



ONLINE WORKSHOP SERIES
On Circular Plastic Use
Innovate & Change to Close the Loop

CASE STUDIES



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REDcycle Program:

Countrywide plastic recycling initiative in Australia

Problem/Challenge:

In 2016 only 2% of the 78 million tons of plastic packaging material was recycled worldwide in a closed-loop system. Australians use 3.9 billion plastic shopping bags every year. Recycling post-consumer household plastic in a structural system as a countrywide initiative is challenging. The weakness of many recycling programs is that the consumers cannot follow their plastic waste. Without being aware of the value of the recycled products, people are less motivated to take responsibility in the process. A further difficulty can be the lack of a sufficient amount of drop-off points which derives from the limited number of collaborators, or the poor logistics management. Thus, plastics value chains are not well-established; manufacturers that use plastic waste struggle to collect their raw materials.

Company/Organisation:

[RED Group](#) is a Melbourne-based consulting & recycling organisation that developed and implemented an innovative soft plastic recycling initiative, the REDcycle Program, in 2011. The RED Group collects the material via its collaboration with retailers and post offices, processes it, then delivers it to local manufacturers.

[Coles](#), [Woolworths](#), [Australia Post](#): Coles is a Melbourne-based supermarket, retail, and customer services chain which is part of the initiative from the very beginning and offers REDcycle drop-off points in all of its 807 supermarkets. Woolworths, Australia's biggest supermarket chain with 1000 locations, became part of the Program in 2017. By August 2021, battery and mobile phone recycling units will join the REDcycle soft plastics collection bins. Since May 2021, 12 Australia Post offices across the country have been trialling an in-store REDcycle solution that allows customers to drop their soft plastics - including Australia Post plastic satchels - into a dedicated bin at the post office.

[Replas](#), [Close the Loop](#), [Plastic Forests](#): Replas, Australia's leading mixed recycled plastic manufacturer, is in partnership with the RED Group for over 10 years and reprocess the collected waste into new products such as sturdy outdoor furniture and signage. Close the Loop, the innovative materials recovery company, uses soft plastic as a component of a new municipal road infrastructure known as Reconophalt to replace traditional bitumen and asphalt. Plastic Forests transforms household plastic waste into an element of its new Mini Wheel Stops.



Replas manufactures outdoor furnitures from Australian household plastic waste. Source: <https://www.replas.com.au/>

Country:

Australia (countrywide)

Solution:

Consumers can leave their soft plastics at the nearest REDcycle collection bin at participating supermarkets and post offices all around Australia. The collected plastic is returned to RED Group's facility for initial processing, then delivered to Replas, Close the Loop, or Plastic Forests. These companies create new products from recycled materials. The RED Group also cooperates with over 100 brands to develop new initiatives and support innovation, and gradually expand the availability of REDcycle bins to the community.

Impact/Results/Benefits:

Connecting consumers, retailers, and manufacturers triggers collective responsibility and creates a circular economy. Via the accessible collection points throughout Australia, there is a solution beyond landfill to everyone.

Since the beginning of the Program, Coles has diverted more than one billion pieces of flexible plastic from landfills across Australia. Since 2017, Woolworths has collected 900 million pieces of soft plastic from customers through the REDcycle Program, and it also purchased the outdoor furniture and fittings of Replas to use in its stores. By joining the initiative, the Australia Post as a signatory of the Australian Packaging Covenant could support Australia's 2025 National Packaging Targets which aims to accomplish a 70% recycling or composting rate of plastic packaging.

The initiative is transparent because the recycled products of manufacturers are openly available on their websites, and the supply chain of the companies is also guaranteed. In the last 30 years, Replas recycled over 50.000 tonnes of Australian plastic waste, manufactured over 750.000 bollards, and sold more than 35.000 furniture pieces.

The RED Group recovers and recycles over 3 million pieces of plastic bags and packaging every week. Since 2011, over 380 million pieces of soft plastic had been reprocessed in the frame of the Program, which means that over 1580 tons of soft plastic had been prevented from ending up in landfills, on beaches, or in waterways.

Stakeholders involved:

Retailers, post offices, and manufacturers.

Sources:

RED Group (n.d.). Timeline [Facebook page]. Facebook. Retrieved 25 May 2021, from <https://www.facebook.com/REDcyclebyREDGroup/>.

