Shoonya

Towards zero unchecked solid waste in the Himalayas

WASTE WARRIORS
REDUCE RE-USE RECYCLE

“In the Himalayas, resilience is not a choice, it is tradition!”

Credits

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Foreword

High in the Garhwal Himalayas, where ancient rivers flow and snow-capped peaks touch the sky, where snow leopards roam and ancient forests breathe, the villages of Uttarkashi are facing a modern crisis: PLASTIC. Once pristine and self-sustaining, these communities nestled within the eco-sensitive Govind Pashu Vihar National Park and Wildlife Sanctuary National Park and Wildlife Sanctuary, are now at a crossroads. Waste is no longer confined to the margins; it is in the soil, in the water, in the air and in the lives of people who depend on this land for survival.

This case study documents the journey of the Uttarkashi Waste Management Model, a community-led initiative launched by Waste Warriors Society in 2021. It began with a bold experiment, could solid waste be managed effectively in some of the most geographically isolated villages in Uttarakhand like Doni and Satta, through a model built on local ownership, sustainability, and inclusion? The answer, as this study shows, is a resounding YES, not without overcoming a series of obstacles. Waste Warriors began with baseline surveys, capacity-building workshops, and door-to-door awareness campaigns to build a complete waste chain in villages like Doni, Saur, Sankri, Naitwar, Gaichwan, and Satta.

With time, a decentralized model emerged, run by Safai Sathis. Many of them are women: collecting, sorting, transporting, and educating their communities about the true cost of plastic. But the challenge is larger than waste collection. The region faces degraded soils, erratic crop yields, and over 5,400 endangered natural water sources, as reported by the Spring and Rejuvenation Authority. Respiratory illnesses, caused in part by open burning of plastic, are common among elders. Farmers worry aloud: “We can see small bits of plastic in the soil. How will agriculture survive like this?”

77% of packaging waste collected in the area in 2024 consisted of non-recyclable multilayered plastics, a sign of growing reliance on processed foods and the decline of local food traditions. These materials are nearly impossible to process locally and often end up being incinerated or landfilled—adding to environmental and health burdens. In just under two years, this model has successfully diverted 43.7 metric tons of waste from fragile mountain ecosystems, keeping plastic out of forests, rivers, and farmlands. The number is significant, but what it represents is an even more powerful shift in mindset, community, and shared responsibility.

Women have been at the center of this transformation, not just as workers but as change agents. Janita Devi, one of the first Women Safai Sathi, took on the taboo subject of menstrual waste. After educating her peers on reusable menstrual products like cups and cloth pads, 45 women and girls in Gaichwan adopted the practice, significantly reducing waste and improving convenience and dignity. Safai Sathis are not just waste collectors, they are educators and mobilizers. They earn about ₹6,500 for 12 days of work per month, receive health insurance, medical allowance and hobby funds, and command the respect of their communities.

At the heart of their work are waste banks, where materials are sorted into 14 categories before making the long journey to Dehradun for recycling. Despite seasonal roadblocks, poor infrastructure, and minimal state support, the system continues, driven by human resolve. Waste Warriors is working closely with Gram Panchayats to embed waste management into their annual Development Plans, advocating for local budget allocations to cover salaries and waste infrastructure. Already, some panchayats have begun contributing, signaling a shift toward long-term institutional sustainability. But to truly scale and sustain such models across the Himalayan region, policy reform is crucial for improved fund allocation, implementation of Solid Waste Management tax on tourists, promote responsible tourism through a "Carry Your Waste Back" policy, promote sustainable waste management system hotels and homestays, strengthen governance and enforcement by establishing village-level waste management committees, infrastructure development and incentives, expand decentralized systems, empowering local waste managers and establishing more community collection centers.

As the program expands to new Gram Panchayats in Mori block over the next 12–18 months, the goal is not only cleaner spaces but long-term resilience. Waste Warriors is working to embed the waste system into governance through line-item budgeting in GPDPs, laying the groundwork for decentralized, people-led, and climate-resilient rural infrastructure.
This case study offers more than operational insight, it presents a scalable, community-rooted blueprint for rural waste management in the Himalayan context. It shows how deeply interconnected waste is with health, gender equity, agriculture, water, and livelihoods and how empowering local communities, especially women and youth, can turn a crisis into an opportunity. It reminds us that the road to a cleaner Himalaya isn't paved with policy alone, it's carried forward by people willing to climb it, one sack of waste at a time.

Bhasker Pitchai
Associate Director - Projects
Waste Warriors Society

Content

The Himalayas

Rupin

Listen to the Hindi audio summary of the 'Shoonya' case study to get a quick glimpse of the Uttarkashi waste management work.

Supin

Executive Summary

Nobody wants waste in their backyard, but what happens when it's everywhere? That's the challenge facing the remote villages of Uttarkashi in the Indian Himalayas. Nestled within Govind Pashu Vihar National Park and Wildlife Sanctuary National Park and Wildlife Sanctuary, a critical habitat for species like the snow leopard, Himalayan black bear, and musk deer, these villages are witnessing a growing waste crisis. Once pristine landscapes, home to fragile ecosystems, are now littered with plastic. With no formal waste management systems, villagers resort to burning waste in the open, releasing toxic fumes that pollute the air, harm human health, and threaten wildlife. The Uttarkashi Waste Management Model, led by Waste Warriors, is tackling this crisis, one sack of waste at a time.

The idea is simple but powerful: train local green workers to collect, sort, and transport waste while creating awareness about plastic pollution's impact. These green workers, many of them women, have become the backbone of the initiative. With gloves on their hands and determination in their hearts, they go door-to-door, picking up waste that would otherwise choke rivers, pollute forests, and endanger wildlife. In return, they earn a stable income, gain confidence, and win the respect of their villages.

But it wasn't always this way. At first, many villagers resisted. "Not in my backyard!" was the common refrain when Waste Warriors set out to establish waste banks—designated spaces where collected waste could be sorted before being transported out. Land was scarce, and old prejudices ran deep. The caste system, which traditionally assigned waste collection to specific groups, made it even harder to convince people that waste management was a collective responsibility. Yet, step by step, conversation by conversation, change started to happen.

Children became key players in this shift. The Young Warriors Club, a group of enthusiastic kids, took it upon themselves to remind adults about proper waste disposal. “Why should we burn plastic if it harms our air?” they asked. Slowly, families started listening. Women, too, found their voices. Janita, one of the first green workers, once hesitated to speak up in village meetings. Now, she leads discussions on waste management and menstrual health, convincing women to switch to sustainable period products to reduce sanitary waste. But let’s be real—it hasn’t been easy.

Waste collected from high-altitude villages must be carried down treacherous trails before it can be transported to Dehradun for recycling. Seasonal roadblocks, harsh winters, and poor infrastructure add to the struggle. Financially, waste management isn’t cheap. While a small user fee has been introduced, most villages still rely on external funding to keep things running. Local governance has been slow to step in, with only a handful of panchayats contributing funds, despite clear evidence that proper waste management improves public health, agriculture, and tourism.

Yet, the impact speaks for itself. In just 23 months, the initiative has collected 43 metric tons of solid waste, and in some villages, more than 97% of households now participate in the program. However, the biggest challenge remains—financial sustainability. The solution lies in policy change, with greater government investment in decentralized waste management, tourism-linked revenue, where visitors contribute to waste solutions, and local accountability, ensuring communities take ownership of the system.

At its core, the Uttarkashi Waste Management Model is about more than just picking up trash. It’s about changing mindsets, empowering communities, and proving that even in the most remote corners of the world, people can come together to tackle the waste crisis. It’s about ensuring that the next generation doesn’t inherit a mountain of plastic but a cleaner, greener home. Because waste isn’t just an environmental issue—it’s a human one.

About Waste Warriors

Waste Warriors Society, a non-profit organisation, operates as a catalyst for systemic change to address the pressing waste management crisis in the Indian Himalayan Region (IHR). Situated amid the stunning yet challenging landscapes of Uttarakhand and Himachal Pradesh, our team of 190+ Warriors is dedicated to developing effective waste management solutions in urban and rural areas, with a particular emphasis on eco-sensitive and tourist regions. Our mission spans climate change, biodiversity habitat conservation, and creation of dignified livelihoods.

The integrated approach involves collaborating with government bodies and encompasses a Zero Waste Program, Research and Advocacy, Community Activation, and Livelihood Development. Our project locations, including Kasauli, Dharamshala, Bir-Billing, Manali, Kempty, Dehradun, Sahastradhara, Uttarkashi and Corbett Tiger Reserve, are strategically chosen to have a significant impact on the IHR's diverse ecosystem.

The IHR comprises snow-covered peaks and glaciers feeding perennial rivers which provide water to a third of India's population and hosts over 10,000 plants, 300 mammals, 977 birds, 281 herpetofauna, 269 fishes, several species of invertebrates and microorganisms, many of which have global conservation significance. The ecosystem faces exponential degradation due to improper waste disposal practices, impacting high-altitude wildlife food chain, soil health and rivers, thus reducing agricultural yield and water quality.

Waste Warriors actively combats this challenge by promoting source segregation, bridging infrastructure gaps, and raising awareness through Information, Education, and Communication (IEC) initiatives. Our work contributes to waste mitigation and aids in conserving vulnerable and endangered species, maintaining the delicate balance of the IHR ecosystems. Waste Warriors seeks to usher in a sustainable and harmonious coexistence between communities and the environment through these efforts.

Introduction

Setting the Context

The world generated 353 million tonnes of plastic waste in 2019—more than double the amount in 2000. Yet, only 9% was recycled, while nearly 50% ended up in landfills, 19% was incinerated, and 22% was left in uncontrolled environments. By 2050, an estimated 33 billion tonnes of plastic will accumulate globally. India's ecologically fragile Himalayas are at the frontline of this crisis. Plastic waste has reached even the most remote areas, surpassing motorable roads. The Himalayan Cleanup (2024) waste audit revealed that food packaging made up 84.2% of all plastic waste collected in the Indian Himalayan Region (IHR), an alarming increase from 82% (2022) and 81.8% (2023). Of this, 77% was non-recyclable multilayered plastic, highlighting how changing consumption patterns are fueling the crisis. Despite their ecological significance, the Himalayas remain underrepresented in global climate models. Their diverse terrain and extreme climate make sustainable waste management particularly challenging. When an indestructible material like plastic enters an ecosystem unprepared for it, the damage is profound—permeating natural springs, apple orchards, forests, rivers, and soil. Microplastics infiltrate food chains, threatening public health, agriculture, and biodiversity. This isn't just an environmental crisis—it's a cultural and economic one. What happens when the last sacred tree disappears? When a river, worshipped for generations, becomes a plastic-clogged drain? The loss of traditional seeds, passed down for millennia, marks the end of genetic diversity and ancestral knowledge.

Tourism adds another layer to this crisis. The IHR generates 8.4 million metric tonnes of waste annually, a figure set to rise. Uttarakhand alone saw ~25 million tourists between 2012-2016, yet lacks the infrastructure and funding to manage the waste burden. Rapid urbanization and consumerism are further accelerating plastic pollution, while gaps in waste segregation and data collection hinder effective action. The urgency is clear: without sustainable interventions, the Himalayas face irreversible ecological and cultural loss. Solutions must go beyond clean-ups—strengthening waste infrastructure, enforcing policies on non-recyclable plastics, and fostering behavioral change among locals and tourists alike. Urgent, sustainable solutions are essential to protecting the region's ecological and cultural heritage—essentially preserving an entire way of life.

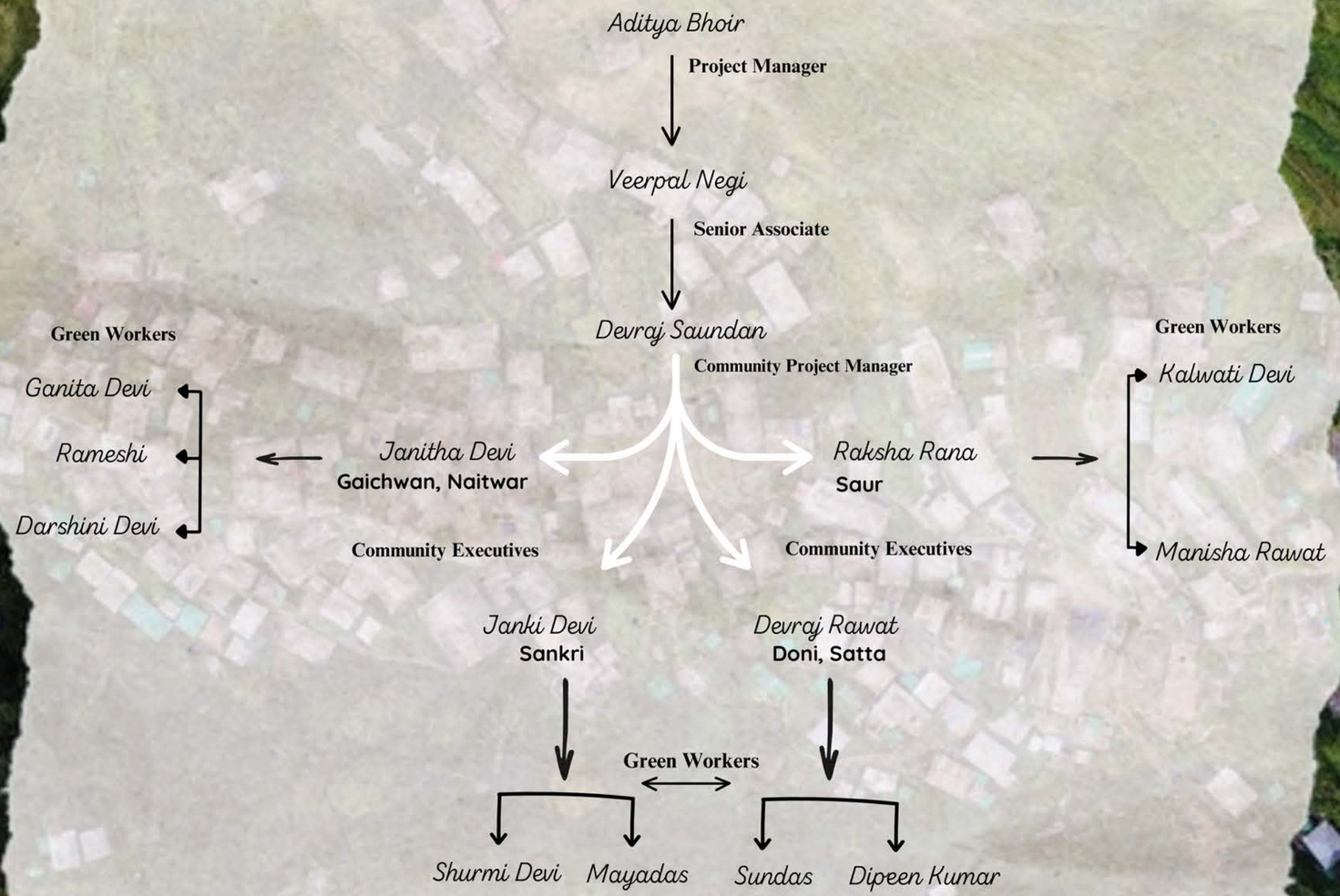
The Uttarkashi Waste Management Model

High in the Garhwal Himalayas, where snow-capped peaks rise above sprawling valleys, a quiet transformation is underway. In the eco-sensitive region around Govind Pashu Vihar National Park and Wildlife Sanctuary National Park, remote villages are tackling an urgent challenge—solid waste management. This is the story of the Uttarkashi Waste Management Model, a community-driven initiative built on sustainability and inclusion. In the villages of Gaichwan, Doni, Naitwar, Satta, Saur, and Sankri, a dedicated team of 11 green workers, 4 community executives, a community project manager, and the mountain communities themselves are leading this change.

