Vital lessons from pioneering organisations on the frontline of waste and ocean plastic

Joi Danielson supported by contributing authors Julia Luchesi (Brazil), Camila Echeverria (Chile), Pinky Chandran and Nalini Shekar (India) and Zulfikar (Indonesia)

LEAVE NO TRACE
This book has been an act of love. It was completed on the sidelines of building and running frontline waste programs at Hasiru Dala, TriCiclos and Project STOP. It’s the report we wish had existed when we were starting our organisations. It includes what we’ve learned in our own endeavours, and what has worked for over 45 successful frontline organisations interviewed in four focal countries—Indonesia, India, Brazil, and Chile.

So often these kinds of reports—including my own past research —take a top-down, “what must be true” modelling approach to solving waste management and ocean plastic problems. But this report is bottom-up. We went into the world and asked those that had been successful on the frontlines how they did it. We hope that making the effort to cross the language barrier between English, Portuguese, Spanish, and Bahasa Indonesia will bring new insights into how sister organisations have solved the most important and common waste management challenges and inspire new collaborations between organisations.

Waste is collected on the frontlines. It can only be stopped from going into the ocean on the frontlines. While global leaders gather at international forums to talk about the crisis of ocean plastic, local leaders on the ground are rolling up their sleeves and getting things done. These are the heroes of waste management. Yet, their task is more difficult than it needs to be. In each country, they need to work around different but significant constraints in the waste system that can only be addressed at a policy level outside their control. They struggle to make the economics of waste management work due to the very low margins of recycling and minimal, if any, government or private sector support. They hear about the hundreds of millions of dollars earmarked for ocean plastic and waste solutions yet struggle to access these funds because they’re too small, too informal, or don’t communicate in a way that international donors need to feel comfortable. There needs to be a better way.

Waste has always been someone else’s problem. The very nature of throwing waste “away”, out of sight, out of mind, transfers the responsibility to someone else. Some blame the government for not investing enough into waste management or for poor legislation. Some blame resin producers and consumer goods companies for flooding the market with plastic products (much of which is hard if not impossible to recycle economically). Some blame everyday people for burning garbage or dumping waste directly into the environment when they should know better (yet do not have access to functional waste collection services). When we blame, we transfer the problems to others. But what’s needed is the sharing of responsibility across the entire manufacturing-to-waste value chain—by every stakeholder—to especially to empower frontline organisations to do their job and scale their impact. This is how true change will happen.

Thank you for joining us on this journey.
Acknowledgements

CORE PROJECT TEAM

**VITAL OCEAN**
- Nalini Shekar, Co-Founder and Executive Director
- Touchy Carioca
- Paulina Monsalve Suter
- Soledad Mella

**HASIRU DALA**
- Joa Danielson, Founder
- Bharati Chaturvedi
- Shekar Prabhakar

**TRICICLOS**
- Julia Luchesi, Operations Manager
- Camila Echeverría, Consultant

Vienna, Austria

We also thank Giorgio Roman for his beautiful illustrations throughout the report, Peter Letzelter-Smith for his thoughtful wordsmithing, our talented designers Andrea Molinho, Stefanie Cabrino, João Monteiro and Pak Yusua Sirait; Pinky Chandra, Sun Oh and Jessica Lee for developing such a thoughtful communications strategy, also Jason Hale for his many contributions throughout the paper. Photo credits go to the project team and the many generous organisations profiled. Gratitude also goes to Dini Triyantii of Vital Ocean Indonesia, and the SYSTEMIQ materials practice, especially Martin Smith for his thoughtful wordsmithing, our talented designers Andrea Moitinho, Stefanie Cabrino, João Monteiro and Pak Yusua Sirait; Pinky Chandra, Sun Oh and Jessica Lee for developing such a thoughtful communications strategy, also Jason Hale for his many contributions throughout the paper. Photo credits go to the project team and the many generous organisations profiled. Gratitude also goes out to Dr. Ravi Anupindi who provided thoughtful feedback on every chapter.

**PROJECT FUNDING**

ExxonMobil, a founding member of the Alliance to End Plastic Waste, provided the funding for this research. All report contents were independently created by Vital Ocean and its local partners.

**EXTERNAL PEER REVIEWERS**

Dr. Ravi Anupindi, Professor Faculty Director, Center for Value Chain Innovation; Stephen M. Ross, University School of Business, Ann Arbor, MI (USA)

Meera Atreya, Associate, SYSTEMIQ

David Clark, Vice President, Sustainability, Amcor

Bram Dortmans, MSc., Eawag

Claudia Giacovelli, Associate Programme Management Officer, UN Environment IETC

Linda Godfrey, Principal Scientist Waste for Development, CSIR, South Africa

Carmela Gonzales, Associate, SYSTEMIQ

Robert Kaplan, Founder and CEO, Circulate Capital

David Lerpiniere, Head of Waste, Resources and Development, Resource Futures

Nicole Portley, Acting Marine Program Director, Pacific Environment

Silvia de Vaan, Founder, SweepSmart

**INTERVIEWED ORGANISATIONS**

We thank all the organisations who gave us a glimpse into why their organisations have been so successful. This work is a celebration of all that they have achieved.

**BRAZIL**

CICLO ORGÁNICO
- Vinícius Caldas Barbosa
- Lucas Chiabi

COOPERCAPS
- Telines Basilio (Carioca)

COOPERREGIÃO COOPERATIVE
- Verônica Cardoso Costa de Souza
- Zaqueto Veira

DOIS IRMÃOS COOPERATIVE
- Roberto Araujo da Silveira
- Everton Serpa da Silva

GIRAL
- Mateus Mendoça

LIGHT RECICLA
- Jasmin Lemke

MOVIMENTO NACIONAL DE CATADORES DE MATERIAIS RECICLÁVEIS (MNCR)
- Sandra Sampaio
- Carlos Henrique Nicolau

PIMP MY CARROÇA
- Carol Pires
- Letícia Tavares

PROJETO RELIX
- Gabriela Carlos
- Lina Rosa

RECYCLO
- Thiago Rocha
- Andreza Livramento
- Fernando Campos

TRICICLOS
- Daniela Laranjo
- Julia Luchesi

VERDECOOP
- Nildo José Lima da Silva
- Ednira Rodrigues dos Santos
- Sanderval Barreto Gomes Filho

YOUGREEN COOPERATIVA
- Roger Koeppi
- Rafael Texeira Escório Athayde

**CHILE**

BUREO’S NET POSITIVA
- Ben Kneppers

FECUNDA PATAGONIA
- Paulina Monsalve Suter

MOVIMIENTO DE RECICLADORES DE BASE
- Soledad Mella

MUNICIPALIDAD DE LA PINTANA
- Patricio Rogers Navarrete Benavides

MUNICIPALIDAD DE PEÑALOLÉN
- Marcelo Miguez

FUNDACIÓN BASURA
- Macarena Guajardo
- Belén Contador

TRICICLOS
- Milca Bolaño
- Agusín Correa
- Camila Echeverría

ZERO WASTE NETWORK
- María José García
- Betsy Ojeda Fuentes
- Magdalena Donoso

**INDIA**

CHINTAN ENVIRONMENTAL RESEARCH AND ACTION GROUP
- Bharali Chaturvedi

HASIRU DALA
- Nalini Shekar
- Pinky Chandra

HASIRU DALA INNOVATIONS
- Shekar Prabhakar

KKPKP - KAGAD, KACH, PATRA, KASHHTAKARI PANCHAYAT
- Lakshmi Narayanan

PLASTICS FOR CHANGE
- Andrew Almack

**STREE MUKTI SANGHATANA (SMS)**
- Jyoti Mhapsekar

SWACH, PUNE
- Sangeetha John

SWACHHA ECO SOLUTIONS
- Victoria Josin Doosaa
- Rajesh Babu
- Raghavan Vinay

VRECYCLE WASTE MANAGEMENT SERVICES
- Clintan Vaz

**INDONESIA**

CIBUNUT BERWARNA
- Titi Martini Tapran
- Herman Sukmana

ECOBALI RECYCLING
- Paola Cannucciari

RUMAH KOMPoS
- Pak Supardi

PADANGTEGAL
- Pak Supardi

PANDEKAR ISLAND
- Maharia

PROJECT STOP
- Jason Hale
- Andre Kuncoroyekti
- Alexandre Kremer
- Putra Perdana Kusuma
- Nur Anik

TEMESI RECYCLING
- Wayan Cakra
- David Kuper

WASTE4CHANGE
- Chairul Ruskandi
- Muhammad Andriansyah

YAKSA PELESTARI BUMI
- Melly

ROBRIES
- Syukrutunit N’hamah
7 Appendix

ORGANISATIONAL PROFILES

SELECTING BEST PRACTICE ORGANISATIONS

Featured organisations were initially chosen based on their proven ability to solve one or more of the five "base" challenges studied – changing behaviour at scale, waste picker inclusion, affordable collection, recycling plastics economically and/or processing organics without a loss. Organisations were then visited and further prioritised based on field observations. The criteria we used are outlined below:

<table>
<thead>
<tr>
<th>Changing behaviour at scale</th>
<th>Waste picker inclusion</th>
<th>Affordable collection</th>
<th>Recycling plastics economically</th>
<th>Processing organics without a loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 75% of the community served separates its waste</td>
<td>Waste pickers are part of the waste system (i.e., not only scavenging high-value waste from trash and selling to junk shops)</td>
<td>Waste collection system that is economically sustainable (this could be through municipal or other subsidy-style support) and ideally in operation three or more years</td>
<td>80% diversion from landfill</td>
<td>Valorising organic waste sustainably</td>
</tr>
<tr>
<td>Measurable change in societal views</td>
<td>Waste picker livelihoods have been improved</td>
<td></td>
<td>Sell or process low-value plastics (e.g., thin film or multilayer plastics, fishing lines)</td>
<td></td>
</tr>
<tr>
<td>Measurable change in private sector choices</td>
<td></td>
<td></td>
<td>Able to build economically sustainable businesses with strong environmental and social safeguards (and sometimes influence others to)</td>
<td></td>
</tr>
<tr>
<td>Measurable change in government legislation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What follows are organisational profiles from most organisations featured in the paper, accompanied by a business canvas outlining their core business design, key activities, revenue model, primary partners, customer base, and unique value propositions.
LEAVE NO TRACE Vital lessons from the frontline

BUREO'S NET POSITIVA PROGRAM

The company Bureo started an end-of-life fishnet collection and recycling program, Net Positiva, with community fishermen in Chile. Paying for used fishing nets (or pieces of nets) from commercial and artisanal fishermen, the scheme keeps netting out of the ocean (where it is the most destructive form of ocean plastic to marine life). The nets, generally made of Nylon 6, are transformed into high-value items like skateboards, sunglasses, and Frisbees—or sold to other manufactures interested in using “materials of purpose” (waste that is both traceable and has a story of hope). One of their signature products, the Minnow, is the first traceable and has a story of hope). One of their signature products, the Minnow, is the first

before they reached the open water in order to turn them into something valuable.

Net Positiva works directly with the fishing communities and the industry. Fishermen learn about the harm done by discarded fishing nets and are offered the option to sell or donate their own. There are now agreements with 15 commercial fishing groups and 12 artisanal fishing communities (representing more than 300 tons of nets per year). Money saved due to donated nets is reinvested in the local community or given to environmental organisations. Used nets are sent to Santiago, where they are recycled into pellets (with each step of the process being traceable). Final manufactured items can be traced back to the fishing village from which the nets were collected.

Bureo currently has partnerships with more than six companies throughout the United States and South America. Their goal is to collect more than 1,000 tons per year of plastic nets by the year 2020 through expansion into Argentina and Peru.

