arabia and the rest of the Middle East, along with the Pacific Island states

that plastic pollution spans its entire lifecycle: from the extraction of fossil fuels to the production of single-use plastics, and further through polluting disposal technologies and waste dumping (Break Free From Plastic, 2023). It's high time that corporations take responsibility and be held accountable for the single-use plastics they produce. This ensures that our focus remains on the real causes of plastic pollution, allowing us to move forward with the real solutions the world desperately needs.

Why Reuse?

Reuse can be part of a solution away from the plastic pollution crisis. It can support a just transition and economic transformation—one which includes diverse participation across different stakeholders, centering these most impacted across the plastic cycle. While reuse is a solution pathway to a world free from plastic pollution, it is also a pathway to achieving climate goals, biodiversity protection, reduction of toxics, and a more equitable world.

Reuse systems fit at a nexus of corporate accountability, strong governance, labor and livelihood rights, and the ultimate responsibility for and costs of transitioning to reuse systems lies with governments, producers, and retailers (Break Free From Plastic, Unpublished.)

Asia is home to a vibrant reuse economy and although reuse solutions have existed all across the Asian region for centuries, new formats and new delivery models have been emerging based on the need to tackle single-use plastics.

Across parts of Asia, numerous initiatives are dedicated to implementing reuse, aiming to reduce single-use plastics. For instance, India is leading the way for citizen-led return solutions for events. Initiatives such as the Crockery and Cutlery Banks are encouraging communities to reduce waste when hosting social and public gatherings. The Philippines has been championing refilling through small neighborhood stores known as sari-sari stores. 'Kuha sa Tingi' is an initiative (Ledesma et al., 2024) that builds on Filipino culture where consumers purchase goods in precise quantities, often using reusable containers. Social enterprises are also leading the way in driving reuse initiatives. For example, initiatives such as Cupable (India); Taksu Reuse (Indonesia); We Use (Hong Kong), are championing the cause of sustainable events, encouraging event organizers to cut down on disposables.

The Asian region has always hosted a vibrant repair, refurbished, and remanufactured economy and waste pickers in the region have been playing an important role across these three Rs. For example: waste pickers collect items that can be reused directly, for the same purpose they were intended for like beer bottles. They also support through channelizing products that can be supported through refurbishment, repairs, and upgrades (in preparation for reuse) like textiles, building materials, electronics, and bulk consumer items, among others. All these efforts have in common the need for localized solutions, and a focus beyond the product but to the system that enables the reuse of a product and largely addresses plastic pollution created for packaging.

Defining Reuse and Reuse Systems

While at present, there is no universally accepted definition of Reuse and Reuse Systems, attempts have been made by different organizations to define it

The International Organization for Standardization (ISO) describes reuse as an operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market, enabling the packaging to be refilled (ISO 18603:2013(en), n.d.)

According to *Ellen Macarthur Foundation,* **'reuse schemes'** or **'packaging reuse'** refers broadly to delivery models in which a single package achieves multiple 'rotations,' 'cycles,' 'loops,' or 'uses' for the same purpose for which it was originally used. This is distinct from, and complementary to, recycling. Reuse models circulate a product or packaging as a whole, whereas recycling reprocesses the constituent materials into a new product or package (Ellen MacArthur Foundation, 2023).

The Global Plastics Center, University of Portsmouth, defines a **'reuse system'** as a comprehensive system designed for multiple circulations of reusable products and packaging which remain in the ownership of the reuse system and are loaned to the consumer. The system accounts for the recovery of the reusable item, reverse logistics, cleaning, replenishing, and redistribution (University of Portsmouth, 2023).

The essence of these definitions articulate the following:
- The packaging must be used for the same/intended purpose that it was conceived for
- The packaging is designed to be used multiple times/cycles/circulations
- The packaging item must be returned to the system to close the loop for further circulation

In this context, it is also useful to make a distinction between **packaging reuse** vs. **packaging prevention** (Schneider & Larissa, 2022). Both Portsmouth and Zero Waste Europe state that when addressing what is popularly referred to as **"reusable packaging,"** one is in fact referring to two types of processes:

- The action of using a container that is owned by the consumer and it is either refilled in the shop or refilled at home—as per the diagram developed by the Ellen MacArthur Foundation. In both cases the container is in fact not packaging but a product, and hence it should be considered as: **packaging waste prevention** (Schneider & Larissa, 2022).

- The action of using a container that is an asset owned by the producer or a third party and/or collected, washed and refilled by a third party. This process is what should be considered as: **reusable packaging** (Schneider & Larissa, 2022).

Clear and universally applicable definitions are essential for establishing consistent terminology across the sector for effective policy frameworks. It is important to note that Reuse and Refill—as terminologies—are frequently used interchangeably when speaking about reuse systems. However, the differences within these terms lie in

the ownership of the packaging. With refill, the focus of action is on the consumer/ end user as the ownership of the packaging/container lies with the consumer. The University of Portsmouth suggests that the term refill should be avoided within the reuse system, and terms such as replenishment would be appropriate for the filling processes (University of Portsmouth, 2023)

It is important to recognize that regardless of ownership, reuse systems for packaging require collaboration across the entire supply chain for efficient functioning of the system as a whole. This collaboration must also facilitate just transitions, ensuring that all stakeholders can adapt and integrate within the system smoothly and equitably.

1.2 SCOPE AND PURPOSE OF THIS REPORT

Popular media narratives only showcase the growing plastic waste problems, eclipsing the growing initiatives towards reuse and refill systems. The rationale for the report stemmed from the need to showcase the diversity of solutions across different countries in the region—with a single narrative **"Asia is home to reuse solutions."**

This abridged version of a larger report of the same title, provides an overview of selected return and refill cases across the region. The full report, which will explore these in greater depth, is expected for release in 2025.

The primary goal of this summary report is to spotlight return and refill systems aimed at replacing single-use plastic packaging with reusable alternatives. It is essential to emphasize that Reuse systems for packaging cannot be looked at in isolation as a product's packaging, but as an entire system of processes (University of Portsmouth, 2023) that includes collection, transportation, washing, and refilling and contains a role for all stakeholders including waste pickers and other workers in informal and cooperative settings.

This emphasis on reuse systems presents a more holistic and transformative opportunity for the region to address plastic pollution, livelihood, and other issues, moving the focus away from solely waste management.

A note on terminologies used in this report:
- **Reuse systems for packaging** refers to the infrastructure and processes established to facilitate and ensure that packaging can be used multiple times, for the same purpose. A system includes elements like logistics, collection, cleaning, redistribution, and partnerships necessary to maintain circularity on a larger scale.

- **Refill and Return** represent two distinct classifications within reuse systems. This report intentionally uses **"refill"** to clearly differentiate it from **"return."** Both terms are essential to highlight their roles within the broader reuse systems for packaging, emphasizing their distinct processes while contributing to the larger goal of reducing single-use waste

- **"Reuse Models"** refer to specific strategies or frameworks within a reuse system that define the implementation of reuse. Models focus on operational mechanisms rather than the overall process and within reuse, include both Return and Refill Models. (Refer to subsequent sections for more details).
- The examples or cases featured here are referred to as **'Reuse Cases'** or **'Reuse Solutions'** throughout the report. These cases showcase how reuse, including refill and return systems, are being implemented to reduce packaging waste.

1.3 METHODOLOGY

A comprehensive crowdsourcing approach was employed to gather reuse case studies, targeting best practices and examples from Asia.

- Primary contributions were sourced from members of GAIA (Global Alliance for Incinerator Alternatives), BFFP (Break Free From Plastic), and ARC (Asia Reuse Consortium) networks.

- To supplement this crowdsourced data, secondary research was conducted in instances where no examples were received from certain countries or where a specific category required more examples to achieve comprehensive coverage.

The criteria and consideration made for selecting featured cases:

- **Diversity in geographical representation.** Represent reuse cases across a broad range of Asian countries as well as practices from islands, rural regions, and urban centers to highlight varied approaches influenced by local contexts.

- **Diversity in operational modality.** Demonstrate how various stakeholders drive reuse, i.e. community/grassroots, local government, businesses, and other models of operations—based on Ellen MacArthur Foundation's classification of refill at home and on the go, and return at home and on the go.

- **Time tested.** Feature cases that have been operational for at least one year.

- **Role of waste pickers:** Feature current cases where waste pickers are involved in reuse work.

Interviews were held with reuse service providers over two months and the case studies, once written, were reviewed with the interviewees before publication. Due to time limitations, not all cases received through crowdsourcing were selected for in-depth interviews or detailed features. However, to maintain inclusivity, every case submitted, whether interviewed or not, are summarized and included in the summary section

2 REUSE SYSTEMS FOR PACKAGING

Reuse systems for packaging focuses on systems where packaging can be used multiple times, for the same purpose. This helps in waste reduction and the need for single-use materials.Here,consumers purchase products—often food or beverage, personal care or household cleaning supplies—in a reusable packaging instead of single-use packaging, and once the product is used, the packaging is cleaned for repeated use.

There are broadly two reuse systems—refill and return, with the ownership of the packaging being the main point of difference between them (Ellen MacArthur Foundation, 2023).

The table below provides an overview of the two reuse systems. Chapters 3 and 4 will provide insights on refill and return systems, through select case studies.

Table 1: Classifications of Reuse Systems for Packaging

Type of Reusable Packaging Service System	Refill	Return for Reuse
Type of Reusable Packaging Service System	Consumer-owned or retailer-loaned containers	Reuse service provider-owned containers
Action	The consumer refills the reusable packaging and undertake washing services	A reuse service provider provides collection, washing, and redistribution of the reusable packaging returned by the consumer
Restocking of Product	The consumer brings the reusable packaging to the store wfor restocking of the product	In case the return system is used for replenishing a product, the same is undertaken by the service provider for re-consumption by the consumer.
Reusability of the Packaging	Consumers are expected to reuse the packaging until it reaches its end of life	Designed to be recirculated multiple times for the same or similar purpose in its original format, until it reaches its end of life
Type of Reusable Packaging Material Used	Consumers are expected to use robust and non-reactive material for this purpose.	The material should be robust to withstand recirculation and non-reactive in nature.
End-of-life Managementw	The packaging material should ideally be recyclable at the end of its life.	The packaging material should be recyclable at the end of its life. The responsibility for its safe end-of-life management lies with the reuse service provider.

2.1 SECTORS COVERED FOR REUSE SYSTEMS FOR PACKAGING IN THIS REPORT

- **Venues, Events, and Onsite Dining.** This refers to food and beverage services provided directly at the venue (offices, institutions, hotels, conference centers, outdoor spaces etc.) as part of the catering service for events (concerts, wedding, parties, meetings etc). These are sometimes referred to as 'closed loop' systems.

- **Takeaway Food and Beverages**. This includes food and beverages ordered from a restaurant or a food establishment for consumption off-site, rather than dining in.

- **Fast-moving Consumer Goods (FMCGs).** These are products that are sold quickly or relatively cheaply (Scott & Gratton, 2024) and are also known as convenience goods. They are non-durable in nature, meaning they have short shelf life or are perishable. Examples: personal care products; cleaning products; food and beverages including dry foods or ready-to-eat foods, condiments, confectioneries, beer, soda, and packaged drinks.

- **Safe Drinking Water Solutions:** This includes accessible and safe drinking water solutions like refillable public fountains or taps that communities can access to reduce reliance on packaged or single-use packaged drinking water bottles.

2.2 SERVICE CHANNELS FOR REUSE SYSTEMS FOR PACKAGING

The following service channels are featured in this report. The diversity of Asia demonstrates multiple options for service channels.

- **Direct-to-Consumer (D2C) or Business-to-Consumer (B2C).** This involves transactions where a business/non-profit/government provides products or services directly to customers.

- **Business-to-Business (B2B).** This refers to business transactions between companies, where one sells products or services to another.

- **Nonprofit-to-Business (N2B).** A transaction between a non-profit and a small business to sell a product or service

- **Trust-based lending.** A service where reusable products (eg: tableware) are rented out within the community on mutual trust, without charging or requesting for a deposit from the individual or organization who wishes to rent.

2.3 REUSE TERMINOLOGIES

To ensure common understanding, terms and definitions used in this report are captured below. The terms are arranged in the order in which they appear in the report.

- **Reusable Packaging.** The International Organization for Standardization (ISO) defines reusable packaging as "packaging or packaging component which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse" (ISO 18603:2013(en), n.d.). According to the EU rules on packaging and packaging waste, "Reusable packaging is a product purposely designed, manufactured, and put on the market so that arrangements are at work to make reuse operational (EN 13449:2004) (Gasperotti, 2024). It means that the packaging so designed is durable enough to withstand repeated circulation

- **Reuse Service Provider.** In the Reuse system for packaging, service providers (individual, non-profit or trust, business, or government) provide direct reuse services to the consumer or business. This could include some or all of the following services: collection, professional cleaning, sanitizing, refilling of the product, and re-distribution.

- **Reuse Service Partner.** An entity or individual that works jointly with a reuse service provider to enable reuse implementation. For example, in the case of return service for events, the reuse partner is the event organizer who partners with the service provider to offer returnable cups and tableware at an event.

- **Reuse End User.** Consumer who directly benefits from the reuse initiative by utilizing the reuse service.

- **Reuse Infrastructure.** These are the systems designed to facilitate reuse services, like refill facilities, infrastructure for drop-off, sorting and cleaning of empty reusable containers as well as reverse logistics to facilitate collection, professional cleaning, reconditioning, and redistribution.

- **Reuse Hub.** These facilities provide sorting and cleaning services for reusable packaging in a return system.

3 REFILL

> **Refill is an equalizer — the price of the product per unit will be same whether the consumer opt for a larger size or a smaller one**

SALMAN TARIQ, DAVAAM LIFE

A refill system is a concept of reusing or repurposing containers through the method of refilling them with desired products. Refill systems provide a practical solution to sachet pollution in Asia by decreasing the reliance on single-use plastic packaging, in particular where smaller quantities of products are required.

These systems allow consumers to purchase products in reusable containers, significantly cutting down on plastic waste while maintaining affordability, especially for low-income communities. Unlike sachets, which are difficult to recycle and often end up polluting the environment, refill stations enable continuous reuse, thus supporting waste reduction. Moreover, refill systems are adaptable to both traditional markets and modern retail formats, making them suitable for Asia's diverse economic and social landscapes. By offering convenience, cost savings, and environmental benefits, refill systems address the core challenges of sachet pollution, making them a viable alternative for sustainable consumption in the region.

REFILL

3.1 CATEGORIES OF REFILL MODEL

In this report, we have categorized the refill cases that were selected for research into three types based on their operational approach.

Refill

Community-Led Refill Model

Refill Model For Safe Drinking Water through Water Refill Stations

Tech Enabled Refill Model

Refill by Establishing Bulk Zero Waste Stores

Refill Through Traditional Neighborhood Stores

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1. **Tech-enabled Refill Model.** The cases discussed under this category include enterprises that provide IT-enabled FMCG product dispenser systems to enable businesses and retailers to sell their products. These ensure security on product quality for consumers and product suppliers, while remotely tracking usage and supply levels, ensuring that the dispenser is always efficiently managed and stocked. IoT[2]-based monitoring also provides valuable insights into customer purchasing patterns and preferences.