Picture men and women balancing their daily routines—tending to apple orchards, fetching water, and caring for cattle—before donning gloves and bags for door-to-door waste collection. The work is tough, but their determination is tougher. They bring not just cleaner landscapes, but also stories, smiles, and hope for a waste-free Himalaya. At the heart of their efforts are waste banks, where collected waste is meticulously sorted into 14 categories before its challenging journey to Dehradun. The path is treacherous, reflecting the daily struggles these green workers face such as steep trails, social stigmas, and limited resources. Yet, they persist. But waste collection is just one part of the solution. These green workers are also educators and mobilizers, leading awareness campaigns, organizing focus group discussions, and conducting community clean ups—rallying everyone, from elders to schoolchildren.

The impact extends beyond cleaner villages. Waste management intersects with everything—for women, it provides financial independence; for men, stable incomes. Green workers earn ₹5,500 per month for 10 days of work, along with health insurance and hobby funds. More importantly, their work earns them respect and recognition, proving that dignity lies in labor. Yet, sustainability is key. To secure long-term success, efforts are underway to integrate the model into local governance. Panchayats are beginning to contribute to salaries, with some villages already allocating Gram Panchayat Development Funds to support waste management. This growing commitment highlights how community-led action aligns with Swachh Bharat goals. In a region where climate change, declining agricultural yields, and limited opportunities are turning Himalayan hamlets into ghost villages, this adaptable, scalable initiative aims to reduce migration and sustain livelihoods, offering a hopeful blueprint to preserve the mountain way of life.

The Warriors on the Battlefield



The Early Warriors Who Set the Groundwork

Raj
Anjali
Bhavna
Samrat
Pushpam
Adison
Pashmina
Ruplal
Narender

Waste x Everything

How waste intersects with other aspects in Govind Pashu Vihar National Park and Wildlife Sanctuary

Agriculture

In the valleys of the Indian Himalayas, unchecked waste seeps into the soil, poisoning the land. Tourists flocking to these pristine locales often leave behind their waste footprints. Over time, leachate from this waste infiltrates the fertile Himalayan soil, weakening its ability to sustain traditional crops like apples and kidney beans. ***"Last year, the harvest was so bad that I could gather only a bucket of kidney beans from an acre of land,"*** laments Raksha, a resident from Sankri village. The fragile microbial ecosystem, vital for soil health, is breaking down. Once-thriving fields are turning barren, their rich greenery fading into lifeless patches. Local farmers, dependent on these lands, are struggling to maintain their livelihoods. The once-bountiful terrain begins to wither, endangering the region's biodiversity and the cultural heritage tied to agriculture.

Health

Unscientific waste disposal poses a silent yet severe threat to public health. Overflowing bins and litter-strewn trails contaminate nearby water sources like the Rupin-Shupin rivers, leaving villagers, who depend on these waters for drinking and cooking, vulnerable to waterborne diseases like diarrhea and dysentery. In recent years, cases of dengue, once unheard of in the region, have begun to emerge. During the monsoons, stagnant waste-filled pools become breeding grounds for mosquitoes, fueling the spread of dengue and malaria.

Meanwhile, the burning of trash releases toxic fumes, worsening respiratory ailments, especially among children and the elderly. ***"We see many elders suffering from respiratory diseases. The open burning of waste makes it worse,"*** a local shared. Once, this community thrived on its natural abundance—pristine rivers, fertile land, and crisp mountain air nourished generations of families. With limited healthcare access, these illnesses escalate unchecked, turning a once-thriving community into one battling a growing health crisis.

Climate Change

Unchecked and unsegregated waste is a major but overlooked contributor to climate change. Uttarkashi town produces about 7–9 tonnes per day during regular periods, rising to around 10 tonnes normally and doubling to 20 tonnes during peak pilgrimage season. Much of this waste ends up dumped or openly burned, especially plastic packaging—which is often impossible to recycle locally and is burned as the easiest disposal method in the absence of infrastructure or collection services. Additionally, poor waste management drives deforestation for landfill expansion, reducing vital carbon sinks. These emissions disrupt the fragile Himalayan ecosystem, accelerating glacial melt, shifting weather patterns, and increasing vulnerability to climate-related disasters.

In Uttarkashi, where villages rely heavily on rivulets and springs, the situation is dire. A report by the Spring and Rejuvenation Authority (SARA) reveals that over 5,400 natural water sources in Uttarakhand are endangered, with nearly 50 of them retaining less than 75% of their original water capacity. For the mountain communities that depend on these landscapes for agriculture and water, the stakes couldn't be higher.

Culture

In Uttarkashi, the mountain way of life, deeply intertwined with nature, is at stake due to unchecked waste. Villages once known for pristine trails and clean rivers now battle littered paths and polluted streams. Traditional practices like composting are being overshadowed by rising plastic waste, altering once-sustainable lifestyles. A 2024 report revealed that food packaging accounted for a staggering 84.2% of all plastic waste collected in the Indian Himalayan Region—up from 82% in 2022 and 81.8% in 2023. ***Alarmingly, nearly 77% of this packaging in 2024 consisted of non-recyclable multilayered plastics, highlighting how shifting eating habits are fueling the waste crisis. The steady rise in packaged food waste reflects the growing dominance of processed and junk foods, gradually eroding the diverse local food cultures of the Himalayas.***

Even festivals, once celebrated with deep reverence for nature, are now marred by heaps of disposable plates and wrappers. Grazing lands for livestock are shrinking as waste encroaches, leaving locals lamenting the loss of harmony with their surroundings. With younger generations growing detached from age-old traditions, waste threatens not just the environment but the very soul of mountain culture.

Ecosystem Imbalance

Plastic waste disrupts the intricate web of life in the Himalayan region. Pollutants accumulate in water and soil, harming plants and animals alike. ***"We can see small bits of plastic in the soil around us. How will agriculture sustain here like this?" a farmer questioned.*** Traditional medicinal herbs, integral to local communities and ecosystems, decline as their habitats degrade. Pollinators like bees, crucial for apple orchards, are affected by plastic waste burning and related toxins. This disruption cascades through food chains, impacting livelihoods and biodiversity. The balance between humans and nature, once harmonious, shifts dangerously. The Himalayas, revered as a cradle of life and spirituality, bear the scars of ecological imbalance, threatening the survival of both nature and the communities dependent on it.

Economic Costs

Uttarkashi generates 15–20 metric tons of waste daily, and improper waste management drives up collection and transportation costs. The lack of segregation means valuable recyclables end up in landfills, reducing potential revenue from recycling programs. As waste piles up, local authorities must divert increasing funds toward waste management, treating it with the same urgency as other developmental projects. Environmental degradation also impacts tourism, a key economic driver in the Govind Pashu Vihar National Park and Wildlife Sanctuary region. Visitors are deterred by littered trails and polluted sites, yet ironically, they contribute to the problem themselves. On average, sustainably managing the waste of household in the region bears a cost of Rs 117 for waste collection, disposal and transportation—an expense that strains already limited rural budgets.

Increased Landfill Demand

Uttarkashi's increasing waste generation of 15–20 metric tons daily is outpacing its ability to manage landfill demand. With limited flat land in the mountainous terrain, waste is often dumped near rivers, fields, and settlements, contaminating water and soil. The absence of segregation means recyclable plastics and compostable organics are lost, further compounding the crisis. As existing landfill sites expand, they encroach on farmland and forests, disrupting local livelihoods and wildlife habitats. With land in short supply, expanding landfills is not a long-term solution. As waste overtakes usable space, communities face a difficult choice to either sacrifice farmland, encroach on forests, or endure worsening pollution in their own backyards.

The Uphill Task

The challenges in managing waste in Govind Pashu Vihar National Park and Wildlife Sanctuary

Geography

Spanning 16.2% of India's land, the Indian Himalayan Region (IHR) is a realm of breathtaking beauty, home to 50 million people, diverse flora and fauna, and rivers that sustain millions. Yet, the highlands often slip through the cracks of national priorities, its challenges multiplied by steep terrain and scattered, hard-to-reach villages. In Govind Pashu Vihar National Park and Wildlife Sanctuary, where the scent of cedar forests lingers along the Rupin and Supin rivers, the problem is stark. As a gateway to the Gangotri and Yamunotri valleys, it draws trekkers and pilgrims but also their waste. Managing solid waste here is a herculean task. Villages are spread across steep ridges, connected by narrow trails where waste collection is near impossible. Poor road networks and harsh weather conditions further limit access, especially in winter when heavy snowfall (though declining due to climate change) and slippery paths make collection even more difficult. With no easy way to transport waste out, the mountain communities are forced to bear its burden.

Dearth of Data

What isn't recorded is often ignored. In the quest for sustainable solutions, this hits hard—especially in waste management.Without reliable, localized data, crafting effective waste management strategies at the micro level is an uphill battle. Insights from regional experiments fade into ambiguity, leaving critical issues unresolved. Consider Uttarkashi: its six urban local bodies generate 20.4 metric tonnes of waste daily, yet Gangotridham astonishingly reports zero waste generation, according to official data. Rural areas fare worse—waste data remains almost nonexistent. This lack of records obscures the scale of a crisis impacting fragile mountain ecosystems and communities unprepared to manage solid waste. Instead, a "one-solution-fits-all" approach persists, offering little hope for sustainable solutions.

Institutional Capacity

In Uttarkashi's Mori block, nestled in the highlands of Uttarakhand, 68 Gram Panchayats, comprising 92 villages, prepare an annual Gram Panchayat Development Plan (GPDP) tailored to local needs. Yet, waste management remains a persistent challenge. Limited funds and low community awareness hinder progress, with panchayat budgets allocated based on population size. Unlike the plains, sparsely populated mountain panchayats require more resources due to rugged terrain, disconnected roads, and environmental sensitivities. However, waste segregation and scientific disposal receive little oversight, often taking a backseat to priorities like roads and sanitation. While the Gram Pradhan wields decision-making power, waste management rarely makes it to the top of the agenda. Strengthening local governance through targeted Information, Education, and Communication (IEC) campaigns is essential—not just to drive community action, but also to ensure accountability in addressing this growing crisis.

Climate Change

Climate change, driven by rising temperatures and shifting precipitation patterns, is intensifying extreme weather events worldwide. In the Himalayas, this takes the form of unpredictable Glacial Lake Outburst Floods (GLOFs), receding snowlines, flash floods, and disappearing mountain springs. These disasters not only upend the lives of indigenous communities, forcing distress migration, but also cripple essential services, including waste management. In remote villages, extreme weather cuts off entire settlements for days or even months, making waste collection nearly impossible. Roads become impassable, and waste, often left unmanaged, accumulates in riverbeds, forests, and fields, worsening environmental degradation. In flood-prone areas, uncollected waste clogs drainage systems, exacerbating disaster impacts. For villages in Govind Pashu Vihar National Park and Wildlife Sanctuary, already on the frontlines of climate change, these challenges compound, turning waste into both a consequence and a contributor.

Commons

"Communities in the highlands have thrived for generations, intricately connected to the natural resources that sustain them—springs, rivers, pastures, and groundwater reserves. These shared resources, or 'commons,' belong to no single individual but are collectively nurtured through cultural traditions and festivals passed down over time. However, this very collective ownership presents a challenge, particularly in managing dry solid waste, especially plastic. As consumer goods reach even the most remote villages, plastic waste has begun to infiltrate these sacred spaces. Without a clear sense of human ownership or adequate knowledge of waste management, the commons bear the brunt—springs and rivers like the Rupin and Supin clog with debris, pastures bear scars of discarded packaging, and soil absorbs what it cannot break down. The unchecked spread of plastic waste threatens not just ecosystems but also the traditions and values that once ensured harmony between people and nature."

Local Unawareness

Plastic is an uncharted territory of rural communities in Mori, Uttarakhand. For generations, people here dealt exclusively with biodegradable waste—organic remnants like cow dung, vegetable waste or agricultural waste that naturally decomposed and enriched the soil. However, the influx of plastic waste, driven by packaged goods has introduced a type of waste the community is unfamiliar with. ***"Why should we segregate?"*** is a common question asked by people here. Without adequate awareness of plastic's non-degradable nature, the communities resort to practices that harm both the environment and their health. Open dumping is common, with plastic waste often finding its way into the rivers or littering the fertile lands. Burning the waste is another widespread practice, releasing toxic fumes into the mountain air. This lack of understanding and almost negligible capacity building to address the issue has turned plastic waste into a growing threat, overshadowing Mori's beauty. Effective Information, Education and Communication [IEC] is the only way to keep communities at the core of designing and maintaining a sustainable waste management system.

Caste System

In the villages of Mori, Uttarakhand, the deep-rooted caste system continues to shape daily life, including waste management. Traditionally, biodegradable waste was seamlessly integrated into farming and household practices. However, the rising tide of non-biodegradable waste, especially plastic, demands collective action—something social divides often hinder. Higher-caste communities frequently distance themselves from handling waste in public spaces, perceiving it as the responsibility of lower-caste groups. As a result, common areas remain neglected, and waste continues to pile up. This rigid social structure not only places an unfair burden on marginalized communities but also obstructs the creation of an inclusive waste management system. Overcoming these barriers requires shifting mindsets that waste is not a marker of caste but a shared challenge that affects the health, environment, and future of all residents.