Quick Facts

| Name: Bureo, Proyecto Net Positiva |
| Location: Chile |
| Founded: 2013 |
| Operation: Fishing net collection, sortation, processing, re-purposing |
| Quantity handled: 300 tons |
| Communities involved: 26 |
| Website: https://bureo.co/pages/net-positiva |

Business Canvas: Bureo – Proyecto Net Positiva

**Organisation**

Bureo – Proyecto Net Positiva

**Organisation Type**

Benefit [B] Company

<table>
<thead>
<tr>
<th>Key partners</th>
<th>Key activities</th>
<th>Value proposition</th>
<th>Waste output</th>
<th>Customers served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing community (commercial and artisanal)</td>
<td>Negotiate with commercial and artisanal fishermen</td>
<td>Aim: To collect end-of-life fishing nets (the most harmful form of ocean plastic) and create something valuable instead of ocean waste</td>
<td>Recycled materials: Plastic pellets</td>
<td>Fishing community: outlet for nets</td>
</tr>
<tr>
<td>Companies purchasing recycled social plastic</td>
<td>Collect nets at end of life from fishing community</td>
<td>Value proposition: provide fishermen an outlet for their used nets other than disposal in the sea (which ultimately hurts their own livelihood)</td>
<td>Retail products: Skateboards, Frisbees, sunglasses, clothing, games, surf items</td>
<td>Consumer product companies: recycled material</td>
</tr>
<tr>
<td>Social impact investors</td>
<td>Collect, clean, process nets (generally outsourced locally)</td>
<td>Provide consumers with products that have been made from recycled materials and can be traced back to source</td>
<td>Consumers: final products (skateboards, frisbees, sunglasses)</td>
<td></td>
</tr>
</tbody>
</table>

**Key Resources**

- Online platform
- Local partners/ managers of outsourced tasks
- Fisherman community

**Key legislation**

REP: Extended user responsibility increasing requirements for end of life certification

**Impact**

- Collected 300 tons fishing nets
- Secured partnerships with 15 commercial fisheries and 12 artisanal fishing communities across five regions of Chile
- Implemented 12 community projects (e.g., environmental education, solar PV panel, community composting)
- Employs 30 local workers
- Successfully retailed eight products from nets in global market (skateboards, etc.)

**Cost structure**

- Staff salaries
- Administration costs
- Purchase of nets and/or donation to local environmental programs
- Production outsourcing costs in each community, paying local partners to manage production process and supply chain

**Revenue structure**

- Retail sale of fishing net-derived products (skateboards, etc.)
- Sale of recycled fishing net material in pellet form
CHINTAN ENVIRONMENTAL RESEARCH AND ACTION GROUP

Chintan was launched in 1999 to address issues of sustainable consumption and social and environmental justice. Bharati Chaturvedi, Chintan’s founder, aimed to address issues of waste picker exclusion and marginalization through a new kind partnership with the informal sector that provides essential services in managing waste to move towards an environmentally and socially just world.

Chintan’s main approach involves research and advocacy, environmental governance, addressing issues faced by the children of waste pickers, and building out the capacity of informal waste workers.

In 2001, Chintan mobilised waste pickers, doorstep waste collectors, small junk dealers, itinerant and other small buyers, and other recyclers to form Safai Sena, which translates as “an army of cleaners” (formerly named Rashtriya Safai Seva Sangathan). It was officially registered in 2009 with a vision to enable adult waste workers to upgrade their work via the concept of green jobs. Safai Sena offers a range of services, including doorstep collection of waste and training to all members.

Chintan is also working on breaking negative attitudes about composting by investing in composters with improved aesthetics and behaviour change targeted at middle- and upper-class communities. Eighteen learning centres impart training to over 2,300 children of waste workers. Their program No Child In Trash is premised on the importance of waste workers’ children having decent childhoods.

QUICK FACTS

Name: Chintan Environmental Research and Action Group
Organisation type: nongovernment organisation (NGO)
Location: Delhi, India
Founded: 1999
Operation: Quantity Handled: Over 60,000 residences, shops, and estates (and New Delhi railway Station)
Waste pickers inclusion: Over 15,000 through Safai Sena
Website: https://www.chintan-india.org/index.htm, http://www.safaisena.net/

BUSINESS CANVAS: CHINTAN ENVIRONMENTAL RESEARCH AND ACTION GROUP

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>CHINTAN</th>
<th>ORGANISATION TYPE</th>
<th>NGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>Key activities</td>
<td>Value proposition</td>
<td>Waste output</td>
</tr>
<tr>
<td>- Waste pickers and scrap dealers</td>
<td>- Facilitating and Organizing: training workers in the informal waste economy, including waste pickers and junk dealers</td>
<td>- Collaborative advocacy</td>
<td>- Organic: Windrow composting and black soldier fly</td>
</tr>
<tr>
<td>- Safai Sena</td>
<td>- Promoting responsible waste management</td>
<td>- Recyclables: Handled by waste picker entrepreneurs</td>
<td></td>
</tr>
<tr>
<td>- Foundations</td>
<td>- Campaign for environmental causes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- National government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- State governments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Media</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Alliance of Indian Waste Pickers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Like-minded organizations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Police</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key Resources

- MRFs
- Published research books

Key legislation

- Solid waste management Rules, 2016
- Amendment to Plastic Waste Rules, 2018

Cost structure

- Staff salaries
- Facility operational costs (electricity, maintenance)
- Vehicle costs (maintenance, fuel)
- Safety equipment
- Administration costs

Revenue structure

- Foundations
- Grants, donations
- Consulting
CIBUNUT BERWARNA

In 2015, the municipal government of Bandung started a program called Kawasan Bebas Sampah (Zero Waste Area). This program aims to provide training and advice to sub-districts in Bandung to reduce their waste in order to decrease the burden on the city landfill. Six sub-districts were selected to implement this program, with Cibunut being one of them.

Cibunut is characterised by its narrow streets, which cars cannot enter. It's also highly populated with significant social and environmental issues. Under a new leader of the sub-district, Om Ibo, things have changed significantly, including the implementing of zero-waste programs.

Many stakeholders were brought into the process, including Tini Martini Tapran, a passionate environmental activist who, at the Mother Earth Foundation in the Philippines, received training in community organizing. Because people in Bandung appreciate creative activities, an awareness program where citizens painted their homes—with neighbourhoods having their own colour and theme—was used to increase citizen awareness of environmental issues and programmes and build community pride.

The program is the inspiration for the name Cibunut Berwarna (Coloured Cibunut). The program also implements methods for people to recycle both organic waste and recyclables. Currently the total amount of waste generated in Cibunut is about 161 kilograms per day (from about 2,000 residents). This is an average of 0.08 kilograms per day per citizen, far less than the average for Indonesia (0.5–0.7 kilograms per day per citizen).

**QUICK FACTS**

Name: Cibunut Berwarna (Coloured Cibunut)

Organisation type: Local government, supported by foundations

Location: Bandung, Jawa Barat, Indonesia

Founded: 2015

Operation: Education, collection, separation, composting

Quantity handled: Under 2 tons/day

Households served: Under 300 (less than 1% of city)

The program is the inspiration for the name Cibunut Berwarna (Coloured Cibunut). The program also implements methods for people to recycle both organic waste and recyclables. Currently the total amount of waste generated in Cibunut is about 161 kilograms per day (from about 2,000 residents). This is an average of 0.08 kilograms per day per citizen, far less than the average for Indonesia (0.5–0.7 kilograms per day per citizen).

**BUSINESS CANVAS: CIBUNUT BERWARNA**

**ORGANISATION**

<table>
<thead>
<tr>
<th>Cibunut Berwarna</th>
<th>Local government</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key partners</strong></td>
<td><strong>Key activities</strong></td>
</tr>
<tr>
<td>Sub-district leadership</td>
<td>Promoting behaviour change to reduce waste</td>
</tr>
<tr>
<td>Bandung municipality government</td>
<td>Door-to-door waste collection by Mamang Sampah (Waste Guy)</td>
</tr>
<tr>
<td>Bandung Cleanliness Corporation</td>
<td>Community and household organic composting</td>
</tr>
<tr>
<td>Donors and partners, such as local university alumni, companies, etc.</td>
<td>Recycling through waste bank</td>
</tr>
</tbody>
</table>

**Key Resources**

- Private waste collector
- Waste bank operators
- Organic processing assets

**Key legislation**

Bandung Local Regulation 9, 2011: Waste Management

**Cost structure**

- Collection worker salary (Waste Guy, 4 workers at Rp 500k/month)
- Waste Guy carts
- All other costs paid on voluntary basis by community

**Revenue structure**

- Donations from foundations and partners to fund door-to-door education, training, and procuring technology
- Primarily volunteer driven without salary

**QUICK FACTS**

Name: Cibunut Berwarna (Coloured Cibunut)

Organisation type: Local government, supported by foundations

Location: Bandung, Jawa Barat, Indonesia

Founded: 2015

Operation: Education, collection, separation, composting

Quantity handled: Under 2 tons/day

Households served: Under 300 (less than 1% of city)
CICLO ORGANICO

The slogan of Ciclo Orgânico is “the destiny of your trash can change the destiny of the planet.” It is a self-sustainable business model providing a unique solution to the processing of household organic waste in Rio de Janeiro, Brazil. Its founder, Luke Chiabi, had been studying different composting methods during his time in university. After several years of perfecting his technique—and with the help of the Shell Iniciativa Jovem program—he decided to launch a business in the Botafogo neighbourhood, using an aerobic composting technique based on microorganisms to divert organic waste from landfill.

Clients of Ciclo Organico pay a monthly fee for the service. For this fee, they get a compost bin, biodegradable collection bag, weekly pick-up service, and two kilograms of compost per month (along with garden seeds and other surprise gifts). Pick-up is done by waste pickers using bicycles; routes have been carefully planned for optimisation. The organics are accumulated in a common area of the city which serves not only as the composting site, but also as a green space open to the public. The composting process takes approximately 3 to 4 months and compost is bagged, then picked up by clients or sold for a profit.

To date, Ciclo Organico has 910 household subscribers and processes approximately 25 tons per month. Because of its rapid growth—from 300 to 850 households in less than a year—they are currently developing a new location where they will be able to process more than 100 tons per month, with space to eventually process up to 500 tons.

QUICK FACTS

Name: Ciclo Organico
Organization type: Company
Location: Rio de Janeiro, Brazil
Founded: 2017
Operation: Collection, composting
Quantity handled: 25 tons/month
Households served: 910
Website: https://cicloorganico.com.br/

BUSINESS CANVAS: CICLO ORGANICO

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Organisation type</th>
<th>Key partners</th>
<th>Key activities</th>
<th>Value proposition</th>
<th>Waste output</th>
<th>Customers served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciclo Órgânico</td>
<td>Social enterprise</td>
<td>• Shell Iniciativa Jovem (start-up phase)</td>
<td>• Deliver compost bins and biodegradable sacks to clients while providing education on proper separation of organic waste</td>
<td>• Create a community in which trash is a solution rather than a problem</td>
<td>• Compost: Aerobic microorganism process, with dry leaves mixed with waste in rotated pyramidal like mounds [also sifted to eliminate plastics]</td>
<td>• Households: door-to-door collection and 2 kg of compost monthly [along with seeds and a monthly gift]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Weekly collection via bicycle</td>
<td>• Process organics using aerobic microorganisms to produce compost</td>
<td>• Provide an alternative outlet for organic waste, then provide compost, gifts, and community beautification</td>
<td>• Businesses/Condominiums: Collection services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Process organics using aerobic microorganisms to produce compost</td>
<td>• Conduct community days at the composting space, which results in:</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o general environmental education</td>
<td>o demonstration of composting techniques</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o volunteer labour</td>
<td>o publicity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key Resources

- Land
- Bicycles
- Composting methodology

Key legislation

- National Law of Solid Waste, 12.305/10

Cost structure

- Staff salaries [compost processors and bicycle collectors]
- Operational costs
- Composting equipment
- Land
- Administration costs

Revenue structure

- Membership fees [monthly fees based on service requested, i.e. frequency of pick-ups and size of buckets]
- Sale of compost
**QUICK FACTS**

Name: CooperRegião Cooperative  
Organisation type: Waste picker cooperative  
Location: Londrina, Brazil  
Founded: 2009  
Members: 127  
Operation: Full waste stream collection, sortation, baling  
Quantity handled: 350 tons/month  
Households served: 78,000 households, 14 public and private contracts  
Website: http://www.cooperregiao.com/site/  

A first contract was signed in 2010. Under it the task of separating and selling materials was laid out. As time progressed, expanded goals and responsibilities were shared by the government, which provided a better income and more room for growth for the coop. Today, CooperRegião performs waste collection, sortation, and sales for more than 78,000 households and holds 14 additional contracts with private and public entities, resulting in nearly 350 tons collected and processed per month, allowing them to provide training and salaries to their current 127 members.

**COOPERREGIÃO COOPERATIVE**

CooperRegião Cooperative, located in Londrina, was the first waste picker cooperative to hold a contract with the Brazilian government. It gave them formal responsibility for collecting waste from every local household and sorting out recyclables.