2. **Community-led Refill Model.** This section highlights the work of selected organizations and enterprises that are reviving the traditional habits of Asians to carry their containers and bags to neighborhood stores for refilling their daily supplies through bulk dispensing systems. They are broadly categorized into two:

   a. **Refill by Establishing Bulk Zero Waste Stores.** In this model, organizations have established stores where customers could refill their containers with products sold through bulk dispensers.

   b. **Refill through Traditional Neighborhood Stores.** Organizations assist neighborhood stores in setting up refill options for select products, enabling consumers to reduce packaging use and associated costs.

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[2]The Internet of Things (IoT) refers to a network of interconnected devices that communicate and exchange data over the internet. These devices, embedded with sensors and software, collect and share information, enabling automation and smarter decision-making in various applications

REFILL

In addition to the two categories where refills are available for FMCG products, the report also highlights **Refill Models for Safe Drinking Water through Water Refill Stations.**

3.2 MODALITIES OF REFILL: MODE OF ACCESS

Each category of refill is identified into two, based on the mode of access to refilling the packaging, defined by Ellen MacArthur Foundation.

1. **Refill at Home.** Users purchase a container once, which they refill at home with product refills purchased in minimal or no packaging. Popular examples of this include concentrated products, refill packs, or subscription-based deliveries.

2. **Refill on the Go.** Users bring their containers to a store or refill station to fill them directly. This model is common for items like beverages, cleaning supplies and personal care products, or food products. Typically, users retain ownership of the packaging along with the responsibility of cleaning them. In some cases, the user can rent or borrow a container from the vendor. The quantity of the products, as per the user's needs, can be accommodated in this model.

Case Study 1

Davaam Life

Karachi, Pakistan

Modality of Refill (Mode of Access): Refill on the Go

Sector: FMCG

Reuse Service Channel: B2B

Primary Market: Low- to Middle-income Communities

IMPACT

Plastic Avoided as of Date: 15,000 bottles

Average Cost Savings Per Transaction for End Customer: 15-20%

ABOUT THE ORGANIZATION

Davaam Life (hereafter will be referred to as Davaam) is a manufacturer and service provider of automated refill dispensers from Pakistan. They first piloted a model by installing their refill dispenser for cooking oil at a textile industry in 2023 before launching their refill and dispensing station for everyday personal care products (e.g., hand wash, surface cleaners, shampoo, liquid soaps, and detergent) at a retail outlet in Karachi.

Manufacturers → Products → Davaam → Technology / Products → Retailers → Products → Consumer

OPERATING MODEL

Davaam partners with retailers as a franchise, lending them their automated refill dispensers in addition to providing maintenance and refilling services for an annual subscription fee. At present, five dispensing machines have been installed in Karachi, including one at a community micro-retailer.

Davaam sources high-quality products directly from manufacturers and supplies them in bulk containers which are dispensed to consumers as per their requirement, while avoiding any packaging. For instance, a customer can utilize the maximum refilling capacity in one go (1,000 mL or 1 L), or make use of the minimum refilling capacity (150 mL or 0.15 L). The savings from packaging, branding, shelving, and distribution costs are passed on to the consumers as discounts to incentivize them to refill their bottles. Davaam plans to expand to more cities and diversify their offering to other cleaning and food products.

VALUE PROPOSITION

- **Real-time Tracking of Inventory Levels.** This enables retailers and micro-retailers to maintain optimal stock levels and reduce the likelihood of shortages.
- **Product Quality Assurance.** As Davaam supplies products to retailers, they conduct thorough assessments of manufacturers and suppliers to ensure product safety and quality.
- **Attractive Price Point for Consumers.** Customers save up to 20% on each transaction compared to purchasing the same product with packaging.

Case Study 2
iRefill
India

Modality of Refill (Mode of Access):
Refill on the Go

Sector: FMCG

Reuse Service Channel: B2B

Primary Market: Low- to Middle-
Income Communities

IMPACT

Plastic Saved: 50 Grams Plastic Can be
Saved for Every Refill

**Average Cost Savings Per Transaction
for End Customer:**15-20%[3]

**Average Cost Savings For Retailer
Against Single-use Alternative:** 15-20%[4]

ABOUT THE ORGANIZATION

iRefill develops product dispensing systems, and leverages technology to build advanced refilling solutions in India. Established in 2021, iRefill tested various pilots, including "Refill at home" and "Refill on the go" aimed at middle- to high-income communities, before they identified their core market and refined their business model.

In their current model, iRefill designs and implements dispensers for products like edible oil, rice, lentils, and personal and homecare products, based on the requirements of the businesses and retailers. iRefill also offers their product dispensers on lease to micro-retailers in low- and middle-income communities to dispense edible oil and cleaning products instead of buying these products in plastic bags and single-use packaging.

OPERATING MODEL

Despite the advent of modern trade and e-commerce in India, 86% of the population still purchase from neighborhood mom and pop stores

(BrandWagon Online, 2022) which offers groceries and other daily essentials in loose or unbranded form. For low- and medium-income households, this allows them to not only buy supplies in smaller volumes but it proves to be cheaper than the branded alternatives. iRefill promotes their technology to retailers offering their products in loose packaging to the end consumer while ensuring minimal risk of contamination.

In addition to maintaining quality control, the retailer can save money by reducing the need for using single-use plastic bags and avoiding penalties associated with India's single-use plastic ban, which took effect on July 1, 2022, under the Plastic Waste Management Rules, 2021[5] (Ministry of Environment, Forest and Climate Change, Government of India, 2021). Further, the automation minimizes human intervention and error during weighing and product handling.

As the dispenser is designed to be cost-effective, iRefill estimates that retailers can pay back within 12-18 months from selling edible oil and 12 months from selling cleaning liquids. In the next few years, iRefill plans to establish a fully automated refill store which could serve as a model for retailers to adopt and also venture into other products in other geographies.
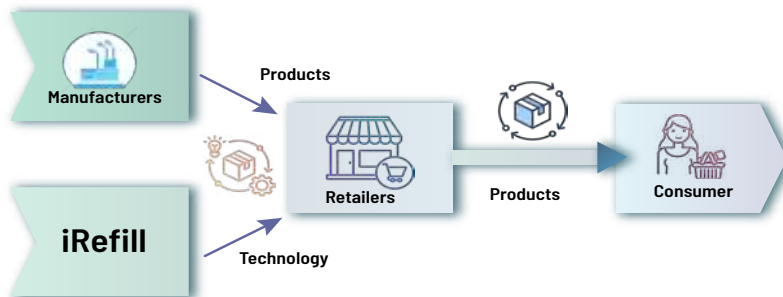
VALUE PROPOSITION

- **Smart Dispenser.** Ensures controlled dispensing for optimal quality and efficiency
- **Space Efficient.** The dispenser can be customized to fit the available space.

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[3] The consumer saves cost by paying for product only and not the packaging
[4] Retailers or Businesses save costs from buying plastic/paper bags
[5] The ban restricts the manufacture, import, sale, distribution, and use of plastic bags of thickness below one hundred and twenty microns, and enforce fines for non-compliance.

Case Study 3
Bopinc-Unilever
Bangladesh

Modality of Refill (Mode of Access): Refill on the Go

Sector: FMCG

Reuse Service Channel: B2B

Primary Market: Low- to Middle-Income Communities

IMPACT

Average Cost Savings Per Transaction for End Customer: Data Not Disclosed

ABOUT THE ORGANIZATION

BoP Innovation Center ("Bopinc") is an independent foundation founded in the Netherlands which supports entrepreneurs and companies to create commercially viable, inclusive business models that benefit Base of the Pyramid (BoP) consumers, producers, and entrepreneurs. Biopinc developed a financially viable FMCG refill solution pilot for low-income communities, in collaboration with Unilever Bangladesh and tech developers from Smartfill/DYDX as part of the TRANSFORM[6].

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[6]TRANSFORM is an impact accelerator led by Unilever, the UK Government's Foreign, Commonwealth and Development Office (FCDO) and EY. It unites corporates, donors, investors, and academics to support visionary enterprises across Africa, Asia, and beyond to test and scale new solutions that support low-income households by tackling environmental challenges, improving health and wellbeing, and building inclusive economies.https://www.transform.global/

OPERATING MODEL

Unilever, in partnership with Bopinc, is currently testing the refill model in four stores within a community in Bangladesh, where consumers seek for quality products at affordable prices. Consumers can choose from three different shampoo options and one hand wash solution, available in preferred quantities at discounted prices through this low-cost refill dispenser. The affordable technology features a simple interface, making it easy for consumers to refill and enjoy quality products.

Bopinc and Unilever Bangladesh are expanding to six stores in Dhaka by the end of 2024 to further validate the model, along with defining roles of various collaborative stakeholders, including the brand, technology, and operational service providers.

VALUE PROPOSITION OF TECHNOLOGY- ENABLED REFILL

- **Local Appeal.** The installation of technology-enabled dispensers are bringing popularity to the micro-retailers in their neighborhood and attract consumers to experience refilling, while saving money.
- **Access to Branded Products for Refilling.** Consumers can still access branded products (by Unilever) for refilling at comparable prices.

Case Study 1

Back2Basics

Philippines

Modality of Refill (Mode of Access): Refill on the Go, Refill at Home

Sector: FMCG

Reuse Service Channel: B2C

Primary Market: Mid- to High-Income Group

IMPACT

Plastic Waste Diverted till Date: 92,133 pieces

Monthly Consumer Visits (Average): Data Not Available

Average Cost Savings Per Transaction for Customer:

Depends on product, but anywhere from 25% to 35%

ABOUT

Back2Basics Eco Store (hereafter will be referred to as B2B) is a Zero Waste bulk store located in Quezon City, Philippines. Founded in 2019 by five women environmental advocates, the store promotes sustainable living by offering a wide range of environmentally-friendly products, ranging from household cleaning agents, to body care products, to pantry staples. Their mission is to build community awareness about how a Zero Waste lifestyle is good for the pocket, the people, and the planet. They partner with various community-based enterprises and source products mostly from local businesses that share their environmental values, fostering mutual support and a dedication to eco-friendly practices and ensuring the quality of their products.

OPERATING MODEL

B2B runs a refill store where customers bring their own reusable containers to the store and fill them up with products. The store prioritizes sourcing products from local suppliers (around 70% of the store's products are sourced locally) who adhere to sustainable practices and deliver products as much as possible in bulk reusable containers, thereby reducing wastage.

The store also offers clean and sanitized used bottles for repurposing and refilling in case customers do not have their own containers (usually for walk-in or first-timers). Customers are encouraged to return clean containers in their next visit.

VALUE PROPOSITION

- Transparency and Consumer Trust. B2B maintains communication on sourcing practices, product ingredients, and environmental impact, thus building trust with customers.

- Community Education and Engagement. B2B regularly organizes workshops and events about sustainable living and Zero Waste practices to foster a sense of community among eco-conscious consumers as well as those who are new in the sustainability journey.

- Advocacy. B2B engages in advocacy with community-based organizations (CSOs) in the Philippines to push for reuse and refill.

- Delivery option. Customers can opt to get products delivered at their doorstep. Back2Basics recently partnered with e-bike delivery to reduce the carbon footprint of their deliveries.

Case Study 2

Refillables Dong Day

Vietnam

Modality of Refill (Mode of Access): Refill on the Go

Sector: FMCG

Reuse Service Channel: B2C

Primary Market: Mid- to High-income Group

IMPACT

Plastic Waste Diverted till Date:

111,500+ containers

Average Monthly Users (Across Stores):

Approximately 1,400

Average Cost Savings Per Transaction for Customers:
Depends on Product, but Anywhere from 5% to 45%

ABOUT

Refillables Dong Day (formerly Refillables Hoi An) is a pioneering Zero Waste store in Central Vietnam. Established in 2018, the store offers a wide range of eco-friendly home and personal care products and healthy food options that customers can refill using their own containers. The store supports local, Vietnamese-made products, contributing to the community's economy and reducing its carbon footprint. Since its introduction, Refillables Dong Day has expanded to three branches across Central Vietnam, including its flagship store in Hoi An (hence, its original name) and two additional locations, which include a second in HoiAn and the third in Hanoi with the support of additional partners.

OPERATING MODEL

Refillables Dong Day offers household essentials that customers can purchase by bringing their own reusable containers and paying based on weight. Products are predominantly locally sourced; hence, they are generally much cheaper than pre-packaged products.

VALUE PROPOSITION

Affordability. Since most products are locally sourced and purchased in bulk directly from suppliers, prices remain competitive, allowing consumers to save money while practicing sustainability.

Making suppliers transition to a better system. Refillables Dong Day has likely transformed how suppliers deliver their products. In the store's early days, finding suppliers willing to ship in bulk containers was a challenge. For certain items, like soap, they even collaborated with suppliers to develop minimalist, eco-friendly packaging—or to eliminate packaging entirely.

COMMUNITY-LED REFILL SOLUTIONS

Case Study 3

Pokka Refilin
(An initiative of ECOTON)
Indonesia

Modality of Refill (Mode of Access): Refill on the Go,

Refill at Home

Sector: FMCG

Reuse Service Channel: D2C and N2B

Primary Market:
Low- to Middle-Income Group

IMPACT

Plastic Waste Diverted till Date from Pokka Refilin Store:

10 ml sachets - 9,500 pieces

100ml sachet- 950 pieces

No of Partner Stores: 9

Average Monthly Unique Users (Pokka Refilin): 50

Average Cost Savings Per Transaction for Customer: 15%

ABOUT

ECOTON, an environmental organization based in Indonesia, focuses on the conservation of wetland ecosystems, particularly rivers, with a strong emphasis on community involvement and environmental education. In 2021, ECOTON founded Pokka Refilin in response to the devastating effects of plastic pollution on local rivers. ECOTON sources products in bulk from both domestic brands and known multinational brands, ensuring they meet consumer demand for branded products. This strategy supports the availability of popular brands while reducing the need for single-use plastic packaging. The initiative has inspired communities to open refill stores in their villages, promoting sustainable practices.

OPERATING MODEL

Refill on the Go (D2C and N2B). They offer package-free options for everyday products including dish soap, detergent, fabric softeners, and floor cleaners through their store as well as community refill stores .

Refill at Home (D2C). Pokka Refilin's commitment to sustainability extends beyond its storefront with the introduction of Mobile Pokka Refilin, bringing eco-friendly shopping directly to local communities. Large containers of products are loaded onto a cart, allowing Pokka Refilin to travel to neighborhoods so residents can conveniently refill their own containers with essential items.

VALUE PROPOSITION

Community Advocacy. Through its store, Ecoton promotes a culture of reuse by encouraging customers to bring their own containers and engaging the community in educational initiatives on the importance of reducing single-use plastics. Additionally, Ecoton supports the community in establishing refill stores within their villages and even in schools. Their efforts have successfully led to the creation of nine refill stores—eight within villages and one in a school.

Case Study 1

Kuha sa Tingi
(An Initiative of Greenpeace)
Philippines

Modality of Refill (Mode of Access): Refill on the Go
Sector: FMCG
Reuse Service Channel: N2B
Primary Market: Low- Middle Income

IMPACT

Plastic Waste Diverted: an estimated 3,920,567 sachets have been avoided based on a 18.5ml sizing

Number of Partner Stores (As on November 2024): 2,175

Average Cost Savings Per Product for Customer vs. Retail Price of Popular Brand in Sachet
Dishwashing: 225%
Fabric Conditioner: 218%
Liquid Detergent: 212.5%
Multi-Purpose Cleaner: 150%

ABOUT

Greenpeace Philippines is an environmental organization dedicated to addressing the most pressing environmental issues facing the country, including climate change and plastic pollution. In 2023, they launched Kuha sa Tingi in partnership with Innovation Catalyst and the city governments of Quezon City and San Juan City, Metro Manila involving 40 stores. In 2024, the project was expanded to include all 17 Metro Manila cities (to reach over 2,000 stores) and another 45 stores were funded to test in five new cities in the National Capital Region.

