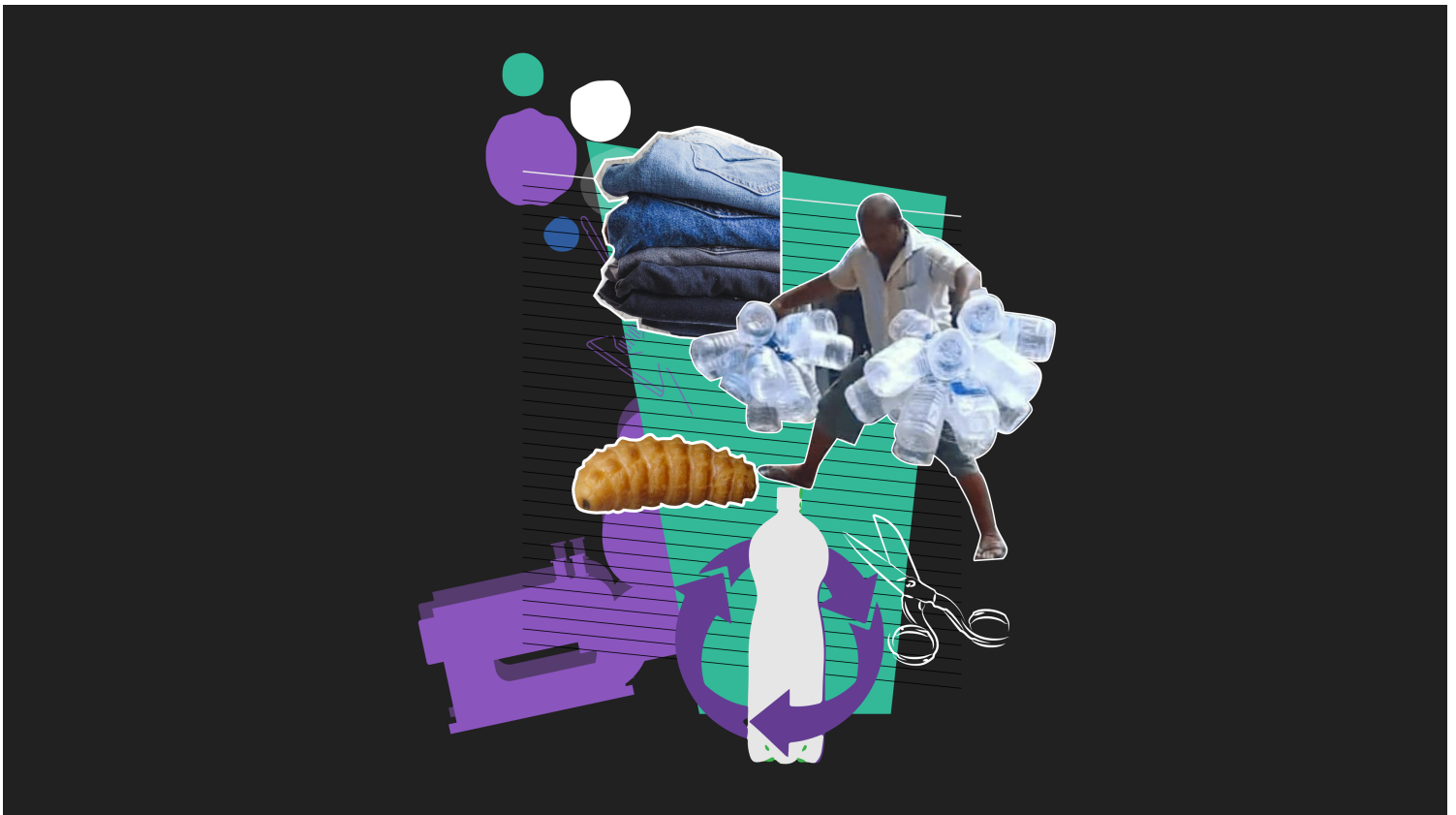


NOVEMBER 2024

Exploring Private Sector Innovation in Waste Management: Reflections from Three Case Studies

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Several pioneering businesses in Sri Lanka are addressing waste management challenges through innovative and sustainable solutions. The Centre for a Smart Future (CSF) identified three such businesses and explored their entrepreneurial journeys and business models. Each of the case studies exemplify a unique approach to managing waste and provides learnings relevant to waste management strategies in the country. Their narratives are also indicative of gaps and opportunities for policy change that would foster entrepreneurship and innovation.

