WASTE RECIPES OF INDIA

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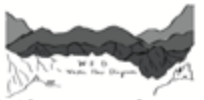
"Mining for a Cause"
LADAKH ECOLOGICAL DEVELOPMENT GROUP (LEDeG)
LEH, LADAKH

"Handling Tourism Waste Surges"
LADAKH ECOLOGICAL DEVELOPMENT GROUP (LEDeG)
LEH, LADAKH



"Where does the waste go?"
LADAKH ECOLOGICAL DEVELOPMENT GROUP (LEDeG)
LEH, LADAKH

"Paryavaran Sakhi"
WASTE WARRIORS SOCIETY
RURAL HIMALAYAN REGIONS

"Alag Karo"
SAAHAS
SUSHANT LOK, GURUGRAM

"Manage Value at Source"
START UPCYCLING NOW PVT. LTD.
MUMBAI, MAHARASHTRA

"Kachra na Kar"
ROUNDGLASS FOUNDATION
PUNJAB

"Ecogram"
SAAHAS, GURUGRAM

"Self-help is the best help"
SAAHAS
UDUPI, KARNATAKA

"Clean Cooperatives"
JAGRITI ENTERPRISE CENTRE
PUNE, MAHARASHTRA

"Hands on waste"
HANDS ON WASTE
KOLKATA, WEST BENGAL

"Living with dignity"
SAAMUHIKA SHAKTI
BENGALURU, KARNATAKA

"Know Waste"
PRATHAM EDUCATION FOUNDATION
CHHATTISGARH

"It takes a Village to Transform one"
HASIRU DALA
NAGAWALA, KARNATAKA

"Islands of no waste"
DAKSHIN FOUNDATION
SOUTH ANDAMAN ISLAND, ANDAMAN & NICOBAR ISLANDS

"Waste needs an office space"
HASIRU DALA
BENGALURU, KARNATAKA

"Where should sanitation workers live?"
TECHNOLOGY INFORMATICS DESIGN ENDEAVOUR (TIDE)
BENGALURU, KARNATAKA

"Housing Colonies Waste Act"
HASIRU DALA
BENGALURU, KARNATAKA

"Kitchen to Kitchen"
SAAHAS
CHENNAI, TAMILNADU

"Micro Solutions for Macro Problems"
GARIYOSHI DAS
TIRUCHIRAPPALLI, TAMILNADU

"What is in my bin?"
BINTIX WASTE RESEARCH PVT. LTD.
BENGALURU, KARNATAKA

"Bhoomitra - true friends of the soil"
SAAHAS
BENGALURU, KARNATAKA

"Green Worker's Army"
SOCIO ECONOMIC UNIT FOUNDATION (SEUF)
MADAPALLY, KERALA

"Women Wasteprenecurship"
GREEN WORMS
KOZHIKODE, KERALA

"A Stitch in time saves a ton"
SAMPOSHAN
CHENNAI, TAMILNADU

ACKNOWLEDGEMENT

The compendium ‘Waste Recipes’ is an effort to convert a wide range of experiential wisdom into curated, actionable recipes drawn from a cohort of individuals from the community of partners, practitioners and people striving to reimagine India’s waste management landscape. My colleagues and I extend our deepest gratitude to the *ClimateRISE Alliance* and *Villgro Innovation Foundation*, whose strategic support and expertise enabled the online convenings and three thematic working groups. Insights from these groups—*Leveraging Markets, Strengthening Civic Initiatives, and Building Communications & Narratives*—have shaped this work, while we documented successful initiatives led by partner organisations across the country.

Our heartfelt thanks go to the diverse group of subject-matter experts, policymakers, municipal officials, civil-society organisations, and private-sector innovators who lent their time, experience, and energy to collect the recipes. Your experiences and honest reflections, use-case studies, and grassroots stories have infused these pages with the lived realities and tested solutions.

We are deeply grateful to informal waste-picker collectives, resident-welfare associations, social enterprises, academic institutions, and local NGOs; without their knowledge and action these case studies and recipes could not have been completed. Your courage and willingness to experiment, adapt, and scale community-driven models offers compelling evidence of what is possible when diverse ecosystem players collaborate to stitch the broken pieces.

I would also like to acknowledge the team at *Socratus Foundation*, whose curatorial zeal, editorial rigor, design thinking, and articulation have made this compendium both an actionable guide and an inspiring solution narrative for policymakers, practitioners, businesses, and citizens alike.

We will continue to drive our efforts in forging partnerships for the ‘*recipes*’, to get cooked, which have already sparked new solution ideas across various contexts.

Devjit Mittra
Executive Director,
Socratus Foundation for Collective Wisdom

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BACKGROUND AND CONTEXT

In 2024, Socratus Foundation, in collaboration with the ClimateRISE Alliance as well as Villgro Innovation Foundation, brought together diverse stakeholders through online convenings to map the dimensions of waste generation and landfill management in cities, and ideate solutions and pathways for the future.

Working Groups of experts and practitioners were convened between June 2024 to August 2025, to develop a deeper understanding of the waste management and reduction problem from the ground up and understand pathways for action.

The working groups were formed along three thematic areas:

1. *Leveraging Markets for Waste Management*
2. *Strengthening Civic Initiatives*
3. *Building Communications and Narratives for Behaviour Change*

Waste Recipes is an attempt to respond to some of the insights that emerged through these convenings, while capturing successful initiatives led by partner organisations around the country.

INTRODUCTION

India Story, Climate Grammar: Waste and the Climate Crisis

In a country as vast as India, what happens when rapidly growing cities treat landfills as the default solution for waste disposal? Do these sites merely contain garbage, or do they quietly emit methane, contaminate groundwater through leachate, and release toxins into soil and air? As the edges of Indian cities see mountains of waste piling up, what happens to the people whose labour sustain the system- waste pickers, scrap dealers, and the informal workers?

Evidence shows that poorly managed waste is not inert; greenhouse gas emissions are driven, ecosystems are degraded and recoverable resources get squandered. Microplastics enter lakes, rivers and oceans, ingested by marine life, birds, and even grazing cattle. The result is evident- landfills are not solutions but systemic failures. And such failures threaten public health and the already depleting biodiversity.

To address India's waste crisis, which cannot alone be addressed by technology or infrastructure, policies need to center these people and the ecosystems impacted by landfills. An intersectional climate justice lens makes these inequities visible, while also challenging the anthropocentric approaches and thereby enabling inclusive, climate-resilient interventions for cities that serve both people and the planet.

Curated by the Socratus Foundation for Collective Wisdom and the ClimateRISE Alliance, this compendium documents case studies and best practices in waste management and landfill remediation across India. Presented as '*Waste Recipes*', it captures innovative approaches, impact stories, and lessons from diverse geographies. It has been designed to serve as a practical resource to support policymakers, municipal authorities, urban development professionals and citizens in shaping the future pathways for sustainable and circular waste management.

A total of 25 case studies are documented in this compendium, structured under the following categories:

1. Citizenship and Public Problem Solving
A collective sense of belonging and responsibility to each other and to the planet. Citizenship is one of the fundamental values of nation-states,

can we make this apply at the planetary level in a truly participatory manner? Can we enable people to exercise their citizenship in crucial matters such as waste management and climate change (climate citizenship)?

- Community-led waste management initiatives
- Behaviour change and citizen engagement
- Data, transparency and citizen awareness - open source data on waste, crowdsourcing data from citizens (grievance redressal platforms, citizen watchdogs etc.)

2. Building Enabling Ecosystems

It takes an ecosystem to solve wicked problems in waste management, which are systemic and complex. Intervening at the level of ecosystems implies acting at the points of intersection between different actors (for instance, between citizens and informal waste workers or between industries and regulatory authorities) to help the entire ecosystem function effectively.

- Public-private partnerships for waste management (ULBs and startups)
- Systems thinking in waste: tools, spaces and knowledge-sharing that apply a systems lens
- Fostering investments and funding in waste
- Journalism, media and public communications on waste - building narratives and promoting interventions at the level of ecosystems

3. Flourishing and Equitable Cities

A state of functioning where everyone has equal opportunity to maximize their capabilities. Flourishing not at an individual level, but at the level of communities, cities, and the planet.

- People living and working in landfills: health, safety, precarity of livelihoods
- Integration and empowerment of informal waste workers: caste and socio-cultural implications of waste work
- Gender and waste: division of labor, workplace safety, equal pay

4. Adopting a Climate Lens

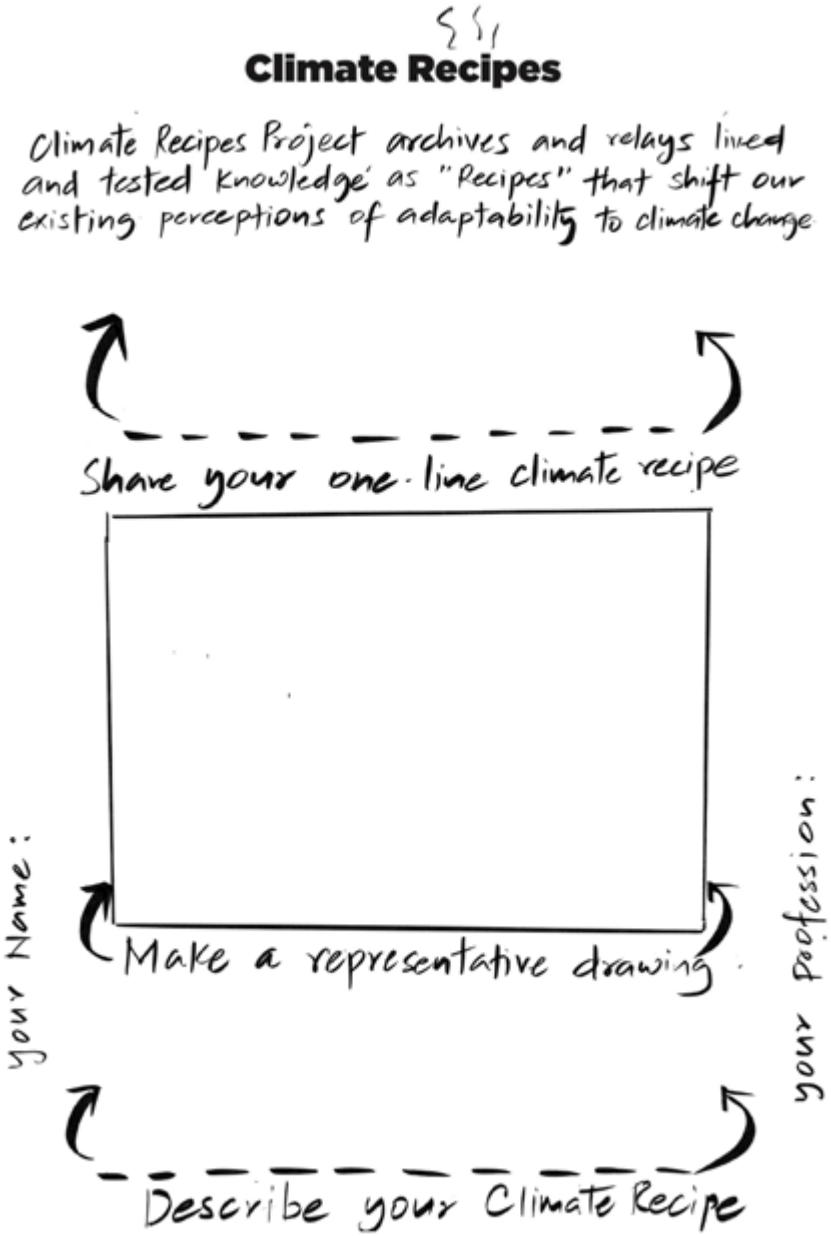
Mainstreaming the lens of climate change in all aspects of waste reduction and management. Climate change and the natural environment are no longer just an external variable to be controlled but an essential aspect of India's development. How can this be foregrounded in public discourse and interventions on waste?

- Assessing the carbon footprint of waste management solutions
- Circularity and upstream innovations - changing production and consumption patterns to reduce waste at source
- New business models for sustainable waste management - building situated and localized economies.

This compendium aims to compile case studies in an innovative format of "Waste Recipes" inspired by the Climate Recipes project. The recipe format appealed to us as a method, as it feels like an intimate, everyday instruction with the potential to improvise and reconfigure intergenerational knowledge. This format renders best practices and commendable efforts in waste management more accessible and memorable to wider audiences, through visual art and storytelling.

CURATORIAL NOTE

About Climate Recipes



Climate Recipes is conceptualized and relayed by Srinivas Mangipudi and Srinivas Aditya Mopidevi and supported by Sunaparanta Goa Centre for the Arts, Pollinator.io, and Socratus. It is an itinerant project envisioned as a growing archive of living wisdom built through conversations with people who have spent their lives in balance with nature. These recipes are entry points for an adaptable life suggesting different forms of creating, listening, cooking, grieving, training, building and loving.

I, We/Us, Ours Journey

Like every complex problem, waste management requires solutions at different levels and collaboration with diverse stakeholders. Each case study we received enabled transformative change at different stages of the waste management process. Therefore, this compendium has been designed to take the reader on a change-making journey of I → We → Ours.

- Case studies highlighting work, primarily with citizens or Resident Welfare Associations (RWAs) have been presented under '**I**' because they inspire and enable individual action.
- Organisations and interventions involving Urban Local Bodies and/or businesses are featured in the '**We**' category.
- Lastly, initiatives engaging state, market and society- citizens, governments (local/national), and businesses—are included in the '**Ours**' category.

Each intervention documented in Waste Recipes contributes to building an ecosystem capable of overcoming the formidable challenges of waste management. These case studies offer on-ground practical insights and inspiration to come together and do more to reduce the environmental harm. They are recipes for a better future, and we hope they will be replicated and scaled for that future to become a reality.

Socratus
The Midwife of Collective Wisdom

As **Socratus Foundation for Collective Wisdom** we catalyse systemic change by co-creating solutions for 'wicked problems' like waste, with communities, governments, markets, and civil society. Guided by our Theory of Change, we "midwife" collective wisdom through the RKNN framework—mobilizing Resources, distilling, creating and sharing Knowledge, building Networks, and shaping Narratives. We design and facilitate inclusive convenings, synthesize research and traditional insights, secure technical and financial support, and craft communication strategies that drive behavior change and embed circular economy principles in policy and practice.

climate RISE alliance

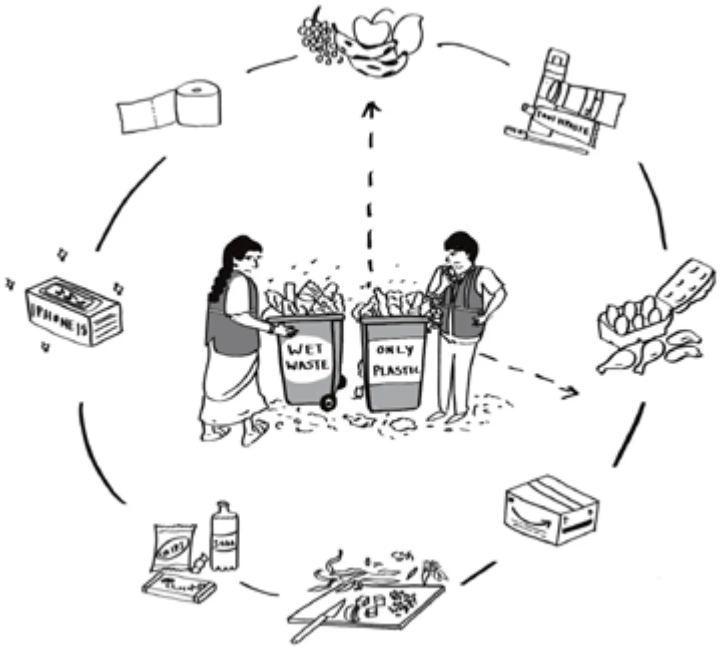
ClimateRISE Alliance is a collaborative platform that aims to accelerate India's journey towards climate resilience for the most vulnerable communities. By leveraging collective insights and expertise of 100+ civil society organizations working at the intersections of climate & building resilience for the most vulnerable communities, the alliance is working to shape an India view, a common vocabulary, and enable a multi-stakeholder engagement approach to intersectional climate action in India. With a mission to build a Resilient, Inclusive, Sustainable, and Equitable India by placing people, nature, and the climate first. The alliance works across the areas of: Sustainable Cities and Service Delivery, Resilient Agriculture and Livelihoods, Conservation and Restoration, Health Systems and Services, and Gender, Equity, and Social Inclusion.