OPERATING MODEL

The Kuha sa Tingi initiative aims to reduce plastic pollution by reviving the Filipino practice of buying small, quantities (Ledesma et al., 2024). By installing refilling stations in sari-sari stores (neighborhood shops) across various barangays in the Philippines, the project allows residents to purchase everyday items like dish soap, detergent, and fabric softener by refilling their own containers. While stores continue offering pre-packaged sachets to maintain income, the refillable option provides a more sustainable choice for consumers, cutting down single-use plastic waste.

[1]Innovation Catalyst is a non-profit fostering an ecosystem uniting diverse thinkers, startups, and industry leaders to champion groundbreaking ideas. In this project, Innovation Catalyst was responsible for identifying product manufacturers/suppliers who could provide the products in packaged free format.

STEP 2
Filled dispensers are distributed to the Kuha sa Tingi partner stores.

STEP 3
Consumers refill their empty containers.

STEP 1
Clean dispensers are filled with the product by the supplier

STEP 4
Empty dispensers are returned to the supplier by the partner store

STEP 5
Dispensers are sanitized by the supplier.

KUHA SA TINGI

Local government support is essential to cover the initial investment of Php 4,950 (USD 90) per store, which includes a starter kit with four liters each of four products and materials for tracking sales. After Greenpeace establishes a partnership with the local government and provides training to partner stores, subsequent transactions take place directly between the suppliers and the micro-retailers.

VALUE PROPOSITION

Convenience and Affordability for Consumers. With refilling stations set up in local stores, eco-friendly shopping is made convenient and easily accessible to everyone. A cost comparison between sachet-packaged goods and the products offered through the initiative showed that on an average, consumers saved 201% across all four products.

Support for local businesses. Kuha sa Tingi project supports the local stores with marketing material to improve their appeal and attractiveness within the neighborhood.

Higher sales for the participating stores. By providing products at lower cost products with the same quality as multinational FMCGs, the project increased the profits of the stores by an estimated 15%.

Case Study 2

Toko Cura

(An Initiative of Divers Clean Action)

Thousand Island, Indonesia

Modality of Refill (Mode of Access): Refill on the Go

Modality of Return (End of Use Point): Return on the Go

Sector: FMCG

Reuse Service Channel: N2B

Primary Market: Low- to Middle-income Group

IMPACT

Plastic Waste Diverted Till Date: 56,285 pieces

Number of Partner Stores: 21

Average Monthly Users (Across Stores): Data Not Available

Average Cost Savings Per Transaction for Customer: Data Not Available

ABOUT

Divers Clean Action (DCA), established in 2015 in Indonesia, is a youth-driven NGO dedicated to safeguarding marine ecosystems through coastal cleanups, research, advocacy, community development, and educational workshops aimed at promoting sustainable practices.

In 2020, DCA introduced Toko Cura in the Thousand Islands—a group of islands north of Jakarta that serves as a conservation and marine protected area (MPA). Toko Cura is a social initiative designed to reduce single-use plastic packaging in local stores. The initiative provides access to daily essentials like soap, home cleaners, cooking oils and condiments through both refill and return models.

OPERATING MODEL

1. **Refill on the Go**

   In this model, customers bring their own containers to purchase daily essentials—such as detergents, soaps, and cleaning products—in customized quantities from local stores that partner with the initiative. Initially, uptake was limited, as many customers preferred well-known branded products over unbranded or unfamiliar options.

   To adapt to this preference, Toko Cura formed partnerships in 2023 with reuse and refill service providers from Jakarta. These partners supply popular branded products in bulk, enhancing the appeal of the refill model by meeting customer preferences while continuing to promote waste reduction. This adjustment has helped make sustainable shopping more accessible and attractive to the local community.

2. Return for Reuse

In this model, customers purchase products in returnable containers (offered by Jakarta based reusable service providers). Once used, the empty containers are dropped by the customers at the neighborhood store/micro retailer. In case the container ends up in the waste stream, it is collected from the waste bank by the Toko Cura operator. The empty containers collected from the port are brought back to the city where it is cleaned, sanitized, and refilled with fresh products.

Dotted line indicates less desired process where consumer dispose the used packaging instead of returning to the microretailer
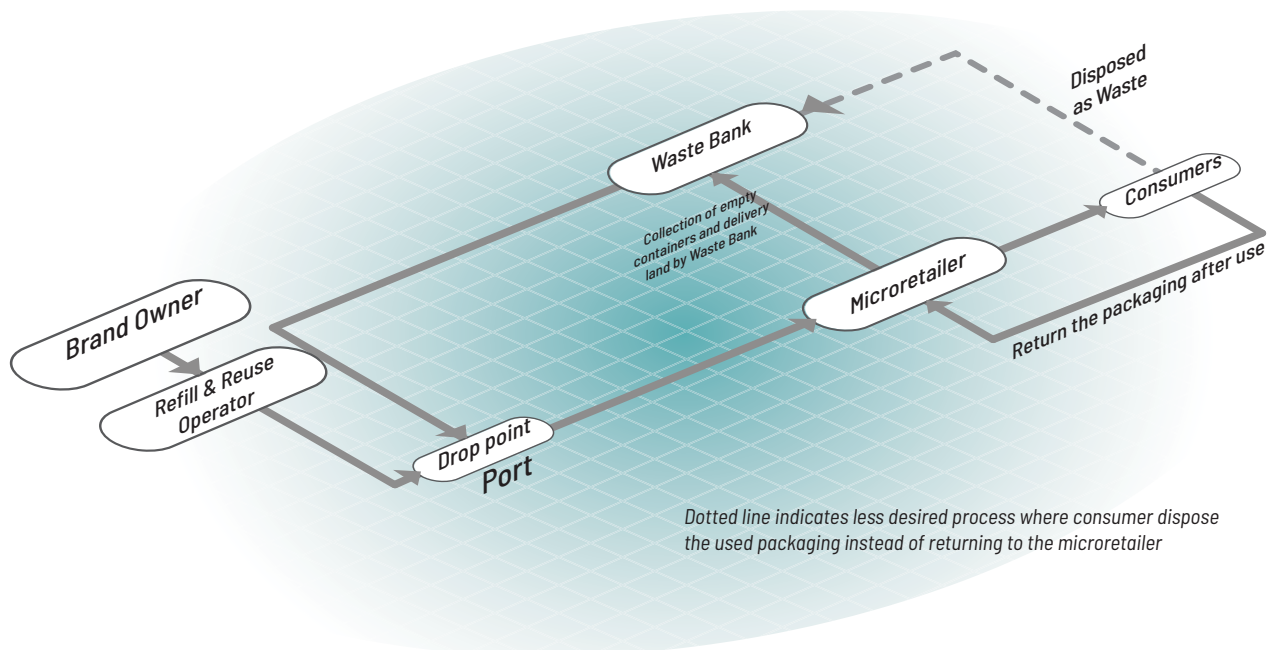
VALUE PROPOSITION

Support for local businesses: The initiative supports local shops in shifting to a more sustainable business model, fostering economic growth within the community.

Convenience of both refill & return options. The initiative provides the islanders the convenience of both the return and refill model, through their partnership with reuse service providers in the mainland, thus improving acceptability within the community.

Community Education & Engagement. Divers Clean Action conducts educational workshops with the community to minimize usage of plastic and choose reuse.

Case Study 1

Bottle-Free Seas & Trash Hero

Thailand

Modality of Refill (Mode of Access): Refill on the Go

Sector: Clean Drinking Water

Reuse Service Channel: D2C

IMPACT

Plastic Waste Diverted:

1.3 million Plastic Bottles through Bottle Free Seas Project (as of November 2024)

41 million+ (Trash Hero)

Number of Refill Sites:

10 (Bottle Free Seas)

220 (Trash Hero)

Average Cost Savings if Users Choose Refill of Water Bottle:

7 THB (USD 0.2) daily

A 2023 survey conducted by the Environmental Justice Foundation (EJF) found that at least 4M water bottles are consumed daily in the city. In the same year, EJF launched the Bottle-Free Seas (BFS) in collaboration with the Bangkok Metropolitan Administration (BMA) to decrease people's dependence on single-use plastic bottles. The project installed 10 pilot water refilling stations in high-traffic areas across the country's capital including parks, malls, and art centers. The stakeholders hosting water refilling stations in their facilities are trained to conduct regular maintenance and water testing to ensure that the equipment are working and the water is safe for drinking.

In a similar effort to promote water refill and increase the visibility of water refill stations, Trash Hero manages an online map showing businesses — restaurants, hotels, and Zero Waste stores that provide water refill for free or at minimal cost across Thailand. The businesses who commit to providing access to safe drinking water are offered a free listing on the online refill map, thereby giving an opportunity to advertise their sustainability efforts.

VALUE PROPOSITION

- Help address plastic pollution by drastically reducing the use of disposable water bottles.
- Savings. The public can save money on safe water refills. This is particularly beneficial since restaurants in Thailand typically do not offer free water.
- Awareness raising and behavior change. The project has helped raise the public's awareness on plastic waste pollution and normalize bringing reusable water bottles.

Refill

Lessons Learned and Way Forward

**Several key insights have emerged from
the refill model cases featured in this report.**

These takeaways underscore the importance of refill systems and the necessary measures to facilitate their widespread adoption.

1. **Refill ensures economic viability for consumers, retailers, as well as producers.**
    Sachets are touted as affordable and convenient for low-income households who make small, frequent purchases due to their limited disposable income. In reality, they impose a premium on the poor, as products sold in smaller quantities cost more per unit than larger packages. Refill systems thus make a strong case for these communities, as they allow flexibility to consumers to buy exactly the amount they require, avoiding the waste and higher cost associated with excess packaging. In all the cases discussed in this report, customers save costs by opting refill over buying the same product in plastic packaging.

    For retailers in low-income communities, the high-order density, due to high concentration of customers, makes refill systems highly viable. The steady demand enables operational efficiency, making refills both feasible and economically profitable at the unit level. For example, in the Kuha sa Tingi project by Greenpeace Philippines, store owners observed a 15% increase in profits after incorporating refill services into their offerings (Ledesma et al., 2024).

    In case of producers, especially brands, setting up refill infrastructure involves an upfront investment, but it can be optimized over time, since refill systems are proven to have higher margins due to reduced packaging costs.

2. **Support for establishment of community refill stores in remote geographies is crucial to reduce plastic waste and its impact on fragile ecosystems.**

    Remote geographies like islands and mountain ecosystems present a unique opportunity to adopt refill and return systems, as recycling often poses significant logistical and economic challenges due to limited infrastructure and high transport costs.

    The 2024 Himalayan Cleanup report by Zero Waste Himalaya highlights a significant challenge in the region's waste management, with over 75% of collected plastic being non-recyclable, primarily multilayer, single-use sachet packaging (Shrestha et al., 2024). This issue is exacerbated by India's EPR regulations, which, although designed to hold plastic producers accountable for their waste, have seen limited enforcement in the Indian Himalayan region.

    A Coastal Waste Assessment and Characterization Survey (WACS)[10] conducted on Apo Island, Philippines by Mother Earth Foundation in 2024 revealed that 44% of the waste generated during the wet season was residual waste. Residual waste typically refers to materials that are neither recyclable nor compostable, highlighting the urgent need for better waste management systems and upstream solutions to minimize non-recyclable waste in coastal and island communities.

    In areas with local product manufacturers, such as in the case of Pokka Refilin, sourcing from both multinational and domestic brands, establishing refill stations becomes more practical compared to managing sachet waste through downstream

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[10] WACS is an activity where project implementers sort and catalog waste according to its material type (for example, biodegradable, recyclable, residual) in order to identify the volume and percentage composition of the waste generated in a certain area

waste systems. Refill stations streamline product access and reduce logistical challenges associated with waste management, especially those involving complex reverse supply chains for non-recyclable items like sachets.

3. **Inclusive licensing and financial support to refill service providers.**

As the shift toward sustainable practices gains momentum, regulatory frameworks play a critical role in shaping the growth and inclusivity of refill systems. The recent release of guidelines in the Philippines for operating refill stations for cosmetics and household/ urban hazardous substances (HUHS), (Department of Health, Republic of Philippines, 2024) marks a positive step forward, as it provides a regulatory framework for safe and standardized refilling practices. However, the requirement that only FDA-licensed establishments can conduct refilling operations limits the participation of micro, small, and medium enterprises (MSMEs), potentially hindering the growth and accessibility of refill options. To truly promote refill activities and drive widespread adoption, the guidelines should be made more inclusive, enabling MSMEs to engage in refill operations while maintaining safety and quality standards.

Furthermore, both government and private sector initiatives should offer tax incentives, grants, and subsidies to businesses establishing refill services. This financial assistance can offset initial setup and operational costs, making it more viable for refill enterprises to thrive.

4. **Drinking water refill models are the easiest to establish and scale.**

Refill systems for drinking water are among the simplest, most cost-effective, and efficient strategies for tackling plastic pollution while expanding access to drinking water. To build robust water refill ecosystems, both national legislation and local government leadership are essential in driving this transition as seen in the case of the Bottle-Free Seas project in Thailand.

National governments can play a key role by formulating and enacting policies that support the establishment of water refill systems while

municipal governments can be supported with adequate financing to set up refill stations. Meanwhile, private sector stakeholders—particularly owners of public spaces like shopping malls, hotels, theme parks, event venues, and art galleries—can further propel the refill movement by installing water refill stations for their customers and employees. Together, these efforts can create a supportive framework for refill systems, fostering widespread adoption and reducing reliance on single-use plastics.

5. **Refill targets could be a path for transition to phase-out sachets.**

Refill targets would support communities in transitioning away from sachets and single-use plastics. When complying with targets, businesses provide consumers a choice that does not utilize throwaway packaging. In addition, it moves communities away from false solutions.

Many companies have adopted co-processing as a method to handle sachet waste, claiming it to be an environmentally responsible solution. However, this approach does not tackle the core issue of plastic production. Instead, it shifts the problem from landfills and waterways to air pollution, releasing harmful chemicals like dioxins, furans, and other toxic emissions. Many so-called "recycling" and recovery programs promoted by sachet producers often end up being nothing more than a form of incineration, further exacerbating environmental damage. For instance, Unilever set up a system in 2017 to pay waste pickers to collect plastic sachets to feed a chemical recycling process in Sidoarjo (Indonesia). The system proved to be expensive and plagued with technical challenges and was discontinued in 2019. Today, sachets continue to abound in Indonesia without a clear path to manage them (Global Alliance for Incinerator Alternatives, 2022).

Refill targets can serve as a strong incentive for establishing refill centers and facilitate the flow of financing. Over time, this can reduce costs for brands and producers, not only in terms of packaging but also in EPR compliance. By reducing their contribution to the waste stream, brands can lower the fees they are required to pay under EPR regulations.

4 RETURN FOR REUSE

The return for reuse involves users returning packaging or products after use, allowing the items to be professionally cleaned, sanitized, and reused for future cycles.

