
Feasibility study: Refilling Consumer Goods in Labuan Bajo

Driving change to reduce waste generation, littering and the open burning of sachets and pouches in rural and remote regions in Indonesia



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Pilot funded by



Abbreviations

ADUPI	Indonesian Plastics Recycling Association
BC	Black carbon
BPOM	Badan Pengawas Obat & Makanan (Food & Drug Administration)
FMCG	Fast moving consumer goods
GHG	Greenhouse gasses
IWP	Indonesian Waste Platform
KLHK	Ministry of Environment and Forestry Republic of Indonesia
KNP	Komodo National Park
LB	Labuan Bajo
MPW	Mismanaged plastic waste
PET	Polyethylene terephthalate
PHRI	Indonesian Hotel Restaurant Association
RG	Refill Generation
RRC	Remote and rural communities
SKU	Stock-Keeping-Units
TPA	Tempat Pemrosesan Akhir (landfill)

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Introduction

This report addresses the burning issue of plastic packaging which has no recyclability properties in Indonesia: sachets and pouches.



Illustration 1. Warung on Mesah Island

Indonesia generates approximately 42 million tons of municipal waste and 7.8 million tons of plastic waste annually, of which 4.9 million tons of plastic waste is mismanaged — e.g. uncollected, disposed of in open dumpsites or leaked from formal unsanitary landfills. Rural areas generate the largest amounts of mismanaged plastic waste (MPW) due to very limited waste collection systems in place. Despite having roughly the same population as urban areas, rural areas generate two-thirds (3.5 million tons/ year) of the MPW in Indonesia. 85% of plastic waste in rural areas remains uncollected¹. The establishment of collection systems in Indonesia is challenging, one reason being Indonesias' geographics, an archipelago nation consisting of 17.504 islands, with a coastal line of 108.000 km². ~70% of the 271 million Indonesians live near a shoreline. Rural and remote communities (RRCs) located both near shorelines and inland - alongside rivers, contribute to marine pollution. It is estimated that roughly 60 kton/ year of plastic waste ends up in the marine environment from waste disposed of in the coastal zone and

¹ [Plastic Waste Discharges from Rivers and Coastlines in Indonesia](#)

² [The Indonesian National Ocean Data Center \(NODC\)](#)

small islands³. RRCs have low climate & waste literacy and nearly no access to solid waste management systems; they generate 50% of plastic waste and ~75% of mismanaged waste⁴.

Without proper waste collection, single-use sachets and pouches end up as litter on land, dumped in illegal dumpsites, polluting fresh water bodies, end up in rivers and on riverbanks, are dumped directly into the sea, are clogging waterways, are openly burned or are deposited in sanitary or open dumping landfilling sites, Tempat Pemrosesan Akhir (TPA), translated ‘final processing facility’. The Indonesian Ministry of Environment and Forestry (KLHK) lists 1.164 TPA locations on their nationwide map of solid waste management facilities⁵. The registered locations can also be found on the map provided by KLHK⁶. At a sanitary landfill, the waste is buried to accelerate decomposition and prevent it from burning or becoming a source of diseases. However, most regions still use open-dumping landfills. Intentional burning happens in landfills to create space. Spontaneous burning in landfills occurs due to ignition by methane from decomposing organic waste⁷.

This report describes our efforts on advancing refilling, the problems we address, how we conducted this pilot and challenges we encountered. After evaluating we have included recommendations which are based on our findings during this pilot and previous research. By conducting this pilot we support reaching the goals of Indonesia’s Plan of Action on Marine Plastic Debris⁸.

Pilot background

Purpose Refilling is instrumental to reduce the use of non-recyclable single-use packaging in RRCs. The purpose of the collaboration in this pilot was to test the feasibility of the Siklus refill delivery model in a more remote region. With this pilot project we sought to mitigate the negative effects on climate and environment of unmanageable non-organic household waste in RRCs in Indonesia.

Pilot location We selected Labuan Bajo (LB) and outlying islands to conduct this pilot because it is representative for other communities located in remote and rural regions in Indonesia. LB is the capital of West-Manggarai regency. LB has been designated to be developed as one of Indonesia’s five Super Priority Tourism Destinations. The main tourism attractions are the famous Komodo Dragons - mainly located on the islands Komodo and Rinca -, the spectacular dive sites and the other islands in Komodo National Park (KNP). LB is the main entry point for tourists

³ [Plastic Waste Discharges from Rivers and Coastlines in Indonesia](#)

⁴ [Plastic Waste Discharges from Rivers and Coastlines in Indonesia](#)

⁵ [List KLHK of landfill sites, Tempat pemrosesan akhir \(TPA\)](#)

⁶ [KLHK map with TPA sites](#)

⁷ [Open waste burning](#)

⁸ [Indonesia’s Plan of Action on Marine Plastic Debris](#)

visiting the National Park. Another category of visitors enter the KNP by boat, on live-aboards coming from Bali, Lombok and other destinations. From 2009 onwards LB has grown from a small-size fishing community to a tourism hotspot, with most rapid developments taking place over the past five years. Large hotels are developed, former homes of fishermen families have disappeared and have been replaced by restaurants, shops and tour- and dive operators. Communities in other parts of Flores are predominantly inhabited by subsistence farmers or fishermen. LB has attracted many Florenese from other parts of Flores where jobs are scarce, to join the workforce in the tourism sector and related industries. LB is constantly expanding with new neighborhoods to accommodate this growing workforce, new tourist accommodations and related businesses⁹. The rapid tourism development contributes to a surge in waste generation. This aggravates the environmental pollution crisis since solid waste management in East Nusa Tenggara province is lagging behind.