Beginning in 2008, the 32 associations of waste pickers in Londrina began discussing the possibility of uniting to form a cooperative. A year later the municipality, acting under the recently approved national policy on solid waste (PNRS), appointed a social worker to work with the associations in forming a cooperative. After providing the necessary training, the cooperative came into being with 20 members from 7 associations. Their goal was to dignify the work of waste pickers, promoting social inclusion and society-wide improvement in proper waste management.

**BUSINESS CANVAS: COOPERREGIÃO COOPERATIVE**

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>CooperRegião Cooperative</th>
<th>ORGANISATION TYPE</th>
<th>Waste picker cooperative</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Key partners</th>
<th>Key activities</th>
<th>Value proposition</th>
<th>Waste output</th>
<th>Customers served</th>
</tr>
</thead>
</table>
| • Government  
  University: students perform quality control as part of their studies  
  • Educate community in cleaning and sorting their waste  
  • Collect entire waste streams  
  • Collect, sort, and bail materials  
  • Sell recyclables | • Aim: Dignify the work of waste pickers and promote social inclusion for them in their work to improve society through proper waste management  
  • Sorted and baled recyclables | • Government (outsourcing of waste services)  
  • Private citizens  
  • Private companies and organizations |

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>Impact</th>
</tr>
</thead>
</table>
| • Trucks  
  • Sorting facilities with conveyor belt, compactor | • Monthly collection of 350 tons of waste  
  • Stable living for 127 waste pickers |

<table>
<thead>
<tr>
<th>Key legislation</th>
<th>Cost structure</th>
<th>Revenue structure</th>
</tr>
</thead>
</table>
| • PNRS: national solid waste policy that specifically directs waste pickers to do collection work | • Staff salaries  
  • Facility operational costs (electricity, maintenance, rent)  
  • Vehicle costs (maintenance, fuel)  
  • Administration costs | • Government contract (fee per household served and payment of facility rent and social security taxes of members)  
  • Business waste collection fees  
  • Recyclable material sales |

**QUICK FACTS**

**COOPERREGIÃO COOPERATIVE**

CooperRegião Cooperative, located in Londrina, was the first waste picker cooperative to hold a contract with the Brazilian government. It gave them formal responsibility for collecting waste from every local household and sorting out recyclables.

Beginning in 2008, the 32 associations of waste pickers in Londrina began discussing the possibility of uniting to form a cooperative. A year later the municipality, acting under the recently approved national policy on solid waste (PNRS), appointed a social worker to work with the associations in forming a cooperative. After providing the necessary training, the cooperative came into being with 20 members from 7 associations. Their goal was to dignify the work of waste pickers, promoting social inclusion and society-wide improvement in proper waste management.

A first contract was signed in 2010. Under it the task of separating and selling materials was laid out. As time progressed, expanded goals and responsibilities were shared by the government, which provided a better income and more room for growth for the coop. Today, CooperRegião performs waste collection, sortation, and sales for more than 78,000 households and holds 14 additional contracts with private and public entities, resulting in nearly 350 tons collected and processed per month, allowing them to provide training and salaries to their current 127 members.
**DOIS IRMÃOS COOPERATIVE**

The Dois Irmãos waste picker cooperative is located 60 kilometres from Porto Alegre, Brazil. It currently employs 38 waste pickers and provides 100 percent of the city’s waste collection. Its roots date back to 1994, when a local couple with a background in waste management established a waste services entity. In order to obtain an expanded contract that included collection it was reclassified in 2009 into a cooperative.

The goal is to find the right destination for the city’s waste while providing gainful employment for members. With nearly 25 years of ever-evolving contracts with the government and industry partners, Dois Irmãos has come to work not only as a collector and sorter of recyclables, but also a purchaser, processor, and environmental educator.

The primary service is daily collection of source-separated waste produced by the city’s 31,000 inhabitants. This includes organics, recyclable, and non-recyclable material. It is then sorted at their facility and processed before being sold. The cooperative adds significant value by washing, shredding, and pelletizing waste plastics. The equipment was purchased in part through partnerships with private companies such as Braskem, Ambev, Funasa, and Abipek. By vertically integrating plastics recycling, the coop not only increases the value of their waste materials enough to operate an economically sustainable waste organisation, but also to pay members more than double the minimum wage (very uncommon for these types of jobs in a remote area).

The extra margin also gives them the ability to support their sister cooperatives. In addition to 100 percent collection of their city’s waste, they purchase approximately 15 tons per month of otherwise low-value materials from nearby cooperatives. This provides a market for certain materials that would not otherwise exist. They can also pay above market rates, thereby sharing their prosperity with sister organisations.

**QUICK FACTS**

- **Name**: Dois Irmãos Cooperative
- **Organisation type**: Waste picker cooperative
- **Location**: Dois Irmãos, Brazil
- **Founded**: 1994
- **Operation**: Full waste stream collection, sorting, washing, shredding, pelletizing
- **Quantity handled**: 110 Tons/month
- **Website**: [https://www.facebook.com/cooperativarecicladoresdoisirmaos/](https://www.facebook.com/cooperativarecicladoresdoisirmaos/)

**BUSINESS CANVAS: DOIS IRMÃOS COOPERATIVE**

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Dois Irmãos Cooperative</th>
<th>Organisation Type</th>
<th>Waste picker cooperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>Key activities</td>
<td>Value proposition</td>
<td>Waste output</td>
</tr>
<tr>
<td>Government</td>
<td>Educate community</td>
<td>Aim: To find</td>
<td>Government</td>
</tr>
<tr>
<td>Industry</td>
<td>on how to properly</td>
<td>the correct</td>
<td>Private citizens</td>
</tr>
<tr>
<td>(Braskem,</td>
<td>clean and separate</td>
<td>destination for</td>
<td>Industry partners as</td>
</tr>
<tr>
<td>Ambev, Funasa,</td>
<td>materials with</td>
<td>waste produced</td>
<td>purchasers</td>
</tr>
<tr>
<td>and Abipek)</td>
<td>door-to-door training</td>
<td>by the city’s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>residents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collect waste</td>
<td>while also</td>
<td></td>
</tr>
<tr>
<td></td>
<td>from clients at</td>
<td>providing gainful</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre-arranged times</td>
<td>employment for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>the cooperative’s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collect, sort,</td>
<td>members</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and process materials</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key Resources**

- **Trucks**
- **Sorting facilities with conveyor, washer, shredder, pelletiser, compactor**

**Key legislation**

- **National Law of Solid Waste, 12.305/10**: Gives waste pickers the right to carry out collection work

**Cost structure**

- **Staff salaries**
- **Facility operational costs (electricity, maintenance, rent for compactor, washer, shredder, pelletiser)**
- **Vehicle costs (maintenance, fuel)**
- **Administration costs**

**Revenue structure**

- **Government contract paying facility rent and utilities directly, in addition to salaries of truck drivers and vehicle fuel expenses (i.e., most operating costs)**
- **Collection service fees**
- **Non-plastic recyclable**
- **Recycled plastic pellets**

**Impact**

- **Collection of 110 tons per month**
- **Stable living for 38 waste pickers**
- **Collection services for 30,470 people**

**Value proposition**

- **Sorted and baled non-plastic recyclables**
- **Recycled plastic pellets**

**Value proposition**

- **Provide an integrated and reliable waste management solution for 100% of the community, including full stream pick-up and sortation services**
- **Provide a market for hard to recycle materials and pay above market prices**
**ECOBALI RECYCLING**

ECOBALI was founded in 2006 by a group of environmentalists who wanted to do something positive about Bali’s growing waste issues. Their initial goal was to change how people thought about, and dealt with, waste.

Eco Bali provides responsible waste management that leads to a more sustainable lifestyle. They try to empower people to live zero-waste lifestyles by teaching waste reduction strategies, providing tools like reusable bags, and ensuring that what’s left is recycled or properly disposed of in legal landfills. With eco-Bali services, customers are guaranteed their waste will be managed responsibly.

Eco Bali distributes colourful bags to households and businesses (as opposed to plastic bins). Green bags are used for paper and cardboard, red are for glass, metal, plastic, and other non-organic waste. Organic material is not collected, though home composting kits are available for purchase. When bags are collected—roughly once a week—they are brought to a manual sorting station where recyclables are further sorted, cleaned, and baled.

Their certified waste bank program—Ini Bukan Sampah (“This is not waste”)—involves the purchase of recyclable materials from schools and homes. This is in partnership with Tetra Pak, the Body Shop, AQUA, and other brands as part of a voluntary EPR program.

Eco Bali has enjoyed a great deal of success to date, having processed more than 5,000 tons of primarily non-organic waste (reducing landfill loads by 70 to 80 percent through recycling and composting programs). They’ve co-founded Waste4Change with Greeneration Indonesia in order to scale their model to Java, held more than 2,500 eco-training sessions with households and businesses, and conducted over 300 education training sessions.

**BUSINESS CANVAS: ECOBALI RECYCLING**

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>ecoBali</th>
<th>ORGANISATION TYPE</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>TetraPak, Danone Aqua, Body Shop, Bali Buda, Waste4Change / Greeneration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key activities</td>
<td>Behaviour change to teach source separatio, Weekly non-organic waste collection services, Sorting, cleaning [e.g., remove labels], and baling of recyclables, Waste bank buying of recyclables, Guaranteeing safe disposal of residual only in legal facilities, Tetrapak distribution centre, Event waste management, Teaching children the three Rs, Consulting services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value proposition</td>
<td>Aim: Enable zero-waste lifestyles, Value proposition: Responsible waste management and a sustainable lifestyle on the Island of Bali</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste output</td>
<td>Sorted and baled recyclables, Composters [from recycled TetraPak containers]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers served</td>
<td>Households: collection and composting, Private companies: collection and event management, Schools: waste bank, NGOs, government: consulting services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key Resources**

- Trucks
- Balers
- Bag system
- Sorting facility

**Key legislation**

- None specified

**Cost structure**

- Staff salaries
- Facility operational costs (electricity, maintenance)
- Vehicle costs (maintenance, petrol)
- Waste bank recyclable purchases
- Administration costs

**Revenue structure**

- Collection fees from households and businesses
- Recyclable material sales [from household/business collection, waste bank purchases, and Tetra Pak wholesaler]
- Retail store (Eco store) with reusable bags, composting units, wine-bottle glasses, bins, recycled roofing tiles
- Consulting service fees
- Event waste management
**LEAVE NO TRACE** Vital lessons from the frontline

**FECUNDA PATAGONIA**

Fecunda Patagonia is focused on both community education and the collection and sortation of recyclables in southern Chile’s remote Patagonia region. It began when a group of school children were learning about recycling and came to the gloomy realization that no recycling facilities existed in their region. Their mothers decided to take action and open the first recycling collection and sortation point in Coyhaique, Chile, in 2016. Fecunda Patagonia operates the clean point, accepting and sorting high-value recyclable materials from local citizens. They then handle the logistics of sending it to Santiago, over 1,600 kilometres away, for processing.

The goal is to “realise concrete and significant contributions to their community—from technical and human knowledge—in future actions that reflect our seal with environmental and social awareness (by) generating, developing, and executing projects, initiatives, and innovative answers oriented to solve current social problems and environmental issues in the Aysén region of Chile.”

In addition to recyclable drop-offs, they provide recyclable collection services at local businesses and operate a small store where bins, home composters, and environmentally sustainable products like reusable diapers are sold. They emphasise community education about the importance of material separation and cleaning and have reached more than 3,000 students and adults in their two years of operation. Recently a contract with Servicio Natural de Turismo of Chile (SERNATUR) was signed covering environmental education at 14 establishments within the region of Aysén. They have also been heavily involved in several local campaigns, such as the Recycling of Batteries in Aysén, in which 23 tons of used batteries were collected in five days. A campaign to build a supply chain to properly recycle glass is underway.

Because Patagonia, a geographically challenging region with two million people spanning Chile and Argentina, does not have any material processing plants (and is approximately a 30-hour drive from Santiago), logistics is a constant challenge. To overcome this, creative ways are being developed to secure low-cost logistical support from companies who would otherwise be making the trip back to Santiago with empty trucks.