4.1 CATEGORIES OF RETURN FOR REUSE

In this report, we have profiled five different return-for-reuse systems, based on the cases selected. The diversity across the sector and the service offerings provide an insight into the different logistical issues involved across different systems.
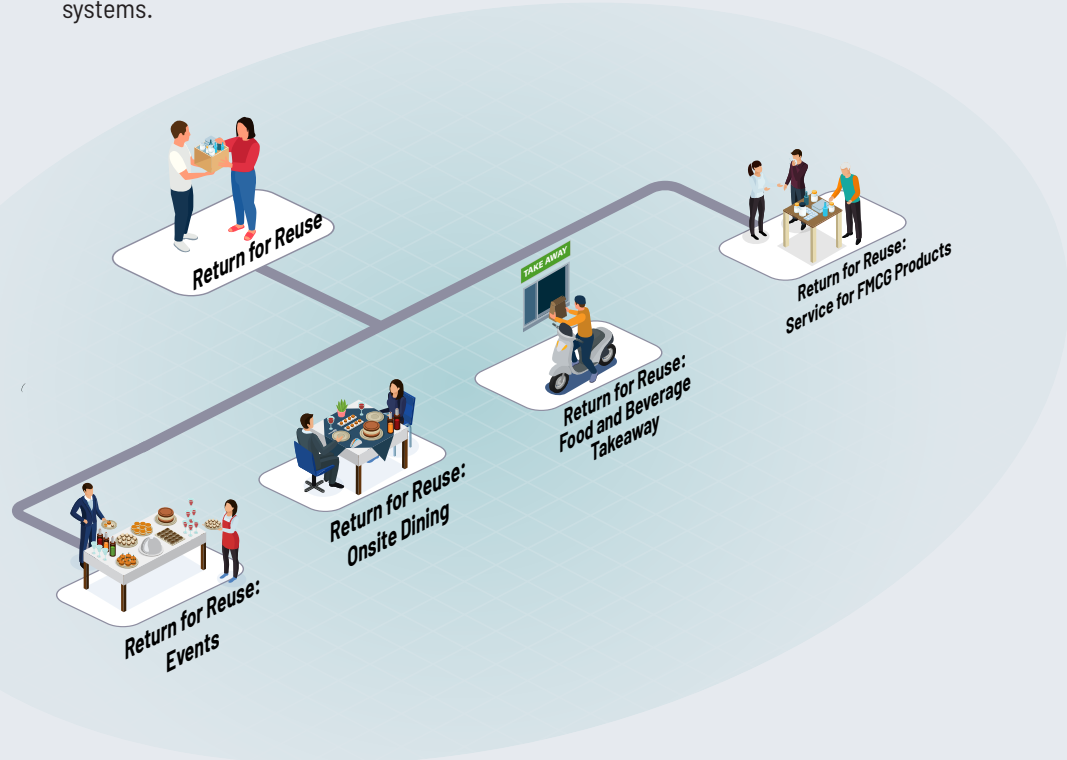
> **"Return models may not fully transform consumption patterns until they are scaled and standardized. However, there's immediate potential for their implementation in controlled environments such as events, restaurants, and offices, where they can be both practical and impactful,"**

PURAV DESAI
CO-FOUNDER, CUPABLE AND REFILLABLE

1. Return for Reuse – Events

Traditionally, reusable tableware were popular for both large and small gatherings, but many faded away with the rise of single-use tableware. However, growing awareness of the environmental impact of disposables has led to a revival of this culture, such as renting tableware.

a) *Community-led Initiatives*
These initiatives involve citizens lending tableware for community events and functions to reduce disposable waste. Known by various names in India—such as Plates Banks, Bartan Banks, and Crockery Banks—these efforts have largely been citizen-led. Currently, there are more than 65 Crockery and Cutlery Banks in operations across India, managed by citizens, non-profits, or local governments.

b) *Business-led Initiatives*
These initiatives provide a range of services to help event organizers incorporate reuse systems and reduce single-use disposables. Offerings may include assessing event needs, providing tableware pick-up and drop-off, and on-site support with collection points and cleaning arrangements (either on-site or off-site). In some cases, they also handle waste and residues generated at the event.

2. Return for Reuse: Onsite Dining

Under this category, businesses offer reusable tableware and utensils to replace single-use materials for on-site dining. These services often include collection, cleaning, and re-circulation of reusable items, making it easier for dining establishments at large institutions and corporate offices to reduce waste and promote sustainable practices.

RETURN FOR REUSE

3. Return for Reuse: Takeaway Food and Beverages

In this system, customers can borrow containers for their takeout orders and then return them for cleaning and reuse, either through designated drop-off points or partner locations. This leverages convenience and technology to maintain a high-return rate, ensuring that containers remain in circulation for multiple uses.

4. Return for Reuse: Reusable Packaging Service for FMCG Products

In this system, reusable packaging is employed for everyday products like food, beverages, and home care items, reducing the reliance on single-use plastics. In this modality, consumers or businesses return reusable packaging after use, which is then collected, cleaned, and refilled for future use.

4.2 MODALITIES OF RETURN: END-OF-USE POINT

Each category of return is identified, based on end-of-use points for returning the reusable packaging, as defined by the Ellen MacArthur Foundation.

Return from Site of Use: The container is picked up from home or site of use for cleaning and processing by the reuse service provider[10].

Return on the Go: Consumers return the container at a drop-off point which is cleaned and sanitized for next use by the reuse service provider.

4.3 MODALITIES OF RETURN: FORMALITY OF OPERATIONS

The return could be classified depending on the formality of different operations across the supply chain. Traditionally, most return systems were open loop with little to no control on the returnability of the packaging.

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[10]Exception is the case of utlery banks in India, where the reuse service partner is expected to clean before returning the tableware to the reuse service provider.

a. **Closed-Loop Operations.** Consumers use and return the reusable packaging at the site of adoption of the reusable packaging. Cleaning of used packaging happens at the site or at a separate location. In this modality, the reuse packaging remains at the site, until it is collected by the service provider for cleaning. The return rates are usually high in such cases.

The consumer purchases the product in a reusable packaging or borrow reusable packaging. When finished, the packaging is collected from the consumer at the Site of Sale/Adoption.

Reusable packaging is either washed onsite or transported to reuse hub for cleaning.

CLOSED-LOOP

The reusable packaging is available for the next use Optional: Reuse Service Provider refills cleaned packaging with product

Reusable packaging is cleaned, sanitized, and dried.

b. **Semi-closed Operations.** Consumers use the reusable packaging away from the site of adoption, but bring back the packaging at the designated site for collection by the reuse service provider. In this case, the reuse service provider has lower control on the returnability of the packaging than the closed loop operations.

Consumer purchases the product in a reusable packaging or borrow reusable packaging.

Consumer returns the packaging at designated collection point or at the point of Site of Sale/Adoption

Consumer consumes the product in reusable packaging away from the site of purchase/adoption

SEMI-CLOSED LOOP

The reusable packaging is available for the next use Optional: Reuse Service Provider refills cleaned packaging with product for the next consumer.

Reusable packaging is transported for cleaning. Reusable packaging is cleaned, sanitized, and dried.

Dotted arrow indicates operations beyond the control of the Reuse Service Provider

c. **Open Loop Operations.** Consumers use and return the packaging away from the point of adoption. The reverse logistics is managed by more than one reuse service provider and often involves informal workers.

Consumer purchases the product in a reusable packaging.

Consumer consumes the product away from the site of purchase/adoption.

Consumer drops the reusable packaging in recycling bin.

OPEN LOOP

The clean reusable packaging is refilled with product for the next consumer.

Reusable packaging is cleaned, sanitized, and dried.

Informal workers collect these packaging which are fit for reuse. They undertake sorting, washing before selling the packaging to formal aggregators.

Dotted arrow indicates operations beyond the control of the Reuse Service Provider (in this case, the manufacturer of the product in reusable packaging, like a beer company packaging the product in reusable glass bottle).

Case Study 1

Rent-a-Cutlery

India

Modality (End of Use Point): Return from Home/Site of Use

Modality (Formality): Semi-Closed Loop

Sector: Events

Reuse Service Channel: Direct to Consumer

Reuse Service Partner: Individuals who are Interested in Holding Waste-free Events

IMPACT

Single-use Tableware Avoided as of Date (Approximately): 0.4 M+ Pieces

Return Rate: 99%

Average Cost Savings for User: Data Not Available

ABOUT

Citizen activists Rishita Sharma and Lakshmiprabha U S launched the Rent-A-Cutlery initiative in July 2016 in Bengaluru, India to address the growing waste problem from disposable cutlery at community events. This initiative provides plates, bowls, spoons, and tumblers for events like birthday parties, baby showers, corporate gatherings, weddings, and social events for a small deposit fee. Community support has played a crucial role in helping Rent-A-Cutlery expand its services beyond Bengaluru, reaching locations across Chennai in India and even establishing a setup in Dubai.

OPERATING MODEL

Users can contact Rent-A-Cutlery through the provided mobile numbers or email to specify their requirements. Each item—spoon, compartmented plate, and tumbler—is individually priced against a security deposit and nominal rental fee that includes transportation (Rent-A-Cutlery team arranges round-trip transportation). Users are expected to clean and wash the tableware after use before returning them. Once returned, all items are sanitized with a homemade citrus-peel bio-enzyme, ensuring they are ready for the next use. In case of lost or damaged items, the user is responsible for covering the replacement cost.
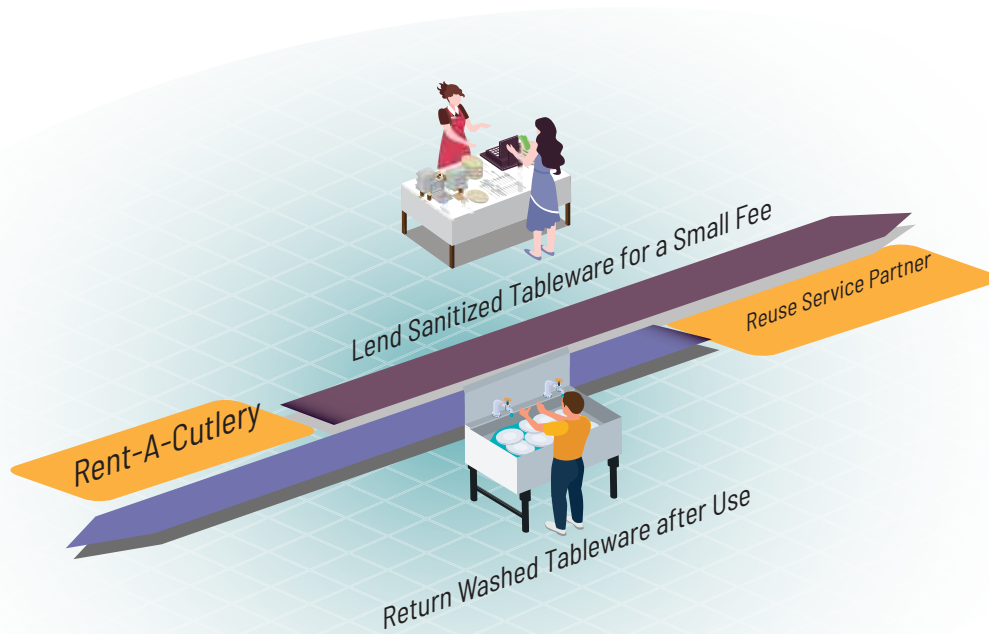
Value Proposition

Ease of Replicability. This model is highly replicable and can be established with minimal investment, largely depending on the willingness and capacity of volunteers involved. For instance, it can be launched with as few as 50 tableware items to as high as 5,000 items, making it adaptable to various community sizes and resources.

Convenient with Pickup and Delivery Options. Rent-A Cutlery arranges transportation to pick and deliver tableware if required, at an additional cost

Case Study 2

Crockery Bank for Everyone

India

Modality (End of Use Point): No Return Service Available

Modality (Formality): Semi-closed Loop

Sector: Events

Reuse Service Channel: Trust-based Lending

Reuse Service Partner: Individuals Who are Interested in Holding Waste-free Events

IMPACT

Monthly Single-use Tableware Avoided (Across All Chapters): 10,000 pieces

Return Rate: >98%

Average Cost Savings for Reuse Service Partner: INR 3,000 (USD 35.6) for an Event Hosting 100 People

ABOUT

Sameera Satija, a retired government employee, set up the Crockery Bank for Everyone in 2018 in Gurgaon, India, motivated by the sight of plastic waste littering social and religious gatherings. Inspired by the practice of serving food in reusable containers at the langar (a free community kitchen at Gurudwaras), she established the initiative to offer an alternative to single-use containers. With a stockpile of 800-900 reusable tableware items, the Crockery Bank serves various social, religious, and public events, encouraging a more sustainable approach to community gatherings. As of today, there are 41 chapters across India. Citizen volunteers who want to establish their chapters are provided with guidelines on crockery renting. Over the last six years, the program has prevented at least 1.2 million disposables from reaching the landfill.

OPERATING MODEL

The *Crockery Bank* for Everyone initiative follows a simple "Take-Use-Wash-Dry-Return" model, providing easy access for all with no rental charges. The only requirement is that users return the crockery and cutlery in clean and dry condition.

For large public gatherings, Crockery Bank encourages the practice of onsite washing to minimize stockkeeping of large quantities of tablewares.

If any items are lost, users are responsible for covering the cost of replacements.
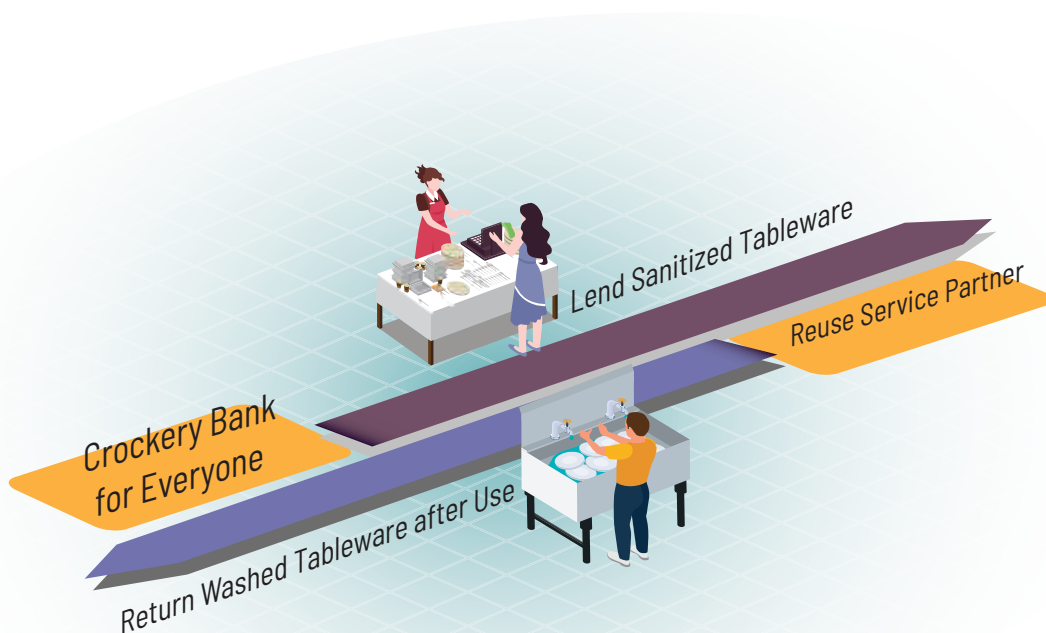
VALUE PROPOSITION

- **Easy to Set Up.** This model is flexible and requires only a modest investment, with success primarily depending on volunteer enthusiasm and capability.