History of efforts to advance refilling in Labuan Bajo

In October 2019 Indonesian Waste Platform (IWP) explored advancing refilling with the owner of the largest supermarket in LB at that time. The owner was willing to explore opportunities to allocate shelf space for refill containers. IWP explored different options of piloting refill models including with Unilever, since Unilever had published their refilling initiative in Bintaro, joining forces with Indonesia's Saruga packaging-free store to launch product refilling. At the time Unilever indicated that it was not timely to roll out to other locations.

In 2021 IWP approached Siklus Refill in Jakarta and the Danish Embassy in Jakarta for funding to pilot refilling in LB.

Timeframe of the pilot and COVID The time frame of this pilot was six months. In the light of the aftermath of the COVID crisis, the timing of this pilot may have had an influence on the results: due to the COVID pandemic and the subsequent lockdowns, tourism came to a complete standstill in LB in early 2020. Businesses temporarily or permanently closed, most working in the tourism sector lost their income and suffered from poverty. For this reason we delayed the starting date of our pilot as long as possible, since low economics already had impacted the community and budgets for purchasing household products were low. After the lifting of the COVID regulations, tourists began to arrive in LB again. By the middle of 2022, although domestic tourism in particular had increased, tourism in general had still not reached the capacity of pre-COVID in 2020, when LB was a bustling small town full of both international and domestic tourists¹⁰. An unrelated set-back occurred during the week of 01-07 August 2022, when businesses closed and deliveries were impossible due to social unrest in LB.

⁹ [Jumlah Penduduk Kabupaten Manggarai Barat Menurut Jenis Kelamin \(Jiwa\), 2017-2019](#)

¹⁰ [Domestic tourists dominate the number of visits to Labuan Bajo, July 2022](#)

Scope of the pilot

- Introducing refilling - selling household products through refilling to LB community, businesses and island community;
- Socialization, raising public awareness, education, producing video content and other documentation, shareable via WhatsApp, educational webinars, door-to-door outreach, a “refer a friend” campaign, presentations socialization in sub-districts;
- Data collection and reporting.

Pilot partners

IWP takes measures to reduce the negative impacts on climate and environment caused by mismanaged organic and non-organic waste in rural & remote communities and small island fishing communities. In 2020, IWP developed a comprehensive and inclusive community-led solid waste management program¹¹. This program includes a collection system for recyclable waste and litter in LB and outlying islands in and around the Komodo National Park. IWP operates a solid waste management center in LB. In this facility recyclables are sorted, compressed, baled and prepared for shipment to recycling factories on Java. Non-recyclable packaging collected on the islands by IWP team and community members is landfilled. The IWP approach includes education in schools to increase waste and climate literacy^{12 13} and raising awareness about the impact of open waste burning¹⁴. IWP collaborates with fishermen to reduce single-use plastic in fisheries and promote reusables to reduce single-use packaging. IWP introduced NAZAVA water filters in schools and includes solid waste management in community-based tourism development¹⁵. In 2021, IWP partnered with Siklus to introduce refilling in LB. IWP identified Siklus to collaborate on introducing refilling in Labuan Bajo, based on Siklus’ expertise in this field in Jakarta.

Siklus is a start-up venture that delivers refills of everyday household products to the door, without plastic waste. Customers can order to refill their own containers for household detergents, shampoo, cooking oil and other household products at a lower cost than the same product sold in sachets and without having to leave their home. Price information is communicated via WhatsApp (or other applications) and delivery is direct to the home by Siklus’s own bicycle delivery service. Siklus main operation area is in Greater Jakarta where it works with major FMCG companies including P&G, Unilever, and other major brands to allow customers to purchase their favorite brands without single-use plastic packaging by using a refill and reusable containers.

¹¹ [IWP community-led solid waste management](#)

¹² [IWP education](#)

¹³ [Green Indonesia](#)

¹⁴ [IWP open waste burning](#)

¹⁵ [Flores Homestay Network, waste and what can you do](#)



Illustration 2. Siklus Refill delivery by motorbike

Partners responsibilities The pilot project was a joint effort by both partners. Siklus hired staff for the Siklus LB pilot team and provided staff training, supplied refill equipment, rented a temporary warehouse to store stock of refill products, ran the operations of the refilling, scheduling, marketing and supply chain logistics. IWP supported the Siklus team by sharing knowledge about local stakeholder to engage in the pilot, facilitating introductions to IWP's stakeholder network (hotel & restaurant association, marine tourism live-aboard association, the dive sector, women groups Ibu PKK, local government and island fishing communities in the KNP), organizing joint events to introduce Siklus Refilling concept and advising during the duration of the pilot. Weekly meetings were conducted between IWP and the Siklus teams in LB and Jakarta. This partnership was mutually reinforcing.

The problems we address

Recyclability properties of sachets and pouches 70% of Indonesian consumers purchase their everyday products in micro-portion or single-serving packaging called sachets. Products sold in sachets include personal hygiene products, laundry and household cleaning detergents, seasonings. The same products are also sold in larger portions ranging from 240 ml to 1000 ml in (stand-up) pouches and in bottles. Consumer information printed on the pouches often indicates that the content can be poured in a previously bought bottle of the same brand. In some cases instructions include 'do not add water'. Sachets and pouches are made up of multiple layers of flexible plastic barrier films and adhesives and sometimes a layer of an aluminum barrier, welded together by sealing technology. A typical sachet, or pouch has multiple layers to impart protection against moisture, heat and odor. From the mechanical recycler point of view sachets and