Coles (n.d.). Sustainability at Coles. Retrieved 25 May 2021, from <https://www.coles.com.au/about-coles/sustainability>.

Woolworths (2021, 23 April). Woolworths to make battery recycling easier with a national network of 1,000 collection bins. Retrieved 25 May 2021, from https://www.woolworthsgroup.com.au/page/media/Latest_News/woolworths-to-make-battery-recycling-easier-with-national-network-of-1000-collection-bins/.

Replas (n.d.). Home. Retrieved 25 May 2021, from <https://www.replas.com.au/>.

Mymizu:

The first Japanese water refill app

Problem/Challenge:

Every minute 1 million PET bottles are consumed globally, and every day, 69 millions of them are used across Japan. The recycling rate is only 5%. Especially the Z generation is increasingly interested in environmental activities, sustainable brands, and all the easily reachable smart solutions that make everyday life more eco-conscious.

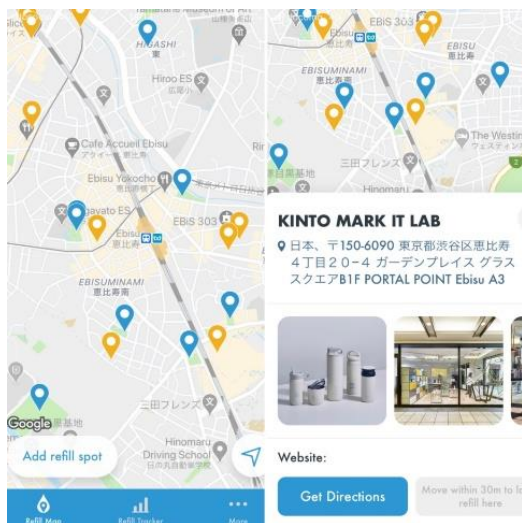
Company/Organisation:

Mymizu is a non-profit, co-creative platform that runs mymizu, Japan's first free water refill app. The free Mymizu app was established in Japan in 2019 and shows the nearest water fountain or eco-friendly businesses offer free refills. It also shares the opening hours, the description and photograph of the enterprise, the way of refilling, and the available type of water.

Country:

Japan (globally used)

Solution:



Mymizu app shows the nearest water refill stations: the blue ones are public fountains and the orange ones are sustainable businesses that offer free refills. The information of the businesses is available as well.

Mymizu was launched in 2019 with the help of a crowdfunding campaign that connected it with 410 supporters. The public data of drinking fountains are sourced from the OpenStreetMap, which gathers open-licensed data worldwide from national mapping agencies and thousands of individuals. Furthermore, Refill Ambassadors, the Dutch non-profit organisation, adds different water stations to Mymizu. App users can also add free drinking facilities, and they can track the number of single-use plastic bottles, CO2 emissions, and money they have saved by refilling their bottles. From 1 to 13 May 2021, 285 new refill spots were submitted via the app, whose confirmation is the task of the Mymizu volunteers.

Together with Shizen Energy, a Japanese company operating renewable energy power plants, the organisation also developed the Mymizu Denki initiative. It allows homes, offices, and shops to change their electricity system to a renewable one and part of the sales support Mymizu's activities. Furthermore, Mymizu also produces products such as stainless-steel bottles, organic cotton T-shirts, and vinyl stickers.

Impact/Results/Benefits:

Including public drinking fountains and partner stores, there are nearly 200.000 refill spots worldwide and 5.500 in Japan. In the first 2 months, the platform has gained more than 8,000

users. Since 2019, Mymizu has tracked the reduction of over 100.000 single-use plastic bottles and 1.700 kg of CO2 emissions.

It collaborates with nearly 1.000 refill partners from small, family-run businesses to major brands in Japan and more than 10 countries. By guiding people to sustainability-conscious businesses, it also aspires to increase consumption at green cafes and restaurants. According to the company's concept, people automatically join the Ocean Loop initiative by purchasing at the Mymizu store. Mymizu, collaborating with companies and volunteers, collects 1 kg of rubbish from rivers, beaches, parks, and oceans for every item sold at the online store.

Two-thirds of the app users are women. Most of them are students and young adults who studied abroad, were already engaged in environmental issues, and runners and bicyclists who need rehydrating while doing outdoor sports.

Stakeholders involved:

Users of the application and businesses were aiming for sustainable production.

Sources:

Mymizu (n.d.). Home. Retrieved 25 May 2021, from <https://www.mymizu.co/home-en>.