- **Fostering Community Behavior Shifts with Free Access.** Users can borrow the tableware without any charges, as long as they return the clean tableware after use. By providing easy access to reusable tableware, cutlery banks are nudging individuals toward opting for reusables instead of disposables.

Case Study 1

Cupable

India

Modality (End of Use Point): Return from Home/Site of Use

Modality (Formality of Operations): Closed Loop (Offsite Washing)

Sector: Events

Reuse Service Channel: B2B

Reuse Service Partner: Event Organizers

IMPACT

Single-Use Cups Avoided: 1 million+

Number of Events Serviced in a Year (Average): 30

Return Rate: 80-93%

Average Cost Savings for Users to Reuse at the Event: INR 50 (USD 0.6) Per Refill of Alcoholic Beverage

ABOUT

Cupable, launched in 2019 by Recube Circular Solutions, is India's first brand dedicated to designing and manufacturing reusable drinkware. Created to provide a sustainable alternative to single-use cups at events, Cupable partners with food and beverage brands at universities, offices, sporting arenas, events, and restaurants, promoting eco-friendly choices across a range of venues.

OPERATING MODEL

In this system, event attendees are encouraged to use and refill their cups, with strategically placed collection points across the venue to facilitate easy returns and close the loop. The required number of cups is calculated based on event size and expected losses. Washing is managed at a centralized facility to maintain strict hygiene standards. Clear communication is undertaken to ensure that attendees are aware of the reuse and return process, encouraging them to drop cups at designated points for efficient collection and reuse. Attendees receive a discount on alcoholic drinks each time they refill their cups, encouraging reuse throughout the event. On average, each cup is refilled over four times during single-day events, significantly reducing the need for disposable alternatives.

Event organizers opting for customized cups are encouraged to reuse them across multiple editions of their events to reduce wastage and save costs. One of their clients demonstrated the model's profitability by generating USD 20,000 in savings simply by reusing the cups over seven events within a three-month period. (Sambhwani, 2022).
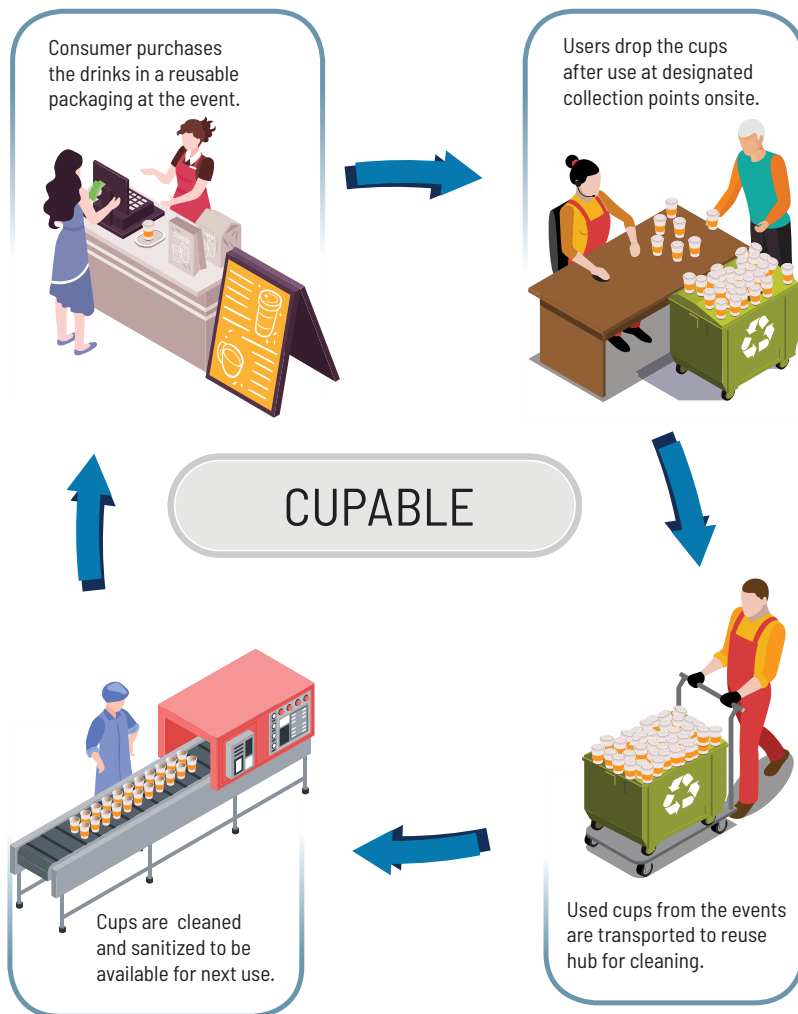
VALUE PROPOSITION

Impact Reporting. Cupable provides comprehensive impact reports for all event organizers, detailing key metrics such as carbon footprint savings. These reports offer valuable insights into the environmental benefits of adopting reusable cups at events, showcasing reductions in waste and emissions compared to single-use alternatives.

Ancillary Services. Cupable set up water refilling stations at every event for unlimited water refill services. They also partner with waste management companies to support residual waste management services.

Case Study 2

We Use

Tableware Rental Service

Hong Kong

Modality (End of Use Point): Return from Site of Use

Modality (Formality):
Closed Loop (Offsite Washing)

Sector: Events

Reuse Service Channel: B2B

Reuse Service Partner:
Event Organizers

IMPACT

Single Use Tableware Avoided: 700,000

Events Serviced as on Date: ~800

ABOUT

Founded in 2015, We Use is Hong Kong's pioneering tableware rental service, offering reusable cutlery and tableware for a variety of events, from small gatherings to large-scale marathons, fairs, and banquets. They provide a comprehensive service that includes delivery, on-site support, helping event organizers reduce single-use waste effortlessly. Over the years, We Use has scaled to support events with over 800 attendees and currently manages 20 to 50 orders monthly.

OPERATING MODEL

Event organizers initiate their order with We Use through an online platform. Upon confirmation, We Use handles all logistics, coordinating the delivery of reusable tableware to the event location. Post-event, We Use collects the used items and transfers them to an external partner facility for professional dishwashing services. Once the tableware is sanitized, it is returned to We Use's facility, prepared for future use.

The fee is structured based on the scale of the event and specific service requirements, covering logistics, partner cleaning services, and any additional requests, such as residue collection. This streamlined process ensures convenience for event organizers while supporting sustainable, reusable options at a large scale.

Clean Reusable Tableware made available at the event.

Used tableware from the events are collected for cleaning.

We Use

Used tableware are cleaned at the third party dishwashing facility

VALUE PROPOSITION

We Use offers a one-stop solution for event organizers, on-site support, and collection of residues post event if required.

Case Study 1

Infinity Box

India

Modality (End of Use Point): Return from Site of Use

Modality (Formality of Operations): Semi-Closed Loop (Offsite Washing)

Sector: Onsite Dining

Reuse Service Channel: B2B

Reuse Service Partner: Corporates, Hospitals, and Universities

IMPACT

Monthly Savings on Operational Expenses Per Client: 8-25%

Scope 3 Emissions Reduction Per Client: 40-60%

ABOUT

Infinity Box is an India-based packaging platform dedicated to sustainable food service operations. They initially aimed to reduce single-use plastic pollution in the food delivery industry by partnering with food delivery platforms to offer reusable containers—a concept inspired by Mumbai's dabbawalas[11]. Since 2022, they have pivoted to an enterprise model focused on streamlining cafeteria operations for corporates, hospitals, and universities. This model provides clients with a fresh supply of cleaned and sanitized service ware each morning, which is collected and replaced daily. Currently, Infinity Box processes 40,000+ orders per day across Bengaluru, Mumbai NCR, and Hyderabad and has an order book of 35,000+ orders confirmed.

With an end-to-end approach, Infinity Box collects reusable dishes, plates, and containers from clients, thoroughly washes and sterilizes them at centralized facilities, and redistributes them, ready for reuse. To enhance efficiency and minimize emissions, orders are grouped together, and deliveries are scheduled a day in advance to account for any logistical delays.

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[11]Dabbawalas, sometimes known as tiffin wallahs, are essentially delivery men, who form a vast lunchbox delivery and return system, ferrying home-cooked hot lunches, known as tiffins, to India's working population.The 'Mumbai Dabbawalas' manage to handle almost 400,000 end deliveries within 3-4 hours on a daily basis. Every Tiffin may change hands at least 6 times in transit before it reaches its consumer, and the same trail on the return journey. That makes it close to at least 2.4 million manual movements for all the Tiffin boxes in a day.

STEP-2
Tableware used by the clients

STEP-3
Collection of dirty tableware from clients

INFINITY BOX

STEP-1
Supply clean tableware to the clients' offices

STEP-4
Washing and sterilizing the tableware at the washing facility.

VALUE PROPOSITION

- Cost Savings through Operational Efficiency. In addition to reducing the use of single-use tableware, Infinity Box helps clients tackle daily operational challenges in cafeteria management, such as manpower shortages, cutlery pilferage, plumbing issues, and dishwasher break-downs. This leads to a reduction in monthly operational expenses by 8-25%. Further, clients save on capital expenditure towards purchasing tableware and dishwashing equipment.

- Technological Advantage: Infinity Box's centralized and advanced dishwashing systems are designed to decrease water usage by up to 40% and energy consumption by up to 60%. This directly reduces Scope 2 (purchased energy) and Scope 3 (value chain) emissions, aligning with the sustainability goals of their clients.

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[12]Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

Case Study 1

Recube

Hong Kong

Modality (End of Use Point):
Return on the Go

Modality (Formality of Operations): Semi-Closed Loop (Onsite Washing)

Sector: Food and Beverage Takeaway

Reuse Service Channel: B2B

IMPACT

Reuse Service Partner:
Restaurants and Cafes

Return Rate: 98%

Average Cost Savings for Restaurants Against Single-use Alternative: USD 0.13-0.5 Per Set of Disposable Packaging

ABOUT

ReCube, which stands for Reuse x Reward x Reduce, is a social enterprise started in 2023, that provides reusable tableware rental services in partner restaurants, thus eliminating the need for disposable containers.

OPERATING MODEL:

The partner restaurants can save on their operation costs by choosing reusables, which they can pass to their customers as discounts, thus boosting their customer traffic and loyalty.

Within 1.5 years of operations, Recube has partnered with 34+ restaurants in Hong Kong, avoiding usage of 20,000+ single-use tableware and has achieved a high return rate of 98%. The high return rate may be attributed to the convenience of being able to return the tableware at any partner restaurant, combined with the fear of incurring a default fee for failing to return it within 7 days.

Recube anticipates achieving break-even by 2024, with increasing demand for reusable tableware solutions, particularly in light of Hong Kong's recent ban on single-use plastics and are well-positioned to enhance impact while ensuring financial sustainability in the coming years.

VALUE PROPOSITION

END USER

- Convenience of returning to any partner restaurant
- Flexibility to keep the container for seven days

PARTNER RESTAURANT

- Cheaper than single-use alternatives
- Position themselves as green, enhancing their reputation as environmentally responsible businesses
- Promotion and customer loyalty with the reward system

Customer scan the QR code to borrow reusable takeaway tableware for food

Customers return the reusable takeaway tableware at any of Recube's partner restaurants

Recube return

Recube

Tableware are washed at the restaurants

Clean and sanitised tableware are available for next use
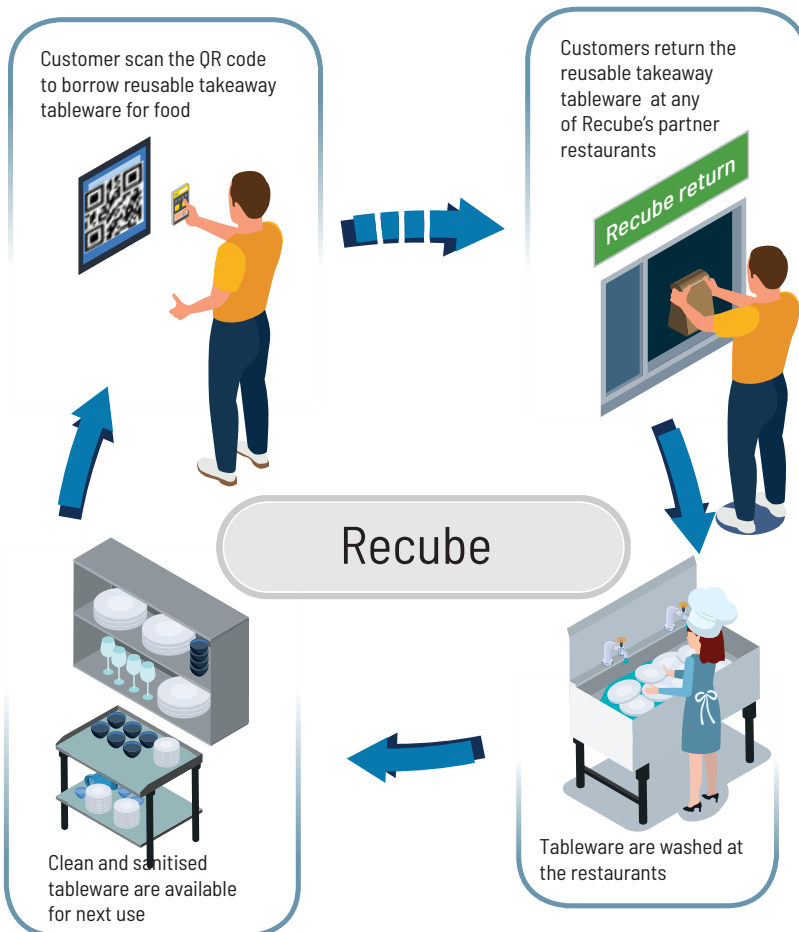
Case Study 2

Shuangti Reusable Takeaway Container Project

China

Modality (End of Use Point): Return from Home/Site of Use

Modality (Formality of Operations): Semi-Closed Loop (Onsite Washing)

Sector: Food and Beverage Takeaway

Reuse Service Channel: B2B

Reuse Service Partner: University

IMPACT

Single-Use Plastic Packaging (As of Date): 40,000 sets

Return Rate: >98%

Average Cost Savings Per Restaurant for Providing Food in Reusable Container: Data Not Available

ABOUT

ShuangTi, the smart dining brand of Shenzhen KuaiPin Information Technology Co., focuses on providing smart and intelligent solutions for dining and take-out scenarios across universities in China, allowing consumers to order foods from restaurants through their application and food is delivered to the self-pickup cabinet designated by consumers in the order.

In 2020, they launched their smart reusable takeaway container project to minimize the plastic pollution caused by the takeaway orders made from nearly 30 restaurant vendors serving food in the Shunde campus of the South Medical University (SMU).


As of May 2023, Shuangti's reusable container pilot at SMU Shunde has reached an annual average of 63 reuses per container, helping the university reduce the use of 400,000 sets of disposable plastic containers.

OPERATING MODEL

Students can place food orders through Shuangti's platform and select reusable takeaway lunch boxes. Each reusable container is embedded with a chip and unique ID, enabling tracking. The food is delivered to self-pickup cabinets located across the university, where students can scan the code to unlock and retrieve their order. After eating, students return the container to any drop-off cabinet. The containers are then collected, cleaned, and disinfected at the restaurants for reuse.

