

## CASE STUDY: TerraCycle

### Recycling the 'unrecyclable'

This case study demonstrates market-based solutions towards "less plastic wasted", exemplary solutions for transformational changes in the way the plastic is managed in the value supply chain. Circular Economy approaches, including business incentives for plastic reduction and recycling, are used, leading to increase in plastic re-use and recycle and to the reduction in single use plastic packaging.

## Introduction

- > In many developing nations, large populations and rapid urbanization overwhelm the local waste management infrastructure. Low waste collection rates and high littering trends produce substantial pollution both in the surrounding land and marine environments.
- > More and more organizations and people are becoming aware about recycling of plastic waste.
- > Recycling is mostly PET – but there is still a huge amount of waste that ends up in landfills. This is reflected in the fact that approximately one million waste plastic bottles are growing every minute worldwide, but less than 50% of plastic bottles are recycled. According to an expert report from the press conference, if this problem is not resolved, there will be more plastics in the ocean than fish by 2050.

## TerraCycle background

> TerraCycle is a global social enterprise which targets “Eliminating the Idea of Waste”. Present in 20 countries, the company runs a [volunteer](#)-based recycling platform to collect non-recyclable items through national, first-of-their-kind recycling platforms, partners with businesses and municipalities to turn it into raw material to be used in new products.

> Founded in 2001, the company started with a continuous-flow composting system invented by Harry Windle of Gainesville, Florida, to take and have it processed by worms into fertilizer. The dining halls of Princeton University, where founder Tom Szaky was a student, were the first sources of the food waste that was used.

> For its work in Southeast Asia, Terracycle is focused on collection and recycling platforms for waste in emerging economies, with a special emphasis on preventing plastic pollution from entering riverine and aquatic systems.

## The Challenge

> Diverting millions of tons of valuable resources from landfills all over the world, and upcycling these for use is a clear opportunity to address fast-filling landfills, recycling resources, and reducing plastic packaging and waste. This inspired TerraCycle to build profitable recycling solutions around waste processes in the regions where the company has established itself.

Objective: Conquer more waste streams, convert more corporations into clients, recruit more collectors, and make way more products from recycled materials.

## Interventions (How was it done? What worked?)

01 Define ecosystem players and be aware of their interests:  
define who's involved

Collectors, Aggregators, Recyclers: Work with businesses, NGOs, communities, schools, and individuals to collect various waste streams (on a massive scale).

02 Simple and transparent processes

CHOOSE (the waste and the box to use) – COLLECT – SHIP (print QR code)

Sorting: Sorting at the organic/household level, using the waste boxes. Collector selects the box type for the specific and desired waste stream.

03 Breakthrough business modeling and collection process

> COLLECTION: TerraCycle characterizes waste streams based on the economics behind them with a focus on three primary categories: positive economic waste streams, neutral, negative economics

> SOLUTIONS: Through science and technology, and using only circular methods (reuse, upcycling or recycling, composting, and closed-loop solutions), TerraCycle repurposes the waste and transforms these non-recyclables into manufacturer-ready, raw materials

(1) reuse solutions (2) upcycling – changing the original use of the object (3) recycling – recovering the materials that an object is made of (4) composting – all organic materials collected, and (5) closed loop solutions (like LOOP\*), or secondary applications like displays or pallets from a waste material to be used by the same company to primary applications that involve turning the waste back into the same product that it began as)

\*TerraCycle's new LOOP platform aims to change the way the world shops with favorite brands in refillable packaging offered with convenience and style. Disposable packaging is transformed into durable, reusable alternatives. Loop is a groundbreaking e-commerce platform that offers zero-waste packaging options for popular products from TerraCycle's corporate partners.

## THE TERRACYCLE PROCESS

Our approach stands alone. Rather than focusing on a single waste stream for recycling and then building the infrastructure around it, we have built the processes to design a profitable recycling solution for almost everything that we consider waste.