---

**BUSINESS CANVAS: FECUNDA PATAGONIA**

**QUICK FACTS**

**Name:** Fecunda Patagonia  
**Organisation type:** Company  
**Location:** Coyhaique, Patagonia, Chile  
**Founded:** 2016  
**Operation:** Education, collection, sorting  
**Quantity handled:** 10–15 tons/month

Website: https://www.facebook.com/fecundapatagonia/

**FECUNDA PATAGONIA**

**ORGANISATION**  
**Fecunda Patagonia**

**Key partners**  
- Government  
- Cristalerías Chile

**Key activities**  
- Educate business, schools, and organizations on how to properly clean and separate materials  
- Collect pre-sorted and cleaned recyclable materials from local business and organizations  
- Hold special campaigns to collect specific materials, such as batteries (23 tons thus far)  
- Collect, sort, and bail materials  
- Organise transportation of recyclables back to Santiago  
- Facilitate visits from schools and other organizations to the sorting facilities

**Value proposition**  
Aim: Increase recycling rate in the Aysén region of Patagonia and decrease landfill volume  
Value proposition: Offer the community reliable recycling services and environmentally sustainable products

**Waste output**  
- Sorted and baled materials

**Impact**  
- Environmental education of over 3,000 students and adults in the Aysén  
- Over 90 tons of recyclable material diverted  
- Over 23 tons of batteries recycled

**Cost structure**  
- Logistics fees to deliver materials to Santiago  
- Staff salaries  
- Operational costs (electricity)  
- Facility rent  
- Administrative fees  
- Leasing costs (vehicle, compactor)  
- Vehicle cost (maintenance, petrol)

**Revenue structure**  
- Business collection fee (fixed model varying by the number of collection trips per month)  
- Recycling material sales to buyers in Santiago  
- Funds raised from government sponsored contests  
- Contract with agencies to conduct environmental trainings  
- Sales of environmental products at retail store
QUICK FACTS
Name: Fundación Basura
Organisation type: Non-profit
Location: Santiago, Chile
Formed: 2015
Operations: Waste consulting, education, public policy, event waste management
Community reached: Over 15,000
Website: https://www.fundacionbasura.org/

FUNDACIÓN BASURA
Fundación Basura is a non-profit founded in 2015 in Santiago, Chile. It focuses on raising community awareness that trash does not exist—that in nature there’s no such thing as trash. Founder Macarena Guajardo, while living in Germany, was inspired by the cultural movement happening there towards the revalorization—rather than simple disposal—of waste.

She created a website dedicated to ways trash can be reused in architectural design and art. Upon returning to Chile, she took her passion one step further and began urban interventions to raise awareness about waste issues. Eventually, the idea was transformed into a more comprehensive organisational model with the aim of addressing and promoting the zero-waste concept.

The organization uses a diverse set of tactics, all built around the zero-waste lifestyle. Revenue mostly comes from contracting their Zero Waste Challenge waste management services to local events. But they don’t simply collect waste for recycling and composting. Instead, they offer advice and consulting on how to run a waste-free event. To date, Fundación Basura has worked for 42 events, preventing the production of 24 tons of waste. Their most successful effort to date saw recovery of 99 percent of waste generated.

They also offer a Zero Waste Academy, where 20 people are selected to complete a series of eight experiential courses teaching how to implement a zero-waste lifestyle. The Academy has been attended by 230 people and an impressive 11,000 have taken courses online. Fundación Basura also offers a Zero-Waste Stamp to organizations who prove their operations are waste neutral. Finally, they host massive zero-waste events where influential members of society come together to discuss different viewpoints around waste management principles and legislation, thereby promoting active dialog and supporting the transition to a zero-waste culture.

Most importantly, Fundación Basura has found success teaching the benefits of living a waste-free life—and that this should be a common desire (rather than obligation). It is emphasised that humans are part of nature, needing to take care of both ourselves and our home—and that this can start at any level of society.

BUSINESS CANVAS: FUNDACIÓN BASURA

ORGANISATION | Fundación Basura
---|---
Key partners | Government, Zero-waste alliance, Private sector, Universities (infrastructure, support, and access to student volunteers)
Key activities | Event waste management (zero-waste challenge), guidance on reducing waste and providing services at events, Community education (Zero Waste Academy): a course of study with tools to implement a zero-waste lifestyle, Business waste consulting (Zero Waste Stamp): Companies with zero-waste practices receive certification and recognition, Community influence (zero waste meetings): host monthly debates with influential members of society to discuss waste topics, Provide advice on waste related legislation, Raising awareness via social media
Value proposition | Aim: Generate opportunities to connect and share zero-waste culture through an integral and flexible vision
Waste output | Some recyclables, Organics to compost [from events]
Customers served | Event organisers, event guidance and waste services, Government decision makers: legislation advice, Private sector: zero-waste certification scheme, Community: environmental training and social activities

Impact | Managed 42 events (up to 99% waste recovery), Prevented release of 20 tons of CO2, Held 11 zero waste academies, Trained 11,500 people online, Recognised 8 organisations with Zero Waste Stamp, Organised 7 zero-waste events with 1000 attendees, Published 2 books

Key Resources | Social network (social media and website), Online platform (UDEMY)

Cost structure | Staff salaries, Administrative costs, Event operational costs [logistics, staff, food for workers and volunteers], Materials (training and green point materials, merchandising)

Revenue structure | Donations – government (zero waste academies), private sector, individual, Zero-waste product sales, Zero-waste challenge event fees (based on event length and expected attendance)

Key legislation | REP: Extended user responsibility law of Chile

QUICK FACTS
Published 2 books
Organised 7 zero-waste events (up to 99% waste recovery)
Recognised 8 organisations with Zero Waste Stamp
Managed 42 events with 1000 attendees
HASIRUDALA INNOVATIONS

Hasiru Dala Innovations (HDI)—meaning Green (Hasir) Force/Army (Dala)—is a for-benefit, not-for-loss company based in Bangalore, India. It is a partner of NGO HasiruDala, which focuses on social justice and policy advocacy for waste pickers. They aim to create better livelihoods for waste pickers by enabling them to build viable businesses that have a positive social and environmental impact. They’ve inspired 28,000 households to sort their waste, resulting in 90 percent being recycled or processed (and thereby diverting more than 700 tons per month from landfill), while providing employment for nearly 200 waste pickers.

In Bangalore, legislation requires municipalities to provide collection services for single households—but leaves the market open for bulk waste generators (i.e., residential complexes with more than 50 households or commercial establishments generating more than 50 kilograms of organic waste per day). For these, HDI waste picker entrepreneurs provide total waste management services.

Entrepreneur waste pickers are trained on service delivery and given a unique collection route and truck (which they gain full ownership of after four years). They then recruit a driver, two collection workers, and sorters in order to build their own waste business. Collection workers gather organics daily and non-organics once per week, selling recyclables to wholesalers and delivering organic waste to composters. They earn money from their recyclable sales and a collection service fee from each household.

This model empowers waste pickers to become entrepreneurs who can in turn gainfully employ other waste pickers and gain assets for themselves (e.g., coming to own a collection truck). They also develop stable earnings and enjoy safer working conditions.
## Business Canvas: Hasiru Dala Innovation

### Organisation

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Hasiru Dala Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 8 for-benefit, not-for-loss company</td>
<td></td>
</tr>
</tbody>
</table>

### Key Partners

- Hasiru Dala NGO
- Waste pickers

### Key Activities

- Sign-up bulk waste service customers (B2B) and manage contractual relationship
- Recruit entrepreneurial waste pickers and train them for service delivery, KPIs, etc.
- Give each entrepreneurial waste picker a collection route, a truck, and a standardised process for service delivery
- Provide quality control (one HDI supervisor supports three truck routes every day with customer care helpline and issue log system)
- Waste management services, including 80 events a year (employing 250 waste pickers)
- Managing aggregation facility

### Value Proposition

- Aim: Create better livelihoods for waste pickers through viable businesses that provide positive social and environmental impact
- Value proposition: Offer households and businesses reliable, full waste collection services by empowering waste pickers to become entrepreneurs
- Impact: Waste is diverted from landfill. Waste managed responsibly (800 tons/month) achieved over 90% source separation. Materially changed the lives of waste pickers with sustainable livelihoods, confidence, and marketable skills

<table>
<thead>
<tr>
<th>Key Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hasiru Dala legacy</td>
</tr>
</tbody>
</table>

### Key Legislation

- BBMP: regulation ensuring bulk waste services would not be provided by municipalities, opening up 40% of Bangalore’s waste to private collection services

### Cost Structure

- Staff salaries
- Truck purchases for entrepreneurs
- Landfill tipping fee
- Customer service
- Safety gear
- Wet waste transfer

### Revenue Structure

- Collection service fees (fixed fee per household/month), variable fee per kilogram of wet waste and residual waste (dry waste is free)
- Waste event management fees
- Aggregation facility recyclable sales

### Key Legislation

- BBMP: regulation ensuring bulk waste services would not be provided by municipalities, opening up 40% of Bangalore’s waste to private collection services

### Organisation

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Hasiru Dala Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 8 for-benefit, not-for-loss company</td>
<td></td>
</tr>
</tbody>
</table>

### Key Partners

- Hasiru Dala Innovations (HDI)
- Recruit entrepreneurs and workers (driver, collection workers, sorters)
- Train clients on how to separate waste

### Value Proposition

- Aim: Create better livelihoods for waste pickers through viable businesses that provide a positive social and environmental impact
- Value proposition: Offer households and businesses reliable, full waste collection services by empowering waste pickers to become waste system entrepreneurs

### Key Resources

- Collection trucks
- Sorting stations
- Assigned routes
- Household relationships

### Key Legislation

- BBMP: regulation ensuring bulk waste services would not be provided by municipalities, opening up 40% of Bangalore’s waste to private collection services

### Cost Structure

- Staff salaries (driver, collection workers, sorters)
- Truck maintenance and fuel
- Vehicle rent

### Revenue Structure

- Recyclables sales
- Franchise fee per household served

### Impact

- Supported 184 waste pickers to be gainfully employed

### Customers Served

- Households and businesses
MUNICIPALITY OF LA PINTANA

The municipality of La Pintana, part of Santiago, Chile, prides itself on the proper management of its waste. This begins with source separation and collection. To process the 56% of its waste that is organic, they implemented a compost system. This was first inspired by budgetary pressures, then made possible by strong municipal leadership after a deficit developed in the waste disposal budget. Realising that a composting program would not only better utilise organic waste but also save up to 50 percent of the municipality’s waste disposal budget, they started the DIDA initiative. Organics are selectively collected from residents and transformed into useable compost and fertiliser. To garner support, an environmental education team goes door-to-door speaking to residents an average of four times each.

Residents can register for the service free of charge. They are then given a compost bin, collection bags, and taught how to properly separate organics. The municipality uses trucks painted with the slogan, “If you don’t want the world to stop … ¡Stop and Sort!” The trucks collect three times a week. At a processing site material undergoes either windrow (to produce compost) or a trench method with vermiculture to produce hummus fertiliser. The final products are considered property of the community itself and are available for free to any residents. The compost is also used as part of the municipality’s nursery program, which plants 150 trees a month. Currently, the municipality is processing up to 15 tons of organics per day, allowing it to produce compost and fertiliser at a rate of approximately 4 tons per month.

La Pintana also started a reading program, with a travelling library called Ecolubi focused on environmental education. Adults are engaged through a community-learning program focused on courses in composting, gardening, and medicinal herbs that enhance appreciation for working with organic materials. The program has also experimented with collecting used cooking oil and converting it into biofuel, which then powers the waste collection trucks and a wood chipper used in the composting process. Mushrooms are also being produced as part of the program.

QUICK FACTS

Municipality of La Pintana
Organization type: Municipality
Location: Santiago, Chile
Founded: 2005
Operation: Collection, composting
Materials: Organic
Quantity handled: 15 tons/day
Households served: 10,000
Website: http://www.pintana.cl/

La Comisión Nacional del Medio Ambiente (CONAMA): former state agency that granted original permission to operate plant

Key legislation

Key Resources

Land
Trucks

Key partners

Government
Community of La Pintana

Key activities

Educate households on how to properly clean and separate materials
Collect pre-sorted organics from households
Perform windrow processing of organics into compost
Perform vermiculture processing to capture excess organics (to keep out of landfill) and produce fertiliser

Value proposition:
Offer free service and bring benefits to the community by providing an alternative to organic waste management going to landfill

Aim:
Selectively collect organic waste from residents and transform it into a useable compost and fertiliser

Waste output

Compost (windrow, vermiculture)
Fertiliser
Plant nursery

Customers served

Households: 10,000 provided with sustainable outlet for organic waste and access to free compost
Other community programs provided with compost to use for planting, etc.