The growing problem of waste management

Sri Lanka produces approximately 7,000 metric tons of solid waste per day (FAO, 2021). Such waste manifests in various forms, including organic, plastic, textile, and electronic (Dharmasiri, 2020). Each type of waste presents unique challenges in collection, sorting, recycling, and disposal. The lack of segregation at the household level, inadequate infrastructure, and limited public awareness exacerbate these challenges. The improper disposal and management of waste impacts human health and causes severe environmental degradation, including water contamination, air pollution, and threats to biodiversity (Earth Day, 2024).

Tackling waste management is crucial for a greener economic recovery in Sri Lanka. Proper waste management can mitigate environmental pollution, thus preserving natural resources vital for sectors such as agriculture, tourism, and fisheries. Recycling and composting can reduce the reliance on imported raw materials and chemical fertilizers, promoting local industries and sustainable agriculture. Innovative waste management solutions can create green jobs, fostering economic growth and resilience. In this context, private sector innovation is as critical as effective public policies to meaningfully manage waste and create new economic opportunities around waste.

Better understanding the entrepreneurial landscape in waste management in Sri Lanka can help identify new pathways for innovation in this space. This publication explores how three pioneering businesses navigate the waste management sector. We draw out key learnings from each case, as well as present some overall reflections relevant for policymaking.

1. House of Lonali

House of Lonali is a clothing and lifestyle brand founded by Lonali Rodrigo in 2010. Based in Colombo, the business has 10 employees, most of whom are home-based seamstresses. House of Lonali is the first recipient of the ISO 14065 certification in Sri Lanka.

Lonali was inspired by the abundance of waste in the country that was simply going to landfills. She synthesized her background in design and her passion for sustainable practices to pioneer upcycled fashion in Sri Lanka using pre-consumer industrial waste in the apparel sector.

Learning 1: How collaborative production models can create mutually beneficial outcomes

House of Lonali faced a two-pronged production challenge at the outset - Large factories did not take orders because the orders were too small, whereas subcontracting was too costly. After much trial and error, Lonali understood that the manufacturing process must be given to individuals who have the time to stitch and have a love for it. She recognized that these individuals were most often women working from the comfort of their homes. So, House of Lonali began employing home-based seamstresses.

Some seamstresses work full-time, while others manufacture House of Lonali products as a supplementary source of income to their own sewing businesses. Some are affiliated with other apparel companies as well. Lonali says that this flexibility is an important part of the work that she does with the seamstresses, as it allows them to provide for their families and communities.

This collaborative approach facilitates mutual learning. The company provides machinery and training on quality control

House of Lonali: Business Model



1 Apparel sector waste

2

Sorting according to texture and colour

3

Designing done by Lonali herself



4

De-centralised/ home based sewing process done by seamstresses and artisans



5

Products sold

Bags, Books, Clothes, Kids Clothing, Accessories

6

Second hand retail repairing clothes

Worn out House of Lonali products

Design Collective, Some boutiques in Ahangama and Unawatuna

Website Retail

Individual customers



and sewing techniques to the seamstresses. They also bring knowledge and expertise to House of Lonali by working in their own and for other businesses. Lonali says that this provides invaluable insights and advantages and allows for collaboration between her and the seamstresses in the production and manufacturing processes.

Learning 2: The importance of stakeholder engagement when introducing innovative products

Due to the unfamiliarity of the concept of upcycling, and being a newcomer in the fashion industry, building trust in the brand and mission of the business was imperative. On the supply side, sourcing was a major challenge. As a pioneer to work exclusively with pre-consumer industrial waste, House of Lonali had to navigate a sector that not only was unfamiliar to its business model but also imposed strict constraints. Under the regulations of some companies, House of Lonali was not able to obtain pieces of fabric larger than the A4 size.

As a pioneer to work exclusively with pre-consumer industrial waste, House of Lonali had to navigate a sector that not only was unfamiliar to its business model but also imposed strict constraints.