Land Conflicts

The limited availability of land for waste management infrastructure in Mori, Uttarakhand, poses a significant challenge. Spaces for segregating and storing collected waste are scarce, and the region's steep terrain and fragile ecology make it impossible to utilize every seemingly unoccupied area. Lands that might appear vacant are often vital grasslands or pastures, or they exist in ecologically sensitive zones where human intervention could do more harm than good. This means the waste generated in the mountains cannot be effectively addressed within the mountains themselves. The lack of even temporary storage highlights the urgent need for innovative and sustainable solutions tailored to these spatial constraints.

The Trek so far

The beginning, middle and the journey so far

The Pilot: Doni and Satta

In the quiet, tucked-away villages of Doni and Satta, in the Mori block of Uttarkashi, an unusual commotion rippled in 2019. It wasn't the gurgling of the Rupin-Shupin rivers or the distant murmur of wind through the deodar forests—it was something else. A stranger had arrived. He stood out. Long-haired, with the unmistakable gait of a city dweller, he walked into their world—one without tarred roads, without a reliable mobile network (except for the occasional lifeline of BSNL), and without the conveniences city folk took for granted. The villagers watched, curious. They had seen outsiders before—trekkers passing through, government officials making rare appearances. But this boy… he was different.

A villager flashed a cautious smile his way. Another greeted him in Hindi, testing the waters. He responded —haltingly, broken but understandable. He was trying.

Days passed. The boy did not just visit—he stayed. And then, the questions began.

They saw him walking tirelessly through every stretch of their land. He wasn't just admiring the beauty of the towering peaks, the crystal rivers, the green pastures. Instead, he bent down, again and again, picking up something small, something scattered, something unwelcome.

Plastic!

"Who is he? And why does he care about this *kachra* (waste)?" they whispered among themselves, watching him with puzzled glances. This was Rajkumar Vavilapalli, a former Waste Warrior, fondly called as Raj. A city boy from the South of India, drawn to the mountains, seeking to learn from their people. But he had also come with a purpose—to help them understand something that didn't belong in their pristine villages. An alien intruder. Not him. But plastic.

> ***It was a long haul. I spent days just talking to the communities, understanding how they see and feel about the plastic waste around them. With time, they understood me and vice versa. Unlike urban dwellers, these communities are much closer to nature through their everyday work, their festivals, their beliefs. Once they understood how plastic was interfering with everything they have guarded over generations, they actively started participating in the waste management in their village. I once saw one of the community memebers carrying a sack full of plastic waste from his agricultural field to the waste bank. There were kids whose pockets you could randomly check and would find them stuffed with wrappers of eatables.***

Raj
Naam to suna hi hoga..

Making of a waste bank

Building trust is the first step to inclusive and participatory approaches.

Accessing waste management infrastructure is a key challenge in remote Himalayan villages. Setting up Waste Banks was the first step in changing that. But how do you convince a village council leader or a community member to give up a piece of land to store and segregate waste? The answer lies in building trust. Satta village became home to the first Waste Bank set up by Waste Warriors—a milestone that was anything but easy. The journey to make waste management a community-driven effort was met with skepticism, resistance, and the slow but powerful force of persistence.

For Raj, leading this initiative as a Waste Warrior felt almost serendipitous. ***"I didn't know the language; I was just a stranger walking into these villages, talking about waste,"*** he recalled. The locals were wary. NGOs had come and gone, often taking photos, painting murals, and leaving just as quickly. So when Raj proposed a Waste Bank—an actual physical space where collected waste could be stored before being transported out—the initial response was blunt: ***"You people come here, take pictures, get funding, and then disappear."***

It wasn't just skepticism that stood in the way. Waste management in these villages had deep social and cultural barriers. People believed that handling waste was the job of a particular caste, and the idea of storing waste within the village was unheard of. ***"Why do we need a waste bank? We don't want waste piling up in our village,"*** was a common reaction.

But Raj was persistent. Week after week, he traveled 60 kilometers on roads that barely existed, returning to speak with villagers, build trust, and challenge old ways of thinking. ***"My most important work wasn't just setting up the Waste Bank, it was showing up, again and again, building relationships, making people see that we weren't going anywhere,"*** he said.

Slowly, the conversations started shifting. One of the key figures in this transformation was Chaitra, the Pradhan of Satta. Unlike many, he was open-minded and willing to take a chance. ***"He had some issues, but he saw the bigger picture,"*** Raj noted. When Chaitra finally gave permission to use a space for the Waste Bank, it sent a ripple effect through the region. ***"If Satta could do it, why couldn't we?"*** The neighboring village of Doni quickly followed suit, demanding their own Waste Bank. Within a week, both villages had set up collection and storage systems, hiring green workers from their own communities.

In Sakri, another village, the women took it a step further. Raj recounted, ***"They picked up whatever they could find—wood, tin sheets, anything—and created a space where they could collect, segregate, and process waste."***

The shift wasn't just physical. It was cultural. These women—many of whom worked part-time in shops, as anganwadi workers, or in households —had begun to see waste management not as a burden, but as a responsibility. ***"It's funny when I think about it now,"*** Raj laughed. ***"One night at 1 AM, during a village festival, I stood on a stage talking about waste to a crowd of thousands. I don't know why I thought that was the right time, but I did it. And people listened."***


I AM A WASTE WARRIOR

Our Approach

Waste Warriors began its work in 2021 by piloting its waste management initiative in two of the most geographically challenging villages within the Govind Pashu Vihar National Park and Wildlife Sanctuary (GWS): Doni and Satta. The approach combined grassroots action with system design—starting with baseline surveys, IEC activities, capacity-building workshops, and community-led data collection. The full waste management chain was implemented including door-to-door collection, segregation, storage, transportation to Dehradun, and final recycling or disposal. The waste management model maturity here was extremely nascent; there was no collection system and no demand for solutions. Years of sustained effort have now created that demand, making it possible to establish structured systems where none existed before.

Following the initial success, the model was expanded to four more villages—Gaichwan, Sankri, Saur, and Naitwar—laying the foundation for a decentralized, community-owned rural waste management system in the high Himalayas. While the immediate goal was cleaner villages, the long-term vision is broader: building integrated infrastructure that improves quality of life through access to clean water, sanitation, and dignified livelihood opportunities.

Currently, Waste Warriors operates in the Mori panchayat with a team of 11 green workers, supported by 3 community executives and a project manager. Over the next 12 to 18 months (from November 2024 onward), operations will expand to more Gram Panchayats in Uttarkashi.

A core element of the approach is community empowerment. Green workers are being trained not just as collectors but as educators and advocates. In the GWS region, they engage with villagers and visitors alike, promoting sustainable tourism practices and raising awareness about the impact of waste on local ecosystems. To ensure long-term sustainability, Waste Warriors is working closely with local government bodies to embed waste management into annual Gram Panchayat Development Plans. This includes advocating for the inclusion of green worker salaries and infrastructure like Waste Banks as line items in annual Gram Panchayat Development Plans.

The insights and learnings from Uttarkashi serve as a blueprint for replication across the district. The ultimate aim is to demonstrate the real cost of running a reliable waste management system in Himalayan villages—informing policy, securing better funding allocations, and influencing systemic change.

We believe this approach is key to preserving the fragile Himalayan ecosystem and strengthening the resilience of indigenous mountain communities against the growing threat of plastic pollution.

Awareness and capacity building

- We begin every intervention with detailed household surveys and informal interviews to map the waste landscape and assess community practices. Based on these insights, we deliver tailored capacity-building sessions, often using real-world analogies, participatory games, or storytelling to deepen engagement.

- We introduced Chai pe Charcha, an informal, open-invitation gathering in the village square, to listen and learn. These conversations help surface barriers to participation, from caste-linked stigma to a lack of awareness about plastic's long-term impact. Alongside tea, we serve up simple, visual IEC materials, creating a relaxed space for building collective understanding and capacity.

- Every village has its own traditions, references, and societal view. In Gaichwan, for instance, we invoked regional deities in our wall murals and community meetings, reinforcing the message that "God doesn't reside in unclean spaces." By drawing from cultural symbols, we make the conversation around cleanliness relatable and respectful.

- Our model is built on the principle for the community, by the community. We hire local residents as green workers, community executives, and project support staff, ensuring the solutions are both rooted in local knowledge and accepted by the people they serve. These community members are trained not only in waste collection and segregation but also in outreach, awareness-building, and record-keeping.

Keeping community at the core

True to our values, every intervention is designed with the community, not just for them. From the earliest stages, we involve residents in decision-making. Before setting up any waste bank, we secure informed written consent from every household in the village ensuring transparency, shared ownership, and trust in the system being put in place.

Providing a sustainable waste management system

We focus on creating systems that cover the entire chain: effective door-to-door collection, household-level segregation, strategically located waste banks for safe storage, environmentally sound processing, and final disposal. This infrastructure is tailored to the region's geography, cultural dynamics, and logistical limitations.

Introducing livelihood options

At the heart of this system are the green workers or community members employed and trained to carry out critical functions. In a region where livelihoods are largely dependent on unreliable daily wage labor and increasingly climate-stressed agriculture, this initiative offers stable, dignified work. The economic empowerment of green workers, especially women, becomes a pillar of local livelihoods.

Improving standard of life in villages

Improving waste management also means improving overall living standards. Reduced open dumping and burning lead to better public health, cleaner water sources, and improved air quality. Sustainability practices, like composting, segregation, and reuse, are gradually becoming part of everyday life in these villages.


RECYCLABLE WASTE
WASTE WARRIORS
REDUCE RE-USE RECYCLE
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RECYCLABLE WASTE
WASTE WARRIORS

Meet our Young Warriors

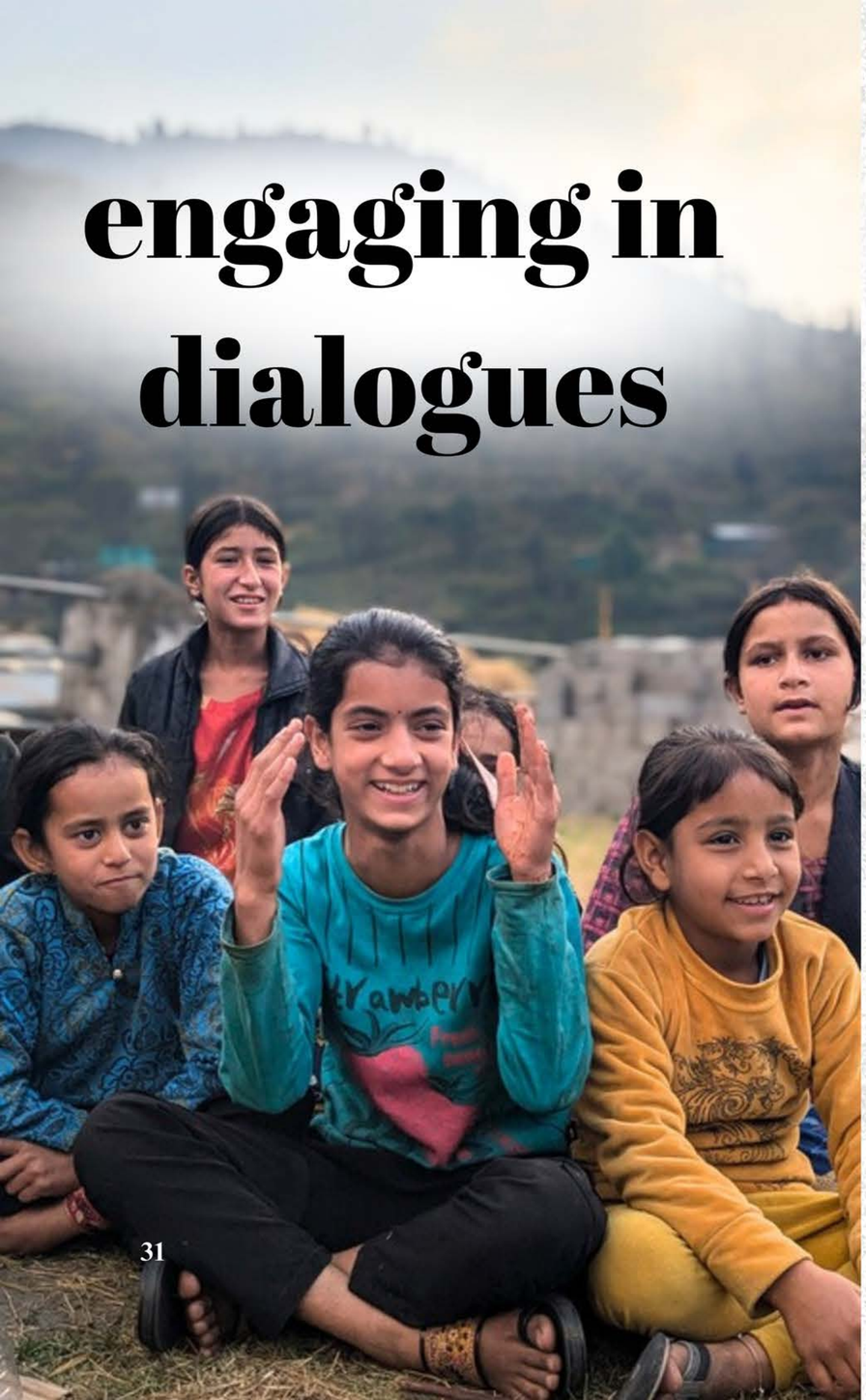
Waste Warriors, under the leadership of our community project managers, established a Young Warriors Club in Doni village in the Govind Pashu Vihar National Park and Wildlife Sanctuary region. This group of bright, spirited children aged 5 to 15 meets monthly to explore the waste challenges their village faces, through their own eyes. What they bring to the table is something many adults often overlook: honesty, creativity, and a sense of fairness. These children find innovative ways to educate, and at times, lovingly persuade, their elders to take plastic waste management seriously.

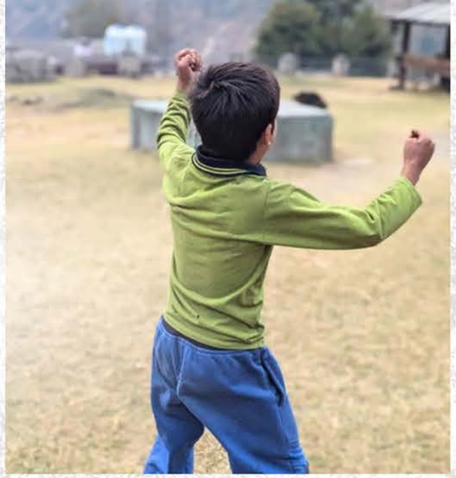
A major problem in the region is the littering of packaging of consumables like chips and energy drinks. Ironically, children are the biggest consumers of these items. That's why involving them isn't just important, it's essential. When they take ownership of the problem, change begins right at home, often one conversation, and one wrapper, at a time.