01

CRAFTING GROUND-UP STORIES TO DRIVE BEHAVIOURAL CHANGE

I We Ours

Megha Raha
-
Hands on Waste
Kolkata, West Bengal
-
Thematic Keywords: Citizenship and public problem solving
-
Stakeholders: CSOs/Social Enterprises/NGOs, Waste Pickers, ULBs, Citizens' Groups/, Residents' Welfare Associations (RWAs), For-profit, Startups



Core Challenge

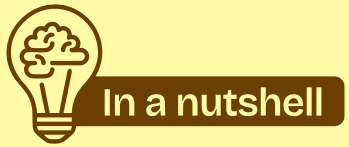
Beyond awareness, what's truly missing in society is people taking the time to reflect on waste management. In our daily lives, people hardly think before acting when it comes to how they dispose their wastes. There are neighbourhoods where commonplace disputes occur regarding where waste is to be dumped. In the midst of this, waste pickers have practiced the art of finding valuables among the waste and they should be recognised for their efforts and included in any model proposed for waste management. But as we scout for a multi-faceted solution that benefits all, it becomes crucial to take the time to think about who is included in the innovations that are introduced. The solutions might be incredibly simple but habit-forming is a complex game. Hence, Hands on Waste started using storytelling with authentic voices and real-life narratives from the waste workers to inspire citizens into seeing their world and what it means for them when we segregate and handover waste to them with respect. The occupation of handling waste might not be glamorous but it ensures

our daily lives keep going smoothly. Our goal is to highlight impactful examples and leverage them to develop new initiatives, fostering collaboration over competition in this critical sector.

Turning Challenges to Solutions:
Hands on Waste uses social media and offline events to simplify the complex issues surrounding waste work and the challenges faced by waste workers. We collaborate with schools and colleges to run educational initiatives on responsible waste management. The practice of segregating waste into more than two categories (wet and dry) remains uncommon among the public. We plan to introduce models focused on waste reduction through reuse and repurposing. Our goal is to create accessible solutions while promoting an inclusive waste management sector free from stigma. Through narratives, interviews, snippets, facts, and informational posts, we raise awareness. Our communications wing supports grassroots organizations by showcasing their work through online and offline media and developing creative collaterals for their IEC (information, education, communication) interventions.

Journey of Problem Solving:
A. The concept was born in 2019 during an upcycling project that our team was undertaking.
B. We then started an initiative to create a platform addressing the plight of waste workers across the country.
C. We designed a social media page to run advocacy campaigns.
D. We also disseminated these insights and stories during various events and walks.

Secret ingredient(s) for success:
1. The waste workers' willingness to share their story.
2. The mindset shift required to see waste as a resource.



Usage of different creative story-telling formats to spread awareness about the world of waste work. The aim is to drive behavior change and encourage responsible practices of waste segregation, composting and more.

02

EMPOWERING RURAL STUDENTS TO TACKLE PLASTIC WASTE

I We Ours

Kirti Bhatnagar
-
Pratham Education Foundation
Chhattisgarh
-
Thematic Keywords: Citizenship and public problem solving
-
Stakeholders: Govt. at state level

Core Challenge

The Plastic STORI (Study of Rural India) 2022 by Pratham and Green Communities Foundation uncovered critical insights into plastic waste management gaps across 15 Indian states, covering 700 villages. The study found that 73% of the villages studied burn plastic waste due to limited disposal options, and 74% of households are unaware of the severe health and environmental effects of burning plastic. Only 36% of these villages have public waste bins, emphasizing the urgent need for awareness and community-driven waste management solutions. In response, the Plastic Literacy Inter-School Challenge was launched in October 2023 to empower students and communities to address plastic waste issues through education, innovation, and the utilization of existing waste processing systems like a Materials Recovery Facility (MRF).

This case study addresses the low awareness of plastic waste management in rural communities and highlights the critical need

for empowering citizens, particularly children and youth, to take leadership roles in identifying local waste management problems and finding sustainable solutions.

Turning Challenges to Solutions

The project unfolded in three levels: All, Some and Few, allowing students to participate in workshops, lead plastic waste awareness campaigns and design innovative solutions to reduce plastic waste.

Over three weeks, students from 58 participating schools collected 1,311 kg of plastic waste that was transported to Manikanchan Kendras, a Materials Recovery Facility (MRF), with the support of village and school authorities.

The project took place in five blocks across three districts, namely Dhamtari, Durg, and Balod districts of Chhattisgarh. Using the facility instead of creating a new system encouraged students to connect with existing infrastructure, reinforcing that sustainable waste management can be achieved through community collaboration and resource utilization. Different functional MRFs were used depending on the location of the schools.

The challenge not only fostered plastic literacy but also catalyzed community-driven solutions. At the challenge's advanced stage, students developed design-thinking projects, including prototypes for plastic shredding machines and automated waste collection systems. With active support from local government officials, this initiative has raised plastic literacy, inspired long-term behavioural change and community engagement, creating a replicable model for sustainable waste management in rural settings.

Journey of Problem Solving:

A. Planning: Conducted a baseline study (The Plastic STORI) to assess the extent of plastic waste in rural India in 2022. The project was structured in three levels—All, Some, and Few—progressing from awareness creation to hands-on problem-solving. The pilot phase involved collaboration between Pratham and local schools, government bodies with inputs from educators and waste management experts.

B. Design: Developed an awareness and action-based curriculum for middle schools, focusing on both educational workshops and practical waste collection.

C. Implementation:
   Teacher Workshops: Training on creative learning and the National Education Policy, preparing teachers to guide students.
   - Inter-school competition: Project-making competition on the theme 'Plastic and Us' for all middle school students.
   - Student Workshops: Awareness sessions on plastic types and their environmental impacts.
   - Plastic Collection Drive: Students organized community awareness activities and plastic waste collection drives.
   - Prototype Development: At the 'Few' level camp, students used the pedagogical approach of design thinking to create prototypes of solutions addressing local waste management problems.

D. Evaluation: The project used a mix of qualitative and quantitative assessments. Waste collection efforts were verified, and prototypes were evaluated based on feasibility and creativity. The impact was measured by assessing the level of awareness through focus group discussions, the quantity of waste collected, participation rates and the creativity of solutions presented during design-thinking camps.
   - Quantitative Indicators:
     i. High Participation Rates: 3,990 students from 75 government middle schools contributed to the 'All' level challenge, with over 224 students advancing to the 'Some' level workshops.
     ii. Plastic Waste Collection: Over 1,311 kg of plastic waste was collected in 26 days and transported to Manikanchan Kendra for proper recycling and disposal.
     iii. Final Phase Engagement: The top 20 schools participated in the 'Few' level camps, where students designed and presented innovative prototypes addressing plastic pollution. To determine the 'top 20 schools', an evaluation metric was applied based on two key factors: the effectiveness of each school's awareness activities and the total volume of plastic waste collected. Schools that excelled in both awareness-building efforts and waste collection were selected to advance to the next level, highlighting their successful contributions to plastic management in their communities.

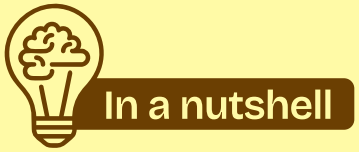
- Qualitative Indicators: Focus Group Discussions (FGDs) with students, teachers, and community members revealed the transformative impact of the initiative.
  i. Implementation and problem-solving: During the plastic waste collection activities, the students faced multiple challenges and showed impressive adaptability by devising practical solutions. When some older students were hesitant to participate, primary school children were engaged instead, incentivised by chocolates. This reward system quickly encouraged younger students to bring substantial amounts of waste each day to the school. In addition, while gathering waste during the Bhagwat Katha event, students encountered resistance and social stigma, with community members questioning their actions. However, they persisted, taking the opportunity to spread awareness about proper plastic disposal and encouraging local shopkeepers to use designated bins. The students also faced health and safety issues while handling dirty plastic waste, with some experiencing hand and mouth infections. In response, they utilized protective gear, such as masks and gloves, to safeguard themselves. They found that using a wooden stick helped them manage the dustbin and collect waste safely without direct contact. This learning was also reflected in a hands-free waste collection prototype created at the 'Few' level design-thinking camp. Each of these solutions reflect the children's resourcefulness, transforming challenges into opportunities for better community engagement and promoting safer waste collection practices.
  ii. Knowledge retention and engagement: The workshops were impactful; students retained key details about plastic types, their environmental impact, and methods of responsible disposal. They especially appreciated the 'learning by doing' methods, with hands-on activities like worksheets, games and video presentations resonating strongly.
  iii. Progression across stages: The quality and depth of submissions by students across stages enhanced significantly. For example, Government Middle School Paraswani initially submitted simple posters but later conducted effective community awareness efforts, collecting over 70 kg of plastic waste and proposing a prototype system for collecting waste from drains. Similarly, Government Middle School Hasda No. 1 moved from basic posters to designing a plastic shredding machine that could be used in villages to process plastic, turning it into a source of income. This progression in submissions highlights the students' deepening understanding of plastic waste issues and demonstrates how the challenge fostered creative, community-centered solutions to local waste management problems.

Secret ingredient(s) for success:

1. Role of middle-school students: The role of the students as 'plastic leaders' was central to fostering community engagement and involvement throughout the project. Once these students were selected through the various stages of the Plastic Literacy Inter-School Challenge, they became ambassadors of change, not only within their schools but also in their local communities. These young leaders organized and spearheaded awareness campaigns about the harmful effects of plastic waste, encouraging villagers to take part in clean-up drives and adopt responsible waste disposal practices. The students, supported by their teachers, mobilized local residents through door-to-door campaigns, school meetings, and public events, educating them about the types of plastic and the environmental damage caused by improper disposal, such as burning or dumping.
2. Government school teachers: The role of teachers was crucial at every stage of the project. As 'Creativity Champions', they not only guided the students through workshops and challenges but also ensured that submissions were completed on time. Teachers acted as facilitators in awareness campaigns and supervised students during waste collection activities, amplifying the project's reach and impact within their schools and communities.
3. Local waste collection bodies and government officials: The completion of this initiative also hinged on the collaboration with local waste collection agencies and village administrations. These bodies were integral in ensuring the proper collection, transportation, and disposal of the plastic waste gathered by the students.

4. Pre-existing infrastructure: Rather than establishing a new system, the initiative connected students and communities with Manikanchan Kendra, a regional MRF. This approach minimized costs and demonstrated how rural areas could utilize existing facilities to manage plastic waste sustainably.

This multi-stakeholder approach ensured that the initiative was not only educational but also practical in its implementation and long-term sustainability.



Pratham Creativity Club's Plastic Literacy Inter-School Challenge engaged over 75 government middle schools across 100 villages in Chhattisgarh. Designed to address plastic waste awareness in rural India, this initiative encouraged middle school students to take ownership of waste management through awareness campaigns and hands-on waste collection efforts.

Alag Karo

FROM MIXED WASTE TO ZERO WASTE

I We Ours

Aarti Sachdeva
-
Saahas
Sushant Lok, Gurugram
-
Thematic Keywords: Citizenship and public problem solving, Building enabling ecosystems
-
Stakeholders: ULBs, Waste pickers, citizens' groups/ Residents' welfare associations, CSOs/NGOs/Social enterprises

Core Challenge
The primary challenge was the improper segregation of municipal solid waste in Sushant Lok, Gurugram. Residents and waste collectors were not practicing source segregation effectively, resulting in waste being mixed, which demotivated residents who did segregate their waste and, eventually, led to open dumping. Additionally, the formal waste collection agency failed to meet segregation and collection standards, necessitating a systemic change.

Turning Challenges to Solutions
After successfully implementing Alag Karo for bulk-waste generators in Gurugram, the project was launched as a ward level initiative in Sushant Lok Block C in 2021 to create a model for decentralized waste management. Led by Saahas, with support from GIZ, the Coca-Cola Foundation, and TetraPak India, the project aimed to improve waste segregation at source and establish a community-owned waste management system. The Resident Welfare Association (RWA) collaborated closely with the Saahas team to conduct awareness campaigns, train waste collectors, and monitor segregation practices.

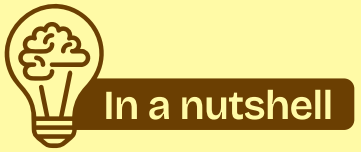
To address inefficiencies in the formal waste collection system, the RWA took over waste collection and established a decentralized processing unit capable of handling 1.5 MT of wet waste and 4 MT of dry waste daily. This facility enabled composting, resource recovery, and recycling, significantly reducing landfill dependency. Over 70% of residents adopted segregation practices, and 7-8 MT of daily waste was processed locally, diverting significant waste from landfills and generating compost for community use.

Journey of Problem Solving:

A. Planning: Conducted a baseline study and gap analysis in waste management.
B. Design: Collaborated with the RWA to set up infrastructure and implement a decentralized processing unit.
C. Implementation: Organized awareness campaigns, trained volunteers and waste collectors, and established a waste monitoring system.
D. Evaluation: Conducted waste audits and monitored segregation levels through WhatsApp updates and regular feedback.
E. Other Steps: Hosted events like plog runs and compost melas to engage the community and promote zero-waste practices.

Secret ingredient(s) for success:

1. Stakeholders: Residents of Sushant Lok, waste collectors, informal workers, and social entrepreneurs managing waste processing.
2. Partnerships: Municipal Corporation of Gurugram, Coca-Cola Foundation, TetraPak, and GIZ.
3. Other Factors: RWA's proactive role, clear communication, and effective use of decentralized waste management infrastructure.



The *Alag Karo* case study in Gurugram showcases a community-led waste segre-gation initiative. Saahas and the local RWA improved segregation rates to over 70% by engaging residents, training collectors, and establishing a decentralized waste processing unit, diverting 7-8 MT of waste daily from landfills.

04

A WASTE PICKER COOPERATIVE MODEL FOR SOLID WASTE MANAGEMENT

T We Ours

Sujay Hammannavar
-
SWaCH
Pune, Maharashtra
-
Thematic Keywords: Building enabling ecosystems, Flourishing and equitable cities
-
Stakeholders: ULBs, Waste pickers, ULBs, CSOs/NGOs/ Social enterprises

Core Challenge
Waste pickers, a majority of whom are women, often from historically socially ostracized communities, rely on collecting recyclables from streets, landfills, and other waste accumulation sites for their livelihoods. An estimated 500,000 waste pickers in Maharashtra derive their household income from the collection and sale of recyclable materials. Their exclusion highlights a significant social and economic issue within the evolving solid waste management (SWM) landscape.

India recycles 12%–13% of its plastic waste, higher than the 4%–5% in developed countries (where the informal waste economy is negligible). This difference is largely due to the informal sector, which facilitates 60%–80% of plastic recycling.

When integrated into formal systems, such as in Pune, where waste pickers help recycle up to 35% of dry waste, they save the local government substantial costs. Despite their contributions, waste

pickers face harassment and lack formal recognition. The Solid Waste Management Rules 2016 and Plastic Waste Management Rules 2016 acknowledge their role, leading some cities to integrate them into their waste management systems. However, this integration remains inconsistent, with many cities unaware of how to effectively involve waste pickers. Some have even designed systems that unintentionally reduce access of waste pickers to waste and sorting spaces. Although they are an integral part of the waste recycling economy, they operate on the fringes of formal municipal SWM systems.

Turning Challenges to Solutions

SWaCH emerged out of a trade union called Kagad Kach Patra Kasthkari Panchayat (KKPKP) that was set up in 1993 in Pune and Pimpri Chinchwad. Today, the 3,761 waste pickers that own and work at SWaCH are divided into internal informal groups based on the city's geographic divisions. Each of these groups, called Kothis, constitute around 30 waste pickers and each Kothi has 1–2 elected leaders. This is essentially the cooperative's parliament – it meets every month, and takes legislative decisions on important issues like operational norms and rules for waste pickers, service fees and organising for protests.

Fourteen of the 200 representatives are further elected to become members of the board of directors – which is essentially the cooperative's cabinet of ministers. Every decision that the board makes has to be endorsed by the council of 200 waste pickers. This ensures that decision-making powers are distributed horizontally across the organisation, rather than hierarchical top-down decision-making.

