LUCID

Closing the loop on single-use plastics

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Problem Statement:

How might we tackle the burning issues of plastic waste disposal in rural India?

Objective and Key Results

Objective:  
Increase the collection and proper disposal of plastic waste in rural areas of India.

Key Results:
- Establish plastic waste collection points in rural areas to increase plastic waste collection over the next year.
- Partner with local waste management organizations to hire and train waste pickers in rural areas, resulting in an increase in proper plastic waste disposal over the next year.

Objective:  
Encourage sustainable alternatives to plastic in rural areas of India.

Key Results:
- Develop a digital platform to connect various stakeholders to sustainably collection and disposal in the waste ecosystem.
- Leverage the Digital India initiative to connect and support rural entrepreneurs for the promotion and sale of sustainable products made of single-use plastics.
Design Methodology

1. Establish research query
2. Conduct interviews and Ground Research
3. Possible Solution
4. Final Selected Solution
5. Research
   - Establish research query
   - Conduct interviews and Ground Research
6. Ideate
   - Possible Solutions
   - Final Selected Solution
7. Empathy
   - User Personas
8. Process Flow
9. High Fidelity Wireframes
10. Define
    - Insights
    - Redefined HMWs
11. Define
12. MEASURABLE RESULT
13. IDEATE
14. VALIDATION
15. IMPACT
16. Iterate
17. Iterate
18. Iterate
Research Findings

India's waste production and plastic consumption have both significantly increased over the last five years. Only 30% of India's annual plastic waste production—3.4 million tonnes—is recycled.

While the remaining plastic waste is disposed of in landfills, the ocean, or burned. According to a report released in the nation's capital by the Marico Innovation Foundation, the country's consumption of plastic has increased at a compound annual growth rate (CAGR) of 9.7% over the past five years, from 14 MT in the fiscal year 2016–17 to 20 million tonnes in 2019–20.

### Research Findings

#### POLYMER NAME

<table>
<thead>
<tr>
<th>Polymer Name</th>
<th>Recyclable?</th>
<th>% Recycled Annually</th>
<th>Time Taken for Decomposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-density Polyethylene - LDPE</td>
<td>Sometimes recycled</td>
<td>6%</td>
<td>20-30 years</td>
</tr>
<tr>
<td>Polypropylene - PP</td>
<td>Occasionally recycled</td>
<td>3%</td>
<td>50 years</td>
</tr>
</tbody>
</table>

#### Public Waste Bins in Village

- **36%** Present
- **64%** Absent

#### Are households visited by a community waste vehicle?

- **24%** Yes
- **76%** No

#### Percentage villages having waste management facilities

- Community Waste Bin: 36%
- Community Waste Collection Vehicle: 29%
- Safai Karamchaari: 47%

#### Are there govt./NGO campaigns on reducing plastic waste?

- Yes: 19%
- No: 76%
- Didn't Know: 2%

Source:

- [Plastic Study Pratham](https://plasticstudy.pratham.org/)
- [tinyurl.com/442yn21b]
Research Findings

<table>
<thead>
<tr>
<th>Polythene bags, wrappers and satchets</th>
<th>THROW WITH OTHER WASTE</th>
<th>BURN</th>
<th>BURY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43%</td>
<td>58%</td>
<td>6%</td>
</tr>
</tbody>
</table>

What kind of waste is bought from households?

- Plastic Bottles: 50%
- Plastic Packaging: 42%
- Plastic Bags: 32%
- Plastic Wrappers: 25%

Why does a Kabadiwala reject certain kinds of plastic?

- As it has low value in the market: 48%
- As it has no demand in the market: 45%
- As it has NO value in the market: 39%
- They are not in substantial quantity: 13%
- They do not have the space to store it: 11%
- Others: 8%

**Key Takeaways**

The waste collected by community waste vehicles was often either burnt outside the village or dumped in a landfill.

As more than 65% of kabadiwalas do not accept single-use plastic, it is often burned by households, causing severe health consequences such as heart disease, respiratory illnesses, and negative impacts on the nervous system.