To circumvent the limitations faced when procuring fabric waste from the large-scale apparel sector, House of Lonali reached out to actors in the small-scale apparel industry, particularly small-scale manufacturers and retailers. Given that the quality and composition of waste generated in the smaller-scale actors may be uncertain, House of Lonali places high emphasis

on the transparency in using these different sources of waste in their products. This ensures that the clients are fully informed of the origins of the product they purchase.

2. Leslie's Agro Products

Located in Uddubaddawa, in the North-Western Province, is the largest vermicompost production facility in the country - Leslie's Agro Products.

What is vermicomposting?

Vermicomposting is a process by which earthworms convert organic waste into a humus-like material "vermicast" used as fertilizer. In contrast, regular compost is produced through various microorganisms such as aerobic bacteria and fungi (Azzolin 2021). Vermicompost has been found to contain more nutrients than regular compost, which fosters better plant growth.

Founder and Managing Director Leslie Bernard Perera inherited a business which began as a poultry farm in the 1970s. In 2008, Leslie ventured into vermicomposting for the first time. Today he runs Leslie's Agro Products and its adjacent business, Leslie's Animal Feed, with a mission for making organic food accessible to the masses. Leslie says that everyone has a right to healthy, organic food regardless of socio-economic class.

Learning 3: How pioneering businesses can steward an industry by facilitating education and competition

Promoting vermicompost was a preliminary challenge for the company as stakeholders were unfamiliar with the process and the residents around the factory had perceptions of worms

Leslie's Agro Products: Business Model

1

Purchased organic waste from markets in Thambuththegama, Dambulla

1

Bakery waste

2

Black Soldier Fly (BSF) Larvae



3

Vermicompost
Animal Feed



2

Gadawil Panuwa
(Earthworms)

3

Vermicompost

Vermicompost from Gadawil Panuwa are sold through the sales outlet in Udubaddawa.

Exports (Vermicompost is sent to the Middle East)

Products from BSF are being used in Leslie's farms as fertilizer and animal feed for chickens

Leslie's Agro Products farm, New Bernard's Animal Feeds (Pvt.)

as dirty, pathogen-carrying creatures. Leslie's Agro Products approached this problem from a societal perspective. Moving beyond marketing their products, their mission was to meaningfully cultivate interest in vermicomposting across the country with two factors in mind. Firstly, healthier agricultural inputs are crucial for improving access to healthy food. Secondly, fostering innovation and healthy competition is critical for a necessary yet unexplored industry such as vermicomposting.

Moving beyond marketing their products, its mission was to meaningfully cultivate interest in vermicomposting across the country

As a solution, Leslie's Agro Products actively educates the public on vermicomposting. The company has trained over 3700 individuals on vermicompost production and continues to train many more through workshops. They noted that women producers find it difficult to travel for training. As an effort to increase accessibility, Leslie's Agro Products is establishing regional vermicompost training centres which would allow for local capacity building. They also collaborate with local universities such as the University of Peradeniya and Uva Wellassa for research and development purposes. The company has also dedicated one of its three farms to training students.

Contrary to how most businesses approach market competition, Perera constantly strives to increase competition in the field of vermicompost both to strengthen the industry and to keep himself and his company on their toes and innovate. To inspire competition, the company aids trained farmers beyond the training period through their buy-back system. This allows small-scale producers to sell their

vermicompost through Leslie's Agro Products, mitigating any difficulties in market access as they begin vermicomposting.

Learning 4: How public-private collaboration can inspire community change: Vermicompost in Udubaddawa

Despite the success of Leslie's Agro Products nationally, the toughest audience they faced were the residents in their own backyard - Udubaddawa. Skewed perceptions on vermicomposting and a lack of communication between the company and the local community were causing this issue.

Only after collaborating with the local Grama Niladhari officer did the attitudes start to shift. Upon seeing the complexity and value of the operation at Leslie's Agro Products first-hand, the Grama Niladhari strongly believed that vermicompost was a practice the local community ought to adopt.