Journey of Problem Solving:

A. Regenerative and Distributive Strategies -

- Waste pickers collect a monthly service fee from households they collect waste from, and have the right to sell recyclables – this acts as a second stream of regular income (between 20%–30% of total income).
- The city corporation also supports waste pickers by paying an incentive to those who work in slums, to enable the daily collection of waste from slum areas. This compensates for low user fee collections from such areas and ensures regular services to the slum residents, at par with other areas of the city covered by SWaCH. Typical SWM companies ignore such areas as they know user fee collection will be difficult and recovery of recyclables will also be minimal.
- All waste pickers pay a monthly membership fee of rupees 200 to the cooperative, which consolidates them into a Livelihood Fund called the 'Upajeevika Nidhi'. The expenditure of this fund is governed by the council and board and the money is used to further enhance the livelihoods of waste pickers.

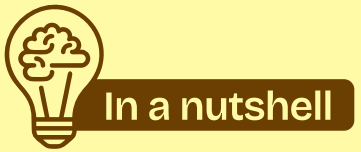
B. Cooperative Stores -

- The waste pickers are able to increase their own decentralised income through mechanisms like cooperative scrap stores. They can decide locally to start their own scrap shop, define its terms of engagement, hire their own staff, decide the price list of recyclables, and decide the annual bonus for regular members. This leads to increased incomes for individual waste pickers without any intervention or directive from SWaCH.

Secret ingredient(s) for success:

1. SWaCH's worker-centric cooperative structure is key to the success of its innovative initiatives. At the heart of its model is the principle of decentralized decision-making, where waste pickers themselves determine operational strategies, ensuring that their work directly benefits their communities and their own livelihoods. This collective ownership allows them to address real-time challenges, such as low user fee collections and provide support to the most marginalized communities of the city. This system is more responsive than traditional, top-down management structures because it places decision-making in the hands of those directly affected, allowing the cooperative to prioritize social equity and environmental responsibility in a way that centralized models cannot.
2. SWaCH's structure provides a platform for individual waste pickers to propose and manage independent income-generating activities like cooperative scrap stores. This gives members a sense of control and fosters entrepreneurship. Since waste pickers are shaping these enterprises, they are better aligned with worker and community needs, creating a sustainable ecosystem of income generation within the cooperative. This self-governance not only boosts individual incomes but also strengthens the collective by promoting accountability and fostering a sense of ownership.

These initiatives are a direct outcome of the cooperative's design, where horizontal power distribution ensures that workers are not just beneficiaries but active shapers of their own livelihoods.



In 2008, SWaCH was registered as a workers cooperative, and was commissioned to work on Pune's waste management system. Today, it has 3,761 self-reliant worker-owners that provide daily front end doorstep waste collection service to over 4 million citizens of Pune. Seventy percent of the workforce is women and over 93% belong to economically and socially excluded sections of society (scheduled castes and scheduled tribes). SWaCH waste pickers recycle 200+ tonnes of waste every day, or 70,000+ tonnes per annum, saving the local government 20 crores in waste management fees.

05

ADOPTING TECHNOLOGY FOR DATA-DRIVEN WASTE MANAGEMENT

T We Ours

Satheesh AV
-
Bintix Waste Research Private Limited
Bengaluru, Karnataka
-
Thematic Keywords: Building enabling ecosystems
-
Stakeholders: For-profits, Startups, ULBs, Waste pickers, citizens' groups/ Residents' welfare associations, CSOs/ NGOs/Social enterprises, Producers importers and brand owners (PIBOs), consumer packaged goods companies

Core Challenge
Bintix's unique technology-enabled process addresses key gaps that currently exist in the waste management space – specifically, lack of citizen awareness, poor segregation at source, unavailability of data on waste and waste traceability.

Bintix has developed proprietary technologies consisting of a Bintix operations platform, traceable waste collection mobile app used by waste collectors and customer mobile app. These technologies, combined with Bintix's experience in waste collection and management in 7 cities for over 6 years, are uniquely positioned to address the gaps that currently exist in the waste management system.

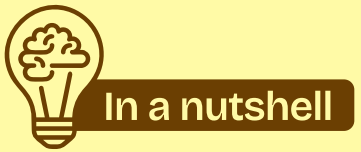
Turning Challenges to Solutions
Bintix adopts technology to power socially inclusive waste-management solutions - from collecting waste, to analyzing it, to finally ensuring environmentally-safe end-processing. Bintix's proprietary

platform and collection design enables end-to-end traceability of waste through QR codes, where every kg of waste collected is traced to the household/ entity generating the waste. This provides real-time feedback to households on compliance to segregation and quantity of waste collected.

Bintix also provides environmental metrics such as CO_2-emissions reduced, and trees/fuel saved due to recycling. These eco-statistics and metrics provide motivation for end users to ensure compliance in segregating at source. System generated traceability enables identification of non-compliant households that can be used to reach out to these subsets of households and eventually, even be used for penalization, if necessary.

Journey of Problem Solving:
Setting up of:
A. Sustainability-focused team
B. Technology Development
C. Partnering with waste management players
D. Information, education, and communication (IEC)
E. Onboarding bulk waste generators, communities
F. Process implementation
G. Reports, insights, feedback, process improvement.

Secret ingredient(s) for success:
1. Technology
2. Partnerships with local waste management entities
3. Sustainability focused team and expertise
4. Association with RWAs and Bulk Waste generators



Insights obtained by Bintix about waste at a large scale in India can support data-driven policy making. Bintix's long-term vision is to see a zero-landfill future, and to achieve this in a sustainable way, in line with the United Nations Sustainable Development Goals.

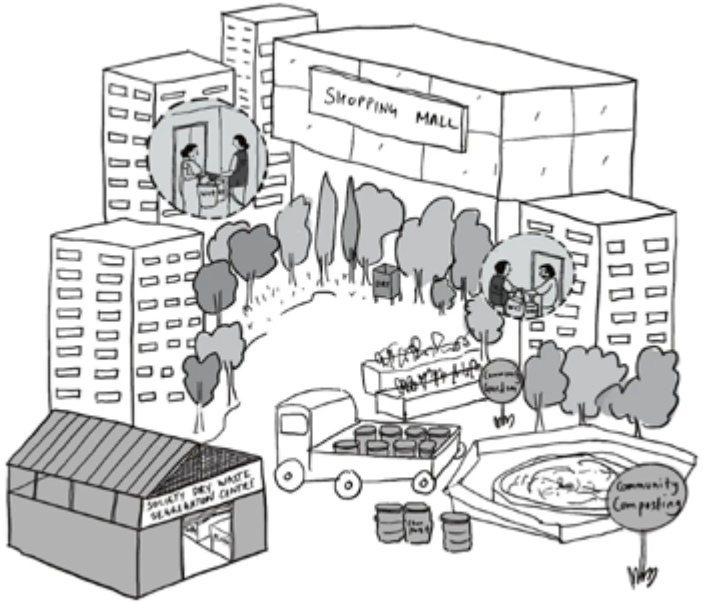
Any waste management company, urban local bodies or government entities can use Bintix's technology platform as SaaS enabling waste management players to bridge the gaps in the waste management process.

06

TURNING WASTE INTO VALUE: SUSTAINABLE SOLUTIONS FOR CLEANER COMMUNITIES

T We Ours

Natasha Maria Dcosta
-
Start Upcycling Now Pvt. Ltd.
Mumbai, Maharashtra
-
Thematic Keywords: Building enabling ecosystems
-
Stakeholders: ULBs, citizens' groups/ Residents' welfare associations, dry waste recyclers and buyers, corporate clients and employees



Core Challenge
The primary challenge addressed by Start Upcycling Now (SUN) is the efficient management of wet and dry waste generated by housing societies and commercial establishments. This includes reducing dependency on municipal waste collection systems, ensuring segregation at the source, and maximizing recycling and composting to minimize landfill contributions.

Turning Challenges to Solutions
Start Upcycling Now Pvt. Ltd. provides end-to-end waste management services, focusing on daily collection, segregation, and processing of wet and dry waste for housing societies and commercial buildings. For instance, at the Tarapore Housing Society (200 flats in Lokhandwala, Mumbai), they implemented a daily waste pickup system. Segregated wet and dry waste is collected, with dry waste further sorted into categories like plastic, paper, glass, and aluminum. Wet waste is composted either onsite or offsite, and dry waste is sold to recyclers.

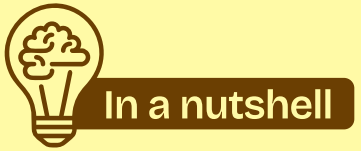
This business model ensures 90% of waste is recycled or composted, contributing to a significant reduction in the carbon footprint. The initiative also provides financial incentives to societies for their dry waste, monthly carbon impact reports, and compost produced from wet waste is either sold or used in tree plantation drives.

Journey of Problem Solving:

A. Planning: Identified housing societies and commercial buildings with high waste generation; designed service agreements and cost models.
B. Design: Established a clear segregation process, ensuring proper infrastructure for sorting and composting onsite or offsite.
C. Implementation: Set up daily waste pickup services; trained residents on segregation practices; organized storage and sale of dry waste.
D. Evaluation: Provided monthly carbon reports to clients and financial incentives for dry waste, ensuring stakeholder satisfaction and transparency.
E. Other Steps: Conducted awareness workshops for schools and corporates to foster a culture of sustainable waste management.

Secret ingredient(s) for success:

1. Stakeholders: Key stakeholders include housing societies, commercial establishments, and local recyclers.
2. Partners: TechnoServe India provided critical support.
3. Geographical Particularities: Operating primarily in Mumbai (Andheri to Borivali), where waste segregation awareness and urban density make such initiatives highly impactful.
4. Other Factors: A dedicated team with expertise in waste management; Financial incentives for societies (e.g., Rs 8,000 paid monthly for dry waste); Value-added services like carbon footprint reports and compost for tree plantation initiatives.



Start Upcycling Now Pvt. Ltd. provides end-to-end waste management services, for housing societies and commercial buildings. SUN focuses on daily waste collection, segregation, and processing, composting wet waste, and recycling dry waste. Their model achieves 90% waste diversion, reduces carbon footprints, offers financial incentives for dry waste, and repurposes compost for sale or green initiatives. It exemplifies a sustainable, circular economy approach to urban waste management.

07

UNDERSTANDING ULB AND PRIVATE ENTERPRISE OPERATIONS IN MICRO COMPOSTING CENTRES

T We Ours

Gariyoshi Das
-
Independent researcher
Tiruchirappalli
-
Thematic Keywords: Building enabling ecosystems
-
Stakeholders: ULBs, research organizations, academics

Core Challenge
Trichy has faced a major challenge of a shortage of waste land disposal and high transportation cost in the Trichy Municipal Corporation, and this has led them to adopt micro composting centres.

Turning Challenges to Solutions
Trichy has been ranked second on the cleanest city ranking index in 2015 and also achieved high rankings in the Cleanest City index in 2016, 2017, and 2018. However, solid waste management in Trichy has been a critical challenge due to the rapid growth of the city, which led to lack of available land to dump waste. The total daily waste generation of Trichy is 460 TPD (tons per day). To manage and to prevent the dumping of waste in the corporation's 47-acre landfill in 'Ariyamangalam' on a daily basis, Trichy implemented Micro composting centres (MCCs). To tackle waste the municipal corporation decided to approach a decentralized waste management approach, as detailed below.

Journey of Problem Solving:
A. Planning: Trichy Municipal Corporation (TMC) identified the critical challenges of centralized waste management, including limited

landfill space, high transportation costs, and inefficiencies in waste segregation and processing. The corporation decided to adopt a decentralized model using Micro Composting Centres (MCCs) to process waste locally and reduce the burden on the Ariyamangalam landfill.

B. Design: A decentralized waste management framework was developed, involving 39 MCCs strategically located across Trichy. MCCs collect, process, and recycle waste within a ward, and turn biodegradable waste into manure. TMC has outsourced work to external private agencies, partnered with cement companies, and taken international funding
C. Implementation: Tenders were floated to invite private agencies for specific tasks such as waste collection, segregation, and equipment installation. Agencies like “Vedaah” were contracted for waste collection using battery-operated vehicles. Partnerships were established with cement companies to utilize inert waste as fuel and NGOs for recycling and repurposing reusable materials. Equipment such as shredders and semi-automatic compost sieving machines were installed at MCCs with support from international funding programs.
D. Evaluation: TMC deployed supervisors and officials to monitor the performance of contracted agencies and ensure compliance with service delivery standards. Penalties were levied for service failures, and GPS tracking was introduced to improve operational transparency.

Secret ingredient(s) for success:

Trichy Municipal Corporation (TMC) spearheaded the initiative with strategic planning, tender processes, and effective monitoring mechanisms to ensure accountability in service delivery.

1. Limited Land Availability: Trichy’s land constraints motivated the shift toward decentralized waste processing to reduce landfill dependency.
2. The use of shredders, semi-automatic compost sieving machines, and GPS tracking for collection vehicles optimized the waste management process.
3. Private Agencies: Vedaah played a critical role in operational tasks such as waste collection, segregation, and transportation, bringing expertise and efficiency.

In a nutshell

The case study describes the decentralized waste management system of Trichy – the Micro Composting Centres (MCCs). It does so by focusing on the public-private partnership aspect of the system. Trichy has faced a major challenge of shortage of waste land disposal and high transportation cost which has led Trichy Municipal Corporation (TMC) to adopt MCC. TMC has partnered with private agencies, NGOs, and international programs to enhance waste collection, segregation, processing, and recycling. Key initiatives include outsourcing waste collection to private contractors, collaborating with cement companies for utilizing inert waste as energy, and working with NGOs to repurpose recyclable materials. The study highlights how outsourcing have brought in operational efficiency, and technical expertise to improve MCC performance, thereby reducing the burden on centralized landfill sites.

08

BUILDING ENABLING ECOSYSTEMS FOR INFORMAL WASTE PICKERS

I We Ours

Ekta Sawant and Zibi Jamal
-
Saamuhika Shakti
Bengaluru
-
Thematic Keywords: Building enabling ecosystems
-
Stakeholders: For-profit, startups, waste pickers, CSOs/ Social enterprises/NGOs, ULBs, research organizations, academics, media, Government at state level

Core Challenge

Bengaluru's informal waste pickers are vital to the city's waste management system, yet their contributions often go unrecognized. They face myriad challenges, including hazardous working conditions, economic insecurity, lack of access to social protection, and entrenched societal stigma. Women and girls, making up nearly half of this workforce, bear additional burdens, including domestic violence, lower wages, and restricted access to opportunities. These challenges are compounded by poor access to essential services such as primary healthcare, clean water and sanitation, education, and housing.

Turning Challenges to Solutions

Saamuhika Shakti, a collective impact initiative based in Bengaluru, focuses on empowering informal waste pickers to improve their lives by addressing systemic challenges through improved and inclusive livelihoods, access to basic services (education, healthcare,

housing, PPE kits, social security & protection, water and sanitation), addressing public perception through online and offline campaigns, and driving process as well as business innovation in the waste management value chain. The initiative brings together 12 partners under a collective Impact model with a structured framework for collaboration. Phase 1 achievements include enabling waste pickers to obtain social security entitlements, access to housing and WASH facilities, pathway to education and assured incomes, creating innovative recycling solutions that provide job opportunities for waste pickers, and launching public perception campaigns to recognise the role of the invaluable waste pickers.

Addressing the challenge of waste pickers also leads to beneficial climate action. Through initiatives championed by Saamuhika Shakti, responsible and decentralised textile waste recycling alone prevented 134,732 kg of waste from reaching landfills. Partners like Hasiru Dala Innovations created global supply chain impacts by turning recycled plastic into buttons for H&M garments. Public outreach campaigns such as #Invaluables led to improved waste disposal habits among citizens. Saamuhika Shakti exemplifies a holistic, inclusive, scalable approach that integrates social equity, environmental sustainability, and innovation.