Shuangti provides the smart takeaway boxes to vendors on rent, who charge students a small fee, set by the restaurant for choosing the reusable option. While the reusable option may seem pricier than single-use for consumers, the net cost becomes comparable because the white disposal fee that is levied by the university when opting for single-use containers is waived for reusable choices.
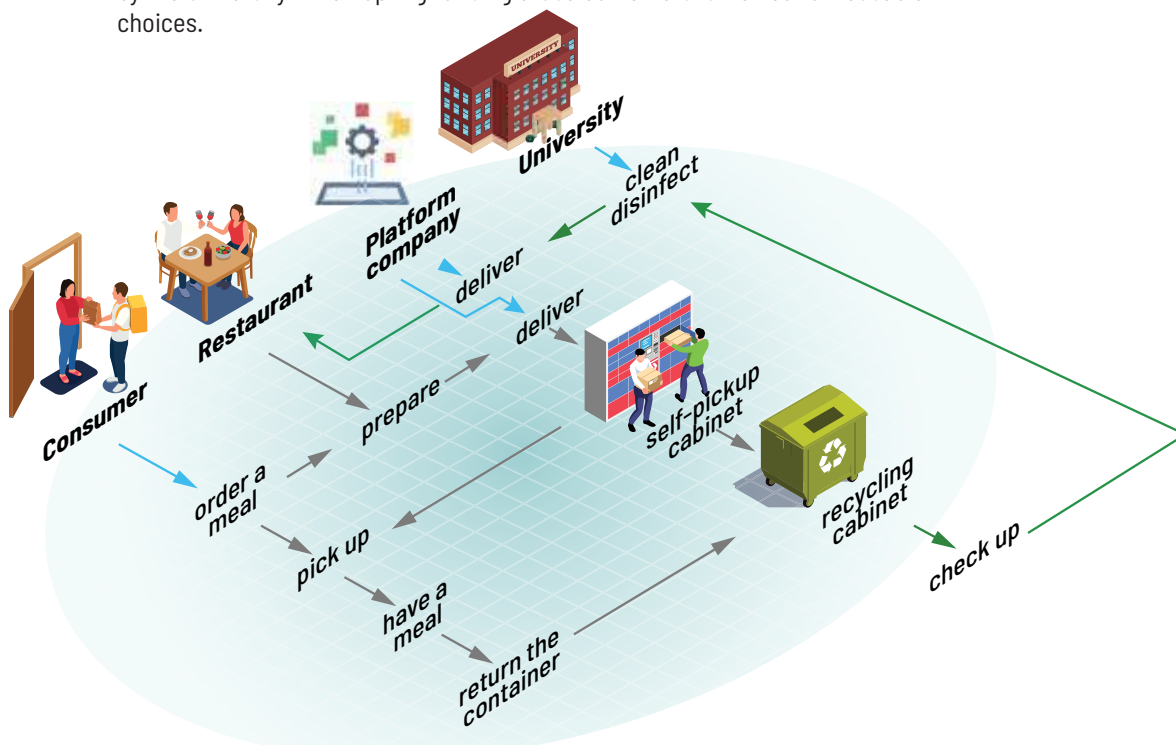
VALUE PROPOSITION

Leveraging existing smart systems. The reusable takeaway container pilot project leveraged long-standing university partnerships and an existing network of smart self-pickup containers installed throughout campus.

Advantage of technology-enhanced closed-loop operation. Integrating technologies such as SMS notifications to remind consumers to pick up and return containers, along with blockchain for traceability, ensures a high return rate for reusable containers.

Case Study 1

Alner

Indonesia

Modality (End of Use Point):
Return on the Go, Return from Home

Modality (Formality of Operations): Semi-Closed Loop (Offsite Washing)

Sector: FMCG

Reuse Service Channel: D2C

Reuse Service Partner: Retailers, Including micro-retailers

IMPACT

Average Return Rate: 70%

Monthly (Average) Single-use Plastic Avoided Per Customer: 20-40 pieces

Monthly Cost Savings Per Consumer: USD 3-6

Average Additional Income Generated Per Sales Point by Local Entrepreneurs: USD 30-50

ABOUT:

Alner, founded in 2020, enables everyday needs such as soaps, detergents, and ready-to-eat foods through their returnable container system. In partnership with leading fast-moving consumer goods (FMCG) brands[13], Alner sells both popular brands as well as white-labeled products[14] manufactured by smaller brands. It has built an impressive portfolio, providing an assortment of 150 Stock Keeping Units (SKUs)/products under one stop. They are present across 1,000+ sales points, including online stores. As of date, Alner serves 1,000 customers on an average every month through their returnable system and has a return rate of 70%.

[13]Note: Names of the brands not provided for confidentiality purposes
[14]White label products are sold by retailers with their own branding and logo but the products themselves are manufactured by a third party. White labeling occurs when the manufacturer of an item uses the branding requested by the purchaser or marketer instead of its own

OPERATING MODEL

Alner's returnable container system allows customers to buy products through their user-friendly online platforms (website, mobile app, messaging service, like Whatsapp) or from their extensive reseller network, including mom-and-pop stores and individual resellers.

Post use, customers can either return the empty containers to the delivery staff during their next purchase or drop them off at their reseller locations. The empty containers are cleaned, sanitized, and refilled with fresh products at the reuse hub operated by Alner or sent back to their brand partners for replenishment.
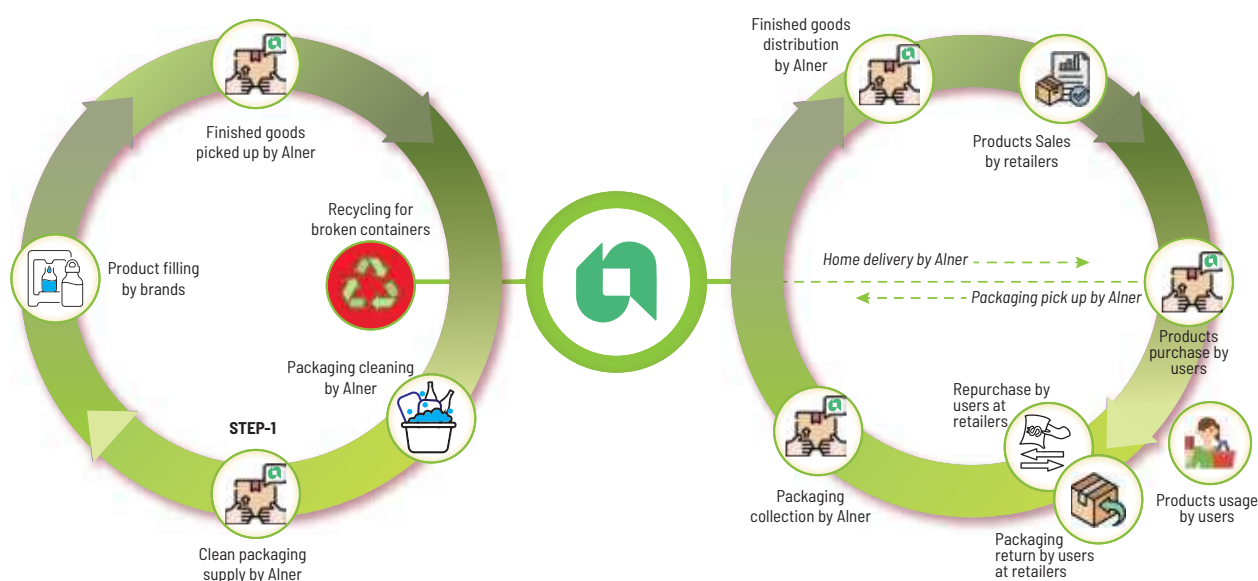
VALUE PROPOSITION

Standardized Design: Standard design is followed for packaging of the same category (e.g., condiments, cleaning liquids) to ensure that Alner only needs to customize their washing practices for each packaging category and not every packaging unit. This not only reduces cost on manpower and training, but also improves the efficiency of washing.

Return Incentives to Customers: Customers are incentivized to return their packaging by receiving either a cashback or a discount (equivalent to the cashback amount) on their next purchase.

Smart Systems: Trackable packaging with QR code system. Their digital tracking system further allows them to monitor the lifecycle of each piece of packaging, while providing valuable data on consumer usage and return habits.

Empowering Micro-retailers: By partnering with local retailers to sell Alner products, Alner is not only expanding its market reach but supporting local economies to promote sustainable practices.

Case Study 2
Refillable
India

Modality (End of Use Point):
Return from Site of Use

Modality (Formality of Operations):
Semi-Closed Loop (Offsite Washing)

Sector: FMCG

Reuse Service Channel: B2B

Reuse Service Partner: Corporates, Businesses (Who Buy Cleaning Supplies from Refillable)

IMPACT

Annual Plastic Waste Reduced per Client (Average): 110 kgs

Annual Cost Saving Per Client: 30%

CO2 Emissions Reduced Per Client: 260 kg

Water Saved Per Client (Average): 7,300 liters

ABOUT

Founded in 2020, the company initially started as a Business-to-Consumer service provider, selling homecare liquids from selected brands in reusable containers, which were delivered at customer's doorstep. Within three years of their operation, they scaled their service to nine cities, serving 15,000 households, with up to 70% customer retention rate and growing 10-15% month on month. In 2023, they shifted primarily to a B2B model, supplying cleaning liquids to bulk consumers like cinemas, malls, and high-traffic hotels, where the unit economics proved more advantageous.

Their service encompasses collecting packaging units from clients and bringing them to their reuse centers to get cleaned and tested for reuse. The refill is undertaken either at the reuse center or sent to the contract manufacturer.

STEP 2
Product Filling by the Manufacturer

STEP 3
Distribution of products in a reusable packaging to the business clients

STEP 1
Clean Reusable Packaging Supplied to the product manufacturer

STEP 4
Collection of empty packaging by Refillable

STEP 5
Inspection and cleaning at the Reuse hub

Refillable

VALUE PROPOSITION

Packaging Traceability by Integrating Smart Systems. Every packaging unit is tracked and traced through a QR code system which allows them to monitor all the packaging units (including loss) remotely

Value-added Services to Clients: Automated Scope 3 emission reduction reporting to support clients in their environmental, social, and governance (ESG) compliance

Return for Reuse

Lessons Learned and Way Forward

This section highlights some key lessons learned from various return initiatives discussed in this report. These lessons underscore the importance of effective policy frameworks, the impact of community-driven innovation, and the economic and environmental advantages of reuse systems when implemented at scale.

1. Standardized packaging and reuse infrastructure with proximity to manufacturing units is imperative to achieve economies of scale.

Standardization is a key element of success, in the case of beer bottles facilitating logistics and optimizing costs. Standardization not only streamlines the packaging formats, but also the entire infrastructure, making them interoperable, creating economies of scale, and largely improving the overall environmental and economic benefits of the system.

In the case of Alner, standard design is followed for packaging of the same category (eg: condiments, cleaning liquids) to ensure that Alner needs to customize their washing practices for each category of packaging unit and not every packaging unit. This not only reduces cost on manpower and training, but also improves the efficiency of washing.

The returnable system for FMCG products involves five steps which dictates the cost of reverse logistics.

1. Collection of packaging from the reuse user
2. Cleaning and sanitizing at reuse hub
3. Sending the clean packaging to the manufacturer for refill
4. Manufacturer fill the liquid
5. Manufacturer sends the prefilled product back to the reuse hub/ warehouse run by the reuse operator

For the logistics cost to make sense, reuse operators currently partner with only those manufacturers as well as reuse users(businesses or individual consumers) which are located in proximity to the reuse hub, thus restricting the

scale of operations. In the presence of strong standards and regulation, which would enforce brands to adopt reuse, the reverse infrastructure will be established close to the manufacturing facilities to optimize the transport distances and associated emissions and costs.

Policy instruments like EPR and investments for establishing a network of reuse infrastructure are some of the biggest enablers for the return system to thrive. Unless this happens, the returnable system will remain small, and an optional mechanism for brands and business.

2. Extended Producer Responsibility (EPR) with reduction and reuse targets and financing is vital to prioritize return system development.

For large-scale penetration of reusable-packaging solutions, several factors need to be in place beyond the solutions themselves. One of the most important policy frameworks in enabling reusable packaging solutions is the Extended Producer Responsibility Scheme, that goes beyond waste management alone.In the words of Thomas Lindhqvist, who first introduced the concept, EPR is "a policy principle to promote total life cycle environmental improvements of product systems by extending the responsibilities of the manufacturer of the product to various parts of the entire life cycle of the product, and especially to the takeback, recycling and final disposal of the product". (Lindhqvist, 2000).EPR essentially aims to internalize the negative environmental costs of and shift the responsibility for managing the products' end of life, and waste(s) arising from it, from public money to producers.

For instance, in India, the Plastic Waste Management Rules (2016), mandate that producers, importers, and brand-owners process their plastic packaging waste through recycling, reuse, or end-of-life disposal methods. The 2022 amendments to the Plastic Waste Management Rules introduced specific EPR targets for reuse of rigid plastic packaging from 2025 to 2026 onwards (Ministry of Environment, Forest and Climate Change, Government of India, 2022). In Indonesia, MoEF Regulation No. 75/2019 plays a crucial role in enabling the adoption of reuse models among brands by introducing EPR policies (Ministry of Environment and Forestry Republic of Indonesia, 2019). This regulation mandates producers, particularly those in the FMCG sector, to reduce, recycle, and reuse their packaging waste, with a clear roadmap of targets for plastic

waste reduction by 2029.

In both these cases, there is no clarity on the operational and financial responsibilities of the brand owners in implementing reuse, making it susceptible to be manipulated. EPR once enforced could enable the following, provided we follow a universally accepted definition and criteria for reuse and reuse systems.

- Incentivization for change in packaging design and standardization of packaging format
- Support for national/global cooperation on reuse standards which would enable development and scale-up of shared infrastructure for returnable systems

3. Returnable systems have the potential to reduce emissions and conserve water when operated at scale.

The adoption of returnable systems offers significant benefits beyond waste management, such as water savings and reduced emissions. For instance, Infinity Box achieves up to 40% water savings and 60% energy reduction through advanced dishwashing systems compared to traditional methods. Further, both Infinity Box and Refillable streamline their logistics through bulk pick-up and delivery of the reusable packaging; and by sharing washing infrastructure among businesses, they minimize transport distances, emissions, and costs. These examples demonstrate the resource optimization potential of large-scale returnable solutions.

4. Prohibiting single-use tableware could be a gamechanger for enabling return systems.

In settings where on-site use and consumption occur in a closed and controlled environment—such as offices, events, and festivals, the return systems become a practical and convenient solution to facilitate the collection and reuse of tableware. Moreover, for recurring events or regular use, such as coffee cups in offices, reusables often prove more cost-effective than single-use plastics, even when accounting for reverse logistics costs. For instance, one of Cupable's clients saved $20,000 by reusing cups across seven events within a three-month period.

Taiwan stands out as the only country in Asia with robust regulations on disposable plastic tableware, which began with a ban in July 2002 on public and private institutions (like schools, universities, medical institutions), shopping centers, restaurants, and convenience stores providing disposable plastic tableware. This progressive approach has recently advanced further: as of August 1, 2023, Taiwan expanded the regulation to include a comprehensive ban on biodegradable tableware (Ministry of Environment, Environmental Protection Administration, R. O. C. (Taiwan), 2023). By disallowing both conventional and biodegradable disposables, Taiwan is fostering a shift towards genuine reusables. Similarly, Hong Kong introduced a comprehensive plastic ban in 2024 to address the growing concern of single-use plastic waste. The ban follows a phased approach, targeting various single-use plastic items, including cutlery, straws, and food containers, especially for takeaway and dine-in services (Ministry of Environment, Environmental Protection Administration, R. O. C. (Taiwan), 2023).