Thus, he took the initiative to mobilize local communities through the village Facebook group, extending an open invitation to all in the village on the company's behalf. The invitation was to observe the operations in the vermicompost facility and also engage in a shrama dhaana, a traditional community service session, in the facility. The event was a massive success which saw the active participation from diverse demographics in Udubaddawa; children, youth, parents, and public officials. A permanent invitation was extended to the residents of Udubaddawa; the doors of Leslie's Agro Products were thereafter always open to the community.

The Grama Niladhari went beyond his mandated duties to actively refer the company to local community-based organizations such as the Rural Development Societies and Women's Development Societies. He also arranged for vermicompost training for the local

public officials specializing in agricultural affairs, an effort that was supported by the local Divisional Secretary.

Fruits from this collaboration contribute to uplift Udubaddawa every day. Leslie's Agro Products has set up vermicomposting facilities in economically challenged homes in the area and has extended a vermicompost buy-back system to provide the homeowners with an additional form of income. Even the Grama Niladhari has a vermicomposting setup in his home, which he hopes would set an example for everyone in the village.

3. Eco Spindles

Eco Spindles (Pvt) Ltd., a subsidiary of BPPL Holdings, is a manufacturer of polyester yarn and filaments in Sri Lanka that utilizes recycled plastics as raw materials. Established in 2008 under the name Beira Enviro Solutions, the company has two factories in Horana that specialize in converting PET bottles into filaments used in brushes and yarn for the apparel sector. The company is one of the few in the world able to create yarn directly from PET flakes (Dawood, 2021). In 2021, the company gained global recognition as one of the top 100 #RecyclingHeroes by the Global Recycling Foundation. In the same year, Eco Spindles received an IFS Change for Good Sustainability Award for the 'Most Innovative Solution for Sustainability'.

Learning 5: How mobilizing a variety of stakeholder groups can increase and diversify input collection

Plastic pollution has become a national problem stemming from both a lack of awareness, as well as indiscipline by individuals and organizations alike. Widespread behavioral change and infrastructure development is needed (Samaranayake 2023).

Eco Spindles has formulated community-centric solutions for plastic waste collection, to reduce plastic waste while increasing and diversifying their input flow. This includes partnering up with stakeholders such as fisher communities, pilgrim sites, and public institutions. For example, given that fishers generate considerable plastic waste at sea which pollutes coastal ecosystems, the company set up plastic bottle collection centers in major fishing harbors in the country. According to company estimates, this initiative collects roughly 20 tons of plastic a month. Eco Spindles engages with several pilgrim sites such as Kataragama, Sri Pada, Munneswaram Kovil, and St. Anne's Church in Thalawila through local youth groups and government authorities.

They also launched a "Waste-to-Value app" in the Western Province to streamline collection processes. The app allowed consumers to locate the nearest bin out of 450 placed within the Western Province to dispose their garbage. However, the usage of the app has not been successful with a lack of habit formation surrounding waste disposal practices among the public.

Through these experiences, the company noted the importance of designing mutually beneficial outcomes to successfully implement community-based schemes.

Learning 6: The importance of reducing emissions in waste management to meet the rising demand for recycled products

Due to Sri Lanka's small size, all waste collected by Eco Spindles is within a 100km radius. This in turn reduces the company's carbon footprint in transporting waste to their factories.

Eco Spindles: Business Model

Bottles from collection areas in Kataragama etc.,
Purchased waste from other corporations,
Collective drives and beach clean-ups,
Material recovery Facilities,
Bale sites,
600+ Registered suppliers,
Clean-ups from water bodies

Transported by
Eco Spindles



1 Convert waste PET bottles and other PET waste into PET flakes

Flake to mono filament/yarn

3

Direct export and indirect export sold to local markets

2

Monofilament

Yarn

3

Sent to the BPL brush factory in Ingiriya

4

Brushes sold through B2B and B2C

3

Apparel sector

Local/International
Sportswear



As companies and consumers strive to increase lifecycles and circularity of products, recycled yarn is likely to have greater demand. This is complemented by many international certifications in fashion...

Usually, the bottle-to-yarn conversion process includes manufacturing chips - an intermediary step converting bottles into PET chips - before stretching them out to be yarn. The technology at Eco Spindles allows them to circumvent this step and directly convert bottles into yarn. This allows the factory to consume less energy and thereby reduce their carbon footprint. It is estimated that recycled yarn saves up to 60% energy and reduces greenhouse gas emissions by 32% compared to conventional yarn production. In addition, using recycled materials in yarn production can reduce the amount of waste sent to landfills by 65% (Textile Exchange 2021).