Journey of Problem Solving:

A. Planning: Conducted an ethnographic survey to identify key challenges and areas of intervention for the waste picking community.
B. Design: Developed thematic focus areas and a Collective Impact framework with shared goals and measurement systems.
C. Implementation: Collaborated with partners to enable seamless execution of programs at the last mile. Programs and initiatives were further refined following discussions with waste pickers, ensuring equity from the ground up.
D. Evaluation: Used continuous monitoring systems to gauge partner level as well as program level impact.
E. Ecosystem Engagement: Ensured consistent communication with the external ecosystem through dissemination of learnings via reports and newsletters. Additionally, drove public perception campaigns like #Invaluables to enable perception shifts amongst Bengaluru's population towards waste pickers, the role they play, and waste disposal practices.

It is critical to note that implementation of a large scale collective impact initiative that is addressing complex systemic issues requires a non-linear approach. At the start of each phase, it was critical to revisit the program vision and strategy, take into account feedback from the ground, and evolve to maximize impact at the last mile.

Secret ingredient(s) for success:

1. Stakeholders: Waste pickers, community organizations, government bodies, and private sector partners.
2. Partnerships: Collaboration with 12 partners covering the gamut from foundations to community based organizations, social enterprises to for-profits and non government organisations.
3. The Sauce: Adoption of Collective Impact methodology; community driven change; thematic intersectionality addressing urban poverty, marginalisation and gender. The initiatives positively benefited climate outcomes.

In a nutshell

Saamuhika Shakti in Bengaluru empowers waste pickers through a collaborative model addressing livelihoods, access to basic services, worker safety, public perception and innovation in the waste management value chain, while keeping gender and equity at the center. With 12 partners, it is demonstrating a scalable approach to social equity and inclusive waste management.

09

HARITHA KARMA SENA FOR CLEAN AND GARBAGE FREE CITIES

T We Ours

Saji Sebastian
-
Socio Economic Unit Foundation (SEUF)
Madapally, Kerala
-
Thematic Keywords: Citizenship and Public Problem Solving, Building enabling ecosystems
-
Stakeholders: Waste pickers, CSOs/ Social enterprises/ NGOs, Citizens' groups / Residents' welfare associations, Government at state level, media

Core Challenge

- Low awareness and facilities for solid waste management,
- No segregated storage of waste at source,
- Throw away culture and indiscriminate disposal,
- Large quantities of mixed waste at dumping sites leading to protests from community residing at the dumping sites,
- Increased legacy waste.

Turning Challenges to Solutions

The Government of Kerala in India is promoting decentralized waste management with community centric strategies and approaches. In 2017, Madappally Gram Panchayat took the resolution to form Haritha Karma Sena (HKS)with the following objectives: a) to make Clean and Green Garbage free Madappally, b) to promote sustainable waste management practices, c) to create employment opportunities in waste management sector, and d) to raise awareness among public about importance of waste management.

HKS is a team of green technicians and supervisors that collects,

transports and manages solid waste in a local self government area – Gram panchayat. Haritha Sahaya Sthapanam are accredited agencies of Government, supporting the capacity building of HKS and other stakeholders coordinating and monitoring the activities. Socio Economic Unit Foundation(SEUF), an accredited agency of Government of Kerala, is supporting the local government as Haritha Sahaya Sthapanam (support agency) in capacity building, skill training, personality development and entrepreneurship.

HKS are selected and trained by SEUF, Kudumbasree and Suchitwa mission for door to door collection of non-biodegradable waste from the households, shops and establishments. They clean, sort and bale them in the material collection facility (MCF) in each ward, to send it to Clean Kerala Company for further processing and recycling. User fee of Rs. 50 and Rs.100 per month is collected from households and establishments respectively. HKS is a micro enterprise of the women group and their wages are met from the user fee collection.
Average collection of plastic from the GP is 3.5 tons and 2 tons of plastic waste has been transported for recycling by the Clean Kerala company every month. Apart from this, as part of a campaign, 30 tons of other waste like leather, metal glass etc. has been collected and processed annually.

HKS also sensitizes the community on segregation of waste at source, proper storage and handing over to the collectors (HKS) once in a month. Biodegradable wastes are converted to compost through different composting processes using bucket, ring, bio compost bins with the support of HKS. They also promote use of alternate materials for plastic, observing green protocol, promoting organic farming, etc. Additionally, Haritha Sevakendram, was established in the Gram Panchayat, for the sale and promotion of services related to waste management and organic farming.

HKS acts as a sustainable solution to plastic waste management as well as empowerment of women as entrepreneurs. It creates growth, increases the standard of living and prosperity of rural women and contributes to Solid Waste Management. It is a replicable and sustainable model.

Journey of Problem Solving:

A. Formation of Haritha Karma Sena at the Gram Panchayat level (selection of women, formation of microenterprise group for waste management)
B. Training of HKS on Types of waste collection, segregation, recycling, bailing of waste IEC programmes, User fee collection and accounts keeping, Bank account opening and accounting procedures, Haritha mitra app and its uses, geo tagging QR code
C. Resource mobilisation for transportation facilities
D. Setting up mini material collection facility
E. IEC programmes, house visit with elected members' distribution of calendars, leaflets, exhibitions, rallies, social media and local channel FM radio,media village broadcasted series of talks
F. Collection of non-degradable waste (plastics)
G. Linkages with recycling agencies such as Clean Kerala company
H. Segregation and cleaning at MCF
I. Bundling and handing over to recyclers
J. Support services for households for biodegradables such as ring composting bio composting ,inoculum distribution etc
K. Meeting with officials and collaborating with them for skill upgradation
L. Agriculture department encouraging kitchen garden and organic farming – Campaigns for clean environment and farming – Haritha Smridhi Panchayat received award and recognition from the Government
M. Attending monitoring and evaluation meetings
N. Operations street programme- for screening waste disposal at public places, enforcing fines

Secret ingredient(s) for success:

1. Government Policy for Decentralized waste management
2. Madapally Gram Panchayat committee and officials
3. Committed Haritha Karma Sena members
4. Haritha Sahayasthapanam (SEUF)
5. Collaboration and cooperation of related departments, Suchitwa mission
6. Haritha Kerala mission and Kudumbasree
7. IEC campaigns, Support of media
8. Community ownership of the project

In a nutshell

Madappally Gram Panchayat in Kottayam launched the Haritha Karma Sena (HKS) in 2019 to create a garbage-free area, promote sustainability, and provide employment. HKS, comprising 36 trained women green technicians, collects, sorts, and bales non-biodegradable waste, earning wages from user fees. Partnering with SEUF and Kudumbasree, HKS processes 3.5 tons of plastic monthly and campaigns for waste segregation, composting, and green alternatives. The initiative has improved livelihoods, raised over ₹1.69 crore in fees, and demonstrates a scalable, sustainable model for plastic waste management and women's empowerment in rural India.

10

ENABLING LITTER FREE STATE THROUGH A SUSTAINABLE SOLID WASTE MANAGEMENT PROGRAM

I We Ours

Neeru Khanna
-
Roundglass Foundation
Punjab
-
Thematic Keywords: Building enabling ecosystems
-
Stakeholders: CSOs/ Social enterprises/NGOs, Citizens' groups / Residents' welfare associations, Government at state level, ULBs, Village panchayats

Core Challenge
In Punjab, with waste generation on the rise, only about 50% of the waste is effectively managed. Additionally, due t Lack of Infrastructure i.e. recycling centers, composting units, waste collection system, open burning of waste and stubble etc, the National Green Tribunal (NGT) On August 31, 2024, imposed a fine of ₹1,000 crore on the Punjab government for its failure t manage solid and liquid waste

The state grapples with significant environmental challenges as its waste management systems struggle t cope. This mismanagement leads t the contamination of water bodies, the spread of diseases, and a negative impact on the environment and quality of life for millions.

Turning Challenges to Solutions
To address waste management challenges, Roundglass Foundation developed a program aimed at achieving a litter-free Punjab.

The waste management initiative combines integrated infrastructure

with behavioral change strategies. Through a decentralized approach that focuses on:

- Waste segregation at source
- Composting organic waste
- Recycling materials

The program empowers local communities by involving them in the process, ensuring their participation, ownership and engagements. we have currently implemented this program successfully in 250 villages in Punjab, involving 45,000 households and having a capacity t manage 25,000 raw wet waste annually.

Journey of Problem Solving:

Implementing a waste management system in a village involves the following steps:

A. Build Partnerships with Local Authorities
   - Reach out to the village administration to discuss the need, designs and outputs of the project
   - Ensure the availability of land and other infrastructure-related resources for creating composting facilities in the village

B. Set Up Waste Management Infrastructure
   - Compost Pits: Design and construct open bed aerobic compost pits
   - Dust Bins: Provide each household with two dustbins (blue and green) for waste segregation.
   - Waste Collection Cart and Safety Equipment: Equip the waste collector with a cart and safety gear for daily collection and disposal at the compost facility
   - Waste Segregation shed (for secondary and tertiary segregation of waste)
   - Provide Equipment such as rakes, shovel, hand fork, garden fork, trowel, buckets, wheelbarrow, watering can etc
   - Develop facility for treatment of hazardous waste (such as an incinerator for diapers & sanitary pads at treatment site)
   - Storage place for recyclables until they are passed on to recyclers

C. Information, education, communication with the Community for ensuring Behavior Change
   - Run Information, Education & Communication (IEC) campaigns

   - Community Engagement: Field coordinators educate the households for 7-10 days on waste segregation
   - Waste Segregation Demonstrations: Live demos on separating dry and wet waste
   - Awareness Campaigns: Use posters, flyers, and local announcements
   - Collaborate with influencers and schools to promote waste management education
   - Capacity Building: Train local ambassadors for project management

D. Training and Capacity building
   - Waste management workers are trained by RGF coordinators on proper waste segregation collection, transportation and recycling practices

E. Monetizing for Sustainable Operations
   - Implement a basic service charge to fund the waste collector's salary
   - RGF Coordinator facilitates zero-waste living and small economies through the sale of compost and recyclables

F. Waste Segregation, Collection and Transportation
   - Primary Segregation: Residents use different colored bins for waste separation
   - Collection: Waste is collected and transported without mixing
   - Transportation: Use carts, electric vehicles, or tractor trolleys for waste transport, Transport wet and dry waste in separate, designated bins, Wet waste decomposed in compost pits; dry waste sold to recyclers
   - Treatment and Disposal: Waste collected from various locations (offices, residential areas, etc) sent to segregation shed

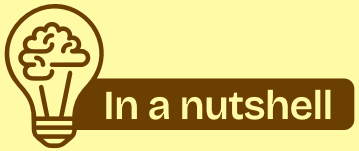
G. Community Cleanup Drives
   - Organize regular community cleanup drives to instill a sense of pride and responsibility
   - RGF facilitates one time removal of old accumulated garbage piles with the support of local administration

H. Monitoring and evaluation
   - Conduct periodic surveys to monitor progress and behavior change of the community and local administration
   - Assess the overall effectiveness, sustainability, and impact of the waste management program

- Impact assessment

Secret ingredient(s) for success:

1. Collaboration with local Panchayats;
2. Appointment of waste collector;
3. Household participation to provide segregated waste;
4. Collection of service fee from households



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- Recycling materials

The program empowers local communities by involving them in the process, ensuring their participation, ownership and engagements. we have currently implemented this program successfully in 250 villages in Punjab, involving 45,000 households and having a capacity to manage 25,000 raw wet waste annually.

STRATEGIC SUPPORT FOR SUSTAINABLE WASTE MANAGEMENT IN ISLAND SYSTEMS

I We Ours

Rajath Bysani, Abhishek Chakraborty & Madhuri Mondal
-
Dakshin Foundation
South Andaman Island, Andaman & Nicobar Islands
-
Thematic Keywords: Citizenship and Public Problem Solving, Building enabling ecosystems
-
Stakeholders: Waste pickers, Government at state level, Gram Panchayats

Core Challenge
Gram panchayats, which are the implementing agencies for solid waste management in the rural areas of the Andaman and Nicobar Islands have been struggling to efficiently set up the SWM system and manage their waste due to multiple challenges.

Waste management systems in the islands inherently face various additional challenges due to factors such as heavy rainfall and a long monsoon season, undulating terrain and thick forests, geographical isolation from the rest of the country, limited access to certain kinds of machinery, spare parts and technicians, lack of recycling options within the islands and the added cost of transporting materials in and out of the islands.

The major issues faced by the gram panchayats are limited financial and human resources, low system efficiency, poor user behaviour (segregation and user fee payment) and non-functional equipment like

baling machines which are critical to the waste management system. Gram panchayats do not have a system to strategically identify and analyse issues and respond to them in an adaptive way. There are many issues that are beyond the individual scope of gram panchayats (such as waste management at beaches and equipment repair) and requires the coordination of multiple stakeholders at different levels, lacking which these crucial issues go unaddressed.

Turning Challenges to Solutions

In rural Andamans, gram panchayats are responsible for implementing solid waste management (SWM) functions. Yet many gram panchayats face operational challenges due to limited resources, weak planning, poor stakeholder coordination and constraints in accessing technological support due to being an island state. In collaboration with Wandoor gram panchayat, Rural Development and Forest departments in the South Andaman district, a systematic, multi-stakeholder approach was implemented to address these gaps. The initiative was anchored in five key ingredients: identifying roadblocks, capacity building of implementing agencies, youth empowerment for behaviour change, multi-actor platform building and consistent adaptive problem-solving.

Key interventions included initiating a process of monitoring, evaluation and evidence-based decision-making at the gram panchayat-level which has helped improve operations. Youth ambassadors trained by Dakshin Foundation mapped the coverage of the SWM system and identified common dumping hotspots aiding gram panchayats in planning of resource allocation. They drove the engagement with communities addressing user behaviour and promoting sustainable products (like reusable menstrual products), increasing citizen participation and significantly reducing sanitary waste being generated. Awareness campaigns, installation of IEC (information, education and communication) boards and dustbins at important locations shifted public behavior, boosting user fee collection and compliance. Equipment maintenance is being tackled through local partnerships, reducing dependence on external resources. Multi-stakeholder consultations facilitated by Dakshin Foundation to unify stakeholders around the shared

vision of ‘Zero Waste Islands’ led to critical collaborative action on repairing baling machines and providing additional human resources for waste management at the beaches. This model of support has strengthened operational efficiency, citizen engagement, and governance.

It offers a scalable framework for rural SWM in resource-constrained regions, with sustainability ensured through ongoing capacity building and troubleshooting. The initiative demonstrates how strategic support to the gram panchayats and other stakeholders through holistic, community-driven approaches can improve rural waste management systems in remote areas.

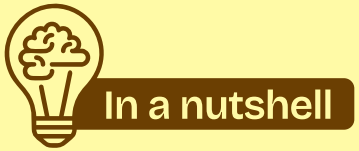
Journey of Problem Solving:

A. Conducted an in-depth assessment to identify all operational challenges faced by the Wandoor gram panchayat in its implementation of the SWM system at different nodes along with the cause and effect of each issue. Based on the assessment, Dakshin entered a formal and active collaboration with the Wandoor gram panchayat to systematically push the SWM system towards greater efficiency by addressing key challenges.
B. Initiated a system of regular review, planning and strategizing at the gram panchayat level with key implementing stakeholders including the pradhan, panchayat secretary, ward members and sanitation supervisor. Dakshin supported the gram panchayat-level planning by providing data driven suggestions for improving coverage, newer avenues for increasing revenues and improving worker efficiency.
C. Identified and provided training to young women from the community through a fellowship programme. These young people are now leading the change in user-behavior on ground.
D. Built relationships with relevant stakeholders and conducted a multi-stakeholder consultation to brainstorm and find solutions to problems beyond the individual scope of the gram panchayat.
E. In situations where there was limited capacity for the gram panchayats to intervene, the Dakshin Foundation provided financial and in-kind support to the gram panchayat to engage additional sanitation workers, and procure cycles, gloves and raincoats for sanitation workers. This was done to improve waste collection

efficiency and worker safety, designed and installed IEC boards and dustbins at the beaches.