pouches cause problems. Unlike mono-material rigid packaging, sachets and pouches are made from chemically incompatible layers of different plastics and adhesives. The incompatibility of these materials makes it hardly possible to process with mechanical recycling technology, chemical solvent extraction or pyrolysis to recover plastics or metal from post-consumer sachets and pouches. GAIA reported on the failure of Unilever's 2017 CreaSolv project in Indonesia; operations were shut down due to logistical difficulties of sachet collection through challenged economics around the end products¹⁶. There is no at-scale recycling technology in place to process these materials. Also, sachets can be 'overlooked' due to their small size and end up with other plastics in recycling batches, causing contamination of recyclable plastics. During the first stage of recycling in the factory's washing lines, sachets and pouches containing layers of nylon and aluminum sink to the bottom in the cleaning water; due to their density they sink together with Polyethylene terephthalate (PET) - and thus contaminate the PET. In October 2018 IWP published a report in collaboration with the Indonesian Plastics Recycling Association (ADUPI) and the Indonesian Packaging Federation. More information about recycling tests on various types of pouches can be found in the report¹⁷. Furthermore, material recovery persons (waste pickers) and other collectors are paid per weight and do not focus on collecting light-weight and small size sachets and pouches. The revenue simply is too low for the time spent on collecting compared to high value rigid plastics.

Ecobricks are promoted as a way of processing sachets and pouches. Ecobricks are a short-term solution to a wider problem, and distract from upstream measures needed to reduce single-use packaging. Ecobricks exposed to sunlight emit Greenhouse gasses (GHG). The photodegradation makes PET bottles filled with fragments of sachets and pouches brittle and susceptible to breaking, thereby releasing micro-plastics into the environment¹⁸. IWP network partner Tangaroa Blue Foundation recently reported that Ecobricks have been washing onto Australia's shores over the past few years. They are currently addressing this issue with a survey to determine the origin of this type of marine debris in the Australian Marine Debris Initiative¹⁹ Ecobrick Source Identification Survey²⁰

The lack of recyclability properties of this type of packaging leads to littering, dumping, landfilling and open waste burning. Recyclability properties and the fact whether a packaging is actually recycled is not only related to material choice and packaging composition; whether a packaging is or can actually be recycled also depends on geographical distances from collection points to recycling factories (cost of transport) and the value the packaging has for waste pickers in areas where collection depends on the informal waste sector. In LB, and on outlying islands in KNP,

¹⁶ [INVESTIGATION REVEALS: UNILEVER'S EXPENSIVE PLASTIC SACHET CHEMICAL "RECYCLING" FAILURE](#)

¹⁷ [Plastic Recycling & Recyclability - Indonesian recycling sector perspective](#) P. 23

¹⁸ [Are Ecobricks the answer to plastic pollution?](#)

¹⁹ [Australian Marine Debris Initiative database](#)

²⁰ [Ecobrick Source Identification Survey](#)

there is no informal waste sector to begin with. The energy use for transports related to collection and in recycling processes are not taken into account in LCA's in relation to the location where a packaging is discarded after use. For example: a packaging discarded after use in remote regions in Indonesia requires considerable additional energy use related to transports to recycling factories based on Java, compared to waste ending up nearer such facilities. LCAs also do not measure the impact of leakage into the environment (litter) due to lack of collection of flexibles.

Furthermore there needs to be a viable market for recycled products, which so far has not been developed at scale. Overall the benefits from sachets and pouches related to their weight and product protection properties, should be weighed against the impact of the entire chain of the packaging, from material extraction to the processing in recycling facilities and the environmental impacts. According to a World Economic Forum's insight report, 16% of waste in Indonesia consists of sachets and multi-material flexible packaging²¹. According to a policy studies by Systemiq 85% of Indonesia's plastic waste, especially in rural areas, is "low/no-value" plastics - plastics that have minimal if any value in the recycling market, such as single-use sachets made with multilayer materials, polystyrene and thin films. With more than 80% of plastics being flexible in most regions across Indonesia and costing significantly more to sort per tonne than rigids and having a substantially lower market value, it is not a good market position.²²

Non-functional slack filling, empty space inside packaging for non-technical reasons, aggravates the plastic pollution and climate crises, which are linked in multiple ways²³. In the IWP 2018 report we addressed the phenomena of this non-functional slack filling in pouches²⁴. Empty space for non-technical reasons is a common practice used in marketing. The larger than needed packaging misleads consumers, by creating a false sense of 'more value for money', and standing tall on shop shelves. Using more packaging material than needed is unethical and a waste of precious resources. Non-functional slack filling results in packaging which should not have been produced at all. According to a German study on deceptive packaging - i.e. oversized packaging by the ~Institute for Energy and Environmental Research and the Society for Packaging Market Research, on behalf of the Federal Association of Consumer Organizations (VZBV), there is a potential for avoiding between 3% and 27% packaging material²⁵

The open burning of plastic packaging Non-recyclable packaging exacerbates the climate crisis. As mentioned above, plastics exposed to heat and UV in the open environment slowly degrade, releasing methane and ethylene, both of which are GHG, during the degradation process. The emissions occur when plastics are exposed to ambient solar radiation, whether in water or in the

²¹ [Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership](#)

²² [Policy Studies on Waste Management by SYSTEMIQ](#) P.32

²³ [The fundamental links between climate change and marine plastic pollution](#)

²⁴ [Plastic Recycling & Recyclability - Indonesian recycling sector perspective](#) P.32

²⁵ [vzbv study: Stricter rules for deceptive packaging could reduce packaging by up to 27 percent](#)

air, but in air emissions are much higher²⁶. A lesser-known fact is that in Indonesia 61% and 64% of rural and remote communities respectively burn their household plastics, often near their homes. This open burning is a method of waste management²⁷.