Mymizu (n.d.). Mymizu Denki. Retrieved 25 May 2021, from <https://www.mymizu.co/denki>.

Mymizu (n.d.). Timeline [Facebook page]. Facebook. Retrieved 25 May 2021, from <https://www.facebook.com/mymizu.co/>.

Refill Ambassador (2020, 31 January). Water Refill Apps: An Investigation. Retrieved 25 May 2021, from <http://refillambassadors.com/refill-apps/>.

Mymizu (n.d.). Home [LinkedIn page]. LinkedIn. Retrieved 25 May, 2021, from <https://www.linkedin.com/company/mymizu/>.

Shizen HATCH (2020, 28 September). Less Plastic, More Fun! What is "mymizu" that works to reduce 1 million PET bottles by the end of 2020?. Retrieved 25 May 2021, from http://shizen-hatch.net/2020/02/20/interview_mymizu/.

Lactips:

Biodegradable plastic from milk protein

Problem/Challenge:

Since the widespread culture of 100% compostable, biodegradable plastic use has not been established yet, plastic is recycled at best or simply ending up in landfills (Karbalaee et al., 2019¹, Walker and Xanthos, 2018²). However, it is also argued that bioplastics don't solve the plastic crisis and triggers further risks and challenges (European Commission, n.d.³). For example, most of the "compostable" labelled products are only industrially compostable, and home-compostable bioplastics are very rare, which is problematic because many councils don't have the facilities to process them (Oakes, 2019⁴).

Company/Organisation:

Lactips, a France-based innovative company founded in 2014, produces the first plastic-free, water-soluble, durable, edible, and fully biodegradable plastic, which is home-compostable, and suitable for mass production.

Country:

France

Solution:



The thermoplastic pellets, based on milk protein, possess the properties of plastic, but they are biodegradable in all environments. Source: <https://www.lactips.com/>

The Lactips material's patented technology uses milk proteins (caseins) as a raw material. It can replace pollutant plastics and be easily incorporated into production processes such as extrusion, blow molding, injection molding, vertical and horizontal flow packaging. It had been developed in 10 years in the frame of university research and it is continuing to develop the mechanical and technical properties of the material through partnerships with Jean Monnet University in Saint-Etienne and its Polymer Materials Engineering Laboratory, the University of Montpellier, and partner companies. It is categorised as a single-use, non-plastic solution by the European Union. Lactips provides expert technical and operational

support to industrial companies, which are dedicated to using the material instead of un-biodegradable plastic in their production. The application includes gold tees, individual food packaging, laundry bags.

¹ Karbalaee, S., Golieskardi, A., Binti Hamzah, H. et al. (2019). Abundance and characteristics of microplastics in commercial marine fish from Malaysia. *Marine Pollution Bulletin*. 148:5–15.

² Walker, TR., Xanthos, D. (2018). A call for Canada to move toward zero plastic waste by reducing and recycling single-use plastics. *Resources, Conservation & Recycling*. 133:99–100.

³ European Commission (n.d.) Environment. "Bio-based, biodegradable and compostable plastic". Retrieved from https://ec.europa.eu/environment/topics/plastics/bio-based-biodegradable-and-compostable-plastics_en. Accessed 24 May 2021.

⁴ Oakes, K. (2019, November 5). Why biodegradables won't solve the plastic crisis. *BBC Future*. Retrieved from <https://www.bbc.com/future/article/20191030-why-biodegradables-wont-solve-the-plastic-crisis>. Accessed 24 May 2021.

Lactips is a constantly growing company, it will deploy a new production site with 2,500 m² of space in 2021 and it will gradually increase its production capacity to about 10,000 metric tons of material produced annually by 2025.

Impact/Results/Benefits:

The Lactips material is customisable and print-ready, thus it offers recognition and visibility to consumer brands. A further benefit is that it is a natural polymer under the EU REACH regulation, so it is not subjected to microplastic restrictions or labeling and declaration requirements on chemicals.

Stakeholders involved:

Universities' research centers, and industrial companies.

Sources:

Lactips (n.d.). *Homepage*. Retrieved 24 May, 2021, from <https://www.lactips.com/?lang=en>.

Lactips (n.d.). *Home* [LinkedIn page]. LinkedIn. Retrieved 25 May, 2021, from <https://www.linkedin.com/company/lactips/>.