Implementing reuse practices during events or onsite dining offers a highly effective strategy for waste reduction and can also be more cost-effective in the long run as they avoid the recurring costs associated with disposables. A policy that mandates the use of reusables over disposables could further create a favorable environment for reuse infrastructure to be established that could enable reuse service providers to scale their operations.

Such policies not only benefit businesses but also foster community-driven innovation. For example, in Karnataka, India, the state's plastic ban (Chandran, 2023), which prohibits single-use plates, spoons, forks, and cups, created an opportunity for citizen groups to launch the Crockery and Cutlery Bank model. This initiative allowed people to rent reusable tableware for small, personal events. The model quickly gained momentum, inspiring other neighborhoods in Bangalore to adopt similar systems. The movement expanded to other cities, including Chennai, Siddipet, Hyderabad, and Goa, showcasing the power of grassroots action in driving significant environmental change.

Using reusables is deeply rooted in the traditions of many Asian communities, making the transition away from single-use plastics easier. By implementing a blanket ban on disposable products, these communities can smoothly shift back to more sustainable practices.

5 JUST TRANSITION FOR REUSE SYSTEMS IN PACKAGING

Situating Just Transition in Reuse Systems for Waste Pickers in Asia

What is Just Transition?

A Just Transition is defined as ending plastic pollution in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind (International Alliance of Waste-pickers, 2023). It is based on making visible those already working at all stages of the plastic value chain, waste pickers, and other workers under informal and cooperative settings, and recognizing their fundamental human dignity and their historic contribution. It involves maximizing the social and economic opportunities of ending plastic pollution while minimizing and carefully managing any challenges—including through effective social dialogue among all groups impacted—and respect for fundamental human rights.[17]

The International Alliance of Waste Pickers defines waste pickers as "people who participate (individually or collectively) in the collection, separation, sorting,

> **"The main things that we need are Just Transitions in Reuse for Wastepickers: a) System-wide investment, built into the existing system; b) Deposits or bounties on materials that are not linked to a specific account or person; c) Standardized packaging for easy sortability and convenient return; d) Access to materials for unorganized waste pickers; and e) More opportunities for organized waste pickers to advance to managing and running operation depots, washing, transportation, etc."**
>
> **TAYLOR CASS TALBOTT**
> **(INTERNATIONAL ALLIANCE OF WASTE PICKERS)**

transport, and sale of recyclable and reusable materials and products (paper, plastic, metal, glass, and other materials) in an informal or semi-formal capacity, as own-account workers, or in a cooperative or social and solidarity economy setting, and as workers who subsequently achieved formal work arrangements through their organizations. Our description includes itinerant waste pickers, current and former waste pickers who have new roles and engagement in waste pickers' organizations, and those who have been integrated into municipal solid waste management systems and continue to retrieve, sort, and sell recyclables" (International Alliance of Waste-pickers, 2023).

The focus of the following is on Just Transition for waste pickers in Asia, while recognizing that a Just Transition is needed for all workers and communities impacted across the plastic lifecycle and needs vary.

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[17] The just transition definition has been drawn up by representatives of waste pickers' movements from around the world and draws on the ILO definition that is frequently referred to in the context of climate action, and the definition proposed by the International Trade Union Congress in their submissions to the Secretariat. https://resolutions.unep.org/resolutions/uploads/230113_international_alliance_of_waste-pickers.pdf

Just Transition in Reuse Systems for Waste Pickers in Asia

In the current operational model within recycling systems, waste pickers play a crucial role in the collection, segregation, sorting, grading, transporting, and sale of recyclables in the recycling plastic value chain. The just transition framework within a reuse system means supporting waste pickers and other workers in the plastic recycling value chain who are most vulnerable to occupation disruption, as the dynamics within the new system will affect their livelihoods as shown in the following table.

**Table 2. Impacts of Transition to Reuse Systems
on the Livelihood of Waste Pickers[18]**

TYPES OF IMPACT	EXAMPLES
New Job Creation	• In washing reusable cutlery and refilling areas • In setting up washing services—similar to materials recovery facilities (MRF) that is hygienic—which create affordable cutlery-on-hire and create jobs *Note: These are not necessarily alternative jobs that are created*
Redefining Job/Extension Services	• Waste pickers within recycling system will continue providing collection services for reuse—refill and return packaging—as the model will be the same (see Beer Bottle case study) • Transportation/reverse logistics • End of life for 'reuse products/packaging' (waste collection, sorting, and management)
Job Elimination	• As more private players get involved, access to materials will be harder, and that would lead to job elimination • Closed Deposit Return systems also risk eliminating waste pickers' livelihoods, as collection will then be direct Business-to-Consumer[17]

Applying Just Transition Approaches to the Reuse System

Given the impacts of reuse in the livelihood of waste pickers, Just Transition approaches should take into consideration the following:

Accessibility, Cost, and Livelihood Issues
- Will access to material become harder?
- What are the costs of accessing these systems?
- What happens when jobs get eliminated because of a particular model being championed (e.g., Deposit Return Systems)

Inclusion and Voice in Decision-making
- Are policies being drawn up in consultation with waste pickers? How will recognition of rights during the transition period take place? How can policies be co-designed?
- Do they have the adequate capabilities and skills to participate in the reuse system? How can they contribute to the discussions and how can they raise their concerns? What are the institutional mechanisms to address their concerns?

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[17]DRS is not the best system in South Asian countries where robust informal waste recycling systems are established and recover rigid plastic (high-value plastic). We need to professionalize the informal plastic recycling sector. Any DRS system for flexibles is welcome, as the cost of collecting flexibles is very high and requires participation of the consumers for its collection and diversion from landfill. —Nalini Shekar, Co-founder, Hasiru Dala (India)

[18]Table Adapted from Patrick Schröder's research paper Promoting a Just Transition to an Inclusive Circular Economy https://www.chathamhouse.org/sites/default/files/2020-04-01-inclusive-circular-economy-schroder.pdf

- What happens when there is a competing interest that prioritizes large-scale privatization of reuse systems? What will be the criteria to ensure that Just Transition frameworks are incorporated?

Planning and Policy
- What are the existing reuse models that are operating in the country? Which of those models include waste pickers?
- What kind of infrastructure requirements are needed to scale up?
- How can governments ensure that brands are part of the just transition solutions?
- How can governments ensure that brands are being true and not green-washing?
- How can privatization not undermine community-centered reuse models?
- How can EPR programs be better designed to incorporate reuse and prod-uct design with the Just Transition lens?

Standards and Safety Practices
- What will be the reuse criteria/standards in the systems approach that will be followed by countries? What safety criteria will need to be factored in? (This will also include defining what happens at the end of life of the chosen material.)

Skills and Capacity Investments
- What will be the budget allocations envisioned and envisaged for the shift? Who can access these funds?

Data Transparency and Traceability
- What data needs to be mapped and collected? How can there be traceabil-ity in data gathering?

Automation that Supports Rather than Replaces Waste Pickers' Roles
How can automation be seamlessly integrated into the operations, where waste pickers and other stakeholders are involved?

Communications and Behavior Change for all Stakeholders
What are the behavior change components that will need to be consistently communicated to different stakeholders?

Table 3. Example of a Just Reuse Scenario

	Reuse Scenario	Just Reuse Scenario
Open Loop Operations	Packaging will move from user (individual/ business) to the reuse operator	• Packaging will be collected by the wastepicker from the user, who will in turn sell the packaging to the reuse operator for cleaning and reuse
Closed-loop Operations (e.g., Events)	Cups and tableware will be collected by the reuse operator at the event	• Onsite collection of tableware will be undertaken by the waste pickers which will be handed to reuse operator for offsite washing • Onsite collection and washing of tableware will be undertaken by waste picker

Case Study 1

Beer Bottle collection by Waste Pickers for Reuse in India

(An Example)

The most common forms of glass bottles from households and commercial establishments in India are:

- Beer bottles: White, green, and brown
- Other alcohol bottles (including local and global brand): Assortment of colors, shapes and size—includes wine bottles
- Glass bottles from consumer goods such as sauces, pickles, malted drinks bottles, juices other non-alcoholic beverages such as mixers and caffeinated drinks
- Broken glass bottles—including alcohol and other beverages
- Other glass items, such as window panes, mirrors, plates, etc.

Note: Very often, decorative glasses, ceramics, and colorful and mixed glasses are destined for landfills

In India, unbroken beer bottles have always been picked up for recycling or reuse. While there has been a dedicated collection channel for hotels, restaurants, bars, and pubs, in most cities, bottles that often end up on streets, beaches, and other public spaces have been traditionally picked up by waste pickers. There used to be a DRS for beer bottles but these systems have been done away with.

What happens to the glass bottles, after they are collected?

After glass bottles are collected by waste pickers or other waste collectors, they undergo a sorting process—labels are removed from the bottles and the bottles

are sorted based on size and color. The bottles are then sold to local scrap dealers. From there, the bottles make their way to aggregators.

Once at the aggregators godown (warehouse), the bottles are soaked in water to remove impurities, and then further checked for any defects. Bottles that have a reuse value are washed before they are sent back to the beverage companies, according to the requirements of the brands. These bottles are traded by piece.

Bottles that are chipped, cracked, or broken, or those that do not have a smooth surface or have blisters, pinholes, and sharp edges are then crushed into smaller pieces and washed before they are sent to glass factories. Bottles are crushed according to color. Broken glass is traded by weight. See the Value Chain section in the succeeding pages

Challenges

- Glass bottles resale value has taken a severe hit, after the introduction of the 18% Goods and Service Tax (GST) on glass products. This makes the collection process uneconomical. Previously, a waste picker could earn INR 2 (USD 0.024) per bottle. Now the rates are as low as 50 paise (USD 0.006) per bottle in some cities and value by kg is INR 2.
- The beer industry in India is also transitioning from traditional glass bottles to cans, and that impacts how reuse can be incorporated.

Way Forward

- In India, the Food Safety and Standards (Packaging) Regulations, 2018, provides a list of suggestive packaging materials, which may be used for packaging of food products falling under the specified categories—and the glass is a suggestive packaging material for all the 10 product categories, given its safe status (also referred to as GRAS or generally recognized as safe). This is an opportunity for brands offering beverages, any other liquid-based food and drink items to adopt this model (Food and Safety Standards of India, Government of India, 2018).

- The beer bottle industry is uniquely positioned to lead the way towards a more sustainable future for packaging, moving away from single-use disposable materials. The model has been tried and tested and the collection systems are the same for both reuse and recycling. In envisioning Just Transition for waste pickers, within this system, it is important to ensure that the exciting model is not disrupted. Access to material is an important component for a reuse system to work.

Case Study 2

Hasiru Dala Innovations:

Engaging Waste Pickers to Provide Green Event Management Service

Hasiru Dala Innovations (HDI) is a social enterprise company that integrates waste pickers into the evolving circular economy value chain. They empower waste pickers to become green professionals and entrepreneurs, and help create predictable livelihoods for them. HDI has adopted the entrepreneurial model, rather than the individual employee model, as a way of respecting and providing agency to waste pickers. One of the ways that they do this is through the Green Event Management Services that prioritizes Zero Waste[20] over landfill solutions by giving preference to reuse over recycling, and engaging waste pickers to plan and execute the operations, as partners.

HDI offers end-to-end solutions to different types of events irrespective of the scale, such as sporting events, conferences, concerts/festivals, weddings and reception, religious events, and other kinds of celebrations such as birthday parties, christening/naming ceremonies, house parties, and so on.

How Does this Work?

1. As soon as HDI receives an enquiry for event waste management, HDI organizes consultations with event organizers and recommends solutions that prioritizes reuse solutions, over recycling.
2. The HDI team then conducts a recce of the venue, along with waste picker representatives to plan necessary interventions, including placing collection points and setting up washing area and place for storage.

3. The day prior to the event, the HDI team sets up the operations for managing the event.
4. On-site services are provided throughout the event—with a dedicated team of waste pickers who have enlisted for event waste management.
5. The add-on service also includes collection, sorting, transportation of recyclables and food waste for composting
6. The team also submits an impact report post event.

In this model, it is difficult to quantify the social value of the initiative as it also includes a pathway for dignity of livelihood apart from waste reduction.

Example of an Event
Wedding: Smitha Shrinath (2023)

- A three-day event that had a footfall of 2,300 attendees.
- HDI had 22 waste picker micro-entrepreneurs working in five different shifts, for eight hours, each day, of which 94% were women frontline workers.
- The HDI team provided reusable tableware and cutlery (1,200 plates, 1,500 water glasses, 1,000 soup bowls, 1,200 ice cream bowls, and 1,500 spoons).
- This event had a 122% average increase in waste pickers' income, as this service also included collection, segregation, sorting, and washing services. Post-event services also included composting of food waste. Any recyclables generated at the event could be sold by the waste pickers in the open market.

Way Forward

- The government must mandate that events adhere to the Zero Waste hierarchy framework and show evidence that the event organizers have made all attempts to prioritize reuse system solutions over recycling.

- Permission to organize public events must be given only after showing proof that the event prioritizes reuse and includes waste pickers in executing the plan. The same procedure applies to private events run at public places.

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[20] "Zero Waste: The conservation of all resources by means of responsible production, consumption, reuse, and recovery of all products, packaging, and materials without burning them and with no discharges to land, water, or air that threaten the environment or human health." Version 8.0 — Last updated May 19, 2022 Source https://zwia.org/zwh/

Lessons to Help Guide Just Transition for Reuse

Lessons Learned and Way Forward

No one size fits all. Any measure for transition should be inclusive, responsive, and relevant for local contexts. In addition, it should recognize waste pickers as key stakeholders in strategies to reduce plastic pollution.A successful Just Transition will rely on:

1. Inclusivity in design and decision-making

- The measure should be developed and implemented through inclusive participatory processes: accountable, transparent, equitable and inclusive approaches must be employed across planning, negotiations, and implementation processes.
- Example of how this could be done: Conduct stakeholder and vulnerability mappings to ensure a just transition to reuse systems model
- In line with the 'first access to waste' principle, the first right of collection for reuse must be reserved for waste pickers.

2. Integration into policy and regulation

- Develop coherent and integrated policies along with Extended Producers Responsibility.
- There should be a responsibility framework to enable transition to reuse systems including the right to repair and the wider existing reuse economy.
- Social protection, health care programs, and other safeguarding measures must be considered in efforts to move towards reuse systems.

3. Availability of Investments and funding

Investment in skill development is essential, as it is important to ensure that new systems do not exacerbate inequalities for waste pickers and other workers in the plastic recycling value chain by unfairly burdening them with the costs and risks of transitions.

Both public and private funding is crucial for transitioning into reuse systems.

Within the broader architecture of funding, it is crucial to ensure access to finance for waste pickers and other workers and establish or strengthen safe and sustainable reuse livelihood options.

Establishing a dedicated transition fund may also help support implementation of reuse systems for waste pickers and other workers.

It is important to design a reuse economy that is environmentally sustainable, consumer friendly, and economically viable, which leverages the skills of waste pickers and other workers in the value chain in the plastic packaging industry.