Impact

Processing up to 35 tons of organics per day
Production of compost and fertiliser of 4 tons/month
Compost that is part of 150 trees being planted per month

Cost structure

Staff salaries
Facility/land rent
Vehicle cost (maintenance, fuel)
Operational costs
Administrative fees

Revenue structure

Municipal funding
Credit with other municipal departments, i.e. compost or nursery plants

BUSINESS CANVAS: MUNICIPALITY OF LA PINTANA
QUICK FACTS
Name: Municipality of Peñalolén
Location: Santiago, Chile
Organisation type: Municipality
Founded: 2010
Operation: Collection, sortation
Quantity handled: 40-50 tons/month
Households served: 6,000
Website: https://www.penalolen.cl/medio-ambiente/centro-de-reciclaje-en-penalolen/

MUNICIPALITY OF PEÑALOLÉN

More than 400 waste pickers reside in the municipality of Peñalolén. To protect their livelihoods, the municipality started Recicla je Inclusivo Comunal, which formally integrates waste pickers into the city’s waste collection services. The program aims to dignify and professionalise their work with training, workshops, certification, awareness, and regular environmental education for both the general populace and waste pickers. The program is in the social entrepreneurship sphere of sustainable development, incorporating environmental, social, and economic issues.

Backed by strong support from government and industry, as well as the impact of Chile’s 2016 Law 20,920 (which stipulated a five-year goal for the economic role of waste pickers to be formalised), currently, 30 door-to-door waste pickers collect recyclable materials on predetermined routes. Workers are guaranteed fair payment (ranging from 1.3 to 2.5 times the minimum wage). Materials collected include white paper, newspaper, cardboard, magazines, PET 1, plastic bottles, and aluminium cans. When markets develop, the program plans to add other types of materials in the future.

Materials are taken to one of six stations where they are sorted, compacted, and sold. Each sorting station was financed by private companies, while operating expenses are covered by the municipality. Currently around 6,000 households are served and approximately 40 to 50 tons of material is sold a month. Some of the key adjustments over the course of the project include recyclers being given clearly assigned routes, formal agreements with households served, individual feedback, and increasing autonomy.

The program plans to build a larger recycling centre in Peñalolén. It is expected to deliver recycling services to more than 15,000 homes, increase the number of waste pickers employed from 30 to 100, and further diversify materials collected. A business management model will make the program a pioneer in formalising the role of recyclers and collection systems with regards to Law 20,920 (Extended Producer Responsibility).
BUSINESS CANVAS: MUNICIPALITY OF PEÑALOLÉN
(1 OF 2: MUNICIPALITY MODEL)

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Municipality of Peñalolén</th>
<th>ORGANISATION TYPE</th>
<th>Government municipality run program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>• Partner companies (Coca Cola Foundation, Fundación Casa de la Paz) • Waste pickers</td>
<td>Key activities</td>
<td>• Sign-up households for recyclable waste services • Recruit entrepreneurial waste pickers to join the program • Assign routes based on equipment at each waste picker’s disposal • Introduce waste pickers to households, establishing mutual relationship and commitment • Provide clean points (from sponsoring companies) for sortation and aggregation • Provide quality control with random surveys of households and providing individual feedback to each waste picker • Train waste pickers</td>
</tr>
<tr>
<td>Value proposition</td>
<td>Aim: Dignify and professionalise work of waste pickers Value proposition: Offer households reliable recyclable waste collection by empowering waste pickers to become waste system entrepreneurs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste output</td>
<td>• Households (6,000, mostly condominiums) provided with reliable door-to-door recyclable waste service • Reliable income for 30 waste pickers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers served</td>
<td>• Partner companies (Coca Cola Foundation, Fundación Casa de la Paz) • Waste pickers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Impact
• Entrepreneurial opportunity provided to 30 waste pickers

Key Resources
• Collection equipment • Sorting stations • Assigned routes • Household relationships

Key legislation
• Law 20,920 of Chile of 2016 (REP: Framework Law for Waste Management, Extended Producer Responsibility, and Recycling Promotion): Stipulates five-year period for waste pickers to be formalised

Cost structure
• Staff salaries • Sorting station (rent, electricity, materials, compactor, etc.) • Administration fees • Door-to-door training of communities

Revenue structure
• Collection service fees (fixed model based on collections per month) • Municipal support • Industry partners (who provide capital investment for sorting stations)

BUSINESS CANVAS: MUNICIPALITY OF PEÑALOLÉN (2 OF 2: WASTE PICKER ENTREPRENEURIAL MODEL EMBEDDED IN MUNICIPALITY MODEL)

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Municipality of Peñalolén</th>
<th>ORGANISATION TYPE</th>
<th>Government municipality run program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>• Municipality • Collect specific categories of household recyclable waste (white paper, newspaper, cardboard, magazines, PET 1, plastic bottles, and aluminium cans) • Aggregate materials at assigned sorting stations • Sort and bail material • Sell material to chosen buyers at market price</td>
<td>Key activities</td>
<td>• Municipality • Collect specific categories of household recyclable waste (white paper, newspaper, cardboard, magazines, PET 1, plastic bottles, and aluminium cans) • Aggregate materials at assigned sorting stations • Sort and bail material • Sell material to chosen buyers at market price</td>
</tr>
<tr>
<td>Value proposition</td>
<td>Aim: Dignify and professionalise work of waste pickers Value proposition: Offer stable, safe entrepreneurial opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste output</td>
<td>• Baled recyclable materials • Households provided with recyclable material service • Municipality landfill burden lessened • Condominums provided with reliable door-to-door recyclable waste service • Reliable income for 30 waste pickers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers served</td>
<td>• Baled recyclable materials • Households provided with recyclable material service • Municipality landfill burden lessened • Condominums provided with reliable door-to-door recyclable waste service • Reliable income for 30 waste pickers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Impact
• Entrepreneurial opportunity provided to 30 waste pickers

Key Resources
• Collection equipment • Sorting stations • Assigned routes • Household relationships

Key legislation
• Law 20,920 of Chile of 2016 (REP: Framework Law for Waste Management, Extended Producer Responsibility, and Recycling Promotion): Stipulates five-year period for waste pickers to be formalised

Cost structure
• Collection vehicles (capital and operating costs)

Revenue structure
• Recyclable sales
PIMP MY CARROÇA

Pimp My Carroça is a non-governmental organization (NGO) whose mission is to bring visibility to the street-level waste pickers by engaging society at large. The initiative was created by Brazilian graffiti artist Mundano, who while engaging in social and environmental causes realised that art could be a path of social inclusion.

His interactions with waste pickers culminated in the creation of Pimp My Carroça—a day of public intervention at a central point of the city (to ensure waste pickers with different schedules could attend). The focus was to promote the welfare and health of waste pickers by bringing doctors, ophthalmologists, psychologists, and masseurs to them—in addition to repairing and painting carts. Carried out by volunteers, the Pimpex methodology is available on their website, which outlines eight basic steps that those who want to help waste pickers can follow, including with equipment, repairs, and painting carts.

Cataki is an app developed by Pimp My Carroça that allows citizens to schedule collection from a street waste picker. Pimp My Carroça is funded by businesses and foundations (for example, OAK Foundation sponsored the development of the Cataki app).

QUICK FACTS

Name: Pimp My Carroça
Organization type: Non-governmental (NGO)
Location: São Paulo, Brazil
Founded: 2012
Operation: Art, education, public intervention
Website: http://pimpmycarroca.com/

The initiative won hearts and minds in cities in Brazil. In addition to performing interventions in public spaces, Pimp My Carroça now holds events at cooperatives and collection points. It offers companies and those interested the opportunity to experience the work and lives of waste pickers.
PLASTICS FOR CHANGE

Plastics for Change has a mission to change the social and environmental impact of plastic. Their high-touch, high-tech model materially increases brand demand for recycled plastic. It also improves recycler transparency and environmental and social practices by providing access to working capital to recyclers and guaranteeing fair, stable wages for waste workers.

Fewer than 5 percent of Indian manufacturers source recycled plastic. Plastics for Change aims to make it profitable and easy for companies to transition away from virgin plastic and begin sourcing recycled material. To this end, they provide training to companies on how to work with recycled plastic materials effectively and help them meet the quality specifications needed for their production process.

After negotiating long-term contracts at a price premium for fully traceable, Fairtrade plastic feedstock, brands gain access to a consistent supply of high-quality recycled material. This enables them to improve recycling rates and meet or exceed India’s new Extended Producer Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

Using an IT-enabled, ethical-sourcing platform and a skilled team, Plastic for Change builds a traceable, Fairtrade supply chain. Waste pickers use the platform to compare junk shop pricing and receive immediate payment through the app, ensuring fair pricing and quick payment. Materials sold are also given a unique ID. Buyers then aggregate like materials and sell through the app to wholesalers, also receiving near real-time payment. Wholesalers and recyclers then process materials in batches to keep tracking integrity, getting priority access to premium pricing only if they comply with a social, environmental, and transparency code of conduct (as well as certain quality production standards meeting buyer requirements).

Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

After negotiating long-term contracts at a price premium for fully traceable, Fairtrade plastic feedstock, brands gain access to a consistent supply of high-quality recycled material. This enables them to improve recycling rates and meet or exceed India’s new Extended Producer Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

Using an IT-enabled, ethical-sourcing platform and a skilled team, Plastic for Change builds a traceable, Fairtrade supply chain. Waste pickers use the platform to compare junk shop pricing and receive immediate payment through the app, ensuring fair pricing and quick payment. Materials sold are also given a unique ID. Buyers then aggregate like materials and sell through the app to wholesalers, also receiving near real-time payment. Wholesalers and recyclers then process materials in batches to keep tracking integrity, getting priority access to premium pricing only if they comply with a social, environmental, and transparency code of conduct (as well as certain quality production standards meeting buyer requirements).

Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

After negotiating long-term contracts at a price premium for fully traceable, Fairtrade plastic feedstock, brands gain access to a consistent supply of high-quality recycled material. This enables them to improve recycling rates and meet or exceed India’s new Extended Producer Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

Using an IT-enabled, ethical-sourcing platform and a skilled team, Plastic for Change builds a traceable, Fairtrade supply chain. Waste pickers use the platform to compare junk shop pricing and receive immediate payment through the app, ensuring fair pricing and quick payment. Materials sold are also given a unique ID. Buyers then aggregate like materials and sell through the app to wholesalers, also receiving near real-time payment. Wholesalers and recyclers then process materials in batches to keep tracking integrity, getting priority access to premium pricing only if they comply with a social, environmental, and transparency code of conduct (as well as certain quality production standards meeting buyer requirements).

Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.

After negotiating long-term contracts at a price premium for fully traceable, Fairtrade plastic feedstock, brands gain access to a consistent supply of high-quality recycled material. This enables them to improve recycling rates and meet or exceed India’s new Extended Producer Responsibility legislation, which requires companies to prove they collect the same amount of waste they sell into the market. By hedging prices in advance, the program stabilises material costs for brands while lowering the risk of price fluctuations, giving aggregators and recyclers the surety they need to accumulate plastic in bulk. This creates more stable livelihoods for waste pickers.
PROJECT STOP

Borealis and SYSTEMIQ joined forces to start Project STOP, which partners with cities and government to create effective waste management systems. The goal is to collect waste from every household and business in order to eliminate leakage of plastics into the ocean. STOP builds circular systems where the majority of waste, even that which is hard to recycle, is recycled or processed into new products. The resulting created value lowers the financial burden of the waste system on the city and its residents.

Primary objectives of Project STOP include: zero leakage of waste into the environment; increased recycling and valorisation of waste; socio-economic benefits to the local community; and scaling by communicating frontline insights to inform policy, product designs, and support others working on ocean plastic and waste management issues.

Project STOP uses a “system enabler” approach. A team of experts in waste management, recycling, business development, and behaviour change—financed by the private sector and the Norway Ministry of Foreign Affairs—help sub-districts and villages design and implement integrated, low-cost waste management systems. Then sorted waste is collected from every household and business, transported to a waste-sorting facility, and as much value is captured as possible (with residual waste disposed of safely). Existing local initiatives (and informal waste collectors) are supported and integrated into the new waste system. All profits from the sale of recyclables and processing of organics are kept by the local community, used to support worker salaries and other system operating costs.

The team is embedded with local governments for the long-term, providing sustained implementation support across every facet of the waste system until a new one is institutionalised across an entire city. They also provide catalytic funding for the purchase of collection and processing equipment, community behaviour change campaigns, clean-ups, and transitional operating costs.