Kachra kab se hone laga apke gaon me?
Keshav, 13 years: Jab se insaan basne lage yaha par

crafting waste

engaging in dialogues

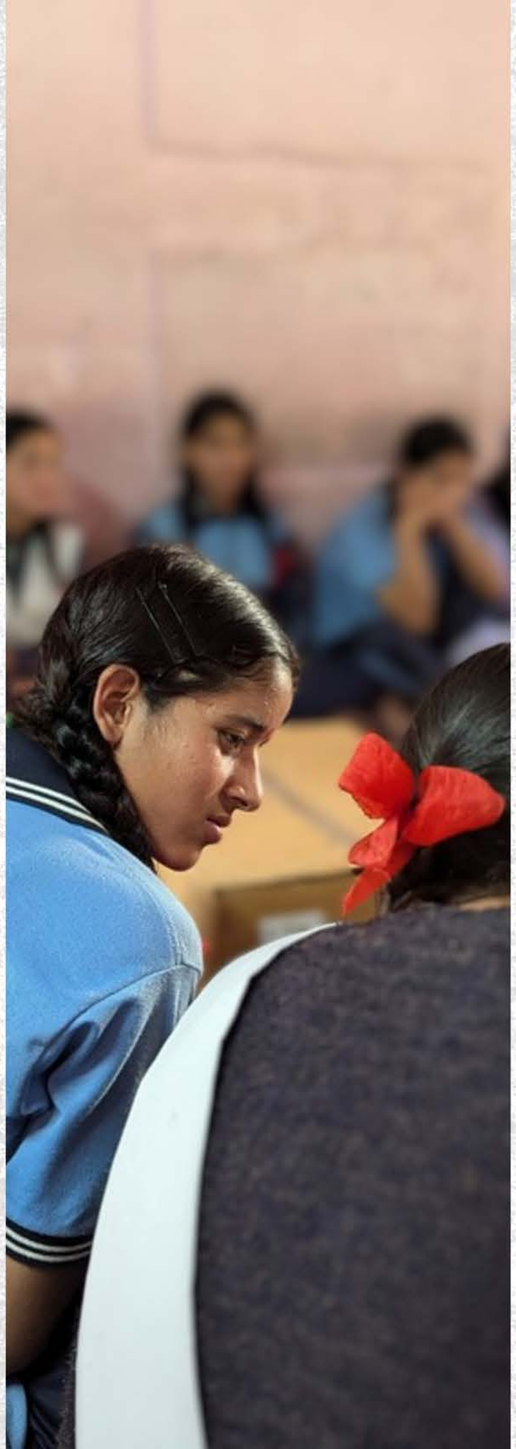


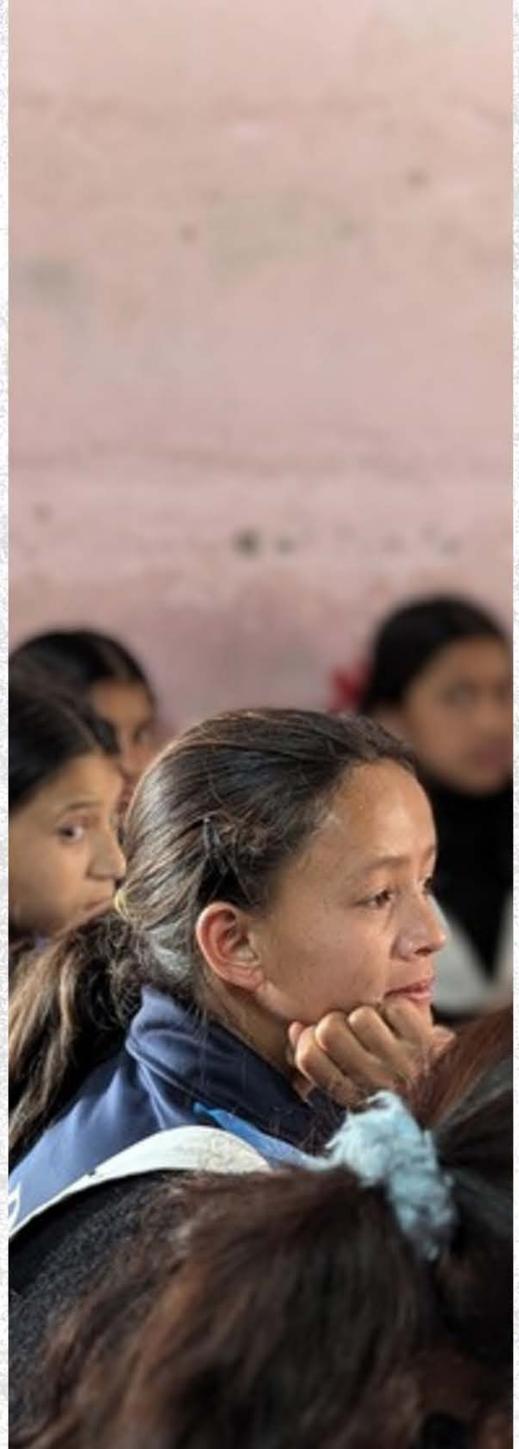


sloganeering in cleanup drives

Talking Periods

At Waste Warriors, we view waste management through an inclusive lens, one that considers the roles of different age groups, genders, and communities. Young girls are active participants in this journey, especially when it comes to conversations around menstrual health and hygiene. In many Himalayan villages, disposable pads are used without proper disposal systems, contributing to the plastic waste burden. Our sessions, led by community executive didis, create safe spaces for girls to talk openly about periods, ask questions, and learn about sustainable alternatives like reusable menstrual cups and pads. The didis, who've made the switch themselves, share real-life insights from their daily routines—building trust and breaking taboos. Participants listen, learn, question, and carry forwards these learnings to their homes and schools. By normalizing these conversations, we're not just addressing menstrual health, we're also tackling menstrual waste as an important part of the rural waste management puzzle.

REUSABLE
SANITARY PADS




Janita Devi
Community Executive

The Big-Basic Questions

Understanding the keywords and phrases

Who is a green worker?

A green worker is a local community member with an aspirational spirit to bring a change, leadership qualities and communication skills, dedicated to waste management and waste-related awareness in their village. They could be of any age, gender and socio-economic background.

Watch as our Green Worker carries over 50 kg of collected waste through the harsh winters of the remote Govind Wildlife Sanctuary!

What is a waste bank?

A Waste Bank is a designated space within the village where green workers can safely segregate, weigh, and store collected dry waste. It serves as the operational hub for waste management at the local level—ensuring that recyclables are not dumped or burned, but properly sorted and prepared for transportation.


स्वच्छता केंद्र
गेचवाण गाँव
KING


STE WARRIORS


स्वच्छता केंद्र


Jeep

How does the waste move?

Waste collected door-to-door

Waste carried to the waste bank

Waste segregated in 10 categories

Waste weighed and recorded

Waste transported to Dehradun MRF centre

Waste transported to Purola- the nearest township

Waste carried in sacks to the transport point

Waste stored in the waste bank

What do we solve?

Dignified Livelihood Generation ⟵

Climate Change Mitigation ⟵

Biodiversity Habitat Conservation ⟵

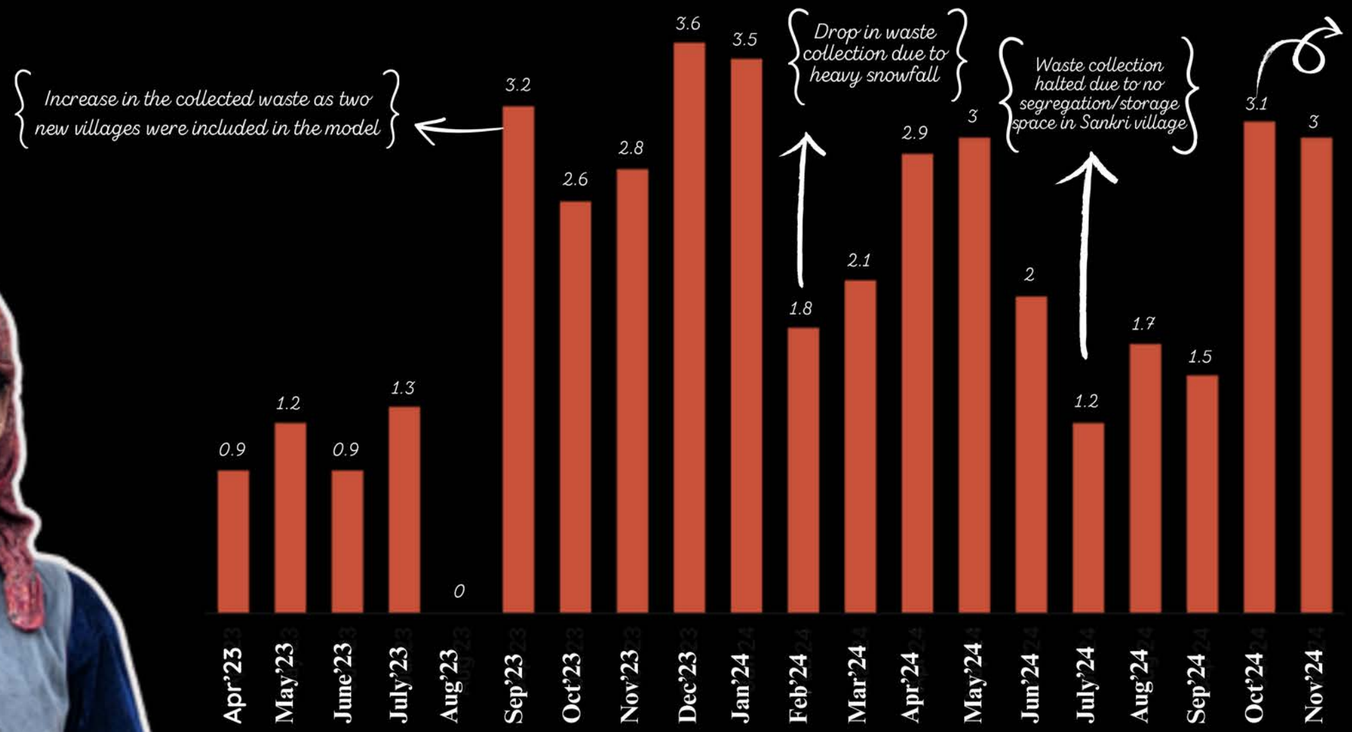
Responsible Tourism ⟵

Improved Menstrual Health ⟵

IEC around plastic waste ⟵

Access to Waste Management Infrastructure ⟵

Monthwise total waste collected by green workers (April 2023-November 2024) (in metric tonnes)



=

in 20 months

43.7 MT

of solid waste collected under Uttarkashi Waste Management Model

Percentage of households and commercial establishments availing the door-to-door waste collection services under Uttarkashi Waste Management Model

The high percentage of active units were due to continuous IEC efforts in the past years

Drop in the active unit percentage as two more villages were adopted under the waste management model, thereby increasing the total number of households

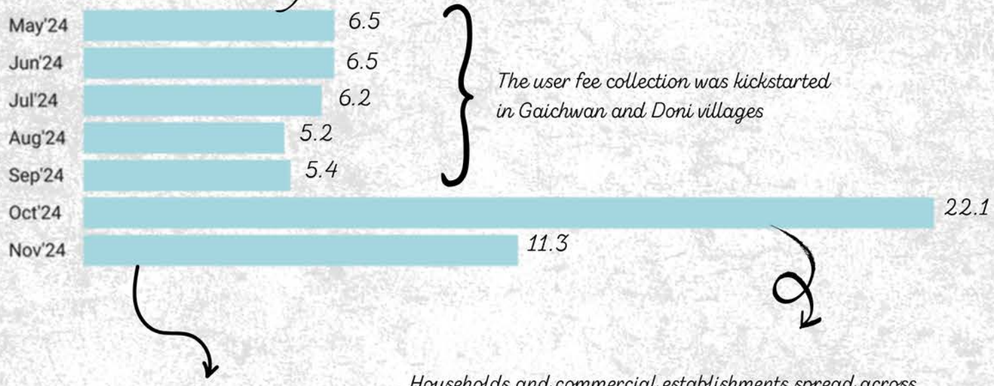
The active units remained stable through these months due to extensive and targetted IEC from 2021 onwards. The households not part of the model were located in geographically chllaenging regions.

Increase in the active units percentage as green workers started trekking to far flung habitations to collect waste

Devraj from Waste Warriors handing over the monthly card for recording community user fee

Percentage of households and commercial establishments which are paying a user fee to avail the door-to-door waste collection services

User fee collection has been only in May 2024 onwards



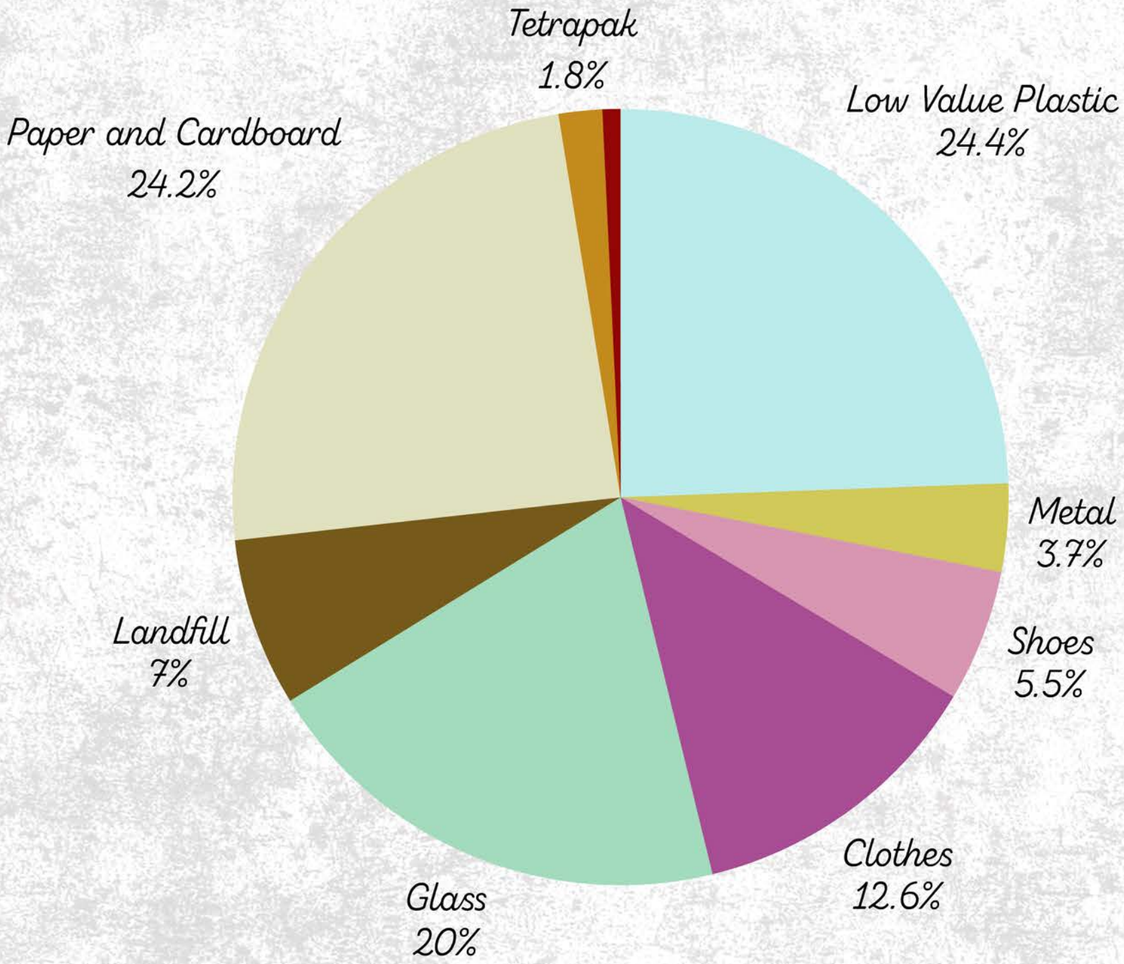
The user fee collection was kickstarted in Gaichwan and Doni villages

Prominent local festival resulted in diversion of funds and thus the collected user fee dropped

Households and commercial establishments spread across six operational villages started contributing to the user fee

Segregated Waste Categorisation

April 2023-February 2025



Out of the total 53.684 MT of collected waste in 23 months, from April 2023 to February 2025, a major chunk is Low-Value Plastic (LPV) ain the non-recyclable category.