Minimum Waste (MIWA): Smart technology for zero-waste shopping

Problem/Challenge:

Every year, plastic packaging waste in the amount of approximately 16 million tons is generated in the European Union while only 30% gets recycled. Today, it is clear that recycling alone is no longer enough, and stopping the waste before it happens is crucial. Plastic packaging plays the leading role in protecting, preserving, and transporting products. Globally, 95% of the material value of plastic packaging is lost after just one use, which generates an approximately USD\$80–120 billion economic loss every year (World Economic Forum, 2016⁵). Even though, both the negative environmental and economic impact are recognised, the producers and retailers don't tend to implement deep-rooted changes in their packaging, transporting, and preserving culture. The main reason is that it may decrease the competitiveness of the brands via decreasing the variety and selection. To alter the already established harmful pattern of plastic packaging, innovative business solutions, eco-conscious consumer behavior, and government regulations are needed (Walker et al., 2021⁶).

Company/Organisation:

[Minimum Waste \(MIWA\)](#) founded in Prague in 2014, offers a complete business ecosystem to create innovative solutions for pure shopping. Its smart reusable packaging is based on a clean and effective way of selling goods while minimising packaging waste to help consumers, retailers, and producers overcome barriers in pre-recycling methods adoptions.

Country:

Czech Republic (Prague: headquarter), Switzerland (nationwide), France (Paris)

Solution:



The smart, reusable MIWA cup keeps the information about the purchased product. Source: <https://www.miwa.eu/>

MIWA created a circular system of reusable, smart capsules which are well-adaptable for the logistics of supermarket chains. The information system is the core of the MIWA technology and makes efficient logistics and store operations. The transport capsule is a 12-liter reusable container that circulates constantly among the manufacturer, the store, and the washing center. After getting filled it carries detailed information about the product. Inside the capsule, a thin, recyclable, single-use pouch ensures the hygienic protection of the food. After the store staff takes the filled capsules from the producers, they install them into the smart, modular shelf, which calibrates automatically. Due to the real-time data flow to the information system, the stock is continuously tracked by the retailer. Customers can buy and register the smart MIWA cup at the supermarket, which is dishwasher safe, reusable packaging that

⁵ World Economic Forum, Ellen MacArthur Foundation, and McKinsey and Company (2016). *The new plastics economy-rethinking the future of plastics*. Retrieved from https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf. Accessed 23 May 2021.

⁶ Walker, T.R., McGuinty, E., Charlebois, S. et al. (2021). Single-use plastic packaging in the Canadian food industry: consumer behavior and perceptions. *Humanities and Social Sciences Communications* 8, 80. <https://doi.org/10.1057/s41599-021-00747-4>.

transfers product information to the app. Via the MIWA app, the users can order and buy the products and check the useful information about the producer, the expiration date, or allergen content. Moreover, it shows the amount of plastic waste that has been avoided and shares cooking tips.

In 2019, MIWA and its development partner, Country Side, launched its first store equipped with a smart technology system. The store offers 8 MIWA modules with bio-quality products. For shopping, customers can use their containers or the offered reusable ones. In the same year, Nestlé Switzerland implemented MIWA to sell two of its brands. In 2021, the collaboration was extended to 16 shops across Switzerland and updated the module to the latest version. Since 2020, MIWA has its community spot and shop in Prague, which offers a limited range of nuts, dried fruits, and snacks. In 2021, it introduced its modules in the Parisian store of the French retailer, Intermarché. Through the collaboration with Barilla, Daco Bello, and JusteBio, it could create a diverse product range, including pasta, rice, nuts, dried fruits, seeds, grains, and legumes. The company also installed for the first time the smart MIWA cup and MIWA app.

Impact/Results/Benefits:

According to the results of a Life Cycle Analysis, in comparison to the normal distribution of food in disposable packaging, MIWA can reduce the overall negative environmental impact by up to 71%. It includes packaging waste reduction, eco-toxicity, fossil fuel consumption, influence on climate change, and water consumption. The example of Nestlé shows that the innovation of MIWA is attractive and well-adaptable for global brands searching for sustainable packaging solutions.

Stakeholders involved:

Retailers and producers.

Sources:

MIWA (n.d.). *Home*. Retrieved 25 May, 2021, from <https://www.miwa.eu/>.