Illustrations 3. Open plastic burning at household level, Gorontalo, LB 2020; women and children inhaling toxic fumes

Household plastic waste burning has a negative impact on climate, environment and human health, particularly due to black carbon (BC) emissions. BC emissions from burning waste contribute over 2-10% of global CO₂Eq emissions²⁸. The impact of open burning of plastic on human health and the food chain has been well documented by IPEN²⁹. Harmful pollutants from open- air burning include fine particles, BC (soot) particles, polychlorinated dibenzo dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and polyaromatic hydrocarbons, including known carcinogens such as benzo(a)pyrene. Young children and older adults, especially those with existing respiratory conditions, e.g. asthma and chronic obstructive pulmonary disease, are most susceptible to the immediate negative health effects from open-air burning. Exposure to these pollutants is linked to cancer, disorders of the liver, and impacts on the immune-, endocrine and reproductive systems, and the developing systems of young children. Plasticizers are linked to neurodegenerative disorders. Various researchers have revealed the possibility for aluminum

²⁶ [Production of methane and ethylene from plastic in the environment](#)

²⁷ [Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership](#) p.8-11

²⁸ [Experimental measurements of black carbon emission factors to estimate the global impact of uncontrolled burning of waste](#)

²⁹ [PLASTIC WASTE POISONING FOOD AND THREATENING COMMUNITIES IN AFRICA, ASIA, CENTRAL & EASTERN EUROPE AND LATIN AMERICA](#)

neurotoxicity, however the exact mechanism of its toxicity is unclear. Humans are exposed to aluminum from various sources, such as diet, which accounts for 95% of body aluminum, drinking water, air, cosmetics and medical drugs. Its uptake primarily takes place via food, breathing aluminum dust and skin contact. It is a well-known neurotoxin that has been linked to the development of neurological disorders such as dementia³⁰. Women are exposed to aluminum when burning metalized sachets or pouches.

The impacts of open burning of plastics is well documented in the report *Plastic & Health - The Hidden Costs of a Plastic Planet* by the Center of International Environmental Law (CIEL)³¹

Despite all the above mentioned facts and the multiple direct links between non-recyclable sachets and pouches to environmental degradation and harming human health, FMCG companies and their associations have not committed to phase out single portion sachets. In fact in 2020 Unilever CEO Alan Jope did publicly state their intention to eliminate sachets. However, according to an investigative report by Reuters the company has worked to undercut laws aimed at eliminating sachets in at least three Asian countries³².

Given the multiple negative impacts of sachets and pouches as described above, IWP is committed to address these issues by promoting and advancing a system change in retail through refilling and reusables.

Market research

Prior to the implementation of refilling, the Siklus team in Jakarta visited LB for an initial survey to gain insights in the LB market. Some of the findings were as follows:

- Some city residents already buy products in bulk (i.e. in jerrycans), especially if they work in tourism (boat, ships, small hotels);
- Most local residents that are not working in the tourism sector buy products in refill pouches, except for shampoo (sachet) and soap (bar);
- Most locals who reside in villages buy products in sachets;
- Some bulk size products are available in current supermarkets for household and food products, particularly those used in restaurants or boats;
- Compared to other areas of Indonesia, including Jakarta, LB residents use fewer types of household product categories;
- LB residents prefer less expensive and economical products (for example, using powder detergent compared to liquid detergent, because liquid detergent is more expensive);

³⁰ [Role of Environmental Toxicants on Neurodegenerative Disorders](#)

³¹ [Plastic & Health - The Hidden Costs of a Plastic Planet](#)

³² [Unilever's Plastic Playbook by Joe Brock reporting for Reuters](#)

- There are some products they are not willing to change even if another brand is less expensive, such as powder detergent.

Survey Once refilling was implemented, Siklus customers were approached with a survey. These interviews took place in May, June and September 2022. All respondents were interviewed one time in person by the team leader of the Labuan Bajo Siklus team.

IWP collected data on the range of household detergents and personal hygiene products sold in LB supermarkets in sachets or pouch packaging. With support of the Indonesian Packaging Federation we were able to identify the various types of materials used in sachets and pouches (2018)^{33 34}.

Community outreach

The Siklus LB team and IWP reached out to stakeholder groups to introduce the refilling concept.

Events Siklus team was present at Ramadan Bazaar and Regular pop-up market, with a stand to promote refilling to the local community. This resulted in customers reaching out via Whatsapp to place orders - mostly within 1-2 days after the event. IWP and Siklus teams jointly engaged in participating in a BAKTI Millennial #4 2022 in Mesah Island, International Conference To Reduce Marine Debris EASICO 2022 hosted by IWP, and GeSoloExhibition. During these events we were able to introduce refilling, the Siklus business process, discuss and get feedback from participants. We presented the refilling concept in a virtual meeting with JANKAR³⁵, engaging with live-aboard companies. Eight JANKAR members subsequently ordered from Siklus after this meeting.




Illustration 4. Socialization at Bakti

Illustration 5. Regular pop-up market announcement

³³ [Range of household detergents sold in LB supermarkets in sachets or pouch packaging](#)

³⁴ [Range of personal hygiene products sold in LB supermarkets in sachets or pouch packaging](#)

³⁵ [JANKAR](#)



Illustration 6. Presentation and refill demonstration at International Conference To Reduce Marine Debris EASICO 2022

Printing and dissemination of promotion materials Leaflets and price lists were printed and disseminated via direct contacts, meetings and social media. Product samples were handed out at meetings with women groups.

Kini Siklus Hadir di Labuan Bajo!