Secret ingredient(s) for success:

1. As the islands are ecologically sensitive and an important tourist destination, Dakshin was able to build a common vision of 'Zero Waste Islands' with like-minded and supportive stakeholders across the administration. It allowed them to collectively understand the problems and reframe solutions taking into account ground-level realities.
2. This also allowed to identify critical sectors where both the gram panchayat and departments required external resources to initiate alternative solutions. Dakshin facilitated this process by providing technical support, procuring equipment and technical expertise to implement alternative solutions.
3. The strong collaboration with the Gram Panchayat, Rural Development Department & Forest Department, and collectively designing strategies from the perspective of the operational and capacity related challenges faced by them ensured that feasible solutions could be implemented. Framing strategies with an understanding of the limitations at each government actor allowed for improved collaboration and clearer responsibilities for each stakeholder.
4. Involving and empowering local youth to drive change was critical to build accountability from the gram panchayat and also engage more citizens for improving segregation of waste, cleanliness drives and reducing sanitary waste by introducing sustainable menstrual products.
5. Dakshin's embeddedness in the location and long-term relationships with government and community stakeholders, was critical to building collective processes of problem-solving.



In rural Andamans, gram panchayats (GP) struggle with solid waste management (SWM) due to limited resources and weak coordination. Dakshin's multi-stakeholder initiative in Wandoor GP brought together government departments, local partners and youth to identify challenges, build capacity and solve problems adaptively. Key actions included evidence-based planning, waste-system mapping, sustainable-practice promotion and public-awareness campaigns. Youth Ambassadors led behavior change, while partnerships ensured & improved equipment upkeep. Guided by a shared "Zero Waste Islands" vision, stakeholders improved coordination, operations and resource allocation. This model demonstrates a scalable, community-driven approach for sustainable rural SWM.

Self-help is the best help

A SUSTAINABLE APPROACH TO LOCAL WASTE COLLECTION AND PROCESSING

Aarti Sachdeva
-
Saahas
Udupi, Karnataka
-
Thematic Keywords: Citizenship and Public Problem Solving
-
Stakeholders: Citizens' groups / Residents' Welfare associations, ULBs, CSOs/ Social enterprises/ NGOs, Udupi City Municipal Council, CSR funding from HDB Financial Services, farmers (using compost)

Core Challenge
The waste management system in Udupi faced several challenges, including low service levels, inefficiencies in door-to-door waste collection by Self-Help Groups (SHGs), lack of training for SHG members, and limited infrastructure. This resulted in poor source segregation, low recovery of recyclables, environmental pollution, and resource loss.

Turning Challenges to Solutions
In 2018, Saahas, partnered with the Udupi City Municipal Council (CMC) and HDB Financial Services to overhaul the municipal solid waste management (SWM) system in Udupi. The project aimed to improve resource recovery from waste by bringing efficiency in collection and processing, and improving the earnings of SHG members. Key interventions included: conducting community awareness campaigns, providing technical training to SHGs, and developing infrastructure for scientific waste processing. Promotion

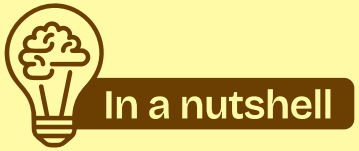
of home & community composting; special waste streams such as flower market waste was diverted to farmers for mulching in fields, coconut waste used to make coco-peat were some of the innovative approaches used in the project. Community engagement involved door-to-door campaigns, cleanliness drives, and radio messaging. These efforts resulted in 85% source segregation, diversion of 9,200 MT of waste from landfills and tenfold increase in dry waste sorting efficiency which led to improved SHG income.

Journey of Problem Solving:

A. Planning: Assessed existing waste collection and segregation inefficiencies.
B. Design: Created standard operating procedures, delivered staff training, and established waste processing facilities.
C. Implementation: Launched public awareness campaigns, organized cleanliness drives, and implemented monitoring systems.
D. Evaluation: Tracked source segregation rates and performance indicators through systematic data collection and review meetings.
E. Community Engagement: Built partnerships with local stakeholders—including SHGs, student volunteers, and activists—to strengthen community participation.

Secret ingredient(s) for success:

1. Stakeholders: SHG members, Udupi CMC officials, local residents, and NGOs.
2. Partnerships: Strategic collaboration between Saahas, HDB Financial Services (through CSR funding), and Manipal University volunteers.
3. Other Factors: Strong policy support (Nirmal Nagar Yojana), comprehensive training programs, enhanced infrastructure, systematic monitoring, and effective community awareness initiatives.



The SHG model case study in Udupi demonstrates how Saahas partnered with the Udupi City Municipal Council to empower Self-Help Groups (SHGs) in sustainable waste management. By providing technical training, infrastructure support, and community awareness campaigns, the initiative improved waste segregation to 85%, diverted 9,200 MT of waste from landfills, and increased SHG incomes through enhanced dry waste sorting.

13

CIRCULARITY OF KITCHEN WASTE

T We Ours

Shajimon Kaitheri and Angel Vinod
-
Saahas
Chennai, Tamil Nadu
-
Thematic Keywords: Citizenship and Public Problem Solving
-
Stakeholders: For-profit, CSOs/ Social enterprises/ NGOs,

Core Challenge
The main challenge addressed was the lack of sustainable management of kitchen waste generated by the community kitchen at ECO Kitchen, Chennai. The goal was to create a circular solution by using organic kitchen waste to generate biogas, replacing fossil fuels, and producing organic manure to support local agriculture.

Turning Challenges to Solutions
ECO Kitchen in Chennai, managed by YRG Care, partnered with Saahas and GPS Renewables to implement a small-scale biogas plant capable of processing 300 kg of organic kitchen waste daily. Financial support came from CGI's CSR initiative. The biogas produced replaces 20% of the LPG used in the kitchen, saving approximately ₹5,36,000 annually, and the fermented organic manure (FOM) is distributed to nearby farms. The implementation involved selecting and installing an appropriate technical solution considering the capacity and design specifications, designing SOPs and training

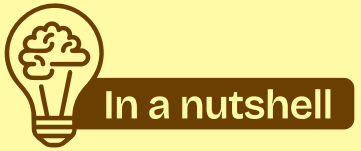
staff for operations. A robust monitoring system was established to maintain plant efficiency and manage variations in feedstock. Operational since June 2022, the plant has processed 73,000 kg of waste, produced 10,000 m^3 of biogas, and diverted waste from landfills. Challenges like staff turnover and feedstock inconsistency were addressed through shared training and process optimization. The project highlights the potential for biogas plants in urban institutions to achieve circularity in waste management.

Journey of Problem Solving:

A. Planning: Secured funding (₹30 lakhs) from CGI's CSR program and identified land within the ECO Kitchen campus.
B. Design: Partnered with GPS Renewables to design the biogas plant and trained staff for operations and maintenance.
C. Implementation: Installed the plant in June 2022, achieved full operational capacity by September 2022, and monitored operations through dashboards.
D. Evaluation: Regular monitoring of biogas production, feedstock consistency, and operational parameters ensured efficiency.
E. Other Steps: Distributed organic manure to nearby farms and implemented an Annual Maintenance Contract (AMC) for plant upkeep.

Secret ingredient(s) for success:

1. Stakeholders: ECO Kitchen staff, Saahas, GPS Renewables, and local farmers.
2. Partnerships: Funding from CGI (CSR), technical expertise from GPS Renewables.
3. Other Factors: On-site gas utilization, robust monitoring systems, and staff training to ensure operational sustainability.



The ECO Kitchen case study in Chennai highlights a biogas plant that processes 300 kg of kitchen waste daily, reducing LPG use by 20% and saving ₹5.36 lakh annually. It converts organic waste into biogas for cooking and organic manure for local farms, showcasing a circular waste management model.

14

TRUE FRIENDS OF THE SOIL

I We Ours

Rishi Ranjan Bakshi
-
Saahas
Bengaluru, Karnataka
-
Thematic Keywords: Citizenship and Community Problem Solving
-
Stakeholders: CSOs/ Social enterprises/ NGOs, ULBs, Citizens' groups / Residents' welfare associations, community

Core Challenge

Ramanashree Nagar Layout, a gated community of 232 households located in Arekere, South Bengaluru, faced challenges complying with new waste management regulations. While they rely on Bruhat Bengaluru Mahanagara Palike (BBMP) for waste collection, a March 2022 BBMP circular mandated decentralized processing for bulk waste generators. At that time, hardly 4-5 households were composting their waste, and the remaining handed over their waste to BBMP. The resident welfare association (RWA) lacked the composting infrastructure and financial resources to process waste effectively at a community level.

Further complicating the situation, not all residents were consistently segregating their waste at source, a practice mandated under the Solid Waste Management Rules 2016 and crucial for resource recovery. Although around 60% of the residents adhered to the guidelines, the remaining were unaware or unwilling to even segregate their waste at source, much less than composting their waste in-house.

Turning Challenges to Solutions

Driven by a vision of a circular economy where waste is treated as a resource, Saahas, an NGO dedicated to creating sustainable waste management systems across India, initiated Project “Bhoomitra” meaning friend of the Earth, in July, 2022. Focussed on Resident Welfare Associations (RWAs) in apartments as well as planned layouts to implement decentralised composting, the project targeted on building awareness among waste generators & providing hand holding and infrastructure support to the RWAs.

Saahas NGO initiated Project Bhoomitra at Ramanashree Nagar Layout, a gated community in South Bengaluru. The project aimed to help the community comply with new BBMP regulations requiring decentralized waste processing while promoting circular economy principles. The intervention focused on implementing decentralized composting through resident education, infrastructure support, and community engagement.

The project's success is evidenced by its outcomes: 100% waste segregation, one-third of households adopting home composting, zero wet waste sent to BBMP, production of high-quality compost, and diversion of 150-160 kg of waste per day from landfills.

Journey of Problem Solving:

A. Planning: Conducted baseline survey for waste quantification and infrastructure assessment
B. Implementation: Conduct door-to-door awareness campaigns for source segregation, organized awareness events for home and community composting, arranged community composting demonstrations by vendors, experts and local environmentalists such as Mr. Vasuki Iyengar, Dr. Shanthi Thummala on composting and living sustainably. Product demonstrations helped train the residents, management, and housekeeping staff on composting techniques, SOPs, equipment maintenance, and troubleshooting.
C. Community Engagement: Conducted home composting workshops, distributed composting kits to residents. Set up two community composters, provided four months of close monitoring and support, established documentation and supervision processes. Created a WhatsApp group for ongoing monitoring and communication.

Secret ingredient(s) for success:

1. Partnerships: BBMP, Saahas, composting vendors and the RWA collaborated to enable effective waste management fostering self-reliance and sustainability, which would not have been possible otherwise.
2. Continuous monitoring: At times, the compost took much longer before harvesting, than what is typically expected. The reasons identified were:
   - The operating team did not adhere to the SOP
   - Residents were giving large uncut fruit/vegetable pieces that slowed down the process
   - Inadequate addition of Microbes by the staff
   - Frequent changes in the staff monitoring the composters
   - Improper segregation of waste by residents

   To address these Saahas with the support of the association carried out daily monitoring for another 60 days to ensure that the composting process SOP was strictly followed and residents also adhered to the instructions. To ensure 100% segregation by residents, the BBMP Health Inspector penalised households who had been handing out unsegregated waste.

In a nutshell

Project Bhoomitra transformed a 232-household community from minimal waste management practices to 100% waste segregation and complete wet waste processing through a combination of home and community composting. The project demonstrated that with proper support, education, and infrastructure, residential communities can successfully implement decentralized waste management systems that benefit both the environment and community.

A stitch in time saves a ton

UPCYCLING FABRIC SCRAPS FROM TAILORS AND BOUTIQUES

T Wa Ours

Mamta Jain
-
Samposhan
Chennai, Tamil Nadu
-
Thematic Keywords: Citizenship and Public Problem Solving, Building Enabling ecosystems, Flourishing and equitable cities, adopting a climate lens
-
Stakeholders: Tailors, boutique owners, tailoring institutes, design institutes, skilling bodies, Livelihood Mission Central, For-profits, startups, CSOs/ Social enterprises/ NGOs, Govt at state level, govt at national level, ULBs, Self-

Core Challenge
Fabric scraps or 'katrans' / 'cutting waste' from non-industrial tailors and boutiques sneak into landfills pan India. Although these scraps are considered to be of insignificant quantity by circular economy practitioners, Team Samposhan has busted that myth by measuring waste released by this sector to be at 40+ units (here, 1 unit is a non-industrial tailoring shop or a boutique that runs with a minimum of 3 machines and upto 10 and are informally run or under the Shop & Establishment Act). Apart from gaps in the SWM Guidelines, when collecting fabric scraps from tailors, Samposhan faced challenges of unclean collection – since most tailors maintain a single dustbin causing discarded tea cups, needles, and packaging waste to contaminate the katrans that are also discarded in the bins.

Turning Challenges to Solutions:
Samposhan, an initiative based in Chennai, aims to build a circular ecosystem for textile waste recycling. It was founded in 2020 with

the first exhibition being held in the Madras School of Social Work, Chennai with products completely made from waste sourced from a boutique unit. The project focuses on reclaiming textile waste from small tailoring units and boutiques. The organization implements a solution chain of collection, sorting, and conversion into sustainable products. Products of every use such as functional tote bags, pouches and decor such as buntings were made with tailoring techniques. Now, with handloom weaving, Samposhan also makes woven rugs suitable for meditation, and pooja mats. Using handcrafted techniques like sewing and quilting, Samposhan creates alternatives to single-use products and items made from virgin materials. Samposhan has used low cost pilots, and fail fast methods to implement initial ideas. For instance, prior to leveraging SHGs, they executed small pilots with informal SHGs. The initiative also empowers women and home-based entrepreneurs by providing livelihood opportunities in waste upcycling. Samposhan's impact includes saving over 1,615 kg of fabric waste, reducing greenhouse gas emissions, and contributing to material efficiency. By leveraging a community-driven approach and partnerships, the initiative demonstrates a scalable model for reducing textile waste and promoting sustainability in urban environments.

Journey of Problem Solving:

A. Identified techniques and possible uses of 'katrans' / product research and development.
B. Built knowledge and capacity to understand which government systems can be roped in for support.
C. Developed a process to collect, sort, and upcycle waste into sustainable products.
D. Engaged informal SHGs and informal workers in sorting and converting fabric waste.
E. Started implementation. Conducted workshops and monitored material savings.

Secret ingredient(s) for success:

Figuring out a complete end to end local upcycling possibility with relevant government institutions - some are already available like SHGs, and some (like marketplaces) are in initial stages.

1. Stakeholders: Tailoring units, SHGs, informal workers, and women entrepreneurs.
2. Partnerships: Collaboration with tailoring businesses and community organizations.
3. Other Factors: Innovative product design, awareness of circular economy benefits, and community engagement.

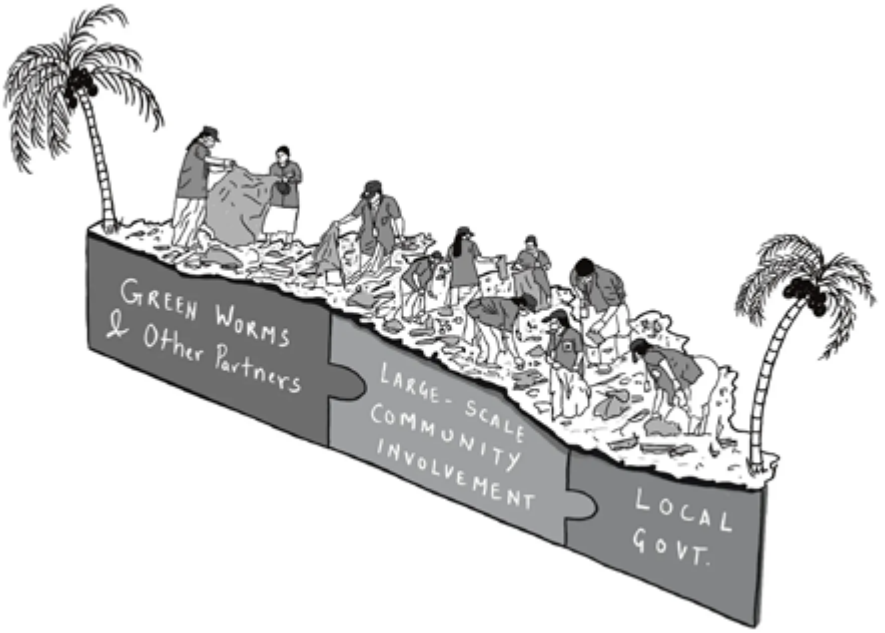
In a nutshell

Fabric scraps from tailoring / boutique units can be diverted from landfills and converted into low carbon products of everyday use and decor. However, there are systemic challenges hampering circular models for textile wastes, and there remains a need to integrate circular solutions with government efforts and regulations, including city and ULB efforts. Self-help groups (SHGs) and state-government marketplaces can be roped in for support.