Metal and glass waste is the most reusable.

The Shift

Recording the changes observed since the model commenced

A Mindset Change

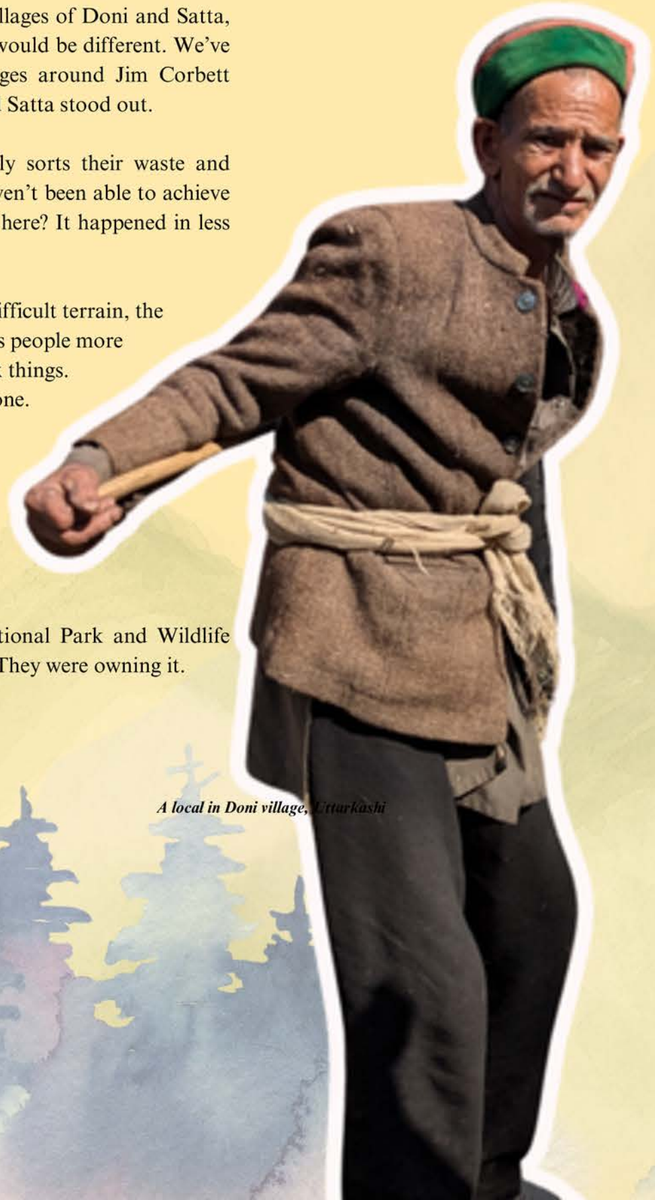
When Waste Warriors first started working in the remote villages of Doni and Satta, deep in the Mori block of Uttarkashi, we knew this project would be different. We've worked in other Himalayan regions before—like the villages around Jim Corbett National Park in Ramnagar—but something about Doni and Satta stood out.

Almost every single household here—nearly 100%—actively sorts their waste and hands it over to our green workers. That's something we haven't been able to achieve in Corbett Tiger Reserve, even after a decade of effort. But here? It happened in less than four years.

We believe the geography has a lot to do with it. The steep, difficult terrain, the remoteness, the lack of proper road connections—it all makes people more self-reliant. Here, no one waits around for someone else to fix things. The community comes together and does what needs to be done. That attitude carried over naturally into waste management. We saw it everywhere—in the way people asked questions, in their eagerness to learn.

Change didn't feel like something we had to push, it was already happening from within.

In these villages, deep inside the Govind Pashu Vihar National Park and Wildlife Sanctuary, people weren't just adopting waste management. They were owning it.



A local in Doni village, Uttarkashi

Leaving No One Out

When we first started working in these villages, it was the children who had the most questions. They would crowd around us, wide-eyed and curious, firing off one question after another..

"Why can't we just burn it?"
"So what if it's in my *khet*? It's not bothering anyone."
"What happens after we collect all this waste?"

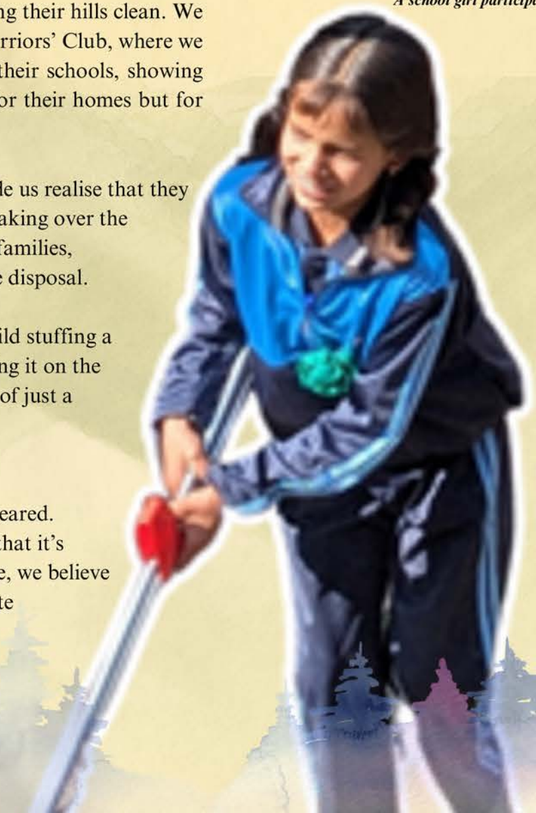
We welcomed their curiosity because we knew that real change would only happen if they were part of it. So, we made them our focus. We organized rallies where they carried hand-painted signs through the narrow village paths, chanting slogans about keeping their hills clean. We met with them every month through the Young Warriors' Club, where we talked, played, and learned together. We went to their schools, showing them why waste management mattered—not just for their homes but for their forests, their rivers, their future.

We led by introductory questions. The answers made us realise that they already knew so much. Slowly, the children began taking over the advocacy themselves. They started reminding their families, their neighbors, even each other about proper waste disposal.

Now, if you visit these villages, you might spot a child stuffing a chocolate wrapper into their pocket instead of tossing it on the ground—something that would have been unheard of just a few years ago.

We won't claim that littering has completely disappeared. But we do know this: the children understand now that it's not okay. And if things keep going the way they are, we believe there will come a day when they won't jus participate in waste management...they'll sustain it.

A school girl participating in a clean-up drive



The Caste Faultlines

In the remote villages of the Govind Pashu Vihar National Park and Wildlife Sanctuary, caste-based discrimination runs deep—as it does in many parts of India. But here, in tightly woven mountain communities, the divide is often sharper, more visible. It shows up in the smallest moments of daily life.

Dipin's (greenworker) wife Veerma Devi put it simply: ***"We are involved in prepping all the requirements when our deity visits us—making the drums, building the wooden carriage. But we are not allowed to enter the temple."*** Generations of exclusion have been normalized, absorbed as tradition.

When Waste Warriors first began working in these villages, this reality surfaced in an unexpected way. Higher-caste families refused to let our green workers, most of whom belonged to Scheduled Castes, step into their homes to collect waste. The irony was glaring. Waste knows no caste, yet its disposal was still governed by it. Centuries of social hierarchy had cast the responsibility of sanitation and waste work onto specific communities—reinforcing the idea that managing waste was someone else's job, never their own.

It took time, trust, and countless conversations to begin changing that mindset. Through awareness sessions, village meetings, and quiet persistence, we started to see a shift. At first, just a few households opened their doors. Then a few more. And eventually, something unexpected happened: some higher-caste individuals began to take part in community clean-up drives, standing shoulder to shoulder with others to manage their village's waste.

The fault lines haven't disappeared. Discrimination still exists. But what we're witnessing is a quiet shift in perception where handling waste is no longer seen as a caste-assigned duty, but a shared responsibility for a cleaner, fairer future.

Menstrual Heath

When Waste Warrior's Community Executive, Janita Devi first started talking about menstrual cups and washable cloth pads in Gaichwan village of GWS region, she was met with skepticism. Women and adolescent girls had questions, hesitations, even fear.

"How do we use it?"
"Is it safe?"
"What if it leaks?"

For years, women had relied on disposable sanitary pads, despite the challenges they posed such as limited access, high costs, and the constant need for disposal in a region where waste management was still evolving. On average, a woman here spent ₹20 per month on sanitary pads. It wasn't just about money; the logistics of changing pads while working long hours in the fields made them impractical.

But change was daunting.

Janita Devi, a green worker deeply involved in community waste management, took it upon herself to address their doubts. She conducted multiple meetings, patiently explaining the benefits of switching to reusable menstrual products. She demonstrated how menstrual cups worked, how they could last longer, and how washable cloth pads were a safer, cost-effective alternative.

At first, only a few women were willing to try. But as they experienced the comfort and convenience—no more worrying about frequent changes or running out of supplies—they began sharing heir stories with others.

Slowly, curiosity turned into acceptance.

Now, it's common for women to approach Janita Devi, asking for washable cloth pads when needed. And the impact is visible. So far, 45 women and girls in Gaichwan have switched to menstrual cups, reducing both financial strain and the burden of sanitary waste, which would otherwise fall into the category of rejected waste.

Encouraged by this success, awareness programs have now begun in Doni village, paving the way for an even greater shift toward sustainable menstrual health.

Impact in 23 months

January 2023 - November 2024

53.684 MT *of solid waste collected under Uttarkashi Waste Management Model*

625 units *average active household and commercial units*

77 kgs *of waste segregated manually by the green workers per day across all five panchayats*

3.71 MT *of carbon-di-oxide emissions reduced*

Field Excerpts

Our village has no such system to manage waste. I wish there was because our fields, streams and roads are littered by plastic and we don't know from where to start. If something like this starts in my village, I would be so happy. I am ready to lead the work there.

Vipina Devi, Khanna village

Is there any work available for me as well? I also want to be a green worker like them(referring to the green workers Dipeen and Sundas). Please let me know if there are any vacancies.

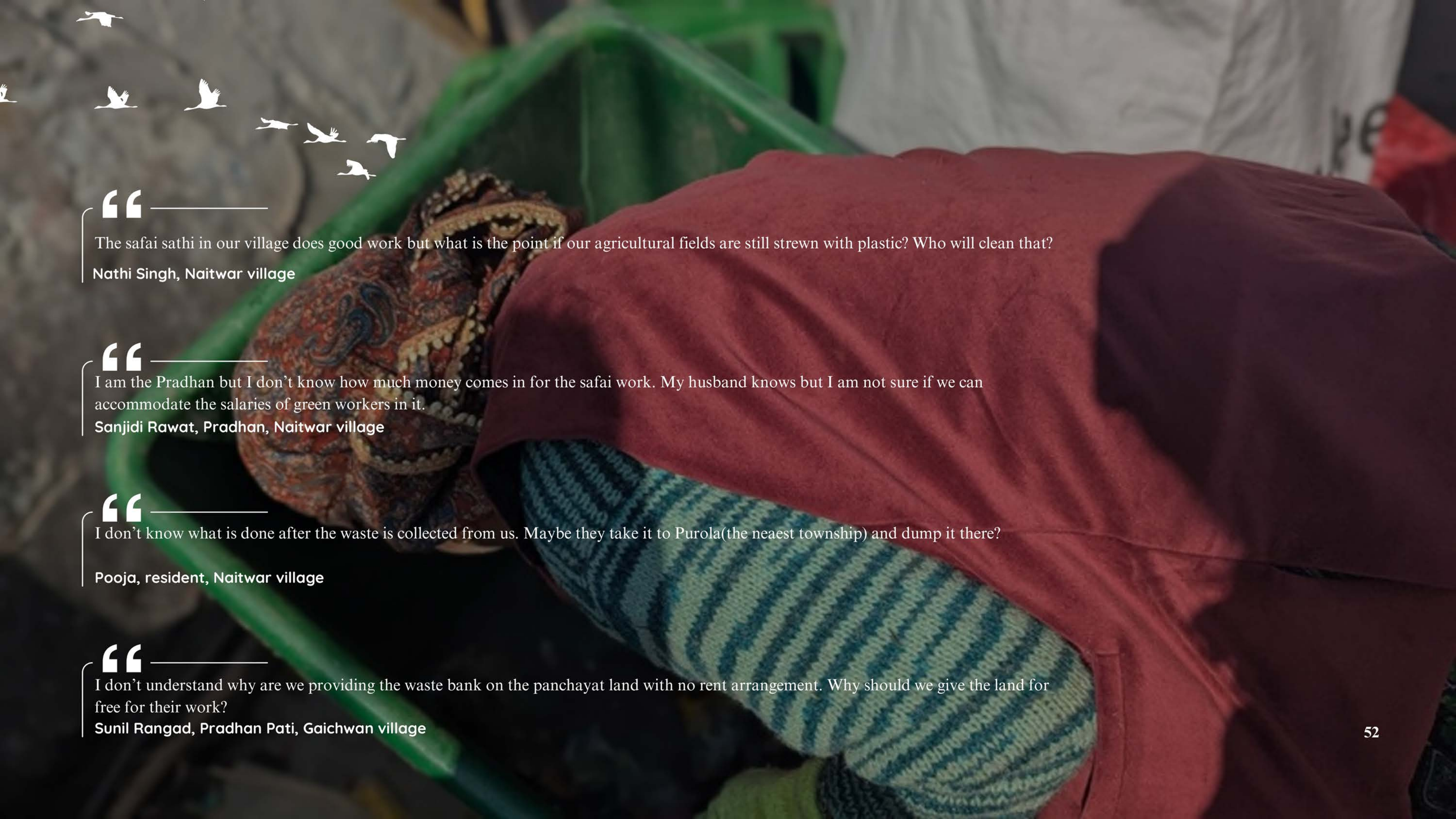
Deelchand, Doni village

I don't believe that the waste from our village needs to be handled by any particular caste. We all live here and we all need to be responsible for our waste disposal methods if we want to solve the plastic problem.