Cara Memesan Siklus Melalui WhatsApp	Kenapa Harus Isi Ulang di Siklus?	Daftar Harga Siklus di Labuan Bajo																
<div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>Tentukan produk pesanan dan kirim ke WhatsApp Siklus 0813 1777 5425</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>Tentukan jadwal dan alamat pengantaran.</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>Siapkan wadah bersih untuk diisi ulang.</p> </div> </div> <div style="display: flex; align-items: center;"> <div> <p>Motoris akan mengantarkan dan mengisi ulang produk pesananmu sesuai jadwal yang ditentukan.</p> </div> </div>	<div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>Sampah plastik butuh waktu yang sangat lama untuk terurai. Butuh 50 - 100 tahun!</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>13 ton sampah atau 2 sebanyak 6 truk sampah dihasilkan di Labuan Bajo setiap harinya, termasuk diantaranya sampah plastik.</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>58% wisatawan mengatakan kalau Labuan Bajo kotor karena sampah.</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div> <p>Plastik yang dibiarkan begitu saja membuat kotor dan mencemari lingkungan!</p> </div> </div> <div style="display: flex; align-items: center;"> <div> <p>Pada HPSN 2020, aksi bersih laut yang hanya dilakukan dalam waktu 3 hari mengumpulkan sebanyak 20 ton sampah dari Labuan Bajo.</p> </div> </div>	<table border="1" style="width: 100%; border-collapse: collapse; background-color: white;"> <thead> <tr style="background-color: #00AEEF; color: white;"> <th>PRODUK</th> <th>1000ML</th> <th>2000ML</th> <th>5000ML</th> </tr> </thead> <tbody> <tr> <td></td> <td>Siklus Selsun Pel Lantai 15.000</td> <td>30.000</td> <td>75.000</td> </tr> <tr> <td></td> <td>Siklus Deterjen Cair 25.000</td> <td>50.000</td> <td>125.000</td> </tr> <tr> <td></td> <td>Siklus Pembersih Pakan 18.500</td> <td>37.000</td> <td>92.500</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;">*Produk white label memiliki logo Kementerian RI No. FK. 01/03/V/028-a2019</p>	PRODUK	1000ML	2000ML	5000ML		Siklus Selsun Pel Lantai 15.000	30.000	75.000		Siklus Deterjen Cair 25.000	50.000	125.000		Siklus Pembersih Pakan 18.500	37.000	92.500
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	Siklus Pembersih Pakan 18.500	37.000	92.500															

Illustration 7. Promotion leaflet

Socialization with women groups Between May and September 2022 the Siklus team organized various meetings with various women groups. We connected to the Family Welfare Empowerment (PKK), Posyandu and other groups, with the purpose of getting in touch directly with women in various neighborhoods in LB. These meetings included socialization about the impact of plastic waste, the need to reduce single-use packaging and refilling.



Illustration 8. Meeting Ibu PKK

B2B We reached out to the business community to expand the B2B market. We connected to the Indonesian Hotel and Restaurant Association (PHRI) and to the Indonesian Liveaboard Association. We met with various B2B owners to find out their needs.



Illustration 9. Meeting JANGKAR



Illustration 10. Meeting restaurant owner

Marketing activities via website, social networks, press releases and video publications Both partners engaged in stakeholder engagement and community outreach. IWP published a [webpage](#) about refilling on their website. Both partners shared regular updates on various social media platforms. We created an Instagram account, published on Facebook and YouTube. Siklus' team created a [video](#) to illustrate refilling in the LB and KNP region. IWP published illustrated posts on [IWP Facebook Forum](#), on Instagram and LinkedIn with regular intervals. Siklus posted on [Instagram](#). We disseminated a press release and were mentioned in publications by various press agencies [Beritasatu](#) [Marketing.co.id](#) [Infosatu](#) . IWP is listed in the [Living Landscape of Reusable Solutions database](#) and on the [Planet Reuse](#) platform.

Refilling models implemented

We implemented two different refill models. The first model is based on the refilling model implemented in Jakarta, deliveries by a motorist to the door. The second model includes local shop owners selling refill products supplied by Siklus. A third model evolved during the pilot. This model involves refills sold in group meetings and will be implemented as follow-up on this pilot.

Pilot model 1 - Refill Delivery

One model for refilling is Refill Delivery, as implemented by Siklus in Jakarta. Customers place their order via WhatsApp and the Siklus driver delivers to the doorstep by motorbike. Sometimes the driver also goes to an area and acquires customers on the go. Customers provide their own container to store the product, mostly those were 500ml drink bottles.