Today they are working in Muncar—a fishing village in Eastern Java—with plans to scale into two additional cities and an entire region in 2019.
**BUSINESS CANVAS: PROJECT STOP (1 OF 2: SYSTEM ENABLER MODEL)**

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Project STOP</th>
<th>ORGANISATION TYPE</th>
<th>B-corp [SYSTEMIQ project]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key partners</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Borealis (co-founder)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Indonesia Ministry of Environment and Forestry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Technical partners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Veolia and Sustainable Waste Indonesia (SWI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PPK Women’s groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Fishermen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Strategic Partners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Norway Ministry of Foreign Affairs, NOVA Chemicals, Nestle, Alliance to End Plastic Waste, Borealis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Perform city assessments, including waste characterisation study, ocean leakage assessment, and socio-economic surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Provide expert waste management and recycling advice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Skills transfer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prepare and implement city waste management project plan, including design of transfer station, waste collection system, behaviour change campaign, and beach clean-ups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Build municipal government and financial transparency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Provide funding for waste processing assets, household behaviour change campaigns, and clean-ups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Find markets for waste output, including normally hard to recycle plastics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Inter-village regulations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value proposition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Aim: Off-the-ground, tangible solutions to ocean plastics in Southeast Asia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Waste output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• N/A: waste output produced by village business (BUMDES)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customers served</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• National government: Ministry of Environment and Forestry, Coordinating Ministry of Maritime Affairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Provincial/Regency government: Banyuwangi Mayor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Local government: Camat, Village heads, BUMDES leaders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Private sector: Resin producers and consumer packaged goods companies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Empower local government to build low-cost waste system that is economically sustainable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Valorise organics using black soldier fly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Found markets for normally non-recyclable plastics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Socio-economic benefits for communities supported</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BUSINESS CANVAS: PROJECT STOP (2 OF 2: VILLAGE BUMDES MODEL EMBEDDED IN PROJECT STOP MODEL)**

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Project STOP</th>
<th>ORGANISATION TYPE</th>
<th>Village business [BUMDES]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key partners</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Project STOP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Environmental Agency (IDILH)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value proposition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Door-to-door household and business collection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recyclable sorting and baling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Black soldier fly and compost processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Waste bank (in development)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Waste output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recyclables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Black soldier fly larvae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Compost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customers served</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Households and businesses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Collection vehicles (trucks, tricycles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Conveyor belt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Baler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• TPST facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key legislation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Internal Affairs Minister Regulation No. 33, 2012: required villages to be responsible for household waste collection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Law No. 32, 2004: about Local Government including BUMDES regulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost structure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Staff salaries (driver, collection workers, sorters)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facility operational costs (electricity, materials, compactor, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Vehicle costs (maintenance, fuel, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Administrative costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Black soldier fly materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Revenue structure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Waste valorisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recyclable sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Black soldier fly larvae sales to fish and chicken farmers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Organic compost for agriculture and government facilities (minimal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Collection fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Households collection services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Business collection services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Government funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Environmental Agency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Village funds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key legislation**

- **Internal Affairs**: Minister Regulation No. 33, 2012: required villages to be responsible for household waste collection
- **Law No. 32, 2004**: about Local Government including BUMDES regulation
**PROJETO RELIX**

Projeto Relix started as an environmental education project formed by the company Agência de Comunicação e Cultura. When Brazil enacted the National Policy of Solid Waste in 2010, local governments were called upon to take action. The state of Pernambuco—and more specifically the city of Recife—took this responsibility very seriously. The principal aim of Projeto Relix was to promote environmental education and communication, especially with regards to minimising the negative stigma of waste pickers and seeking solutions for handling the waste stream.

Theatre has been an integral part of Relix’ activities since its inception. Performances are customised to audiences and are offered free to the public (with typical attendance of 200). These focus on the importance of recycling while keeping waste pickers as central characters to promote community acceptance of their work.

The program also donates specially designed bikes and equipment to waste pickers, who are usually featured in expositions that promote the acceptance of waste pickers into society.

Finally, a wide range of educational and general reading materials such as comic books are available for use in schools and by other educational organizations. These promote environmental education as part of the ordinary curriculum, reinforcing recycling as an everyday habit.

Since its inception—currently in its fourth version—the project has developed success metrics and is committed to feedback. Current efforts include speaking directly with waste pickers about their “before and after picture” of recycling and their level of community acceptance. To date there have been over 600 performances in 3 different Brazilian states, over 3,000 students and adults receiving environmental education, 3 expositions, and 73,000 copies of materials (including 35,000 comic books) distributed.

**QUICK FACTS**

Name: Projeto Relix  
Organisation type: Company (sponsored by SESI)  
Location: Pernambuco, Brazil  
Formed: 2011  
Operation: Environmental education and behaviour change  
Community directly reached: Over 100,000  
Website: https://www.facebook.com/projetorelix/

**BUSINESS CANVAS: PROJETO RELIX**

**ORGANISATION**  
Projeto Relix  
**ORGANISATION TYPE**  
Company [but the Project Relix is financed by SESI]

<table>
<thead>
<tr>
<th>Key partners</th>
<th>Key activities</th>
<th>Value proposition</th>
</tr>
</thead>
</table>
| Municipality of Recife  
Social Service of Industry (SESI)  
Waste picker cooperatives | Perform free theatrical productions based on local culture that promote environmentally sustainable actions and waste picker inclusion, including in schools  
Promote communication with waste pickers  
Donate ergonomically designed bicycles to waste pickers  
Photograph waste pickers to promote and dignify their work, creating booklets and public expositions  
Produce and sell educational materials (comic books, scholastic curriculum materials) | Aim: Promote environmental education and seek solutions to improve the conditions of waste pickers  
Value proposition: Provide education in communities to promote environmentally sustainable behaviours and inclusion of the waste picker community |

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>Key legislation</th>
<th>Impact</th>
<th>Cost structure</th>
<th>Revenue structure</th>
</tr>
</thead>
</table>
| Communication outlets (web, publications, videos, books)  
Bicycles to waste pickers  
Theatre scripts | National Law Of Solid Waste, 12.305/10 | • Improved social standing of waste pickers  
• Over 600 performances  
• Over 73,000 copies of material distributed, including 35,000 comic books |  
| • Staff salaries  
• Cost of donated bicycles  
• Cost to produce theatrical events  
• Cost to create and promote expositions  
• Administrative costs  
• Cost of publication/printing | • Project fee from SESI to implement the project (financed by Sesi, with the Aliança Comunicação Cultura having different projects in other sectors) |
RUMAH KOMPOS PADANGTEGAL

Padangtegal is a village in Ubud, Gianyar, that is home one of Bali’s most important tourist destinations, the Sacred Monkey Forest, with more than 500 monkeys and a number of important Hindu temples.

Unfortunately, the soil supporting the many large trees in the forest has been eroding. Monkey Forest managers realised they needed compost to address the issue, while also being concerned about waste dumping by many residents into local rivers. In large part because of these issues, Rumah Kompos was born in 2012.

It is now a community run, village-owned facility—led by Pak Supardi—collecting waste from every household and business within the village. According to Supardi, the goal is to make sure all waste from Padangtegal is managed so that little of it is transported to landfill and the Gianyar region is made clean and free of trash. Currently 67 percent of waste is being diverted from landfill.

Their unique approach of community organizing has inspired 90 percent of residents to separate their waste into organic and non-organic. Families are given multiple bins with the their name on it and taught how to properly separate.

QUICK FACTS

Name: Rumah Kompos Padangtegal
Organisation type: Village-led organisation
Location: Padangtegal, Gianyar, Bali, Indonesia
Founded: 2015
Operation: Full waste stream collection (pre-sorted), composting
Quantity handled: 15 tons/day
Households served: 723 (100% of Padangtegal)
Website: https://www.facebook.com/rumahkompospad

Bins are also placed every 60 meters along the tourist streets. These tools and training are supported by an awig-awig (cultural regulation) enacted in 2017 requiring Padangtegal households to separate their waste as part of Bali’s Tri Hita Karana philosophy that promotes harmony between man, the environment, and God. This regulation also enables Padangtegal to not collect trash if it is not sorted.

Rumah Kompos collects waste nightly, keeping vehicles off the heavily trafficked, tourist-orientated Ubud streets during the day. Door-to-door collection with handcarts is synced with truck collection so that holding stations (depots) are not required. Trash is quickly sorted, with most organics delivered to Temesi (see Temesi organisational profile). A small portion is composted in Rumah Kompos’s own Compost Learning Centre, which helps teach the importance of recycling.

Collection service fees are paid by the Monkey Forest tourist fund (about 4,500 visitors per day pay about US $3.40 for entry). There is already an agreement with the Ministry of Public Works and Housing to construct a larger facility for processing waste.

Municipality-led organisation
Organisation type: Village organisation
Location: Padangtegal, Gianyar, Bali, Indonesia
Founded: 2015
Operation: Full waste stream collection (pre-sorted), composting
Quantity handled: 15 tons/day
Households served: 723 (100% of Padangtegal)
Website: https://www.facebook.com/rumahkompospad

Business Canvas: Rumah Kompos Padangtegal

Key partners
- Gianyar Environmental Agency
- Government of Panitia Pembangunan Desa
- Bendesa (chief) of Padangtegal
- Ubud Monkey Forest
- JICA

Key activities
- Behaviour change to teach source separation
- Daily organic and non-organic waste collection services
- Sorting of recyclable materials and subsequent sale
- Onsite composting at Compost Learning Centre
- Environmental education

Value proposition
- Padangtegal village is clean and minimal waste is transported to landfill

Value proposition
- Provides a complete and responsible waste management system for residents and businesses of Padangtegal village in Ubud

Key legislation
- Traditional awig-awig regulation honouring Tri Hita Kerana and requiring all residents to sort waste

Cost structure
- Staff salaries (Rp85,000/day)
- Facility operational costs (electricity, maintenance)
- Vehicle costs (maintenance, fuel)
- Administration costs

Revenue structure
- Recyclables
- Some compost using windrow method
- Recyclable material sales

STAFF
- More than 700 households
- Private companies
- Sacred Monkey Forest temple tourist destination

Impact
- About 70% of waste diverted from landfill
- Household sortation levels of 99% achieved
STREE MUKTI SANGHATANA

Stree Mukti Sanghatana (SMS) was founded in 1975 as a women's liberation organisation, focused on the social ills that plagued society. These include dowry, rape, women's illiteracy, and female feticide. In 1983, SMS launched the famous play Mulagi Zali Ho (A Girl is Born) that ran for more than 300 performances across Maharashtra. They then established a family counselling centre, the childcare centre Aamche Ghar (Our House), and an adult literacy campaign. In 1998 SMS launched their famed Parisar Vikas (Neighbourhood Development Programme).

Jyothi Mhapsekar, founder of SMS, voluntarily retired from being a librarian to devote herself to organizing over 5,000 waste pickers into self-help groups under the Parisar Vikas programme. In 2001, SMS organised a residential training program for 500 self-help groups (SHGs) of waste pickers, focused on leadership and vocational skills, and in 2003 partnered in construction of the first biogas plant with Greater Mumbai. A year later SMS founded the Federation of Self-Help Groups of Waste Pickers. It also launched education promotion programs for 500 children of waste pickers.

Current interventions include recognition of waste pickers (in the form of issuance of occupational identity cards by the municipality), support of children's education, formation of SHGs, health check-ups and access to medical facilities, providing training in alternative waste technologies (composting, biomethanation, gardening), and facilitating the formation of cooperatives for work opportunities.

SMS represents over 1,700 women who work on zero-waste efforts, biogas operations, gardening, composting, e-waste collection, waste audits, and running school-based and public-awareness programmes. It is affiliated with over 10 cooperatives.

QUICK FACTS

Name: Stree Mukti Sanghatana
Organisation type: Cooperative
Location: Mumbai, India
Founded: 1975
Waste picker inclusion: 5,000
Website: streemuktisanghatana.org

SWACH PUNE

The genesis of SWaCH can be traced to 1993. In Pune and Pimpri Chinchwad, the trade union of waste pickers and itinerant buyers Kagad Kach Patra Kastakari (KKPKP), was formed. Its aim was to assert their members' role in the city’s solid waste management system. Lakshmi Narayanan, the founding member of KKPKP (which has over 9,000 members), says that the main goal was to become a successful, self-sustaining social enterprise protecting livelihoods and dignity through fair wages and paving the way for a sustainable solid waste management system throughout the region.