ADDRESSING THE DECENT WORK DEFICIT FACED BY BOTH WASTE WORKERS AND WOMEN IN THE NON-FARM SECTOR

Ours

Chandrima Dhar
-
Green Worms
Kozhikode, Kerala
-
Thematic Keywords: Building Enabling ecosystems
-
Stakeholders: CSOs/ Social enterprises/ NGOs, Waste



Core Challenge
Inadequate waste collection, transport and treatment is often blamed on the shortage of waste management workers. However, insufficient infrastructure, health hazards, poor working conditions and minimal pay are the underlying causes of improper waste management. Green Worms is an organization that addresses all these gaps. In thinking beyond the stigma of waste, Green Worms observed a unique ally in another sphere that also faces an acute deficit of decent work - women seeking employment in the non-farm sector.

Turning Challenges to Solutions:
Green Worms with its unique waste-preneurs model have addressed a major gap in the waste-management and recycling industry. The industry labour force is weighed down by a high degree of informality, low wages or worse a complete lack of wage-employment, uncompensated long-working hours, and primarily male-centric and urban-centric opportunities. In many respects,

these are similar to the dampening factors for female labour force participation in the non-farm sectors. Policies towards solving for female unemployment are not as effective when they do not consider gender disaggregated causes.

Journey of Problem Solving:

A. Small local bodies have restricted funds for allocation to waste management services. Green Worms first creates unique offerings for various local bodies using their needs-assessment tool. Upon agreement they enter into a partnership with the administration to manage the solid waste in the locality. To address the shortage of labour, their team works with local self-help groups to enrol more workers and up-skill existing workers.

B. It is ensured that women employed as waste-preneurs receive adequate compensation as per hours worked as opposed to a daily wage (minimum guaranteed income). Green Worms also provides training on Standard Operating Procedures and IT systems to these women to guarantee better working conditions and to optimise waste collection operations. A workforce of female waste workers who used to manage just 100 days of wages a year under their current work conditions, are now guaranteed 200-250 days of work.

C. To look at an example of this model at work, let us follow the journey of Alappuzha, Kerala. Its administration has been locally and globally lauded for its effective solid waste management systems. However, this has involved a combination of large-scale community involvement, concerted efforts from the government and partnerships with enterprises such as Green Worms. For over a decade now the municipality has been following a largely decentralised waste management system whereby most waste generated in a locality is segregated and treated at the same area via pipe/aerobic composting units. For remaining waste collection needs, the local bodies partner with Green Worms who provide the necessary infrastructure and training to the women waste workers, the Haritha Karma Sena (of the Kerala community network - Kudumbashree) to ensure a near-complete and efficient solid waste management journey.

Secret ingredient(s) for success:

1. Green Worms' success is closely linked to local governments, behavioural changes in the community and patient private capital. Local governments were open to enter into partnerships with private enterprises such as Green Worms and adopt their solutions, the community took to the most efficient solid waste management practices, the geography offered the presence of a latent work-force via the vast self-help community network Kudumbashree. Lastly, patient capital from social impact leaders provided the necessary boost to build requisite infrastructure.
2. In Kerala, Green Worms has partnered with the Kudumbashree and in-turn with local self government institutions to provide appropriate training and support to local women and empower them as 'Waste-preneurs' with a minimum guaranteed income. Under this model, Green Worms provided a customised assessment to Local Self Governments in order to improve their waste-collection and segregation processes. And subsequently supported the women who are part of the Haritha Karma Sena (Kudumbashree) to operate their own nano-enterprises for waste-collection and segregration. With the assistance of grants and investments they were able to expand recycling and processing infrastructure.
3. With a decade of efforts behind them, Green Worms has begun to achieve tremendous scale now. Recently they have initiated the largest waste processing plant in the Kasargod district, Kerala that can process 800 metric tons of waste collected from 41 local bodies through the Haritha Karma Sena group of Kudumbashree.
4. The Green Worms model is attuned to the needs of the local administration and the community alike. It can be replicated in various geographies across India to establish decentralised solid waste management ecosystems as a sustainable alternative to the over-burdened and fatigued centralised systems.

In a nutshell

The Green Worms' 'waste-preneurs' model goes beyond simply addressing the lack of dignity in waste management work. It solves for the higher degree of economic risk, broken infrastructure, lack of basic social protection or employment benefits, and absence of targeted skills-training confronting the waste-management workers. In doing so it has not only created dignified, fair-income jobs for existing waste management workers but also created novel employment opportunities for local women from low-income communities, who were earlier unemployed.

17

DEVELOPING A WASTE FLOW DIAGRAM

T We Ours

Stanzin Odsal
-
Ladakh Ecological Development Group (LEDeG)
Leh, Ladakh
-
Thematic Keywords: Building Enabling ecosystems, Citizenship and public problem solving, Flourishing and Equitable cities, Adopting a climate lens
-
Stakeholders: Hotel and other commercial waste generators, CSOs/ Social enterprises/ NGOs, Waste pickers, ULBs, Citizens' groups / Residents' welfare associations

Core Challenge
Leh faces challenges such as irregular waste collection, inadequate segregation, poor community awareness, and a lack of infrastructure for efficient waste management. Seasonal variations in population and waste generation further complicated the scenario, necessitating targeted interventions.

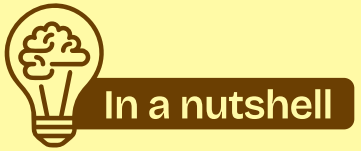
Turning Challenges to Solutions
This case study focuses on developing a Waste Flow Diagram (WFD) for the town of Leh to map waste flows from generation to disposal. The project aimed to address inefficiencies in waste management, including irregular waste collection and low segregation rates, while considering seasonal population variations. Surveys and fieldwork were conducted to generate primary data on waste generation, composition, and collection patterns, leading to actionable insights for improving waste management practices.

Journey of Problem Solving:

A. Planning: Identified data gaps and finalized survey tools and methodology.
B. Data Collection: Conducted surveys with 195 households and 98 commercial establishments in winter and summer seasons.
C. Analysis: Compiled and analyzed data to develop waste generation and composition profiles.
D. Intervention Design: Proposed enhanced collection systems, segregation practices, and community awareness initiatives.
E. Evaluation: Reviewed survey data and visualized waste flows through a Sankey Diagram to identify leakages.

Secret ingredient(s) for success:

1. Collaboration between LEDeG, BORDA, and Municipal Committee Leh.
2. Engagement of local stakeholders, including households and businesses.
3. Deployment of trained surveyors and data collection teams.
4. Seasonal insights captured through winter and summer data collection.



LEDeG's study and waste flow diagram identifies the current shortcomings in the waste management system and offers practical solutions to address them. By adopting the recommendations outlined, Leh town can significantly reduce its environmental impact, minimize waste going to landfills, and move towards a more sustainable and efficient waste management system.

ENGAGING THE COMMUNITY FOR SUSTAINABLE SEGREGATION, RECYCLING, AND WET WASTE COMPOSTING

Stanzin Odsal
-
Ladakh ecological development Group (LEDeG)
Leh, Ladakh
-
Thematic Keywords: Building Enabling ecosystems, Citizenship and public problem solving, Adopting a climate lens
-
Stakeholders: Hotel and other commercial waste generators, CSOs/ Social enterprises/ NGOs, Waste pickers, ULBs, Citizens' groups / Residents' welfare associations, media, unions, cooperatives

Core Challenge
Seasonal waste surges during peak tourism periods overwhelm existing waste facilities. Poor segregation at the source led to inefficiencies in recycling and composting. Lack of visible community engagement in sustainable practices.

Turning Challenges to Solutions
Leh's Integrated Waste Management System addresses waste management challenges through a dual approach: a decentralized wet waste composting system and the innovative 3R (Reduce, Reuse, Recycle) facility. The 3R facility focuses on recycling high-potential materials like PET bottles, cardboard, tetrapacks, and e-waste, using community engagement and incentives to promote proper segregation and delivery. Meanwhile, the decentralized wet waste system diverts organic waste from landfills, processing it into compost at multiple localized units. This holistic approach ensures waste reduction, resource recovery, and environmental sustainability, particularly during high tourist influx periods.

Journey of Problem Solving:

For the 3R Facility

A. Planning: Identified waste surges during tourist peaks as a key challenge.
   - LEDeG was responsible for construction of and operating the 3R facility.
   - Selected a visible, central site for accessibility and awareness.
   - Focused on five recyclable categories: PET bottles, cardboard, tetrapacks, e-waste and clothes.

B. Design:
   - Integrated vernacular Ladakhi architectural aesthetics for visibility and community interest.
   - Functional layout to ensure smooth operations and prevent misuse.

C. Implementation:
   - Land was provided by MCL; LEDeG led the construction and operation of the two facilities along with leading awareness campaigns. Although the facilities are now operated by the MCL, LEDeG still provides periodical monitoring and technical support when necessary.
   - Engaged communities with training on segregation and drop-offs.

D. Evaluation:
   - Tracked waste diversion from MRF and recycling efficiency.
   - Collected community feedback for continuous improvement.

For the Decentralized Wet Waste Management System

A. Planning:
   - Addressed organic waste issues through localized composting units.
   - Strategically placed units to reduce transportation and handle peak loads.

B. Design:
   - Small-scale compost units tailored to Leh’s climate.
   - Easy access for residents and businesses to drop wet waste.

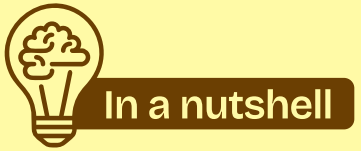
C. Implementation:
   - Municipal Corporation Leh (MCL) allocated land; LEDeG managed setup and operations.
   - Conducted workshops to encourage segregation and participation.

D. Evaluation:
   - Measured compost output and waste diversion impact.
   - Utilized compost for community greening projects.

Secret ingredient(s) for success:

1. KKey Partners: Municipal Corporation Leh (MCL): Provided land, permissions, and operational support. Ladakh Ecological Development Group: Managed design, construction, and implementation. Local Residents and Market Associations: Actively participated in segregation and delivery of waste.
2. Community Involvement: Extensive awareness campaigns and workshops encouraged citizen participation in waste segregation and responsible disposal. Tourists were engaged through seasonal waste management drives.
3. Geographical Particularities: Central Market Location: High visibility and accessibility ensured widespread community engagement. Climatic Challenges: Systems were designed to withstand Leh's extreme weather conditions, ensuring functionality year-round.
4. Design and Aesthetics: Traditional Ladakhi architecture made the 3R facility visually appealing, preventing misuse and fostering community pride.
5. Operational Support: Dedicated staff for maintaining decentralized composting units and overseeing 3R facility operations ensured smooth functioning.
6. Collaborations and Incentives: Partnerships with waste pickers and NGOs for efficient waste handling and recycling. Incentives for residents to bring segregated waste reinforced participation.
   - LEDEG was responsible for construction of the 3 r facility and then running the 3 R facility and the decentralised wet waste management unit and now it has been transferred to the MCL. The facility has Ladakhi vernacular architecture elements. This was to make it more aesthetically pleasing and also visible.
   - Both facilities were designed and constructed by LEDeG based on research to ensure they would function effectively in Ladakh.
   - These are now operated by MCL as we have transferred

these facilities to them. But we also do periodical monitoring and also give technical support where ever necessary.



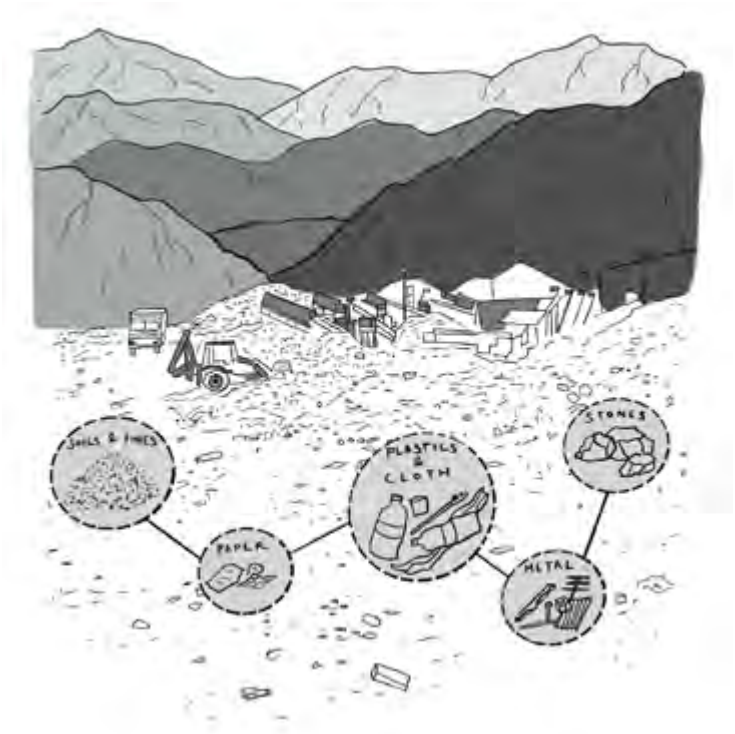
Leh's Integrated Waste Management System uses a dual approach: a 3R (Reduce, Reuse, Recycle) facility and decentralized wet waste composting. The 3R facility recycles key materials like PET bottles and e-waste, promoting segregation through community engagement. Localized composting units process organic waste, reducing landfill use and transportation. This sustainable model addresses waste from tourism, focusing on waste reduction, resource recovery and community participation.

19

INNOVATIVE BIOMINING SOLUTIONS FOR MOUNTAINOUS REGIONS

T We Ours

Asma Yousuf
-
Ladakh ecological developmnet group (LEDeG)
Leh, Ladakh
-
Thematic Keywords: Building Enabling ecosystems, Adopting a climate lens
-
Stakeholders: For-profits, startups, CSOs/ Social enterprises/ NGOs, Govt at state level, ULBs



Core Challenge
This project addresses the challenges of remediating legacy waste in a geographically remote, mountainous region with high service delivery costs, limited local infrastructure, and extreme weather conditions.

Journey of Problem Solving:
A. Planning:
- Conducted volumetric assessments to estimate 132,000 cubic meters of waste.
- Developed a biomining-based remediation plan incorporating local reuse of recovered materials and land reclamation.

B. Design
- Deployed advanced machinery for waste segregation, including trommels and sieves.
- Designed in-situ RDF treatment processes and scientific incineration plans.

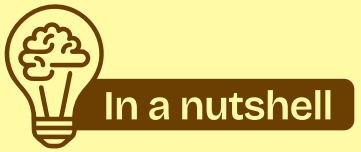
C. Implementation
   - Cleared 35,000 metric tons of waste from the upper dumpsite by August 2022. Recovered usable materials:
     - Plastics for road construction and recycling.
     - Soil and fines for leveling and construction fillers.
     - Rocks and stones for local construction.
     - Addressed residual fractions through scientific incineration or capping.

D. Evaluation
   - Monitored progress regularly, with completion scheduled for December 2022.
   - Tracked efficiency of material recovery and land reclamation efforts.

E. Post-remediation land use
   - Formulated plans for developing a slaughterhouse, waste treatment facilities, green spaces, and potentially a solar park.

Secret ingredient(s) for success:

1. Stakeholder Collaboration
   - Municipal Committee Leh: Executed the project under ULB guidance.
   - Technical Agencies: LEDeG and BORDA provided expertise in waste management in challenging climates.
   - Service Providers: PH Jadhav ensured efficient machinery deployment and waste handling.
2. Localized Solutions
   - Tailored technologies to account for geographical and climatic constraints, such as in-situ RDF treatment.
3. Comprehensive Scoping
   - Included biomining, transportation, residual disposal, and land reclamation within a unified contract.
4. Policy Adaptations
   - Factored in higher costs of service delivery and extended project timelines due to extreme weather.
5. Environmental Impact Mitigation
   - Reduced transport-related emissions by focusing on local reuse of materials and on-site processing.