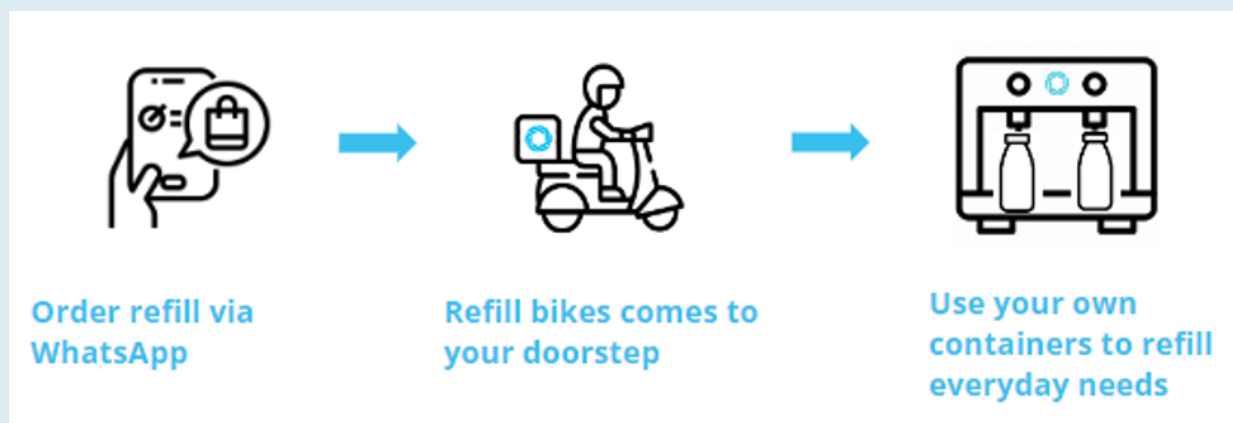


Illustration 11. Business process for Refill Delivery

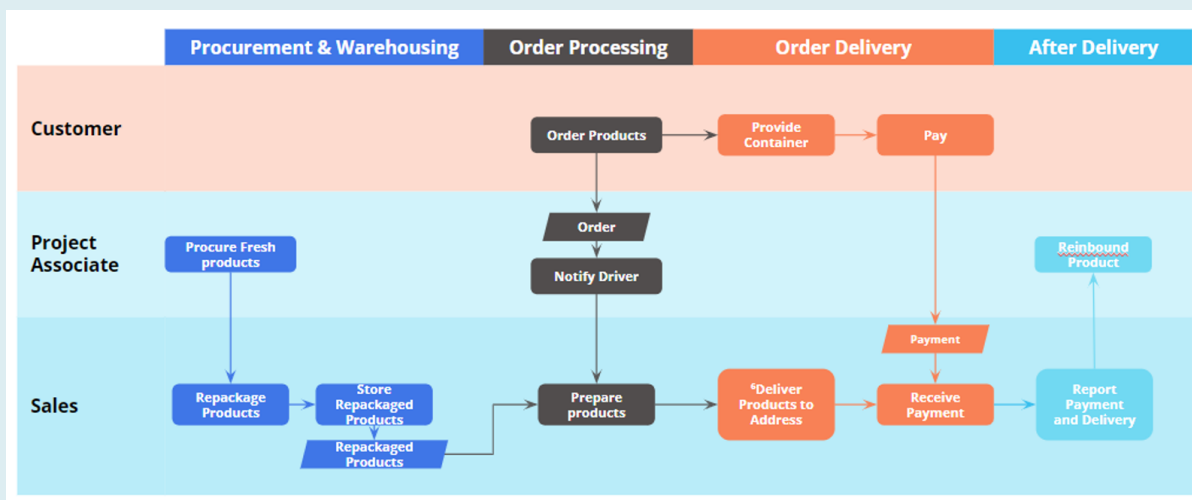


Illustration 12. Operation flow for Refill Delivery



Illustration 13. Refill delivery

Evaluation of sales in Model 1 - Refill delivery

B2C customers indicated that they choose Siklus because of user friendliness (18.18%), good price (63.64%), and fast delivery (36.36%). Customer retention was below target. The main reason for not ordering more than once is explained by responses from customers that the product range was too limited and did not include the brands they were used to purchase. A recurrent comment was that the product range was limited and that their preferred brands were not available.

The sales target for model 1 was based on calculating the breakeven point needed to reach positive unit economics (excluding cost of customer acquisition.) Throughout the pilot sales remained significantly below target. Siklus LB team needed to convince consumers to change

their purchasing behavior from buying products as usual to buy refills for their daily needs and that behavior change was at times difficult due to reasons outlined below. We do see that there is a demand for refill services in the LB area. However, the demand is limited compared to what is needed to make a refilling business viable (and of course achieve significant impact in terms of units of plastic waste avoided.) This is based on the orders we received but most importantly based on the low retention. There were several challenges:

- Not all consumers have a mobile phone needed for placing orders;
- Most consumers are not used to ordering everyday purchases;
- Limited product range, particularly due to difficulty in getting bulk sizes in more rural areas:
- Siklus' driver sometimes had difficulties making deliveries to several areas in LB due to bad road conditions;
- In general, the basket size of customers in LB was very small. This is mainly driven by smaller assortment but also smaller cash outlay and lower consumption of these products. This makes it very difficult to make the unit economics of a logistics intensive service work.

Conclusion: Some of the challenges are addressable: With more time and proof of demand, we would be able to get more support from FMCGs to supply their popular brands in bulk to rural regions at favorable prices. However, many of the challenges are not addressable, such as from the smaller basket size, low customer uptake, and difficulties in delivery of products. We do not think that this model is viable for rural areas.

Pilot model 2 - Stationary Refill

Refill model 1 is not feasible in small fishing communities on outlying islands, due to low density of island population, the fact that delivery of goods by boat and bikes are not used in the villages - the mode of transport is by foot. Hence, we implemented another model: the Stationary Refill Model. We established a collaboration with a Warung owner on Mesah Island. The same concept was implemented in Kampung Ujung, near the waterfront in LB, where we could establish a collaboration with a Warung owner. The products offered in this model were two brands of household detergent and dishwashing liquid. Customers were getting a slightly discounted price while Warung owners were also able to make more margin than on selling sachets. The Warung owner did all their outreach and selling on their own. Customers could bring their own containers and the Warung owner did all the weighing and filling.