In 2000, when the government announced its Municipal Solid Waste Management and Handling Rules, KKPKP launched a pilot program in collaboration with the Department of Adult Education, SNDT Women's University, and the local municipality. The aim was integrating waste pickers into the door-to-door collection of the city’s waste, enabling 1,500 waste pickers to become service providers for hundreds of thousands of households. This paved the way for SWaCH—a wholly owned workers cooperative registered in 2008.

Presently SWaCH organises 3,060 waste pickers in providing door-to-door waste collection services to over 643,000 households. It has saved the municipality more than 310 million rupees (USD $7 million) in labour, transportation, and processing expenses. The program has also helped waste pickers have access to sorting areas provided by the municipality.

In Pimpri and Chinchwad, SWaCH has a scrap shop where waste pickers can sell materials at market rates. It is a modelled credit cooperative, started in 1997 after a group of waste pickers realised the dishonesty of existing scrap shops. Members are guaranteed fair pricing and receive a yearly bonus based on their receipts. The shop also provides members with loans and advocates against child marriages.

SWaCH is also involved in making disposal bags for sanitary pads, composting, biogas generation, and e-waste collection. They run a program called V-Collect for unused household items and V-Collect Clothes for still wearable clothes.

QUICK FACTS

Name: SWaCH
Organisation type: Workers cooperative
Location: Pune and Pimpri Chinchwad, India
Founded: 2008
Households served: 643,000
Waste pickers inclusion: SWaCH: 3,060; KKPKP: 9,000
Quantity handled: 50,000 tons
Website: swachcoop.com
**SWACHHA ECO SOLUTIONS**

Swachha Eco Solutions was launched in 2008 by three innovators—Victoria, Vinay, and Rajesh—with the goal of gifting a zero-waste legacy to future generations. Initially launched as Indus Waste Management, the company aims to be a one-stop solution for waste management and recycling—across waste streams from all sectors. They believe strongly in the importance of route optimisation, research, and the development of new prototypes. Underlying their approach is an emphasis on the importance of constant experimentation.

The company’s founders have experimented with various on-the-ground models as part of their decade-long journey. Currently they provide recycling services and organic waste management for residual layouts, gated communities, apartments, restaurants, hotels, sports facilities, offices, and farms. In addition, they also offer pickup for bulky items, household hazardous waste, and landscape materials.

Swachha operates 12 Dry Waste Collection Centres (DWCC) owned by the local municipality. In 2012 they started employing waste pickers and scrap dealers at these centres. In 2014, in collaboration with the local municipality and other partners, they started a plastic processing centre that vertically integrated the recycling process. The centre deals with both high- and low-density polyethylene and has a capacity to recycle five tons of plastic waste daily. Initially they processed packaging into granules to be sold, but they went one step further—building their own pipe extrusion machine to produce agricultural piping (what many of their original PE granule customers were using it for). Later they invested in aggregation centres at two strategic locations in the city in order to minimise travel time and cut down their carbon footprint. They are also heavily invested in the concept of community composting, having partnered with 24 farmers to process segregated biodegradable waste from their operations.

**QUICK FACTS**

Name: Swachha Eco Solutions  
Organisation Type: Private Limited  
Location: Bangalore, India  
Founded: 2008  
Operation: Waste collection, recycling, making agricultural piping, organics  
Household served: 6,000  
Website: [www.swachhaecosolutions.com](http://www.swachhaecosolutions.com)

| BUSINESS CANVAS |
|-----------------|-----------------|-----------------|
| **ORGANISATION** | Swachha Eco Solutions | ORGANISATION TYPE | Private Limited |
| Key partners | Key activities | Value proposition | Waste output | Customers served |
| • Bruhat Bengaluru Mahanagara Palike (BBMP), Bangalore local government | • Collect waste from households and commercial clients | Aim: To be a one-stop solution for waste management consulting services and recycling streams from all sectors | • Wet waste for composting to farmers | • Households: collection |
| • Apartments and other clients | • Dry Waste Collection Centre management | | • Recycle waste that is collected | • Private companies: collection and consulting services |
| • Karnataka State Pollution Control Board | • Research and development | | | |
| • Citizens | • Transforming collected waste into recycled materials and responsible residual disposal through co-processing | | | |
| • Investors | • Environmental education to households, schools, and community through training and social media | | | |
| • Farmers (24) | | | | |
| • Cement factory | | | | |

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>Key legislation</th>
<th>Cost structure</th>
<th>Revenue structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Trucks</td>
<td>• Solid Waste Management Rules, 2016</td>
<td>• Staff salaries</td>
<td>• Collection fees from households and businesses</td>
</tr>
<tr>
<td>• Facility sorting centre</td>
<td>• Plastic Waste Management Rules, 2016</td>
<td>• Facility operational costs (electricity, maint.)</td>
<td>• Recyclable material sales</td>
</tr>
<tr>
<td>• Facility for recycling</td>
<td>• Amendment to Plastic Waste Rules, 2018</td>
<td>• Vehicle costs (maintenance, petrol)</td>
<td>• Compost sales</td>
</tr>
<tr>
<td>• Composting space</td>
<td></td>
<td>• Safety gear</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Daily wet waste collection of 3–4 tons for compost processing</td>
<td>• Total of 1.8–2.0 tons of daily waste recycled</td>
</tr>
</tbody>
</table>
TEMESI RECYCLING

Temesi Recycling is a partnership of the Gianyar Waste Recovery Project, the Rotary Club of Bali Ubud (now disbanded), the Yayasan Bali Fokus Foundation, and Yayasan Gelombang Udara Segar (GUS) Foundation. In 2004, they sought to develop an environmentally friendly, safe, and economically viable waste recovery solution. A facility for daily processing of 4 tons of waste, located next to the Temesi landfill on land owned by the Gianyar Regency local government, was built in 2004. After optimizing collection processes, expansion to 25 tons per day occurred in 2007 and it became one of the first Indonesian organisations to successfully complete the Kyoto Protocol’s Clean Development Mechanism (CDM) process to sell carbon offsets (from composting). Given the stringent CDM requirements, an ISO 14000 quality assurance system and compost testing protocol were also adopted. Today, roughly 30 tons are processed per day, focused primarily on compost. This allows them to restore soil fertility across Bali and divert close to 90 percent of waste from landfills.

QUICK FACTS

Name: Temesi Recycling
Organisation type: Community foundation
Location: Temesi, Gianyar, Bali, Indonesia
Founded: 2004
Operation: Composting, organic waste processing to liquid fertilizer and liquid smoke, sorting of recyclables and residues
Quantity handled: 28–32 tons/day
Households served: unknown
Website: http://temesirecycling.com

Waste is brought by waste collection partners selected on the quality of their material separation. If too much residue is still mixed in the waste it is rejected. Current output is 7 to 8 tons per day of processed compost, 2 tons of recyclables, and about 5 tons of residues. Most of the processed organic waste results in compost sold to the local government at Rp 1,000/kg. Small quantities of liquid fertiliser are also produced (sold at Rp 15,000/litre) and liquid smoke (a pesticide sold at Rp 30,000/litre). The facility employs 25 permanent staff and around 80 per diem staff.

Temesi Recycling has an education centre which has served more than 50,000 people (the facility attracts about 5,000 visitors annually). Temesi Recycling is under supervision of the community-based Temesi Foundation.

BUSINESS CANVAS: TEMESI RECYCLING

ORGANISATION: Temesi Recycling

<table>
<thead>
<tr>
<th>Key partners</th>
<th>Key activities</th>
<th>Value proposition</th>
<th>Waste output</th>
<th>Customers served</th>
</tr>
</thead>
<tbody>
<tr>
<td>BaliFokus</td>
<td>Industrial-scale quality composting</td>
<td>• Compost: Aerated table top method</td>
<td>• Waste collection service providers: EcoBali, Padangtegal Compost House</td>
<td>• Waste diversion of about 90% from landfill</td>
</tr>
<tr>
<td>GUS</td>
<td>Carbon reduction and carbon management</td>
<td>• Education materials to more than 50,000 people</td>
<td>• Organic buyers: villas, resorts, government facilities</td>
<td></td>
</tr>
<tr>
<td>Carbon project developers</td>
<td>Research on organic processing methods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon project validators</td>
<td>Sorting of recyclable materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sales of recyclables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Value proposition:
• Economically sustainable, quality composting facility and recyclable recovery centre

Key Resources
• Composting facility
• Laboratory

Key legislation
• Gianyar Local Regulation 11, 2013

Cost structure
• Manpower (contracted and non-contracted)
• Facility operational costs (electricity, maintenance)
• Quality-testing laboratory
• R&D of organic processing methods
• Administration costs
• CDM credit certification and audits

Revenue structure
• Compost sold to government and resorts (Rp 1,000/kg)
• Liquid fertiliser (Rp 15,000/litre)
• Liquid smoke pesticide (Rp 30,000/litre)
• Recyclable materials kept by waste sorters
• Carbon credits from CDM market
TRICICLOS

TriCiclos, founded in 2009, was not only the first Certified B Corp in Chile, but also the first outside of North America.

It is a circular economy engineering company specialising in the creation and implementation of product and process solutions. The mission is to design, implement, and promote solutions that correct generations of flawed waste management. Their main expertise is centred on helping the consumer goods industry move towards a circular business model. Solutions are both upstream (with design approaches for products and business models) and downstream (closing the loop on different types of products and materials).

Downstream, TriCiclos has the largest network in Latin America of pre-recycling stations (Puntos Limpios or “Clean points”) that work as collection centres and material recovery plants. Up to 22 types of material are recovered. Citizens can bring recyclables and learn how to redesign their products for easier recyclability. The Recyclability Index Tool (RI, Índice de Reciclabilidad) gives the probability that an item will be recycled in a particular region. Working with the Sustainable Packaging Coalition, the New Plastics Economy, and McDonough Innovation, they’ve done material analysis mapping for more than 14,256 stock keeping units (SKUs) in Chile, Brazil, Peru, and Colombia.

The Recyclability Index Tool (RI, Índice de Reciclabilidad) gives the probability that an item will be recycled in a particular region. Working with the Sustainable Packaging Coalition, the New Plastics Economy, and McDonough Innovation, they’ve done material analysis mapping for more than 14,256 stock keeping units (SKUs) in Chile, Brazil, Peru, and Colombia.

TRICICLOS

quick facts

Name: TriCiclos
Organisation type: B corp
Location: Santiago, Chile; São Paulo, Brazil
Founded: 2009
Operation: Collection, sortation, education, consulting
Quantity handled: Over 5 million visits to clean points
Website: http://triciclos.net/

It is a circular economy engineering company specialising in the creation and implementation of product and process solutions. The mission is to design, implement, and promote solutions that correct generations of flawed waste management. Their main expertise is centred on helping the consumer goods industry move towards a circular business model. Solutions are both upstream (with design approaches for products and business models) and downstream (closing the loop on different types of products and materials).

Downstream, TriCiclos has the largest network in Latin America of pre-recycling stations (Puntos Limpios or “Clean points”) that work as collection centres and material recovery plants. Up to 22 types of material are recovered. Citizens can bring recyclables and learn how to redesign their products for easier recyclability. The Recyclability Index Tool (RI, Índice de Reciclabilidad) gives the probability that an item will be recycled in a particular region. Working with the Sustainable Packaging Coalition, the New Plastics Economy, and McDonough Innovation, they’ve done material analysis mapping for more than 14,256 stock keeping units (SKUs) in Chile, Brazil, Peru, and Colombia.

The Recyclability Index Tool (RI, Índice de Reciclabilidad) gives the probability that an item will be recycled in a particular region. Working with the Sustainable Packaging Coalition, the New Plastics Economy, and McDonough Innovation, they’ve done material analysis mapping for more than 14,256 stock keeping units (SKUs) in Chile, Brazil, Peru, and Colombia.

BUSINESS CANVAS: TRICICLOS

Organisation

TriCiclos

B Corp

Key partners

• Corporations
• Waste picker cooperatives
• Recyclers

Key activities

• Industry (extraction)
• Increase efficiency of processes and services
• Industry (consumer goods): Apply concepts of circular economy and cradle-to-cradle business
• Retail: Promote integrated waste management through the operation of collection points and consumer awareness

Value proposition

Aim: Circularise current linear chain of extraction, production, consumption, and disposal

Value proposition:

• Design customised solutions for each link in the chain—production, consumption, and disposal—in Latin America

Key Resources

• Sorting facilities, including specialisation knowledge of recyclable materials (Ponto Limpo collection points)
• Compactor, weight machine
• Trucks (Chile)

Key legislation

• Chile: REP, Law of Solid Waste
• Brazil: National Law of Solid Waste, 12,305:10

Impact

• Over 6,346 tons of recyclable material recovered (Chile and Brazil)
• Over 1,542,859 people in Brazil impacted by environmental education at collection points

Cost structure

• Staff salaries
• Administration costs
• Facility (Puntos Limpios) operational costs (equipment maintenance, collection fees)

Revenue structure

• Custom consulting
• Fees at collection points
• Business collection service fees (Chile)
• Sorted recyclable material (Chile)
VRRecycle Waste Management Services

Launched in 2009, VRRecycle Waste Management Services is based in Goa, India. Its premise is that not everyone has the time or interest to manage their waste and that VRRecycle can do it for them.