Single-use plastic has a long lifespan of around 50 years. Hence, it should be encouraged for recycling or upcycling than dumping in landfills or burning.
Personas

Sunita Devi
- 45-year-old homemaker
- Born and raised in a small village in rural India
- Daughter of a farmer, mother of two children
- Married at the age of 25
- Suffering from respiratory issues

Challenges
- Limited access to resources and services in her village for waste disposal
- Frustrated by Kabadiwalas coming less frequently and not accepting single-use plastic waste
- Forced to resort to burning plastic waste along with other households in the neighborhood

Goals
- Find simple and affordable ways to dispose of plastic waste without burning it.
- She would like to take care of respiratory issues.
- Encourage neighbors not to burn anything close to her house.

Sanjay
- 42-year-old
- Lives in village with his wife and children
- Self-employed, operates his own scrap business and Engages in door-to-door collection of waste materials

Challenges
- Inconsistent waste material supply from households and local businesses
- Financial challenges caused by fluctuating market prices for different types of scrap materials
- Relies on door-to-door collection to obtain sufficient amounts of scrap materials

Goals
- Provide for his family's needs
- Expand his business
- To get knowledge of current market rates for different types of scrap materials
Improper waste disposal in Indian villages leads to the burning of plastics, causing harmful environmental and health consequences.

Limited market acceptance of low-quality and single-use plastic waste like wrappers and sachets limits scrap dealers to accept it from households impacting their income.

Kabadiwalas in India prefer high-value materials over plastic due to limited storage space on their wooden cart, as plastic occupies more volume and has low return.

Upcycling has multiple benefits over recycling, including environmental advantages, economic opportunities, and the ability to foster creativity and community connections.

Given that single-use plastic can take over 50 years to degrade, promoting upcycling rather than recycling may be more effective.
How might we improve waste disposal in Indian villages to prevent the burning of plastics and reduce the harmful environmental and health consequences?

How might we enable kabadiwalas in India to store and transport plastic waste efficiently?

How might we create an effective waste collection ecosystem to address the issue of uncollected single-use plastics?

**Finalized How-Might-We Statement**

How might we create an effective waste collection ecosystem to address the issue of uncollected single-use plastics?

**Potential Ideas**

What if!! there was no single-use plastic and all packaging had to be made of calcium instead?

Mix foundry sand waste and plastic garbage that has been graded; the resulting mixture can now be used to create a product

Digital + Physical system A SaaS-based DIGITAL WASTE ECOSYSTEM
Introducing Lucid - Revolutionizing the way we think about waste management

Lucid is a powerful platform that is changing the game in sustainable waste management. Our revolutionary toll-free number and mobile application makes it easy for consumers to schedule a pick-up for their upcyclable single-use plastics from the comfort of their own homes.

But that's just the beginning. We've also created the Lucid Marketplace, a platform that solves the imbalance between demand and availability of upcyclable waste materials. From households to waste generators, anyone can list their upcyclable waste on our platform, and upcyclers can bid on them.

With Lucid, the entire process is seamless, from scheduling pick-ups to generating credit points to the user's account. Users can then redeem these points to buy upcycled products on the platform or receive money in their preferred mode of payment.

Join the upcycling revolution with Lucid - where sustainability meets convenience.
The Lucid platform operates within a larger system map of sustainable waste management. At the center of this system map are the waste generators, such as households and businesses, who produce upcyclable waste materials. These materials are then collected and sorted by waste management companies, who work to ensure that they are properly disposed of or upcycled.

Lucid fits into this system map by providing an easy and convenient way for waste generators to sell their upcyclable waste materials to upcyclers. This helps to ensure that these materials are not wasted and instead are repurposed into new products.
The user flow for selling single use plastics on Lucid is simple and straightforward. Users log into the app and navigate to the "Sell Scrap" page, where they enter the quantity of each type of plastic they wish to sell and view the current scrap pricing. They can then schedule a pickup time and location for their materials. Lucid connects the user with a nearby scrap dealer who picks up the scrap and transports it to an upcycling facility. Users receive credit points in their account, which can be redeemed for upcycled products or cash payments. The user flow is designed to be seamless and user-friendly, encouraging users to contribute to a more sustainable and circular economy.
High-Fidelity Wireframes: Buy Upcycled products

The user flow for buying upcycled products on Lucid involves browsing available products, adding them to the cart, and completing the checkout process. Users can pay using their credit points earned from selling single-use plastics or cash. The product is then shipped to the user's address. This user flow encourages sustainable consumption habits and provides a platform for upcyclers to showcase their products.

Thank you!

[Link to Prototype]