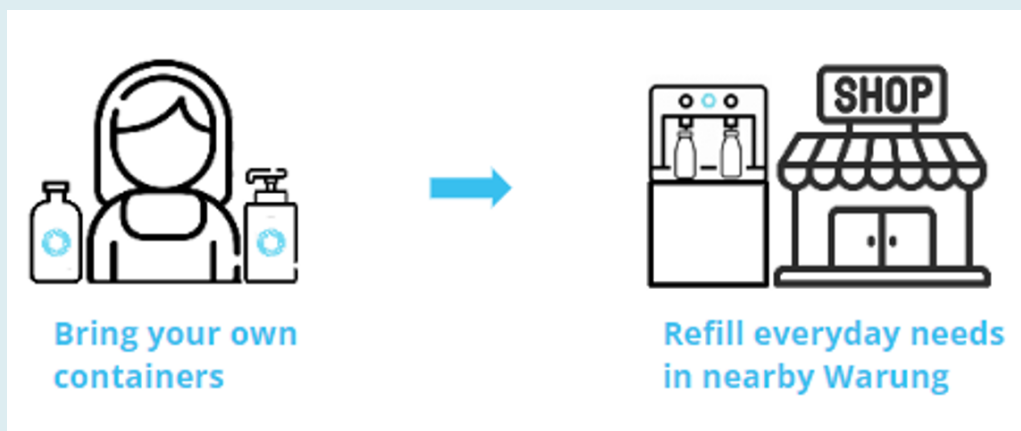


Illustration 14. Business Process for Stationary Refill

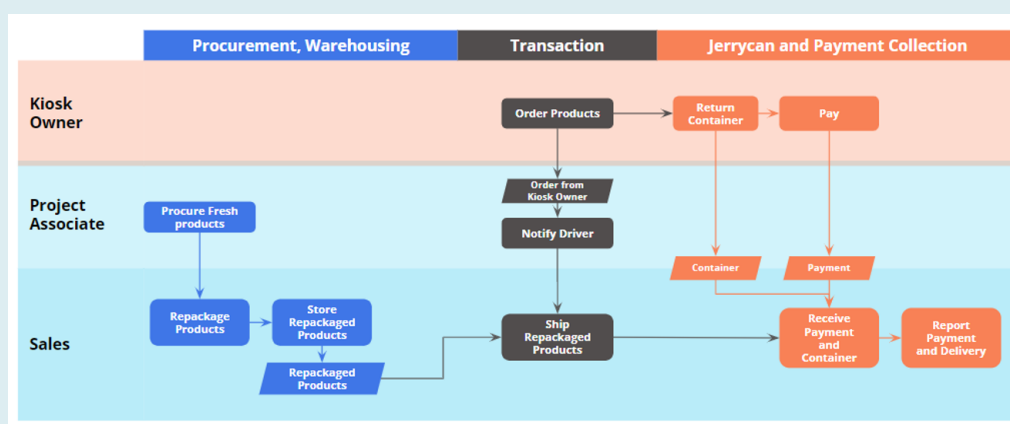


Illustration 15. Operation flow for Stationary Refill



Illustration 16. Stationary Refill in Warung on Mesah Island

- We worked with two Warungs and in one Warung the uptake was consistent until we had to replace the popular products with white label products. We believe that a key difference was that the Warung owner on Mesah island cares about plastic waste and was enthusiastic about the program while the other one in Kampung Ujung was not;
- The Warung owner in Mesah Island reported repeat orders from housewives as well as from boat owners or fishermen, who bought products to clean their boats. Their main reason for buying refills was lower price;
- Extra time needed for refilling was the largest challenge for the Warung owners; further customers like the ease, speed and portion control of purchasing sachets;
- From the experience with the Warungs, both the Warung owners and customers are not interested in the white label products, at least at this point in time. We believe that for this to work, popular brands need to be sold;
- Warungs in remote areas generally have a smaller assortment compared to Warungs in urban areas, where a Warung may sell ten different types of detergent; In more remote areas they only sell two types of detergent; therefore it is easier to satisfy customer demand with a similar small refill product range;
- While the sales are below target, it has to be noted that the assortment was very small. Further, the cost of running this model is limited as we do not do outreach, hence it can also be viable with a smaller sales per Warung as long as enough Warungs are subscribed.

Conclusion: While the sales were limited, we did see a consistent demand from customers until the popular brands were phased out. We believe this model has some promise and should be investigated further. Key questions that need to be answered are:

- Can we get broad FMCG support for this model?
- Can we expand the number of collaborative Warungs to a sufficient level?
- How consistent would sales be over a longer period of time?
- How can we increase sales via Warungs? For instance, supporting Warungs with campaigns and incentives.

Alternative Model - Refill parties

The model of 'Refill parties' evolved from meetings with women groups organized in neighborhoods. This model is based on the Tupperware marketing model. Currently we explore implementing this model as follow up of the pilot.

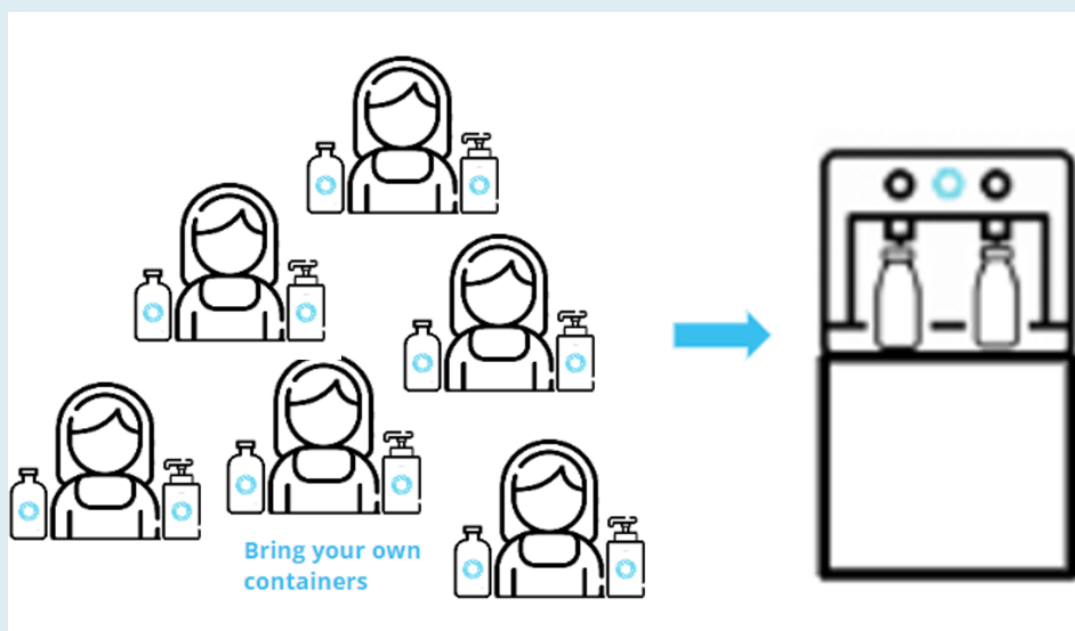


Illustration 17. Operation flow for Refill Party - group sales based on 'Tupperware' model

Consumer behavior change

Introducing a new concept: Refilling as an alternative delivery model is a new concept in LB; the community is not used to ordering products. Consumers buy their products in supermarkets and small shops (Warung), often within walking distance from home. Familiarizing consumers with refilling and raising awareness about the reasons for refilling to all stakeholders was our first priority.