VRRecycle has five different product and service offerings:

- Waste pickup services for individuals, communities, and Panchayats (units of local government)
- Setting up and managing recycling bins and composters in homes, community recycling stations, composting stations for institutions and communities, and composters for garden waste (including chippers and shredders)
- Buying recyclables, both unsorted and sorted, either picked up from homes (for a fee) or deposited at a central facility (no fee)
- Design and consultancy
- Education programmes, including a basic and advanced waste awareness presentation (45 minutes), film screening (90–120 minutes), awareness session and activities (90 minutes), field visit (60–180 minutes), and field activity for a village dry waste collection system (60–120 minutes).

VRRecycle operates out of a warehouse located at the Margao Industrial Estate. It serves over 45 community sites, 68 individual sites, and 2 village panchayats.

Clinton Vaz, founder of VRRecycle, started operations with an initial investment of Rs10,000. With his father’s borrowed car he did pick-ups once a week. Today, he has two vehicles of his own and is completely self-sustaining. He believes that it is important to offer flexible solutions to make his model work. The company’s gross is about 80 lakhs a year with a decent profit margin of Rs 1 lakh a month. The company’s waste recovery (i.e. diversion from landfill) is about 80 percent. Expansion plans include offering a franchisee model.
WASTE4CHANGE

Greeneration Indonesia is an environmental organisation based in Bandung focused on sustainable consumption and production. To accomplish their mission they opened a waste management division in 2012. A year later, they met with EcoBali Recycling (see EcoBali) and founded Waste4Change, now headquartered in Bekasi, Indonesia.

Waste4Change aims to be a provider of responsible waste management in Indonesia. Currently it provides four distinct services, abbreviated as 4C: campaign, consult, collect, and create.

Campaign aims to educate on why and how waste should be managed, while consult provides training and consulting service to organisations ready to be more responsible.

Collect is the primary waste collection service, providing responsible waste management to households and businesses, including initial training on separating waste pre-collection. Waste statistics are tracked so companies can monitor and report their progress.

All collected waste undergoes any required post-collection separation, then is recycled, composted, or safely disposed of as part of the last service type—Create.

Revenue streams for Waste4Change come primarily from business waste collection fees, management fees, and consulting fees. For example, PRAISE (an association of consumer packaged goods companies in Indonesia including Danone, Unilever, Nestle, Coca Cola, IndoFoods, and TetraPak) is receiving services for their packaging recyclability campaign.

Waste4Change currently operates two sites. The first is in Bekasi, where they receive about 4 tons daily, including 1 tonne of compost and 500 kilograms of recyclables. Their other site in Jakarta receives 5 to 7 tons per day from commercial clients, who have joined the Zero Waste to Landfill (ZWTL) programme to minimise waste disposed in landfills. This includes collaboration with a cement factory that uses residues as fuel.

QUICK FACTS

Name: Waste4Change (originally joint venture with EcoBali)
Organisation type: Social enterprise
Location: Jakarta and Bekasi, Indonesia
Founded: 2013
Operation: Education, training, collection, recycling, disposal
Quantity handled: 9–11 tons/day
Households served: 1,600
Other clients served: 12 offices, 3 cafes, 5 embassies
Website: waste4change.com

BUSINESS CANVAS: WASTE4CHANGE

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>Waste4change</th>
<th>ORGANISATION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key partners</td>
<td>Key activities</td>
<td>Value proposition</td>
</tr>
<tr>
<td>Ministry of Environment and Forestry</td>
<td>Their 4 C’s</td>
<td>Creating responsible waste management</td>
</tr>
<tr>
<td>Dinas Lingkungan Hidup Provinsi DKI Jakarta</td>
<td>Consulting: training and feasibility studies</td>
<td>Value proposition: Provide responsible, transparent waste management services from upstream to downstream</td>
</tr>
<tr>
<td>Kementerian Lingkungan Hidup</td>
<td>Campaign: environmental education to companies, households, schools, and the community</td>
<td></td>
</tr>
<tr>
<td>Bergerak Indonesia Bebas Sampah</td>
<td>Collect: waste from households and commercial clients, waste separation training</td>
<td></td>
</tr>
<tr>
<td>Cement factory</td>
<td>Create: transform collected waste into either recycled materials or responsible residual disposal to landfill</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste4Change brand</td>
<td>• Organic: windrow composting and black soldier fly</td>
</tr>
<tr>
<td>Trucks</td>
<td>• Recyclables: handled by waste picker entrepreneurs</td>
</tr>
<tr>
<td>Facility sorting centre</td>
<td>• Households: collection</td>
</tr>
<tr>
<td>Composting site</td>
<td>• Private companies: collection and consulting services</td>
</tr>
<tr>
<td>• Less than 25% of collected waste disposed in landfill</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key legislation</th>
<th>Cost structure</th>
<th>Revenue structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKI Jakarta Local Regulation, 3/2013: Waste Management</td>
<td>• Staff salaries</td>
<td>• Collection fees from households and businesses</td>
</tr>
<tr>
<td></td>
<td>• Facility operational costs (electricity, maintenance)</td>
<td>• Recyclable material sales</td>
</tr>
<tr>
<td></td>
<td>• Vehicle costs (maintenance, petrol)</td>
<td>• Sale of black soldier larvae</td>
</tr>
<tr>
<td></td>
<td>• Landfill tipping fee</td>
<td>• Compost sales</td>
</tr>
<tr>
<td></td>
<td>• Safety gear</td>
<td>• Management fee for education campaigns</td>
</tr>
<tr>
<td></td>
<td>• Administration costs</td>
<td>• Management fee for consulting services</td>
</tr>
<tr>
<td></td>
<td>• Customer care</td>
<td></td>
</tr>
</tbody>
</table>
The YouGreen Cooperativa, located in São Paulo, Brazil, currently employs 35 waste pickers. The fundamental tenant of cooperatives is to seek shared, as opposed to individual, prosperity. This guides their work and socioeconomic model. The cooperative was formed independently in 2011 after attempts to partner with the government were unsuccessful. It is led by a former waste picker with a background in logistics and engineering who saw an opportunity to improve waste management efficiency after a weekend spent volunteering for the Red Cross in Rio de Janeiro. The aim of the cooperative is to improve the quality of life of waste pickers, both financially and otherwise, while also providing waste collection, sortation, awareness, diagnostics, and reverse logistics services to environmentally like-minded businesses. YouGreen also aims to develop and provide opportunities for other groups of waste pickers.

Currently material collection services are provided to approximately 45 corporate clients throughout São Paulo. Collected waste is brought to YouGreen’s efficient central facility, where it is sorted, cleaned, and sold to recyclers. Sophisticated tracking software details monthly waste generation and recycling levels for each client by material, allowing clients to fulfil EPR mandate requirements. This data is also used to continually improve each client’s waste management process. What’s more, YouGreen’s pricing is transparent and their recycling services are less expensive than landfill tipping fees, making it easy for businesses to act in environmentally responsible ways. Education services for the community, as well as self-improvement courses for members and other cooperatives, are also part of the programming.

YouGreen is currently managing 100 tons of waste a month. As part of expansion plans—and to improve the level of service provided to current clients—they are considering employing a social franchising model that would see them partner with cooperatives around Brazil in order to provide the same level of service, traceability, and data over a broader area.

Quick Facts

Name: YouGreen Cooperativa
Organisation type: Waste picker cooperative
Location: São Paulo, Brazil
Founded: 2011
Operation: Full waste stream collection, sortation, bundling with traceability, material consultancy services
Quantity handled: 100 tons/month
Corporate clients served: 45
Website: http://www.yougreen.com.br/
YPBB had been actively building awareness of eco-friendly lifestyles for many years. It then joined forces with the Mother Earth Foundation (Philippines) and other organisations to pilot a Zero Waste program (Kawasan Bebas Sampah) in Bandung municipality in 2015. This program is part of the Asia Pacific Action Against Plastic Pollution: Reducing Land-Based Leakage of Plastic Waste in Philippines and Indonesia Through Zero Waste Systems and Product Redesign, which aims to prevent 14,000 tons of plastic from leaking into the ocean each year. It consists of door-to-door behaviour change education, waste separation, and reduction of landfill waste by 30 percent through organic processing and recycling. Activities include green profiling, consulting with stakeholders, establishing a waste council at district level, developing an integrated waste management regulatory system, training waste collectors, door-to-door education, experimentation and system improvement, and law enforcement.

Besides international zero-waste organisations, YPBB has joined forces with other stakeholders to actively lobby and support the municipalities government (currently focusing at Citarum River region) in drafting environmentally sound waste management and waste reduction regulation, building MSWM masterplan and other waste governance aspect.

YPBB’s campaign in the long term is on the aspect of waste reduction. The disaggregated waste collection system that is encouraged through regulation and technical implementation is an intermediary strategy to achieve conditions where there is a separation between recyclable waste and residue. Waste segregation is not only intended to improve processing and recycling, but also as a way for the government to develop waste reduction policies. Through sorting, the government can monitor the types of waste and those responsible for residual waste that overload the public waste management system. This will open the way to identify and monitor the parties responsible for residual waste and regularly carry out waste audits and brand audits. This approach is used to develop policies to ban or limit products and packaging that are routinely reported to the city government, and in the future it is hoped that the central government can develop policies and implement EPR based on a strong database.

YPBB also conducts training for volunteers from local cadres and others, including training for waste workers in supporting the implementation of the system in the area. For areas that do not have facilities or land for processing waste, YPBB works closely with The Environmental Agency of city to serve the transportation of disaggregated waste, especially organic waste. Currently 10 sub-sub-districts in Bandung and eight sub-sub-districts in Cimahi have received door-to-door education, with approximately 7,742 (45 percent compliance rate) separating their waste. Efforts have been especially strong in Cimahi city, where YPBB is the official waste partner of the Cimahi municipality government, serving 100 percent of the city. For Bandung city, waste diversion rate is 16.15% or 658.12 kg, consist of organic waste 563.74 kg, recyclable plastic 72.91 kg, other recyclables 21.47 kg and compliance rate 34.38% or 3189 households. For Cimahi city, waste diversion rate is 16.15% or 658.12 kg, consist of organic waste 563.74 kg, recyclable plastic 72.91 kg, other recyclables 21.47 kg and compliance rate 34.38% or 3189 households.

### BUSINESS CANVAS: YPBB

#### ORGANISATION

**Name:** Yaksa Pelestari Bumi Berkelanjutan (YPBB)

**Organisation type:** Association

**Location:** Bandung, Cimahi, and Soreang, Jawa Barat, Indonesia

**Households served:** 8,021

#### Key partners

- Mother Earth Foundation
- Bandung Municipality government
- Cimahi municipal government
- Bandung Cleanliness Corporation

#### Key activities

- Green profiling
- Consulting with stakeholders
- Establishing waste council at district level
- Developing municipal waste management system
- Training waste collectors
- Behaviour change training
- Experimenting with system improvement
- Fully implementing waste management system
- Law enforcement

#### Value proposition

- Aim: Prevent annual 14,000 tons of plastic flow into ocean with door-to-door education (100%), waste separation (90%), and reduced landfill waste (30%)

#### Waste output

- 420 kg/day of recyclables and compostable

#### Customers served

- Residents of Bandung, Cimahi (Jawa Barat, Indonesia) and Soreang District

#### Key legislation

- Waste Management Law 18, 2008
- Government Regulation 81, 2012
- Bandung Local Regulation 9, 2011
- Cimahi local regulations

#### Key Resources

- Mother Earth Foundation principles of sustainable solid waste management

#### Impact

- For Bandung city, waste diversion rate is 16.15%.
- For Cimahi city, waste diversion rate is 35.17%.

#### Cost structure

- Operation of education program
- Manpower
- Advocacy campaign
- Education

#### Revenue structure

- Grant from Ford Foundation to fund the YPBB program