The Legacy Waste Remediation Project at the Bombgarh Dumpsite in Leh, Ladakh, involves the biomining of 132,000 cubic meters of waste spread across 28.4 acres of undulating land. Conducted over 18 months (Feb 2022–Aug 2023), the project was executed by the Municipal Committee Leh with technical support from LEDeG and BORDA. The waste profile includes 42% soil and soil fines, 52% plastics, paper, and cloth, and 6% metals, stones, and other materials. Technologies deployed included mechanical segregation, recovery of recyclables, in-situ RDF treatment options, and scientific disposal of residual fractions. The project cleared 35,000 metric tons by August 2022 and reclaimed land for future use, including solid waste management facilities and potential green spaces. This initiative highlights the need for localized solutions in mountainous regions, considering higher costs, environmental constraints, and extended timelines. Comprehensive scoping and clustering of projects were crucial for successful implementation.

PROMOTING A CIRCULAR ECONOMY FOR A CLEANER FUTURE

T We Ours

Chinmayi MN
-
Hasiru Dala
Nagawala, Karnataka

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Thematic Keywords: Citizenship and Public Problem Solving, Flourishing and Equitable Cities, Building Enabling ecosystems, Adopting a climate lens

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Stakeholders: CSOs/ Social enterprises/ NGOs, Waste pickers, Govt at state level, ULBs, Citizens' groups / Residents' welfare associations, alliances / unions / cooperatives

Core Challenge

In the heart of Nagawala Gram Panchayat, a cluster of villages on the outskirts of Mysore, the waste problem had grown into a daily struggle. Trash was piling up in open fields, creeping dangerously close to the water sources, and clogging local streams. Burning waste had become common practice, filling the air with heavy smoke that clung to everything it touched. However, in a place where waste management was largely informal and ad-hoc, few residents saw a way out of the mounting waste crisis.

When Hasiru Dala, first arrived in Nagawala, they didn't come in with an immediate solution. Instead, they began with what they called the 'Needs Assessment and Initial Research' phase, recognising that understanding the root causes of the problem was crucial to designing a lasting solution. From their initial observations, they discovered the toll these unmanaged waste practices were taking: air and water pollution, greenhouse gas emissions from decomposing trash and increasing contamination of the local soil.

Turning Challenges to Solutions

Journey of Problem Solving:

A. Conduct initial needs assessment and secure stakeholder approvals. Hasiru Dala began with open meetings and focus groups, inviting local leaders, the Panchayat Development Officer (PDO), Anganwadi staff, ASHA workers, and residents to share their perspectives. Some participants were initially sceptical; for most, waste management had never been structured, and sorting waste at home seemed inconvenient. However, Hasiru Dala's team emphasized the link between unmanaged waste and health issues—including respiratory problems, waterborne diseases, and pollution—convincing residents to participate.
B. Secure funding and conduct household waste surveys. They conducted detailed surveys in each of Nagawala's five villages, interviewing households, shops, schools, and other waste generators. These waste audits helped identify the types of waste each household produced, from organic materials to recyclables to hazardous waste.
C. Conduct awareness activities and distribute reusable menstrual products. Hasiru Dala launched the Zero Sanitary Waste Gram Panchayat campaign, partnering with ASHA workers to educate women on sustainable menstrual products. Workshops highlighted the hazards of single-use sanitary napkins, and Hasiru Dala distributed free menstrual cups and cloth pads to encourage reusable options. This reduced the sanitary waste burden and earned Nagawala national recognition as a Sanitary Pad Free Gram Panchayat.
D. Set up the SSWMP (Strategic Solid Waste Management Plan) plant and install necessary machinery. Powered entirely by solar energy, this plant handles sorting, processing, and converting organic waste into biogas and compost. The plant took a circular economy approach, ensuring every waste stream—whether organic, recyclable, or hazardous—was managed to minimize environmental impact and maximize resource recovery. Organic waste was transformed into compost to support local farming, while a biogas unit provided fuel for cooking, reducing dependency on traditional fuels. Dry waste, such as plastics and paper, was processed using a newly installed baling machine, designed with a 60-kilogram capacity to make it easier for local women's self-help groups (SHGs) to operate. This inclusive design enabled women to actively participate in waste management.
E. Implement waste collection, segregation, and composting activities. The SSWMP wasn't just a waste processing site—it became a model of sustainable living, sparking a ripple effect across the community. With support from local leaders, Hasiru Dala launched door-to-door awareness campaigns, teaching households to use the "2bin1bag" system: one bin for dry recyclables, one for organic waste, and a bag for hazardous items.
F. Inaugurate the plant and learning centre.

Final Result: Reduced landfill dependence, effective waste segregation, conversion of waste into valuable resources, improved public health, and engaged community participation.

Secret ingredient(s) for success:

1. Zero Sanitary Waste Campaign: Successfully reduced sanitary waste by switching women to reusable menstrual products.
2. Customized Baling Machine: Tailored for SHGs, empowering women and making waste management inclusive.
3. Learning Center: Provided on-site education and live demonstrations of sustainable practices.
4. Ashraya Hasta Trust: Provided timely funding for equipment and awareness campaigns.
5. Community Willingness: Active participation and willingness to adopt new practices were key to success.

In a nutshell

Nagawala Gram Panchayat's transformation from a waste-laden community to a clean, sustainable model didn't happen overnight. It required planning, methodical research, and dedicated community involvement. The SSWMP (Strategic Solid Waste Management Plan), now a trusted institution, is powered by solar energy, equipped with efficient processing technology, and serves as an education centre that continues to inspire. Thanks to community-centric methodology grounded in data, supported by local partnerships, and adapted to local needs—Nagawala has become an example of how a community can reclaim its environment, inspire neighbouring villages, and pave the way for a healthier, sustainable future.

Waste needs an office space

DRY WASTE COLLECTION CENTRES, A MODEL FOR INCLUSIVE AND SUSTAINABLE WASTE MANAGEMENT

T Wa Ours

Chinmayi MN
-
Hasiru Dala
Nagawala, Karnataka
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Thematic Keywords: Citizenship and Public Problem Solving, Flourishing and Equitable Cities, Building Enabling ecosystems, Adopting a climate lens
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Stakeholders: For-profit, startups, CSOs/ Social enterprises/ NGOs, Waste pickers, Govt at state level, ULBs, Citizens' groups / Residents' welfare associations, alliances / unions / cooperatives, media

Core Challenge
Bengaluru city urgently needed an inclusive, decentralized waste management solution that would recognize the contributions of waste pickers, provide them with a sustainable livelihood, and foster community engagement in sustainable practices. This challenge led to the development of the Dry Waste Collection Centers (DWCCs) model—a public-private partnership between waste pickers, Bruhat Bengaluru Mahanagara Palike (BBMP), and Hasiru Dala.

Bengaluru's DWCC model represents a decentralized waste management solution designed to formally integrate waste pickers into the city's solid waste management system. Through the establishment of DWCCs, operated by waste pickers in collaboration with BBMP and Hasiru Dala, the model addresses multiple facets of waste management, from waste segregation to resource recovery. This collaborative effort involved a Memorandum of Understanding (MoU) that outlined the roles and responsibilities of each partner.

This partnership model ensures uniform implementation of the decentralized system across a significant portion of the city, reaching approximately 80% of Bengaluru.

Turning Challenges to Solutions

Empowered Waste Pickers and Waste Workers: The management of DWCCs is entrusted to waste pickers and Self-Help Groups (SHGs). This innovative approach empowers these groups to become entrepreneurs, hiring and managing teams of 5 to 20 waste pickers based on the volume of waste received. The SHGs play a vital role in the financial empowerment of waste workers, support to access affordable credit as well as emotional support networks for the workers. DWCC operators also recognize that a healthy and supported workforce is essential for efficient and sustainable waste management. This commitment goes beyond simply providing a job and extends to a well-rounded approach that considers all aspects of worker well-being including support towards health and medical care, family support through scholarship programs, and ensuring occupational safety and health of waste workers through training.

Enhanced Sustainable Waste Management: Some of the impact examples in Bengaluru's waste management from the DWCC Models demonstrate the potential of effective waste segregation and recycling. For example, the DWCC model has successfully led to the creation of zero-waste wards. They have also pioneered the upcycling of Multi-Layered Plastics (MLP). By collecting MLP and processing it into MLP boards, the program diverts valuable materials from landfills and adds value to low-grade waste. Another innovative initiative involves the separate collection and recycling of cloth waste from select DWCCs. This pilot project, though in its early stages, highlights the potential for recovering and repurposing textile waste as well.

Journey of Problem Solving:

A. Conduct pilot initiatives and formalize partnerships with BBMP.
B. Educate residents about segregation using the "2-bin-1-bag" system.
C. Onboarding and liaising with Urban Local Bodies. Collaborations with government bodies and community organizations provided essential resources and support for successful implementation.

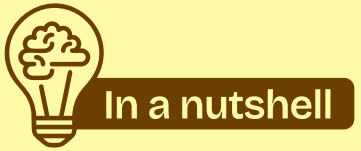
D. Roll out DWCCs across Bengaluru and incorporate upcycling and recycling innovations.
E. Collaborate with RWAs for lane composters and community awareness events.
F. Monitor, evaluate, and replicate the model across wards.

Final Result: A decentralised, inclusive waste management system integrating waste pickers and fostering community responsibility towards sustainable waste practices.

Secret ingredient(s) for success:

1. Zero-Waste Wards: Created zero-waste wards through effective waste segregation, resource recovery, and recycling practices.
2. Upcycling Multi-Layered Plastics (MLP): DWCCs pioneered the collection and upcycling of MLP waste into MLP boards, adding value and diverting low-grade materials from landfills.
3. Cloth Waste Collection and Recycling: Introduced a pilot project to collect and recycle cloth waste, emphasizing the potential for resource recovery and repurposing textiles.
4. Lane Composters: Partnered with RWAs to set up lane composters that processed wet waste, promoting composting at a community level. The "Women of Wisdom" RWA collaborated with the DWCCs to manage composting and distribute compost back to the community.
5. Compost Santhes (Community Markets): Organized Compost Santhes in local parks to educate residents about waste segregation and sustainable living practices. These events brought together neighbours through workshops, stalls promoting eco-friendly products, and fun activities for children, fostering community engagement in sustainability.
6. Daily Awareness Campaigns during Door-to-Door Collection: Waste collectors engaged directly with residents to reinforce waste segregation, offering personalized guidance to encourage consistent practices.
7. Targeted Engagement in Ward 184: Conducted an intensive awareness campaign in Ward 184, a low-income area with low segregation rates. This involved door-to-door outreach, community leader engagement, and regular follow-ups to improve segregation practices.

8. Collaboration with BBMP:
    - Land and Infrastructure: BBMP provided land for establishing DWCC facilities.
    - Monthly Maintenance Support: Supported the DWCCs with the maintenance of collection vehicles and the provision of essential utilities like electricity and water.
    - Route Planning: Collaborated with DWCC teams to plan collection routes for efficient operations across wards.



Revenue generated from the sale of recyclables, compost sales, and financial support from BBMP ensures the long-term sustainability of DWCCs. This public-private partnership empowers waste pickers, fosters environmental responsibility, and contributes to a cleaner and healthier Bengaluru for all. The model's success demonstrates its potential for replication across different urban centres, particularly in areas looking to adopt inclusive waste management systems.

Housing colonies waste act

A GREEN REVOLUTION IN THE POLICE QUARTERS: A SUSTAINABLE WASTE MANAGEMENT MODEL FOR INSTITUTIONAL CAMPUSES

I We Ours

Chinmayi MN
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Hasiru Dala
Nagawala, Karnataka

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Thematic Keywords: Citizenship and Public Problem Solving, Flourishing and Equitable Cities, Building Enabling ecosystems, Adopting a climate lens

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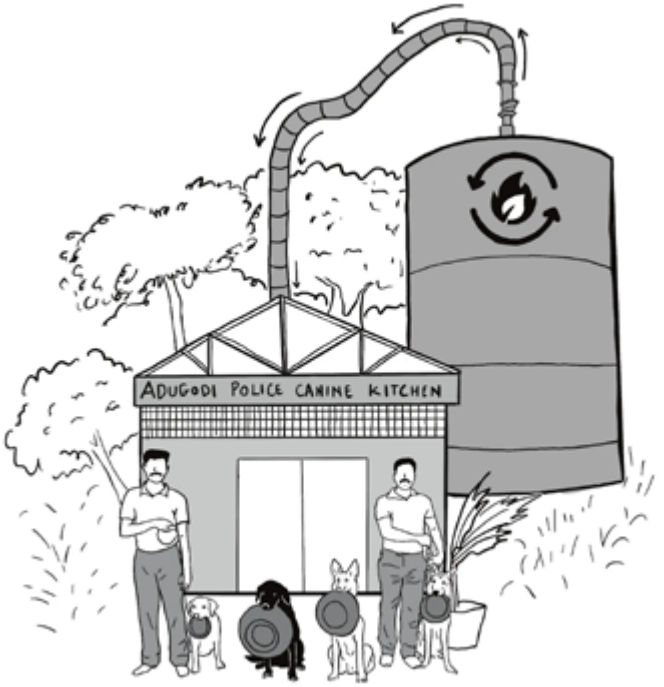
Stakeholders: CSOs/ Social enterprises/ NGOs, Waste pickers, Govt at state level, ULBs, Citizens' groups / Residents' welfare associations, Police officers, CSR funders



Core Challenge

The Adugodi Police Quarters is a residential and administrative hub for over 1,600 police personnel and their families, as well as housing administrative offices, a school, and small businesses like tea stalls and barber shops. The significant quantities of dry and organic waste generated by the Adugodi Police Quarters community, required an effective on-site waste management solution to comply with Solid Waste Management Rules, 2016, and reduce landfill dependency.

Turning Challenges to Solutions

The Adugodi Police Quarters is a residential and administrative hub for over 1,600 police personnel and their families, as well as housing administrative offices, a school, and small businesses like tea stalls and barber shops. This mix of households and services produced significant quantities of both dry and organic waste, which posed a growing challenge for the community. In line with the Solid Waste Management Rules, 2016 and the BBMP circular, which mandates

bulk waste generators to manage their waste within their premises, the Deputy Commissioner of Police proposed the idea of a comprehensive waste management facility.

Hasiru Dala was tasked with implementing this vision. The facility would include a Dry Waste Collection Center (DWCC), a biogas unit, and a composting pit—components that would address both organic and inorganic waste, ensuring that all waste generated on the campus would be processed on-site and kept out of landfills.

Two major Corporate Social Responsibility (CSR) arms—GAIL Gas Limited and Indian Oil Corporation Limited (IOCL)—came on board to provide financial support. Carbon Masters, a leading name in renewable energy technology, was chosen as the technology partner for the biogas facility, while Hasiru Dala took on the role of the overall project lead. This collective effort would transform waste into a resource, benefiting both the environment and the community.

Journey of Problem Solving:

A. Establish a clear vision of what needs to be achieved, identifying desired outcomes. In this case, the vision was to follow the BBMP circular that mandates bulk waste generators to manage waste on campus.
B. Gather necessary inputs, such as human resources, expertise, and logistics. The Deputy Commissioner of Police brought in Hasiru Dala as an expert organization to set up the waste management facility and secured funding from CSR units of GAIL India and IOCL.
C. Hold discussions among stakeholders to bring various viewpoints and finalize the facility's design and operation plan. The goal is to ensure the project is sustainable and beneficial for all involved parties.
D. Set up the waste management facility, ensuring all elements (e.g., biogas unit, composting) serve their intended purpose and contribute to sustainability. Provide incentives to all stakeholders—police personnel receive a continuous gas supply for their dog kitchen, waste pickers gain employment opportunities, and the community benefits from a healthier environment.
E. Organize awareness sessions and capacity-building activities for the community to ensure proper waste segregation at source. These activities promote behavioural change, which is essential for the success of the waste management initiative.
F. Maintain oversight throughout the project implementation, giving freedom for experts to operate while ensuring progress is tracked and adjustments are made as needed.

Final Result: The police department benefits from financial savings on cooking fuel for their dog kitchen, the waste pickers gain sustainable livelihoods, and the community enjoys a healthier environment. Source segregation is encouraged and practised by the community members, leading to reduced waste and a lower carbon footprint. Effective waste management, reduced landfill waste, and decreased carbon emissions, leading to a positive environmental impact and improved community well-being.