### STEP 1: COLLECTION

We inspire and motivate businesses, NGOs, communities, schools and individuals to collect various waste streams on a massive scale (typically those that no one else can recycle)...



### STEP 2: SOLUTION

We develop science and technology to determine how to optimally transform large quantities of non-recyclables into manufacturer-ready, raw materials.



### STEP 3: BUSINESS MODEL

We design a profitable equation for each client—from driving market share, to in-store foot traffic, to offering a competitive advantage that differentiates the brand or product, all in a scalable platform.

Beach plastic can be transformed into shampoo bottles, toothbrushes into playgrounds, cigarette butts into benches; **the permutations are endless.**

## Business model – Sound economic incentives where Everybody profits!

TerraCycle works with the client to design a profitable and scalable model – from market share, increased traffic, and a unique brand of product. This could be any of the following:

(a) Materials sales: TerraCycle focuses on science and supply chain management. Manufacturing and logistics are outsourced to 3rd parties. This results in minimal or even no major capital expenditures

Product offering: raw material (as it is collected), clean, shred, or regrind (usually one kind of plastic, washed and ground), reprocessed pellets (3 to 8 mesh, plastic pellets), and custom compounds (according to client specification)

TerraCycle works on offering custom materials for client companies looking to increase market share, in-store foot traffic, employee retention.





(b) Product development: TerraCycle provides strategy, science, logistics, promotions and marketing. Integrate unique “storied” recycled material into your packaging:

(c) Industrial Recycling Services – TerraCycle picks up the waste from factories, etc. (different methods for the pick up: either through live loading, collecting until in a sufficient quantity, pick up by TerraCycle trailer, or direct delivery to TerraCycle)

04 Attractive incentives for participation: With at least 177,000 active collection centers in the US, waste is collected by tens of millions of people in cities, schools, businesses, and even homes. Easy to sign up to be a public drop off point, which allows for incentives like earning Terracycle points and free shipping.

For each shipment sent, participants have the opportunity to earn points that can be redeemed for a donation to their favorite charity or school. TerraCycle also gives incremental promotions to win everything from products like beach plastic into shampoo bottles, cigarette butts into benches, playgrounds made from recycled toothbrushes, or gardens from cosmetic waste.

05 Partnerships: TerraCycle has partnered with various non-profit organizations so that its recycling efforts not only help the environment, but also contribute to a wide variety of causes (i.e., protect national parks, provide water to those in need, or even offer free music classes to children).

In Southeast Asia, a partnership spearheaded by TerraCycle Global Thai Foundation and involving the local city authorities and support from a university grant and from private sector foundations has installed two ‘River Plastic Traps’ to capture waste from the stream. The collected waste is then dried and sorted for proper disposal and recycling, with data being recorded for future use in raising awareness among community members and promoting behavioral change as a sustainable solution.

## Lessons Learned

> Recycling is mostly PET – but there is still a huge amount of waste that ends up in landfills.

> Profitability for all participating stakeholders should be targeted: collectors, recyclers, brand partners, communities (Annex 1)

## Moving Forward

While still primarily focused on Australia, New Zealand, Japan, China, South Korea + Europe (Netherlands, France, Spain, Germany, Norway, Sweden), there are opportunities that can be explored by plastic manufacturers in the region, specifically in working with their clients. Development of a SEA model, as seen in the work of the TerraCycle Global Foundation, involves the informal sector, and will therefore ensure their participation in an inclusive profitability model.

*In Asia particularly, "the greatest change comes about when the very people creating the problem become part of the solution. Multi-stakeholder partnerships for river clean ups has specifically created employment opportunities for underprivileged workers to become the leaders of change in their own community. This project has brought together community and religious leaders, government officials and underprivileged community members to collectively remove over 23 tons of plastic waste from Lat Phrao canal in Bangkok, Thailand, in just over a month."*

James Scott, Director of TerraCycle Thai Foundation

## Links to further information sources:

[Terracycle](#)

[Terracycle, BMA and the Lat Phrao Canal](#)