As companies and consumers strive to increase lifecycles and circularity of products, recycled yarn is likely to have greater demand. This is complemented by many international certifications in fashion and textile such as OEKO-TEX Standard 100 and Global Recycled Standard requiring companies to demonstrate their commitment to low-emission production processes.

Overall Reflections and Policy Considerations

1. Definitions of success vary across businesses

For House of Lonali, the goal of the business is not to increase its production or sales but to promote the reuse of its own and others' fashion products in general. As Lonali put it, *"Sustainability is not scaling up - sustainability is actually*

slowing down". For House of Lonali, scaling is a societal goal; improving the capacity to replicate and enhance its upcycling model throughout the industry and the broader community. This mission reflects the philosophy of degrowth where such businesses would seek to influence end-user preferences and consumption habits. This includes encouraging a shift towards valuing durability and versatility rather than following short-lived trends. Such a shift can also include encouraging end-users to repair and refurbish goods instead of replacing old or broken ones.

Leslie's Agro Products takes on the role of an industry steward, wearing the hats of an educator, collaborator, and a competitor in the industry. They vigorously advocate for vermicompost as a viable organic waste solution and supporting new entrants into the industry.

Eco Spindles seemingly navigates a perennial conundrum. While it leads the charge for reducing plastic waste through recycling exerting considerable energies towards establishing necessary infrastructure and capacity development in the country, it is inherently dependent upon plastic production. Therefore, while providing a crucial contribution to reduce the waste management pressures of today and the foreseeable future, it faces the challenge of adapting to global trends countering plastic production in the long term.

2. Recognizing social enterprises to facilitate and encourage socially motivated business models

Small and Medium Enterprises (SMEs) such as House of Lonali and Leslie's Agro Products have embedded social oriented missions into their business models. Sri Lanka's entrepreneurship policies should be cognizant of social entrepreneurs and allow for SMEs to

register as socially responsible enterprise models. Such policy structures would dispel the misconception that socially conscious businesses are not profitable in the Sri Lankan market. Lonali highlights that such policies could also enable Sri Lanka to explore tax benefits and export opportunities associated with recognizing such businesses, particularly in European markets.

Fragmented laws on social entrepreneurship are common in many countries in the global South. However, consolidating laws and policies to mainstream social entrepreneurship is possible.

Sri Lanka's SME policy published in 2016 refers to social entrepreneurship in stating that the government would "support social entrepreneurship, ethical production and fair-trade branding by creating awareness of the concepts, requirements and opportunities in local and international markets".

However, no policy nor legal provision in Sri Lanka specifically recognizes social entrepreneurs (British Council et al 2017). It is governed under general SME development and other legal provisions such as the Companies Act of 2007, the Co-operative Societies (Amendment) Act (No. 11 of 1992), the Societies Ordinance of 1891 (Amendment Act 11 of 2005) and the Voluntary Social Service Organizations [Registration and Supervision] Act Number 31 of 1980.

Fragmented laws on social entrepreneurship are common in many countries in the global South. However, consolidating laws and policies to mainstream social entrepreneurship is possible. For example, the Malaysia Social Entrepreneurship Blueprint 2030 launched in 2022 provides a framework

for mainstreaming social enterprise in the country using data-driven targets. The Blueprint identifies social entrepreneurship as being purpose-driven and having clearly identified beneficiaries.

In addition to environmental preservation and climate action, these purposes also include affordable housing, cultural and heritage preservation, social inclusion and others. Malaysia also allows social enterprises to be registered under the Ministry of Entrepreneur Development and Cooperatives (MEDAC) that qualify for different levels of certification under the Social Enterprise Accreditation scheme. This certification allows these entrepreneurs to access greater support and opportunities.