Secret ingredient(s) for success:

1. ZA credible and legitimate government order that pushes authorities to act. Central agency with oversight authority (e.g., Police Department).
2. Expert organizations with relevant expertise (e.g., Hasiru Dala and Carbon Masters).
3. Flexibility and freedom for planning and intervention.
4. Incentives for all stakeholders involved (e.g., police personnel families, waste pickers).
5. Capacity-building and awareness sessions for the community.
6. CSR funding partners (e.g., GAIL India and IOCL.

In a nutshell

The initiative led by Hasiru Dala was designed to tackle waste management comprehensively. The Total Solid Waste Management (SWM) facility was composed of a Dry Waste Collection Center (DWCC), a biogas unit capable of processing one ton of organic waste per day, and a composting pit for organic garden waste. This facility was designed to process all the waste generated on campus, converting organic waste into BioCNG to fuel the dog squad kitchen, and transforming the residue slurry into compost for garden use.

A REFLECTION ON DIGNITY, SANITATION, AND SUSTAINABLE COMMUNITIES

T We Ours

Anjali Wagle K and Ashwin Kumar B
-
Technology Informatics Design Endeavour (TIDE), Bangalore
Chikkaballapura, Karnataka
-
Thematic Keywords: Citizenship and Public Problem Solving
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Stakeholders: CSOs/ Social enterprises/ NGOs, Waste pickers, ULBs

Core Challenge

In the evolving urban landscape, of Chikkaballapura city, the City Municipal Council undertook a significant social welfare initiative by identifying a land parcel near Kandawara lake and developing it into a layout to address the housing needs of marginalized communities, specifically sanitation workers and ragpickers under the Pradhan Mantri Awas Yojana scheme. The housing colony had been gradually taking shape over the years, but it faced serious infrastructure challenges. The most pressing issue was the complete lack of sewage connections. Technical constraints had made it impossible to link the houses to the existing underground drainage system due to its distant location and unfavorable ground slope. Many residents were still living in temporary shelters, with some houses remaining incomplete. The absence of functional toilets had forced many to resort to open defecation, creating significant health and hygiene concerns for the community.

The solid waste management system was absent in the colony. No door-to-door waste collection existed, because of the lack of municipal interventions to collect and handle the waste, leading to mixed waste dumping everywhere. Residents had no structured way to dispose of their household waste. Garbage piled up in random spots around the settlement, littering attracting stray animals, creating breeding grounds for diseases. These piles of mixed waste remained untouched for extended periods.

Turning Challenges to Solutions

The case study showcases the successful implementation of decentralized solid waste management in Kandavara colony through CMC's leadership and TIDE's technical support. The initiative addressed the critical challenges of poor waste segregation and littering by establishing a systematic approach to waste management. Key interventions included setting up a composting unit for wet waste processing, distributing twin dustbins, installing street bins, and initiating door-to-door waste collection. Notable outcomes include the sustainable management of 3.624 tons of wet waste, the elimination of garbage vulnerable points, and consistent waste segregation practices by households.

Journey of Problem Solving:

A. Planning Phase:
   - Assessment of existing waste management challenges in Kandavara colony
   - Design of intervention strategy focusing on both wet and dry waste management
   - Development of community engagement plan

B. Implementation Phase:
   - Infrastructure setup: Installation of composting unit, distribution of twin dustbins, and placement of street bins
   - Capacity building: Training sanitation workers in composting operations and maintenance
   - Community mobilization: Conducting door-to-door awareness programs, community meetings, cleanliness drives, menstrual hygiene sessions
   - Initiation of door-to-door waste collection system

C. Monitoring and Evaluation:
   - Regular monitoring of waste collection and composting operations
   - Tracking community participation and waste segregation practices
   - Impact Assessment

Secret ingredient(s) for success:

1. The program's success was driven by comprehensive capacity building of sanitation workers and intensive community engagement through awareness programs, cleanliness drives, and regular monitoring.
2. The multi-faceted strategy included worker training, resident education, and regular community activities, which created lasting behavioral changes in waste management practices.
3. The systematic efforts in managing both wet and dry waste, coupled with active community participation, transformed the neighborhood into a cleaner space.

In a nutshell

The Chikkaballapura CMC took up the challenge of securing access to solid waste management services in the Kandavara colony to improve waste management with collaborative technical support from Technology Informatics Design Endeavour (TIDE), Bremen Overseas Research and Development Association (BORDA) to help local residents take an active role in managing their community's waste. The case demonstrates how a multi-faceted approach combining infrastructure development, skill building, and community participation can create lasting behavioral changes in waste management practices and transform a neighborhood's cleanliness.

A SUSTAINABLE COMMUNITY-LED SOLUTION TO MANAGE SOLID WASTE IN RURAL HIMALAYAS

T Wa Ours

Waste Warriors
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Waste Warriors Society
Rural Himalayan regions
-
Thematic Keywords: Building enabling ecosystems, Adopting a climate lens
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Stakeholders: CSOs/ Social enterprises/ NGOs, Waste pickers, Govt at state level, Govt at local level, rural communities, unions/ cooperatives

Core Challenge

Waste Warriors' Paryavaran Sakhi model addresses intersectional challenges like gender inequity, climate change, gender stereotypes and working in the waste sector. The model addresses the following challenges:

1. Lack of Opportunities: Due to the reducing land cover in rural Indian Himalayan Region, exacerbated by forest fires, women face a severe loss of opportunities to find daily wage work as agricultural yield drops significantly. Plus, women cater to the household needs simultaneously, hence limiting their ability to travel far for work
2. Increasing Heat: GHG emissions from waste contribute to 3% carbon and 20% methane emissions. Furthermore, waste burning in forests and mountains leads to rampant fires. Both contribute to local temperature rise and there is a gap in mitigating these at the local level.
3. Waste and Gender Stereotypes: Women working in waste are often looked down upon in Indian rural areas and there is a

deeply ingrained notion about untouchability towards people working in waste. There are strong stereotypes towards women from all caste, educational and financial backgrounds. The local community and government agencies need to recognize their work.

4. Mountainous Communities Bearing the Heaviest Brunt: Himalayan region is warming faster than global average (1.3 C > 0.88 C) and this puts mountainous communities exposed to climate vulnerabilities. There is a dire need to build community resilience towards climate change and provide an opportunity to work in the sector.

Turning Challenges to Solutions

The Paryavaran Sakhi Model represents a transformative approach to addressing the waste crisis in the Indian Himalayan Region by promoting community empowerment, gender equality, and sustainable livelihoods.

Journey of Problem Solving:

The implementation of the Paryavaran Sakhi model involves several key steps-

a. Identifying Paryavaran Sakhis
b. Community Activation and Government Support (Awareness and Capacity Building)
c. Introducing/Leveraging an SWM System

A. Step 1: Identifying Paryavaran Sakhis

A Paryavaran Sakhi is identified as a local woman who embodies entrepreneurial spirit, leadership qualities, and strong communication skills, regardless of her age, education, or socio-economic background. She also has a strong drive to make a difference in her community, and to the environment. Women organise themselves into Self Help Groups (SHGs) and work as an entrepreneurial unit in serving their local community.

B. Step 2: Awareness and Capacity Building

The process begins with the "Chai pe Charcha" initiative, which brings community members together in a village square for focused discussions aimed at understanding their reluctance (if any)

to engage in effective waste disposal practices. These informal gatherings serve as a platform for Information, Education, and Communication (IEC) activities that enhance community capacity.

Surveys are conducted to thoroughly evaluate the waste landscape in the village, followed by targeted capacity-building programs. Various IEC tools are utilized to support these efforts, including cleanliness rallies, cleanup drives, awareness sessions in schools, door-to-door outreach for beneficiaries, the establishment of a Young Warrior Club, installation of informative signboards, transformation of neglected areas through art installations, and more.

C. Step 3: Establishing a Sustainable Waste Management System

An integrated waste management system is developed. This system includes efficient waste collection, sorting processes, strategic storage solutions, advanced processing techniques, and environmentally friendly disposal methods.

This system includes efficient waste collection, segregating processes, strategic storage solutions through decentralised Waste Banks, setting up functional Material Recovery Facility (MRF).

Enhancing Community Living Standards:

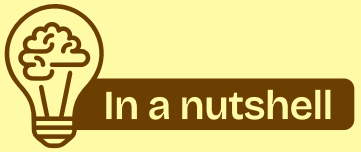
Finally, initiatives are implemented to improve the overall quality of life in the villages. This involves addressing waste-related challenges and promoting sustainable practices that uplift the community as a whole. Women are better recognised for their work-- locally and at a State level and feel more empowered.

Through these comprehensive steps—awareness building, system establishment, livelihood enhancement, and community improvement—the Paryavaran Sakhi model effectively promotes sustainable waste management while fostering community engagement and empowerment.

Secret ingredient(s) for success:

To ensure the successful implementation of our project, we have strategically aligned a robust network of resources and expertise. Our key partnerships and resources include:

1. Local Government Tie-Ups: We have established strong relationships with local government bodies including Block Development, Panchayati Raj, Forest Department, Tourist Department, Gram Panchayat etc., enabling streamlined processes for better waste management and support for regulatory compliance.
2. Community Partnerships: By engaging with local communities through active citizens and Paryavaran Sakhis, we ensure the project aligns with community needs, issues and leverages local knowledge, contacts which will lead to enhancement of both the impact and sustainability of our initiatives. We hold a lot of interactive engagements with the local community including clean up drives, chai par charcha, art for awareness, sustainable menstruation workshops etc. which gives them the agency to take individual climate actions.
3. Geographical particularities: Covering 16.2 per cent of India's land, the Indian Himalayan Region (IHR) hosts 50 million people and diverse flora and fauna. Despite its economic importance, unchecked tourism-driven activities result in 8.4 million tonnes of annual solid waste, impacting the fragile ecosystem, wildlife, agriculture, and local communities. Ramnagar, a gateway to Jim Corbett Tiger Reserve, faces waste woes due to inadequate waste management systems. The region's challenging geography, with remote settlements and limited infrastructure, complicates waste management efforts. Tourist-generated waste, left unchecked, highlights the urgent need for effective solutions in this ecologically sensitive area.



The Paryavaran Sakhi model is driving change in waste management by empowering local women in rural India. The model actively engages women from various backgrounds, providing them with entrepreneurial opportunities in waste management while overcoming social barriers and limited job prospects.

Currently implemented in several villages in Corbett, this initiative employs local women (sakhis) who perform essential tasks such as door-to-door dry waste collection, segregation, and recycling. Transitioning to an entrepreneurial framework, the sakhis now earn income through user fees for their services, promoting financial independence and gender equity. Ultimately, the Paryavaran Sakhi Model aims to create a sustainable waste management system while empowering women and fostering community resilience against environmental challenges.

25

WASTE GURUKOOL IN GURUGRAM

T We Ours

Aarti Sachdeva and Hrishita Gupta
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Saahas
Gurugram
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Thematic Keywords: Building enabling ecosystems, Adopting a climate lens
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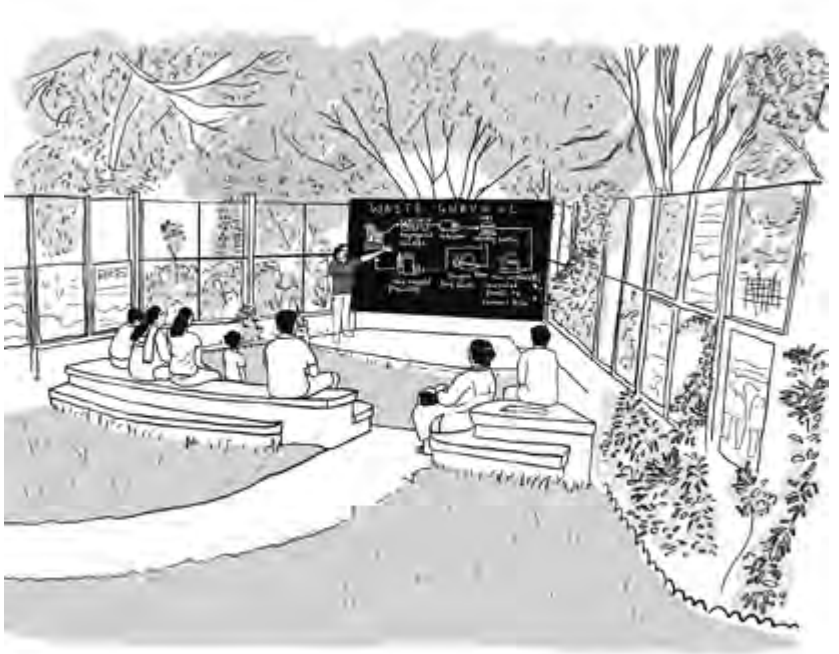
Stakeholders: ULBs, Citizens' groups / Residents' welfare associations, For-profit, CSR funding partners



Core Challenge

Gurugram faces severe waste management issues, including poor performance in the Swachh Survekshan cleanliness assessment. Despite having earned the reputation of millennium city, the city is struggling to contain its own waste. The deplorable situation of waste management in the city worsened by dismal service of the MCG concessionaire and frequent strikes by sanitation workers have led to various challenges such as delays in waste collection, unauthorized waste dumping, open burning of waste and choking of drains at multiple locations across the city. Bandhwari landfill where unsegregated waste generated in the city is dumped is currently over 40 metres high and is amongst the tallest landfills in north India. The mismanagement of this landfill caused by dumping mixed waste has led to more than its fair share of environmental issues such as leachate, uncontrolled fire etc., which is more pronounced owing to its location in the eco-sensitive Aravalli range.

Turning Challenges to Solutions

Saahas, an NGO, established Ecogram in Sector 53, Gurugram, as a model waste management facility through a public-private partnership with Municipal Corporation of Gurugram (MCG) and funding partners (Hyundai Motor India Ltd, SBI Cards, and Signode). The project began in January 2022 and was formally inaugurated in July 2023, designed to serve as both a processing facility and an educational center (अथSHALA) for sustainable solutions.

Apart from the environmental benefits of Ecogram in reducing GHG emissions due to landfilling and transportation of waste; there is also a financial advantage for any municipality as waste transportation cost is one of the highest cost heads. The electricity generated by the biogas unit at Ecogram is utilized for the unit equipment power supply as well as to light up the public spaces in the vicinity. On-site management of segregated waste in this centre established in the heart of the city is now drawing the attention of officials and citizens alike.

Journey of Problem Solving:

A. Setting up infrastructure including:
   - 2 TPD biogas plant for wet waste to generate electricity
   - Semi-mechanized composting unit processing 1.5 TPD kitchen waste
   - 5 TPD Material Recovery Facility
   - Construction of अथSHALA using recycled materials

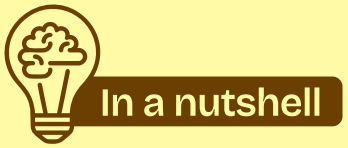
B. Establishing community engagement programs, educational programs and hosting visitors

C. Setting up operational processes for waste processing

D. Developing partnerships with municipal authorities and corporate sponsors

Secret ingredient(s) for success:

1. Strategic location: The prime location of this centre is of strategic importance as it keeps them in the radar of nearby communities enabling easy access and learning opportunities.
2. Source segregation of waste: Waste segregation at source is a must for such decentralised waste management facilities. In Gurugram, Saahas has been at the forefront in driving source segregation through community engagement, operationalizing decentralized waste management for bulk waste generators and capacity building of waste collectors through various initiatives since 2017.
3. Education with practical demonstration: Overcoming initial NIMBY (Not In My Back Yard) opposition through demonstrated effectiveness.



Ecogram serves as Gurugram's first integrated decentralized waste management center, demonstrating that sustainable waste management is possible through a combination of public-private partnership, community engagement, and proper infrastructure. It processes 7 tons of waste per day (serving 38,000+ individuals) while functioning as an educational hub that shows citizens how proper waste management can work effectively.

PUBLICATION CREDITS

Design and ideation: Srinivas Mangipudi and Smriti Tiwari
Editing and content curation: Ansila Thomas, Amiya Chaudhuri, Disha Ranjana
Illustrations: Neha Vaddadi
Book design: Sanket Jadia
This publication was developed under the guidance of Preeti Prada Panigrahi

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