Ravina Devi, Doni village

During community gatherings, people tell me that my wife is doing such good work and has changed the financial status of our family. Look around, this *kothar*(wooden grain storage), her gold, all this has been bought from her money.

#####, Gaichwan village



The safai sathi in our village does good work but what is the point if our agricultural fields are still strewn with plastic? Who will clean that?

Nathi Singh, Naitwar village

I am the Pradhan but I don't know how much money comes in for the safai work. My husband knows but I am not sure if we can accommodate the salaries of green workers in it.

Sanjidi Rawat, Pradhan, Naitwar village

I don't know what is done after the waste is collected from us. Maybe they take it to Purola(the neaest township) and dump it there?

Pooja, resident, Naitwar village

I don't understand why are we providing the waste bank on the panchayat land with no rent arrangement. Why should we give the land for free for their work?

Sunil Rangad, Pradhan Pati, Gaichwan village

Postcards from the Mountains

POSTCARD

With Love

Janitha Devi, 38

Gaichwan

POSTCARD

With Love

Raksha Rana, 24

Sankri

POSTCARD

With Love

Devraj Rawat, 35

Satta

POSTCARD

With Love

Devraj Saundan, 30

Doni

POSTCARD

With Love

Shurmi Devi, 39

Saur

POSTCARD

With Love

Sundas, 56

Doni

POSTCARD

With Love

Manisha Rawat, 35

Saur

POSTCARD

With Love

Ramesha, 31

Gaichwan

POSTCARD

With Love

Veerpal Negi, 35

Barkot

POSTCARD

With Love

Janki Devi, 50

Saur

POSTCARD

With Love

Darshini Rawat, 37

Satta

POSTCARD

With Love

Ganita Devi, 39

Gaichwan

POSTCARD

With Love

Kalawati, 51

Sankri

POSTCARD

With Love

Aditya Bhoir, 30

Mumbai

POSTCARD

With Love

Dipeen Kumar

Doni

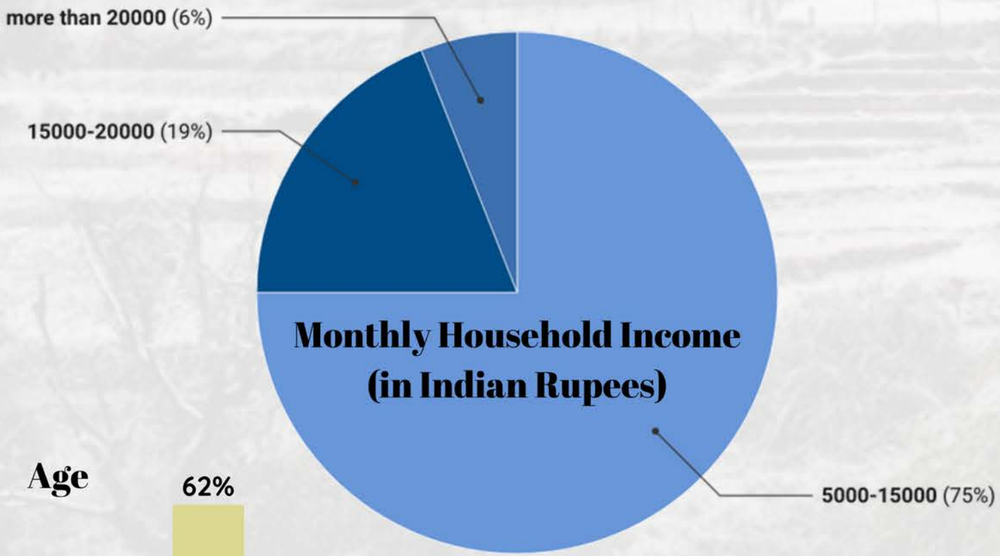
POSTCARD

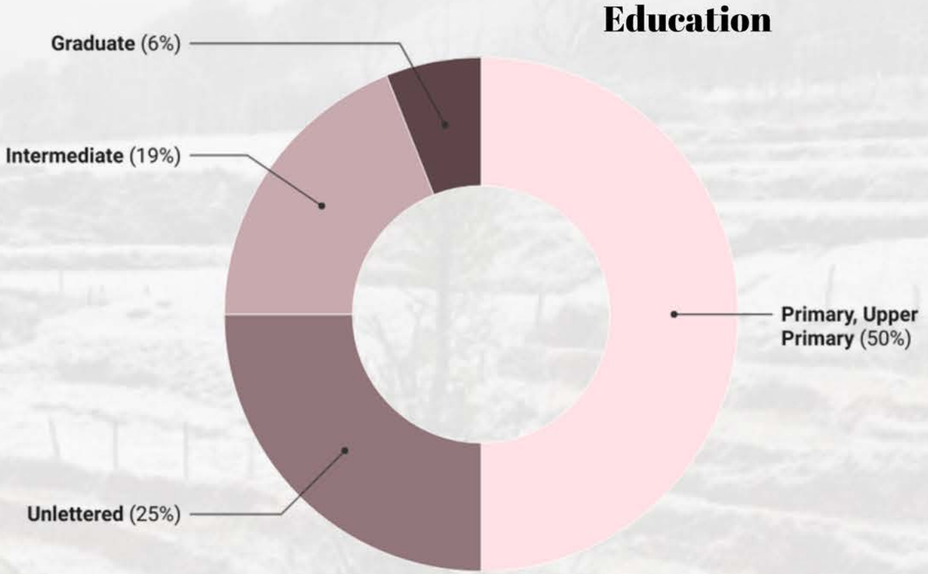
With Love

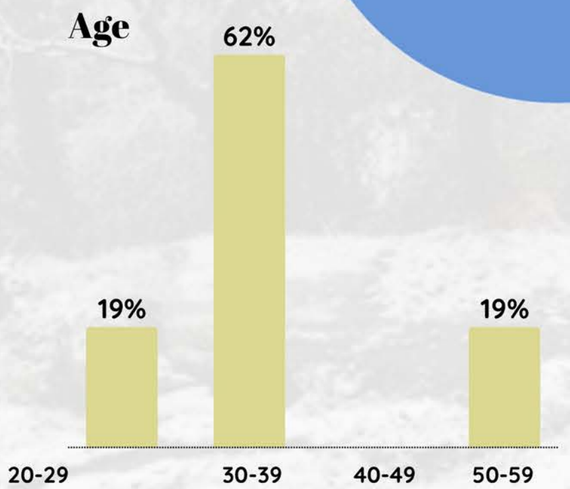
Mayadas, 32

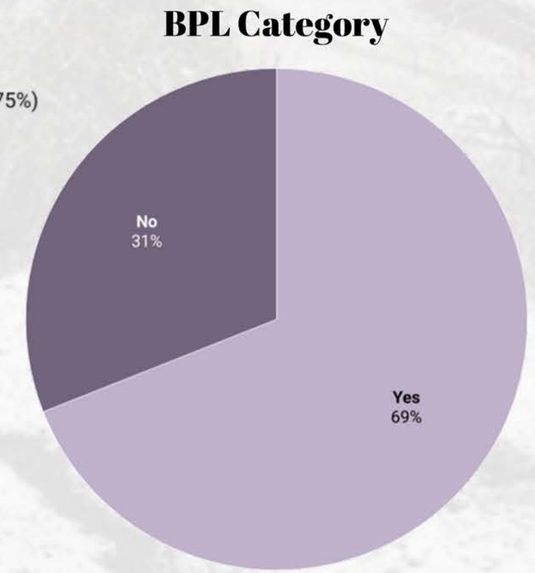
Sankri

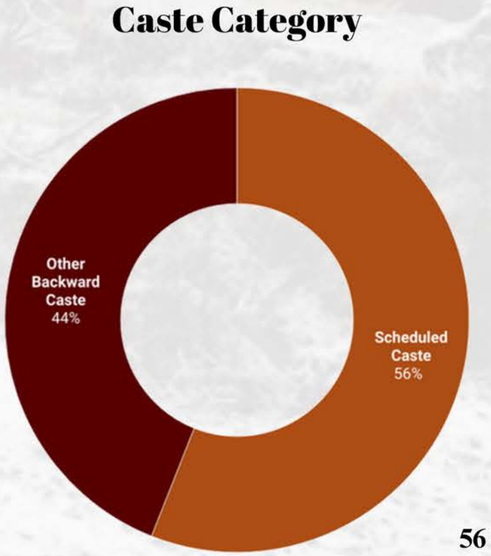
Demographic Profile











Ground Zero

The stories of friendships, comfort, aspirations, hope, dreams and change

I. The Three Musketeers

“Suno ek baat…” Janita Devi's bold voice had rang through the monotonous humdrum of the community gathering in the open ground surrounded by huge Himalayan peaks and pine trees in the background in Gaichwan village. It had drawn immediate attention. Heads turned. For the first time, a woman was part of a forum traditionally dominated by men, raising an issue that had long been ignored: the unchecked dumping and burning of solid waste along the roads. “Isn’t this a problem for all of us? Then why are you unwilling to contribute financially for waste collection?” she asked, her question met with silence. At that moment, she made the villagers see how manageable a contribution of Rs 50 per month was to support a door-to-door waste collection service—something no one had been willing to pay for before.

This was the beginning of Janita Devi’s journey as the first green worker in Gaichwan village. To claim a seat in the all-male community meeting was a far shot for someone shy even to go to the village market by herself. What began as a way to earn a livelihood became so much more thereafter: a source of confidence, a space for camaraderie, and an opportunity to both learn and teach. Over four years, Janita became an executive leader, guiding two more women, Ganita Devi and Pashmina Devi, to understand not only the importance of waste management in their village but also the change financial independence brings for women and how it paves the way to dream bigger. This marked the beginning of their friendship.

Ganita and Pashmina, neighbors in Gaichwan, were hesitant at first when Janita approached them to join her as a green worker. But the story of Janita’s bold stand at the community meeting had sparked something in Ganita. She saw how stepping out of her home had transformed Janita.

“She was able to talk to men with so much of ease, something not too common in our community. She could step out of her home without being answerable to a ‘why’ and that piqued my interest,”
Ganita recalled, her eyes describing the awe she was in.

“Phir socha hum bhi karke dekhe,” she added.

And what an experiment it proved to be!

Ganita's daughter, Disha(16) remembers her mother's journey vividly. "I saw my mother's decision-making power in our home grow month after month. She became not only financially independent but also more resilient and courageous—a far cry from the woman who was once at the bottom of the ladder."

By "bottom of the ladder," Disha referred to the gender disparity her mother faced within their household and the social barriers associated with their Scheduled Caste status. When Ganita received her first salary, Disha urged her to spend it on herself. Ganita bought silver jewelry, as she had always wanted. By her fourth salary, her connection to the cause had deepened. "I built a wooden kothar to store grains, replacing the plastic containers I had used for years," Ganita shared. "It felt hypocritical to advocate against plastic while still relying on it myself."

Now, Ganita has become a role model for Disha. Her mother gets a seat at the table for important decision-making, sharing her experiences, challenges, and solutions with those eager to learn from her journey.

"I understood one thing very clearly after my mother started working that money isn't everything - respect is," Disha said, sitting on the floor of a recently built room in her house by her mother's salary. For her, Ganita is an inspiration—a testament to how one can rise above barriers.

"When my work took me to Dehradun, I felt it was a *doosri duniya*. Men and women spoke, ate and worked together. I met girls who were living so far away from home as a career choice. I could dream something similar for my daughters as well then," Ganita smiled.

Pashmina was not far behind. Though less of a storyteller compared to Janita and Ganita, her warm smile often spoke more than her words. It was the bond between these three women that turned the uphill task of convincing the community into something possible. They worked tirelessly to spread awareness, explaining how plastic was slowly destroying their homes, agriculture, and health—information that many initially found strange or even burdensome.

Day after day, the trio visited every household in Gaichwan, urging residents to hand over their dry waste and contribute Rs 50 per month as a user fee. Together, they lugged heavy sacks of waste to the waste bank and spent hours sorting through it. During these shared moments of hard work, their friendship deepened.
But then came a setback. Pashmina had to stop working due to health issues. Janita, unwilling to let her friend down, took on the extra workload for two months, ensuring Pashmina continued to receive her salary. Despite Janita's efforts, Pashmina saw the strain it placed on her friend and eventually asked to step away.

When Pashmina was asked in November how stepping out to work had felt, her eyes told the story. Tears welled up as she recounted the memories. All she could say was that it had been the best time of her life, and she wasn't sure if she would ever experience it again. As a gesture of love, Pashmina packed a bag full of walnuts from her farm for those who had believed in her and gave her the opportunity to become a green worker.

Thereafter, the women took on a new mission: educating young girls and women about using menstrual cups for improved period hygiene while reducing sanitary waste. True to their approach, the three first tried the cups themselves before advocating their use to others. "Call it a coincidence or a testament to our friendship —our period dates aligned within a gap of two to four days. We'd call each other to check in about how it was going," Ganita laughed, sitting beside Janita and Pashmina outside her kothar. The bond between them was evident.

Their efforts have borne fruit—45 girls and women in the village have now adopted menstrual cups, embracing a more sustainable choice. With this milestone, Janita reflects on her journey. "I wonder what's next for me. It's been four years of doing this work. I know it like the back of my hand now, and I feel it's time to explore new responsibilities," she said, her tone a mix of pride and anticipation for the challenges ahead.