XSProject:

Trash pickers as irreplaceable actors of circular economy

Problem/challenge:

Each day about 450.000 trash pickers work in Jakarta, whose daily income is around US\$4, which is barely enough for their expenses. It is a large, unregulated sector in Indonesia because 62% of the household waste is not collected at all, and 78% of the uncollected plastic trash is burned by households (World Economic Forum, 2020⁷). More than 100 families have built their homes on the garbage dump at Cirendeu near Jakarta. Due to the toxic mix of methane gas emitted from rotting rubbish and smoke from piles of burning trash, the air they breathe is heavily polluted. These marginalised communities are extremely vulnerable from both socio-economic and health perspectives.

Indonesia faces a serious, globally recognised plastic crisis. 80.000 tons of non-biodegradable flexible plastic packaging is manufactured each year in the country. Along with the Philippines, Vietnam, China, and Sri Lanka, it is responsible for 50% of the world's improperly managed plastic trash (Brooks et al., 2018⁸). According to the estimation of the Ministry of Maritime Affairs and Trade of Indonesia, the current trend indicates that the oceans will be polluted by 780.000 tons of plastic waste annually by 2025 (World Economic Forum, 2020). Since waste collection and sorting are the initial steps of recycling, trash pickers are the most ignored but particularly valuable contributors to the country's conscious plastic management efforts.

Company/Organisation:

[XSProject](#) was launched in 2002 as an artist's experimental studio, using waste collected by trash pickers as the artistic medium. Since 2007, it has begun to focus not only on the trash pickers but the welfare of their families and the education of their children.

Country:

Indonesia (Jakarta)

Solution:

XSProject works directly with the waste collector families living at the Cirendeu open garbage dump in South Jakarta. It buys non-biodegradable plastic consumer trash from them, then alongside a for-profit business called XSProject, creates employment in the same communities manufacturing products from recycled trash. The profit also benefits the communities through the social programs of XSEducation, XSHealth, and XSCommunity.

Since non-biodegradable plastic is not purchased by conventional recyclers, trash pickers don't usually pick up them. Therefore XSProject seeks corporate donations of waste materials such as used highway billboards, advertising banners, flags, and auto upholstery. The raw materials are stored, sorted, washed, sewn, and manufactured to "upcycled" products by the members of the waste collector families. XSProject offers a wide range of handy off-the-shelf designs like recycled

⁷ World Economic Forum (2020, April). *Insight Report. Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan. National Plastic Action Partnership*. Retrieved from https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April-2020.pdf. Accessed 24 May 2021.

⁸ Brooks, A. L., Wang, S., & Jambeck, J. R. (2018). The Chinese import ban and its impact on global plastic waste trade. *Science Advances*, 4(6), eaat0131.

plastic laptop bags, cosmetic pouches, pencil cases, shopper totes, wallets, and customises products for bulk orders as well.



XSProject produces hand-made, recycled products with individual designs. This laptop bag is made from fused plastic which transforms used grocery bags into an attractive and durable material. Source: <https://xsproject-id.org/>

The XSEducation provides scholarships to trash picker's children living in the Cirendeu community. Every child that enters the Program receives at least 12 years of education, with some even completing college. It arranges for all students living in the trash picker community to have new uniforms, shoes, and school supplies. Via the XSHealth, children get health check-ups, and it pays for birth control for women, immunisation, etc. The XSCommunity gives opportunities to women to generate extra income for their families by offering vocational training programs such as sewing, jewellery making, cooking. While most trash pickers are men, women can take part in the manufacturing process of hand-made recycled products. It sponsors infrastructure projects as well, like the installation of water reservoirs. As

advocacy activities, XSProject conducts workshops on the process of "upcycling" and educates people about creative waste reuse and the impact of waste on society and the environment.

Impact/Results/Benefits:

The XSEducation sponsored 50 children at primary school, 11 children at middle school, 18 students at vocational school, and 9 students at university. Although XSProject is not engaged in mass production, it assists in reducing plastic waste and spread an eco-conscious mindset among the trash picker communities by combining its environmental and social goals creatively.

Stakeholders involved:

Trash picker communities.

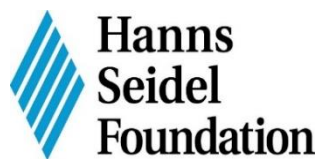
Sources:

XSProject (n.d.). About Us. Retrieved 25 May 2021, from <https://xsproject-id.org/>.



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