3. Increasing supply-side accountability for waste through Extended Producer Responsibility (EPR)

EcoSpindles' recycling of PET bottles has limitations. For example, Yarn and filaments made from "black" i.e. non-transparent PET bottles are particularly difficult to recycle. Some automatic sorting machines fail to identify it as plastic at all. Since the original color of the PET affects the recycled product, colored PETs are generally considered unattractive as a form of recycled packaging. Additives added to reduce colorants can be toxic and preclude their usage for food-related applications. Thus, recycled transparent PET has a higher demand and a longer life-cycle.

A transition into mandatory participation in an Extended Producer Responsibility system can be a starting point to tackle such issues related to plastic usage. Extended Producer Responsibility (EPR) is a policy strategy for reducing plastic pollution and fostering a circular economy by making

producers accountable for their products' or packaging's entire life cycle. This includes raw material manufacturers, packers or fillers, brand companies, and retailers. For plastic waste, producers are responsible for collecting, sorting, and transporting used plastic packaging for recycling or safe disposal after consumers have discarded it.

Extended Producer Responsibility (EPR) is a policy strategy for reducing plastic pollution and fostering a circular economy by making producers accountable for their products' or packaging's entire life cycle.

Typically, producers and importers pay a fee to cover these lifecycle costs. EPR is designed to encourage producers to redesign their packaging to minimize waste, enhance recyclability, and/or increase the use of recycled materials.

In Sri Lanka, the lack of transparency and reliable data regarding plastic usage and the volume of plastic waste has hindered the implementation of EPR. A successful EPR system depends on accurate data to set targets and monitor compliance effectively. In 2018, the Ceylon Chamber of Commerce (CCC) and the Public Interest Law Foundation, with grants from USAID, commenced the Municipal Waste Recycling Program which brought stakeholders together to develop an ERP Roadmap for Sri Lanka. This program set up a voluntary EPR model with the private sector, recyclers, and importers involved in managing plastic waste. As of June 2023, 12 Material Recovery Facilities were established by private sector companies to institutionalize waste collection and contribute to the EPR scheme. In June 2022, with suggestions from partners from the private sector,

Biodiversity Sri Lanka and the CCC developed and launched an Online Plastic Waste Reporting Portal for EPR-Obligatory Companies. Endorsed by the Ministry of Environment, the system allows EPR-Obligatory firms to submit information on their plastic waste usage and collect back accomplishments to the Central Environmental Authority (CEA). The CEA now manages the online reporting system's backend.

Sri Lanka is yet to implement a mandatory EPR mechanism for plastic waste. The 2021-2030 National Action Plan on Plastic Management's Goal 7 committed to introducing legal requirements to operationalize EPR and to pilot implementation for selected products by 2022. In May 2024, the CEA announced plans to introduce new laws which would enforce the EPR system. These laws would oblige companies which use plastic packaging to collect and manage such materials after use, to create a closed-loop system for plastic waste. They are also expected to include a prohibition on littering plastic packaging and bottles.

DISCLAIMER

The purpose of this publication is to explore interesting business models which reveal existing 'bright spots' that are necessary for a greener economic recovery for Sri Lanka. CSF did not receive any financial or in-kind contributions from the companies mentioned here. The selection of these three case studies was through an independent internal review process. The participation of company representatives in our interviews was voluntary. The authors have not independently verified claims made by the representatives.

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We conduct high-quality research, promote collaboration across disciplines, and generate actionable ideas. Our current work is anchored to influencing a just recovery from Sri Lanka's polycrisis, with the environment and human well-being at the core.

Our research has partnered with organisations such as Institute of Development Studies, London School of Economics, International Labour Organization, Open Society Foundation, Blue Resources Trust, and Biodiversity Sri Lanka.

What sets us apart is our interdisciplinary approach to research and policy advocacy. We like being imaginative in how we think about challenges and solutions. We continually engage with a spectrum of stakeholders - from local communities to policymakers - which ensures that our research is relevant and accessible to a broad audience, while also contributing to meaningful policy change.

A publication under CSF's thematic pillar on: Nature, Climate, and the Economy

We conduct research, convene stakeholders, and communicate policy imperatives for putting nature and natural capital at the core of Sri Lanka's post-crisis economic recovery, and its medium-term development pathways. Ongoing work includes innovative financing for conservation and a green recovery, strengthening financial institutions' environmental integration, nature-positive tourism, and reorienting growth metrics towards better considerations of natural capital.



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