II. ‘O Pheriwala!’

Raksha jumped off her chair, alarmed, when she heard her younger sister shouting, “Didi… o didi, jaldi aao bahar!”

She hurried to the door and found her sister’s eyes glued to a pheriwala carrying an oversized bundle of beautifully woven woolen salwar kameez. The shouting, it turned out, was out of excitement as her sister’s gaze locked on a bright red salwar kameez. For Raksha, being able to fulfill her sister’s small wishes meant the world. As the eldest in the family, she had taken on the responsibility of her siblings after losing both their parents earlier that year.

“All I could think about was the trust my sister had in me—that I could give her something she truly wanted in that moment,” Raksha shared. “That was when I realized how far my work had brought me.” Raksha is a graduate, but in her village, Sankri, opportunities for women rarely align with their education. Migrating out also doesn’t come easy.

“I can’t just move to a big city to find work. Who will look after my siblings?” she asked, her tone a mix of frustration and resignation. Agriculture was an option, but it had become increasingly unreliable over the years. “Last year, I harvested four *kattas* (50 kg each) of rajma,” she said, “but this year, it was barely a bucket. How can we survive like this? There are so many mouths to feed and children to educate.” Her job has brought hope to her family. “My siblings see me as a guiding light now. They want to finish their studies and join me in the work,” Raksha said with a faint smile.

For Raksha, it has given her space where she can momentarily drop off her burden of family responsibilities and almost feel a sense of control, when she holds onto her register and pen to precisely take down the waste collection data.

“Aisa lagta hai jimmedariyon se door ho gayi kuch der ke liye. Bahut halka lagta hai,” she admitted softly, almost hesitant, as though afraid of being judged. But her determination shines through. “I want to change my life,” she said, sipping tea at the village shop. “And I think this work is already a foot in the door.”

III. The Neighbourhood

On a balmy November afternoon, Vipina Devi, a resident of Khanna village, arrived in neighboring Doni village to attend a wedding. At first glance, the two villages would seem alike for a first time visitor—apple orchards stretched across the hills, the earthy aroma of freshly harvested lentils filled the air, and houses painted in muted tones blended harmoniously with the mountainous landscape. But for Vipina, whose maternal house is in Doni, a stark difference lies underfoot. While Khanna has a persistent problem of open garbage dumping in the khads or streams and plastic wrappers and discarded bottles are visible as far as the eyes go, Doni is remarkably cleaner.

Vipina Devi couldn't help but marvel. "This village was never this clean a few years ago," she mused aloud, her voice tinged with wonder. "Plastics were strewn everywhere. I wonder if something like this could happen in my village too."

The change wasn't accidental. Doni's transformation was spearheaded by the tireless efforts of its green workers, Dipin and Sundas, who had dedicated over three years to overturning habits of careless waste disposal. Through relentless door-to-door campaigns and community awareness sessions, they continue to explain the waste management responsibilities to people.

One such lesson played out in real-time: a villager casually tossed a plastic bottle onto the roadside. The man, with a shrug of indifference, called out to Dipin, "Why don't you just pick it up?"

Dipin's response was swift yet patient. "It's not just my job to keep the village clean—it's yours too." What began as a tense exchange slowly morphed into a 15-minute impromptu awareness session. By the end, the villager picked up the bottle and placed it in the nearby dustbin, leaving Dipin with a wry smile of victory. "It takes time to change habits," Dipin reflected later, brushing the dust from his hands. "But first, people need to realize it's their responsibility too."

Vipina aspires to be able to do something similar for her village too. "I'd even be willing to become a green worker myself if no one else steps up," she added. She doesn't know where to start yet, but Doni has set an example of the possibility.

Doni's ongoing transformation is beginning to ripple outwards, touching hearts like Vipina's. Change, after all, starts with one step, one bottle, and one inspired individual.

IV. Shurmi Devi & Her Many Shades

“So, if I love to dance and sing, what could I buy with my hobby fund?” Shurmi Devi asked curiously as she tried to understand what truly counted as a ‘hobby.’ The concept of additional money over her salary to pursue her hobby itself felt both new and strange to her—something meant purely for pleasure in her leisure time. But leisure itself had been a rarity in her life. Last she remembers, she had time for herself before she got married at twelve.

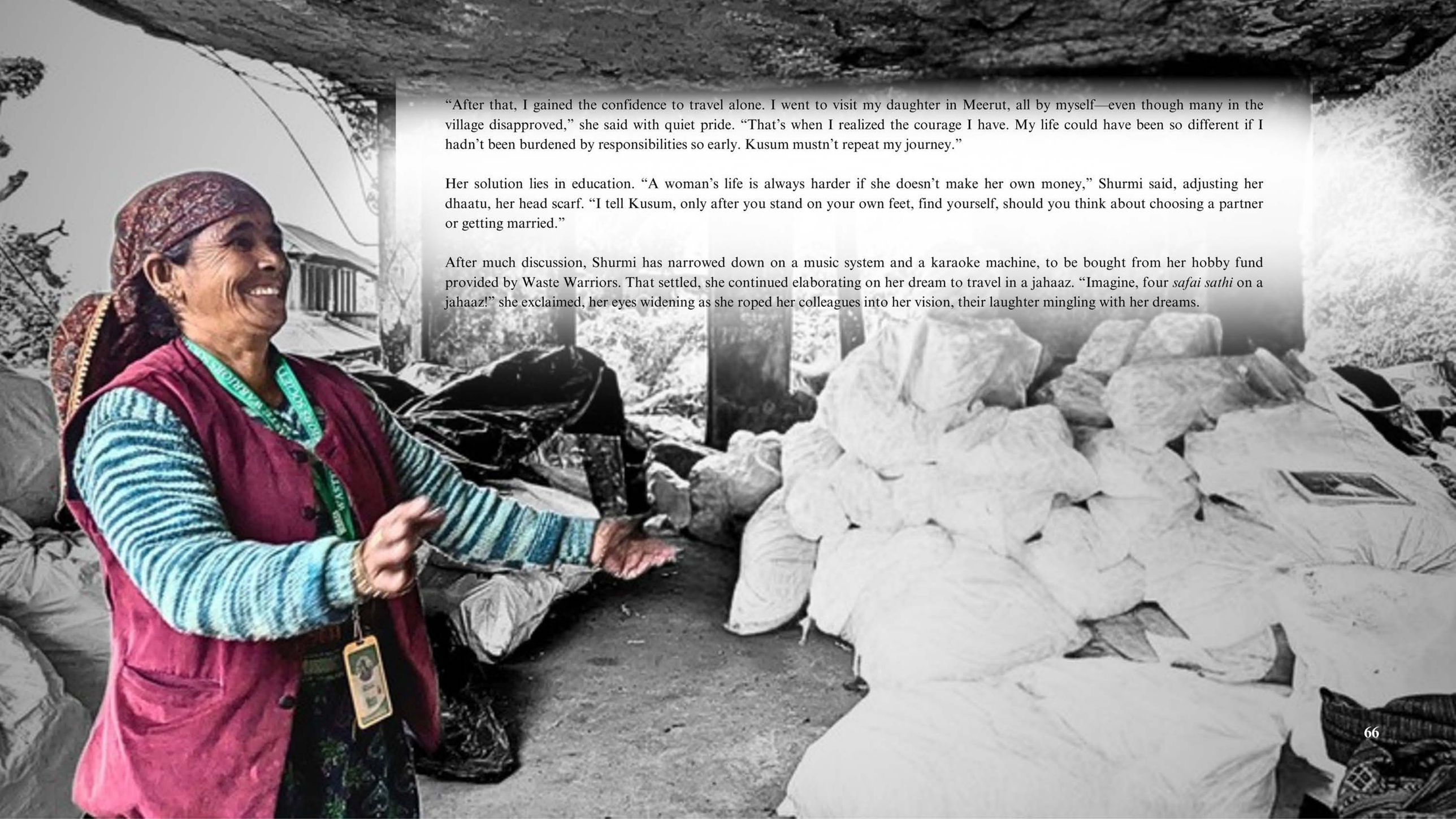
“Since then, it’s been about looking after my home, raising four children, and working as a daily wage laborer to make ends meet,” she said, her voice calm but heavy with memories. “I don’t even understand what you mean by free time.” She shared her story as she walked along the edge of the Himalayan range, the breathtaking view a contrast to the years of grind that had defined her life. But things began to change earlier this year, when Shurmi started working as a green worker. Slowly, she found fragments of herself that she thought had been lost. One day when Kalawati, her closest amongst her colleagues, played the upbeat Nepali song on her mobile phone, Shurmi’s body naturally started synchronising with the rhythm, subtly — just a tap of her foot and a nod of her head. It was a state of entrainment.

Kalawati was quick to notice and with a playful tug, pulled Shurmi to her feet. Hands up in the air, eyes closed in pleasure, and smiling from ear to ear — Shurmi danced her heart out that day. It was a liberating ordeal. And soon after, it became the duo’s ritual in the waste bank. That day, in her peak leisure moment, Shurmi recalled that she had always enjoyed singing and dancing, but it took a place in her heart, which in the beginning of her married life, was kept as a low-priority emotion but over the years was forgotten.

She doesn’t want the same for Kusum, her 17-year-old daughter.

“This work gave me a space where I rediscovered myself. It gave me the opportunity to travel to Dehradun,”

That was the first time Shurmi Devi had stepped out of her village.



“After that, I gained the confidence to travel alone. I went to visit my daughter in Meerut, all by myself—even though many in the village disapproved,” she said with quiet pride. “That’s when I realized the courage I have. My life could have been so different if I hadn’t been burdened by responsibilities so early. Kusum mustn’t repeat my journey.”

Her solution lies in education. “A woman’s life is always harder if she doesn’t make her own money,” Shurmi said, adjusting her dhaatu, her head scarf. “I tell Kusum, only after you stand on your own feet, find yourself, should you think about choosing a partner or getting married.”

After much discussion, Shurmi has narrowed down on a music system and a karaoke machine, to be bought from her hobby fund provided by Waste Warriors. That settled, she continued elaborating on her dream to travel in a jahaaz. “Imagine, four *safai sathi* on a jahaaz!” she exclaimed, her eyes widening as she roped her colleagues into her vision, their laughter mingling with her dreams.

V. The ‘River’ Calling

Thirty-year-old Devraj Saudan speaks passionately about how plastic has infiltrated his village—a place so remote it doesn’t even have a motorable road. Surrounded by the lush Himalayas, he sits before a group of nearly 35 children, aged six to 15, and poses a question: what’s the best way to educate their parents about properly disposing of dry solid waste?

“We have to keep telling them, over and over, until they understand,” one child suggests.

“Maybe we can explain how it affects our apple orchards,” another chimes in.

Devraj marvels at their responses, as if he hadn’t considered them before, to keep the excitement in the children alive. He listens attentively, translates their suggestions into actionable steps, and disperses the children, promising to meet again next week.

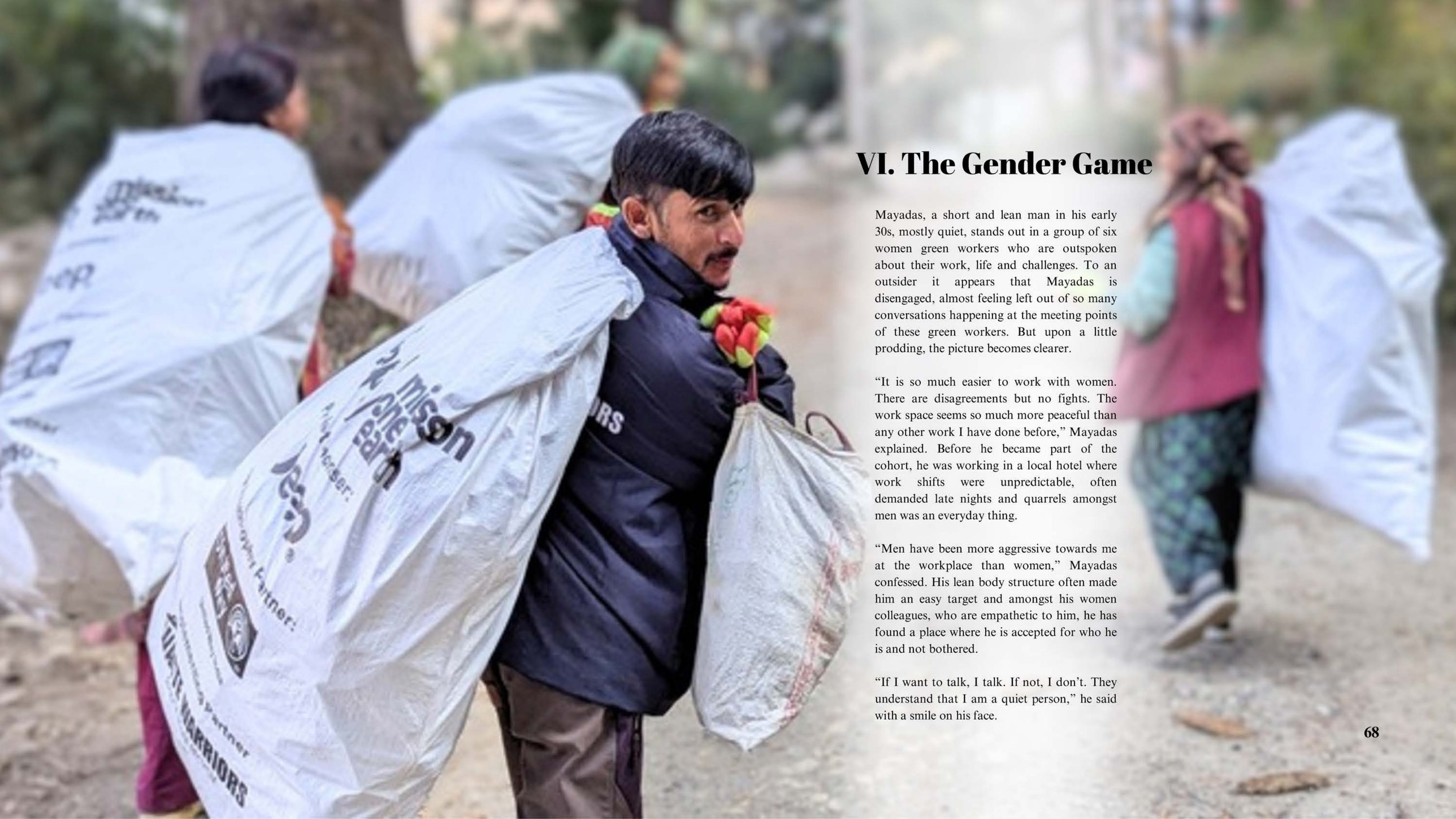
As a community mobiliser for six villages in Uttarkashi’s Mori block, Devraj has built a reputation for fostering change by placing the community at the heart of every solution. His deep knowledge of his village, its people, its rivers, and the toll plastic has taken on them is striking—especially considering that until 2021, Devraj himself used open burning to dispose of waste. “I knew plastic was harmful,” he admitted. “But I didn’t know how else to make it disappear.”