Building trust: Further, we had to build trust; at refill deliveries the product is weighed on a professional scale (weight per gram). We had to explain the accuracy of measuring grams to guarantee that the customer received the accurate amount of product for the correct price. This is because customers are familiar with buying in ml, and for every product the volume to weight conversion differs, which made some customers skeptical.

Preferred product choice: Most households in Labuan Bajo prefer powder detergent to do their laundry. The local brand we introduced could only supply liquid detergent. Consumers indicated they prefer powder because of 'more foam' compared to liquid detergent. They indicated that they believe that powder laundry detergent is more effective and is cheaper.

Feasibility of Siklus Refill models in Labuan Bajo

Two refill models were piloted in Labuan Bajo. It has become evident that the Siklus refill delivery model is not viable due to low uptake, small basket size making the delivery too expensive, low penetration of cell phones, difficult road access, as well as limited assortment. Even with more support of FMCGs in making more popular brands affordable and available in bulk sizes, we do not think this model will ever reach viability or scale.

The Warung model has shown some promise. While the sales were below expectations, the demand was consistent. We believe that it is worth testing this further to see how consistent demand would be over a longer period of time with a larger range of products and whether it is possible to get the buy-in from more Warung owners to do this model. Overall this model is a lot simpler to run as the outreach and sales are done by the Warung owner. However, it is crucial to get the support of FMCGs for their popular products in bulk format and at a price that can compete with sachets.

Another model to explore in more depth would be sales to B2B. When selling to B2Bs, the primary challenge was price. Most B2B clients do not care about brand and usually go with the cheapest product and it is virtually impossible to compete on price with current options available. This would require formulating and creating a price competitive brand.

Opportunities for continuation

In anticipation of the end-date of the pilot, the fact that the SIKLUS model 1 poses challenges and the desire to continue refilling in LB, steps have been taken to continue and build on what was accomplished.

Continuation of refilling Supported by IWP, Ms. Mershint Ayu Rahmadani, Siklus pilot team Labuan Bajo, has developed a business model based on model 2 and model 3. The approach as laid out in Model 1 will be discontinued, since model 2 and 3 are more efficient regarding human resources, costs of time and transport. Branding has been developed: Refill Generation (RG) - with tagline refill | reuse | repeat. RG is collaborating with a local wholesaler/distributor for supplies of a wide range of household detergents & personal hygiene products.



Illustration 19. Branding Refill Generation

Alternative model - Refill parties The model of ‘Refill parties’ evolved from meetings with women groups organized in neighborhoods. This model is based on the Tupperware marketing model. The meetings took place in collaboration with the coördiators of Ibu PKK (Pembinaan Kesejahteraan Keluarga) as part of the marketing strategy. The role of PKK or Family Welfare Development is a community organization that empowers women to participate in the development of Indonesian welfare. The meetings included socialization about the reasons and need to reduce single-use packaging, especially the sachets, by explaining how these materials impact the climate, polluting soil and water bodies and the harm caused on their own health and the health of their family members by the open burning, which often is the only way of disposal of the sachets.

IWP will continue to integrate alternative delivery models in their community-led waste management program. IWP will support RG by publishing progress in social networks and connections with the global reuse networks. IWP is exploring the feasibility of implementing a bartering model for other household products (foods), related to exchanging recyclables handed in by community members for products. Currently we exchange recyclables for cash per kilo. We aim to offer a choice between payment in cash or products.

Recommendations

The continuing influx of packaging which has no recyclability properties exacerbates the plastic pollution and climate crises across the globe. The transition to a reusables system and refilling are essential components of the circular economy development and reduction of single-use packaging materials needs prioritization. There is an urgent need to advance these upstream interventions as one solution to drive change and reach the goals of Indonesia’s Plan of Action on Marine Plastic Debris. The implementation of the refilling model 1 as described above is both time and cost inefficient in Labuan Bajo, where connectivity related issues play a role in supplying refills via household deliveries, such as road conditions and the need for internet signal for placing orders. The impact of all three models is limited compared to the potential impact of refilling structurally provided in supermarkets.

Therefore IWP recommends

- Policy development on regulating targeting supermarkets to allocate a minimum amount of shelfspace for refilling systems, related to the size of their total floorspace;
- Policy development on regulating FMCG companies to supply products which are suitable for refilling to supermarket chains in reusable containers.
- A review of Badan Pengawas Obat & Makanan (Food & Drug Administration) (BPOM) criteria and regulations related to allowed products for refilling, to broaden the product range;

- Policies to regulate the maximum allowed empty space inside sachets and pouches which cannot be avoided by introducing refilling;
- Data collection on the quantity of single-use packaging reduced as a result of the implementation of refilling;
- Collecting baseline data on the practice of open burning of sachets and measuring the impact of reducing the use of sachets through refilling on open waste burning;
- Pilot household budget; explore FMCG purchasing pattern and reasons for consumption of micro-portions; and
- Explore and address the custom of handing out a single candy wrapped in a mini-sachet given as alternative 'change' in small shops and supermarkets.



Illustration 20. single candy wrapped in a mini-sachet