SUMMARY TABLE

Name of Service Provider	Type of Service Provider	Country	Category	Products Available for Refill	Reuse Service Channel	Refill Service Partner[1]	End User
Davaam Life	Social Enterprise	Pakistan	Tech-enabled	Cooking Oil, Cleaning Liquids	B2B	Supply side Operators: Manufacturers supplying products without Packaging Distribution side Operators: Corporates, Retailers	Low- to Middle-income Community
iRefill	Social Enterprise	India	Tech- enabled	Cooking Oil, Cleaning Liquids, Rice and Lentils	B2B	Distribution side Operators: Corporates, Retailers	Low- to Middle-income Community
BoPinc+ Unilever	Non-profit	Bangladesh	Tech-enabled	Unilever Shampoo and Hand wash	B2B	Supply Products: Unilever Dispenser:(Dispenser Developer Supply Side Operators: Unilever (For Products) Dispenser Developer (For Dispensers) Distribution Side Operators: Micro-retailers	Low- to Middle-income Community
Back2Basics	Social Enterprise	Philippines	Community-led (Bulk Stores)	Pantry Staples, Snacks, Cleaning Solutions, Personal Care Items	D2C	Supply side Operators: : Manufacturers supplying products without Packaging	Middle- to High-income Community
Refillables Dong Day	Social Enterprise	Vietnam	Community-led (Bulk Stores)	Home and Personal Care Products and Healthy Food ptions	D2C	Supply side Operators: : Manufacturers supplying products without Packaging Distribution side Operators: Micro-retailers	Middle- to High-income Community
'Toka Cura' by Divers Clean Action	Non-profit	Indonesia	Community-Led (Neighborhood Stores)	soap, dishwashing liquid, and shampoo	N2B	Supply side Operators: : Reuse Operators in Jakarta Distribution side Operators: Micro-retailers	Low- to Middle-income Community
'Kuha sa Tingi' by Greenpeace Philippines	Non-profit	Philippines	Community-Led (Neighborhood Stores)	Cleaning Liquids	N2B	Supply side Operators: : Manufacturers supplying products without Packaging Distribution side Operators: Micro-retailers/ Sari- sari store owners Other Partners: Local Government Unit	Low- to Middle-income Community
'Pokka-Refilin' by Ecoton	Non-profit	Indonesia	Community-Led (Neighborhood Stores)	Cleaning Liquids	D2C, N2B	Supply side Operators: : Manufacturers supplying products without Packaging Distribution side Operators: Micro-retailers	Low- to Middle-income Community
Bottle Free Seas Project by Environmental Justice Foundation	Government	Thailand	Safe Drinking Water through Water Refill Stations	Drinking Water	D2C	Bangkok Metropolitan Authority	Anyone
Trash Hero Thailand	Non-profit	Thailand	Safe Drinking Water through Water Refill Stations	Drinking Water	N2B	Hotels, Cafes, Clinics	Anyone
Almang Market	Social Enterprise	South Korea	Community-led (Bulk Stores)	Home and personal care products	D2C	Supply side Operators: : Manufacturers supplying products without Packaging	Middle- to High-income Community
Juana Zero Express	Non-profit	Philippines	Community-led (Bulk Stores)	Pantry Staples, Cleaning Liquids	D2C	Supply side Operators: : Manufacturers supplying products without Packaging	Low- to Middle-income Community
Tingi Station	Social Enterprise	Philippines	Community-led (Bulk Stores)	Pantry Staples, Cleaning Liquids	D2C	Supply side Operators: : Manufacturers supplying products without Packaging	Low- to Middle-income Community

[1]For reuse service providers involved in dispensing fast-moving consumer goods (FMCG), the term "Reuse Service Partner" can be applied to stakeholders managing either or both:
Supply-side Operations: Providing product in bulk while ensuring product safety standards and delivering to retail locations (Supply side Operators)
Distribution-side Operations: operating/ supporting refill stations for efficient product dispensing (Distributional Side Operators)

Name of Service Provider	Type of Service Provider	Country	Sector/ Category	Reuse Service Channel	Reuse Service Partner	End User	Packaging Unit Type	Return Incentive
Crockery Bank for Everyone	Citizen-led Initiative	India	Events	Trust-based Lending	Individuals/ Business who are Interested in Holding Waste-free Events	Event Attendees	Steel Plates, Glasses, Spoons	None
Rent- A- Cutlery	Citizen-led Initiative	India	Events	None	Individuals/ Business Who are Interested in Holding Waste-free Events	Event Attendees	Steel Plates, Glasses, Spoons	The Deposit is Refunded Upon the Return of the Tableware
Recube	Social Enterprise	Hong Kong	Events, Food and Beverage Takeaway	B2B	Events: Event organizers Food and Beverage Takeaway, Restaurants	Event Attendees	Bowl: Food-grade Polypropylene Lid: Polypropylene/ silicone	None
Weuse	Social Enterprise	Hong Kong	Events	B2B	Event Organizers	Event Attendees	Food-grade Polypropylene	None
Taksu	Social Enterprise	Indonesia	Events	D2C and B2B	Event Organizers/ Individuals	Event Attendees	Steel Tableware	The Deposit is Refunded Upon the Return of the Tableware
Cupable	Social Enterprise	India	Events	B2B	Event Organizers/ Individuals	Event Attendees	Data Not Available	Discount on Next Refill
Hasirudala Innovations	Social Enterprise	India	Events	B2C	Event Organizers/ Individuals	Event Attendees	Steel Tableware	NA
Alner	Social Enterprise	Indonesia	FMCG Products	D2C	Retailers and Businesses	Individual Consumers	HDPE	Discount on Next Purchase
Refillable	Social Enterprise	India	FMCG Products	B2B	Corporates	Corporates	HDPE	Incentive Provided to Housekeeping and Support Services Staff of the Corporates
Shuangti	For-Profit Company	China	Food and Beverage Takeaway	B2B	University Restaurants	University Students	Food grade Polypropylene	No
Infinity Box	Social Enterprise	India	Onsite Dining	B2B	Corporates, Hospitals, and Universities	Staff at these Institutions	Steel, Melamine, Ceramic, PP (Polypropylene), and Acrylic Containers	No
Yourgut BB	Social Enterprise	Malaysia	FMCG Products	D2C	NA	Consumers Purchasing Yoghurt from Yoghurt BB	Polypropylene Bottle	Data Not Available
Get it Fresh	Social Enterprise	Malaysia	FMCG Products	D2C	NA	Consumers Purchasing Milk from Get it Fresh	Glass bottle	Data Not Available
Uzavar Bumi	Social Enterprise	India	FMCG Products	D2C	NA	Consumers Purchasing Milk from Uzavar Bumi	Glass bottle	Data Not Available

REFERENCES

BrandWagon Online. (2022, November 2). 86% of households prefer to get daily groceries from local grocery 'kirana' stores, while 2% use internet apps for the same: Report. Financial Express. https://www.financialexpress.com/business/brandwagon-86-of-households-prefer-to-get-daily-groceries-from-local-grocery-kirana-stores-while-2-use-internet-apps-for-the-same-reportnbsp-2771071/

Break Free From Plastic. (n.d.). On Reuse Systems,. Unpublished.

Break Free From Plastic. (2023, March 3). Calling Asian countries top plastic polluters is waste colonialism. Break Free From Plastic. Retrieved November 16, 2024, from https://www.breakfreefromplastic.org/2023/03/03/misleading-graphics-on-ocean-plastic-pollution/

Carrington, D. (2017, September 5). Plastic fibres found in tap water around the world, study reveals. The Guardian. Retrieved November 16, 2024, from https://www.theguardian.com/environment/2017/sep/06/plastic-fibres-found-tap-water-around-world-study-reveals

Carrington, D. (2022, March 25). Microplastics found in human blood for first time. The Guardian. Retrieved November 16, 2024, from https://www.theguardian.com/environment/2022/mar/24/microplastics-found-in-human-blood-for-first-time

Carrington, D. (2022, October 7). Microplastics found in human breast milk for the first time. The Guardian. Retrieved November 16, 2024, from https://www.theguardian.com/environment/2022/oct/07/microplastics-human-breast-milk-first-time

Carrington, D. (2024, May 21). Microplastics found in every human testicle in study | Plastics. The Guardian. Retrieved November 16, 2024, from https://www.theguardian.com/environment/article/2024/may/20/microplastics-human-testicles-study-sperm-counts

Chandran, P. (2023, June 22). Bans, clean-ups, recycling push: Why all of this has failed to beat plastic pollution. Citizen Matters. Retrieved November 16, 2024, from https://citizenmatters.in/plastic-pollution-solutions-beyond-bans-clean-ups-recycling/

Chandran, P. (2023, July 21). What plastic items are banned in Karnataka? Waste Frames. https://wasteframes.blog/2023/07/21/what-plastic-items-are-banned-in-karnataka/

Department of Health, Republic of Phillippines. (2024, May 17). Guidelines on the Licensing of Establishments Engaged in Refilling Activity of Certain Cosmetics and Household/ Urban Hazardous Substances (HUHS) Products. Food and Drug Administration. Retrieved November 16, 2024, from https://www.fda.gov.ph/wp-content/uploads/2024/05/Administrative-Order-No.-2024-0008.pdf

Ellen MacArthur Foundation. (2023). Unlocking a reuse revolution: scaling returnable packaging. https://emf.thirdlight.com/file/24/sjZ_pROsjk8VSKPsjXVEszMGHY/Unlocking%20a%20reuse%20revolution%20-%20scaling%20returnable%20packaging.pdf

Ellen MacArthur Foundation. (2023, March 3). Reusable packaging business models. Ellen MacArthur Foundation. Retrieved November 17, 2024, from https://www.ellenmacarthurfoundation.org/reusable-packaging-business-models

Food and Safety Standards of India, Government of India. (2018, December 24). Food Safety and Standards (Packaging) Regulations, 2018. https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Packaging_Regulations_05_06_2022.pdf

Gasperotti, P. (2024, January 5). Reusable food packaging: What is it, how it works, and what you can do next. Verive. Retrieved November 17, 2024, from https://verive.eu/reusable-food-packaging-what-is-it-how-it-works-and-what-you-can-do-next/

Global Alliance for Incinerator Alternatives. (2022, January 17). Chemical Recycling of Sachet Waste_A Failed Experiment 2022. Global Alliance for Incinerator Alternatives. Retrieved November 16, 2024, from https://www.no-burn.org/wp-content/uploads/2022/03/Chemical-Recycling-of-Sachet-Waste_A-Failed-Experiment-2022.pdf

Howarth, R. (2019, May 3). The Hidden Costs of a Plastic Planet. Center for International Environmental Law. Retrieved November 16, 2024, from https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf

International Alliance of Waste-pickers. (2023, 1 13). Submission from the International Alliance of Waste pickers for INC-2 on Plastic Pollution. UNEP. Retrieved November 16, 2024, from https://resolutions.unep.org/resolutions/uploads/230113_international_alliance_of_waste-pickers.pdf

ISO 18603:2013(en). (n.d.). ISO 18603:2013(en) Packaging and the environment — Reuse. ISO. Retrieved November 16, 2024, from https://www.iso.org/obp/ui/#iso:std:iso:18603:ed-1:v1:en:sec:6

Ledesma, M., Pamatmat, M., Prebenda, M., & Guerrero, L. (2024, March). Reuse and Refill. Greenpeace. Retrieved November 16, 2024, from https://www.greenpeace.org/philippines/act/plastic-free-future/reuse-and-refill/

Lindhqvist, T. (2000). Extended Producer Responsibility in Cleaner Production: Policy Principle to Promote Environmental Improvements of Product System. Lund University Research Portal. Retrieved November 17, 2024, from https://lup.lub.lu.se/search/ws/files/4433708/1002025.pdf

Main, D. (2024, August 21). Microplastics are infiltrating brain tissue, studies show: 'There's nowhere left untouched'. The Guardian. Retrieved November 16, 2024, from https://www.theguardian.com/environment/article/2024/aug/21/microplastics-brain-pollution-health

Ministry of Environment and Forestry Republic of Indonesia. (2019). MOEF Regulation P.75/2019 Waste Reduction Roadmap by Producers. kNOw.Waste. Retrieved November 17, 2024, from https://www.knowwaste.net/Documents/4.%20Implementation%20Progress%20of%20MoEF%20P75%202019%20Waste%20Reduction%20Roadmap%20by%20Producers.pdf

Ministry of Environment, Environmental Protection Administration, R. O. C. (Taiwan). (2023, June). Biodegradable Plastic Disposable Tableware Banned from 1 Aug 2023-Water-Press Releases-News Ministry of Environment. Retrieved November 17, 2024, from https://www.moenv.gov.tw/en/52CA79FA8514892C/24f012a0-8325-4de1-8c19-23849abaf6f7

Ministry of Environment, Forest and Climate Change, Government of India. (2021, August 12). Central Pollution Control Board. Retrieved November 16, 2024, from https://cpcb.nic.in/uploads/plasticwaste/Notification-12-08-2021.pdf

Ministry of Environment, Forest and Climate Change, Government of India. (2022, February 17). Plastic Waste Management (Amendment) Rules, 2022. Central Pollution Control Board. Retrieved November 17, 2024, from https://cpcb.nic.in/uploads/plasticwaste/PWM-Amendment-Rules-2022.pdf

Nordic Council of Ministers 2023. (2023). Towards Ending Plastic Pollution: 15 Global Policy Interventions for Systems Change. Nordic Council of Ministers. http://dx.doi.org/10.6027/temanord2023-539

OECD. (2022). Global Plastics Outlook: Policy Scenarios to 2060,. OECD Publishing, Paris. https://doi.org/10.1787/aa1edf33-en.

Sambhwani, L. (2022, October 22). Why refillable and returnable packaging makes sense in India? Medium. https://medium.com/@lokesh1302/why-refillable-and-returnable-packaging-makes-sense-in-india-13a98b58908c

Schneider, H., & Larissa, C. (2022, June). Packaging Reuse vs Packaging Prevention.docx. Zero Waste Europe. Retrieved November 16, 2024, from https://zerowasteeurope.eu/wp-content/uploads/2022/06/Packaging-Reuse-vs-Packaging-Prevention.docx-1.pdf

Scott, G., & Gratton, P. (2024, June 18). Fast-Moving Consumer Goods (FMCG) Industry: Definition, Types, and Profitability. Investopedia. Retrieved November 17, 2024, from https://www.investopedia.com/terms/f/fastmoving-consumer-goods-fmcg.asp

Shrestha, P., Rai, R., & Lepcha, P. (2024, August). The Himalayan Cleanup. Integrated Mountain Cleanup/Zero Waste Himalaya. https://www.thehimalayancleanup.in/_files/ugd/13753f_1850ee37ca7d433e878e8f09e1253365.pdf

Terazono, A., Moriguchi, Y., Yamamoto, Y. S., Sakai, S., Inanc, B., Yang, J., Siu, S., Shekdar, A. V., Lee, D.-H., Idris, A. B., Magalang, A. A., Peralta, G. L., Lin, C.-C., Vanapruk, P., & ungcharoen, T. (2005). Waste Management and Recycling in Asia. International Review for Environmental Strategies, 5(2), 477 – 498. https://www.iges.or.jp/en/publication_documents/pub/peer/en/1182/IRES_vol.5-2_477.pdf

University of Portsmouth. (2023). Making Reuse a Reality: A systems approach to tackling single-use plastic pollution - Global Plastics Policy Centre. Global Plastics Policy Centre. Retrieved November 16, 2024, from https://plasticspolicy.port.ac.uk/research/making-reuse-reality/

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