When Waste Warriors educated him on the dangers of burning plastic, Devraj innocently asked, “So should I bury it in the soil instead?” unaware like many, how to deal with this alien waste that didn’t exist in his village until a decade back. Today, he speaks with village elders who suffer from asthma, explaining how plastic burning exacerbates their condition. He talks to the youth about their village’s potential for tourism and how open dumping could deter visitors, impacting them financially. He educates women on how plastic leaches into the soil, affecting the quality of their crops and the health of their children.

“In 2022, I had to leave the organization due to personal commitments,” he lamented. “But the green work didn’t leave me.”
Every day, Rupin and Shupin—the rivers that dance their way down the mountains—called out to him. For Devraj, these rivers were more than water sources; they were lifelines intertwined with his memories. On summer afternoons, he had cupped his hands to drink directly from their crystal-clear waters, feeling the glacial refreshment. But now, the sight of plastic debris floating downstream haunted him. “I realized we could lose all the progress we’d made in awareness and behavior change if I didn’t continue,” he said. “If we don’t do this for our village, who else will?” Within six months of leaving, Devraj returned to his role as a community mobiliser. “Once a Warrior, always a Warrior!” he laughed.

His passion shines through the innovative Information, Education, and Communication (IEC) techniques he develops. In Gaichwan village, he observed a significant behavior shift after invoking the community’s local deity, the devta. Devraj warned that the devta would not reside in the village while it remained littered with waste. People listened, and they acted. To reinforce this change, he later spearheaded the creation of a wall mural depicting the devta blessing the community for disposing of waste responsibly in bins.

Devraj believes that change lies in consistent awareness efforts and keeping the community at the core of every intervention. For him, the journey is far from over, and with Rupin and Shupin as silent witnesses, he continues to fight for a cleaner, greener tomorrow.



VI. The Gender Game

Mayadas, a short and lean man in his early 30s, mostly quiet, stands out in a group of six women green workers who are outspoken about their work, life and challenges. To an outsider it appears that Mayadas is disengaged, almost feeling left out of so many conversations happening at the meeting points of these green workers. But upon a little prodding, the picture becomes clearer.

“It is so much easier to work with women. There are disagreements but no fights. The work space seems so much more peaceful than any other work I have done before,” Mayadas explained. Before he became part of the cohort, he was working in a local hotel where work shifts were unpredictable, often demanded late nights and quarrels amongst men was an everyday thing.

“Men have been more aggressive towards me at the workplace than women,” Mayadas confessed. His lean body structure often made him an easy target and amongst his women colleagues, who are empathetic to him, he has found a place where he is accepted for who he is and not bothered.

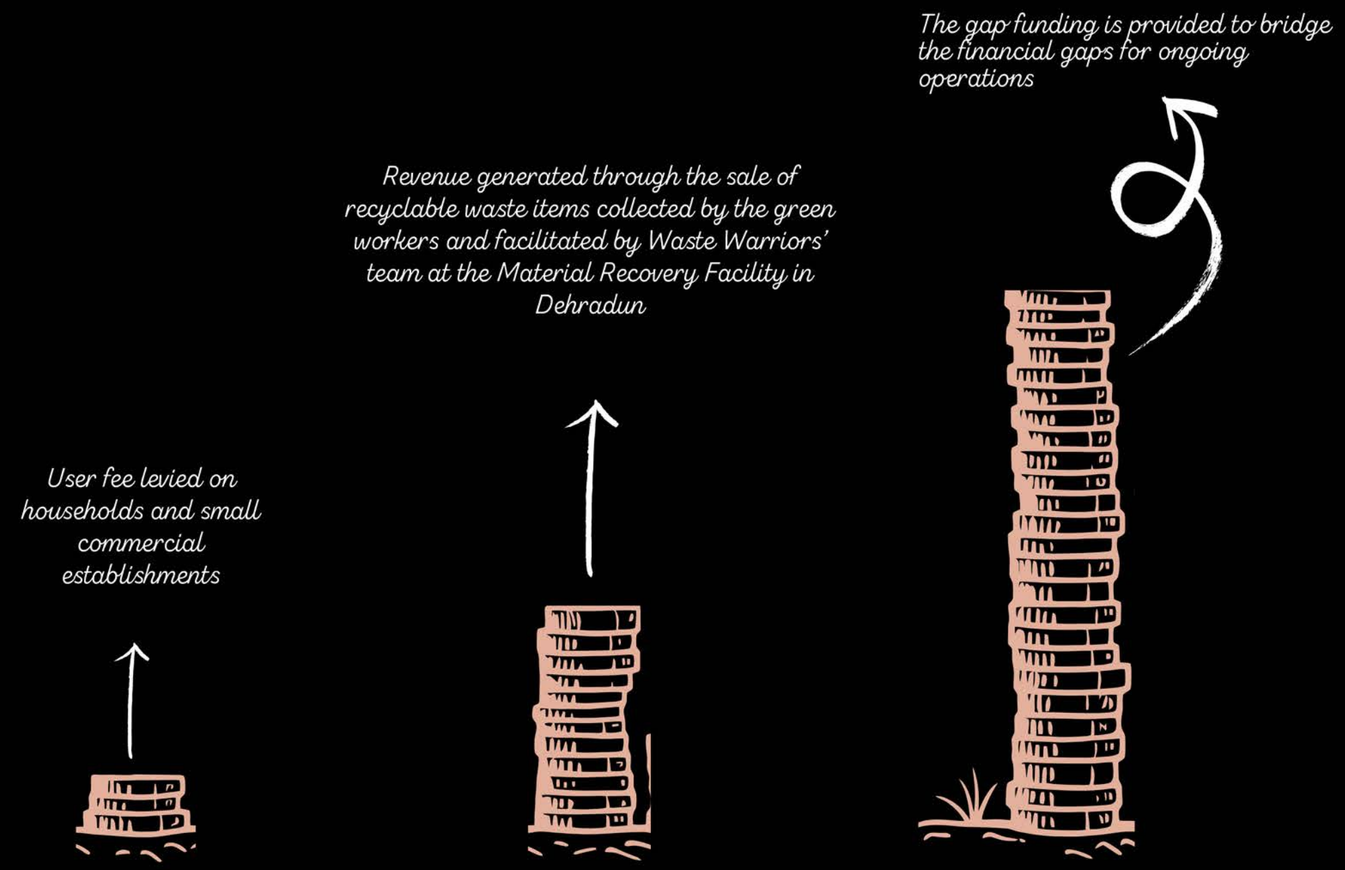
“If I want to talk, I talk. If not, I don’t. They understand that I am a quiet person,” he said with a smile on his face.

The Money Dialogue

Decoding the financial model, local government funds and more...

Under the Uttarkashi Waste Management Model, a community-based livelihoods initiative, a green worker makes **Rs 6681** on an average for **12 human-days** per month; remuneration structured on a per month basis based on the working tenure and skills, with the flexibility of working days and hours.

This financial compensation is derived from three primary sources:



During the initial operation, the incoming user fee was nil as it took time to raise awareness of the pay-for-service model. The user fee was generated from May 2024 onwards. Only a handful of households contribute to this revenue stream through a user fee of Rs 50 per month, while small commercial entities contribute Rs 100 per month. IEC efforts are underway to educate people on paying for waste management services and the numbers are gradually increasing. As of now, an average of Rs 16 per household per month is being generated as user fee.

The second avenue of income through Sale of Recyclables is facilitated by the segregation of recyclable waste items into distinct categories, subsequently transported to Dehradun and sold to aggregators at the MRF centre, negotiating a flat rate per kilogram. The SOR for the waste collected is low because of the socio-economic conditions in these remote Himalayan villages where purchasing capacity is low which mostly generates sachet waste, categorised as unrecyclable or low value plastic waste.

In ***23 months***, between January 2023 to November 2024, out of the total revenue of **Rs 9,392,466** — **Rs 22,230** was obtained from user fee(for 7 months), **Rs 47,553** from Sale of Recyclable(SOR) and **Rs 9322683** (99%) from the gap funding.

Waste Warriors envisions to gradually increase the revenue from user fees. Furthermore, with the collaboration with local and block-level government bodies, the organisation aims to substitute gap funding being invested in the model with funds from local government in the future.

The gap funding provided by Waste Warriors (through Corporate Social Responsibility interventions and philanthropic contributions) is a characterisation of risk-taking and belief in the sustainability of this model as it scales with time.

Local governments can play an important role in accessing funds for decentralised waste management. In GWS region, only Doni's Sarpanch or local government head Ashu Singh pays 50 per cent of the salary for the green workers. Other panchayats hav yet not been able to allocate funds for this. However, other places have provided Gram Panchayat land for setting up the waste banks.

The Panchayat Funds

A panchayat is a village-level local government body headed by a Pradhan, who is elected by the community. The Pradhan is responsible for preparing a Gram Panchayat Development Plan (GPDP), which outlines the village's developmental priorities for the year. This plan is created through a participatory process involving community members, who collectively decide which initiatives should be included.

Local governments can be a game changing entity in ensuring the sustainability of a waste management model by integrating waste policies into village development plans. It is through this decentralised agency that waste management can be made cost effective as well as tailormade for each geographic location.

Panchayats receive funds from two primary sources: population-based allocations under the 15th Finance Commission (FC) and grant or scheme-based funds such as the Swachhta Fund, NREGA (National Rural Employment Guarantee Act) funds, among others. According to the 15th Finance Commission, 60% of the total funds allocated to Panchayati Raj Institutions (PRI) are reserved for national priorities, such as drinking water supply, rainwater harvesting, and sanitation. The remaining 40% is untied, allowing local bodies to use it at their discretion to improve essential services.

In 2023 and 2024, Waste Warriors has unlocked ONLY Rs 62,000 collectively from the six panchayats where it's operational.

The Fund Discrepancy

The disparity in the allocation of funds between rural and urban regions in India has been a longstanding issue. This financial imbalance becomes even more pronounced when comparing Himalayan villages like Doni with villages in the plains, such as those in Uttar Pradesh. The primary source of funds for rural governance in India comes through the Panchayati Raj system, wherein local government bodies, or panchayats, oversee the administration of villages. However, a fundamental challenge in this method of fund disbursal is that it disproportionately neglects villages/habitations with smaller population, scattered communities, such as those found in the Himalayan region. This leaves out remote and sparsely populated Himalayan villages struggling to meet even their most basic needs.

One of the biggest challenges faced by Himalayan villages is their sparse population. The funding model under the 15th Finance Commission allocates Rs 512 per person per year to panchayats. In a village like Doni, which has a population of 712, this amounts to Rs 369,152 annually. In contrast, a village in Uttar Pradesh, where populations can easily exceed several thousand, would receive significantly more funding.

For example, a panchayat in the plains with a population of 5,000 would receive Rs 2,560,000—almost seven times what Doni receives. This funding disparity makes it difficult for small Himalayan villages to undertake the same level of developmental work as their counterparts in the plains. Furthermore, the cost of infrastructure development, transportation, and service delivery in Himalayan villages is significantly higher due to geographical challenges, making the limited funds even less effective.

Unlike urban areas, where waste collection and disposal systems are relatively well-established, rural Himalayan communities often lack even the most basic waste management infrastructure. In Doni, waste management operations are undertaken by organizations like Waste Warriors, which require an annual budget of Rs 372,036 to operate effectively. However, with the panchayat receiving only Rs 369,152 per year in total funding, it is evident that even the entire annual budget would not be enough to cover just waste management, let alone other essential services such as road maintenance, water supply, and sanitation.The cost of managing waste in a Himalayan village is significantly higher than in the plains. The lack of local waste treatment facilities means that garbage often has to be transported to distant cities, further escalating costs.

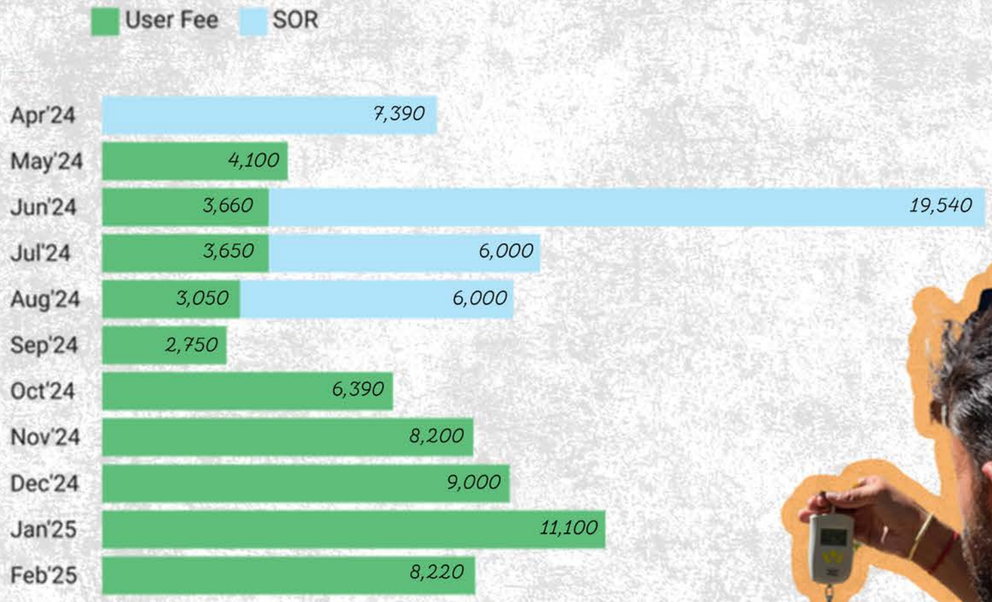
The current model of fund allocation for rural development in India creates an uneven playing field, disproportionately favoring populous villages in the plains while leaving smaller, geographically challenged Himalayan villages at a disadvantage. The case of Doni highlights how existing funding structures fail to meet the real needs of these communities, particularly in essential areas like waste management. Without urgent policy reforms, the financial constraints faced by Himalayan villages will continue to impede their development, leading to worsening environmental conditions and lower quality of life for residents. The government must reconsider its approach to rural funding, ensuring that villages in challenging terrains receive the financial support they need to build sustainable, resilient communities.

How to Improve Fund Allocation

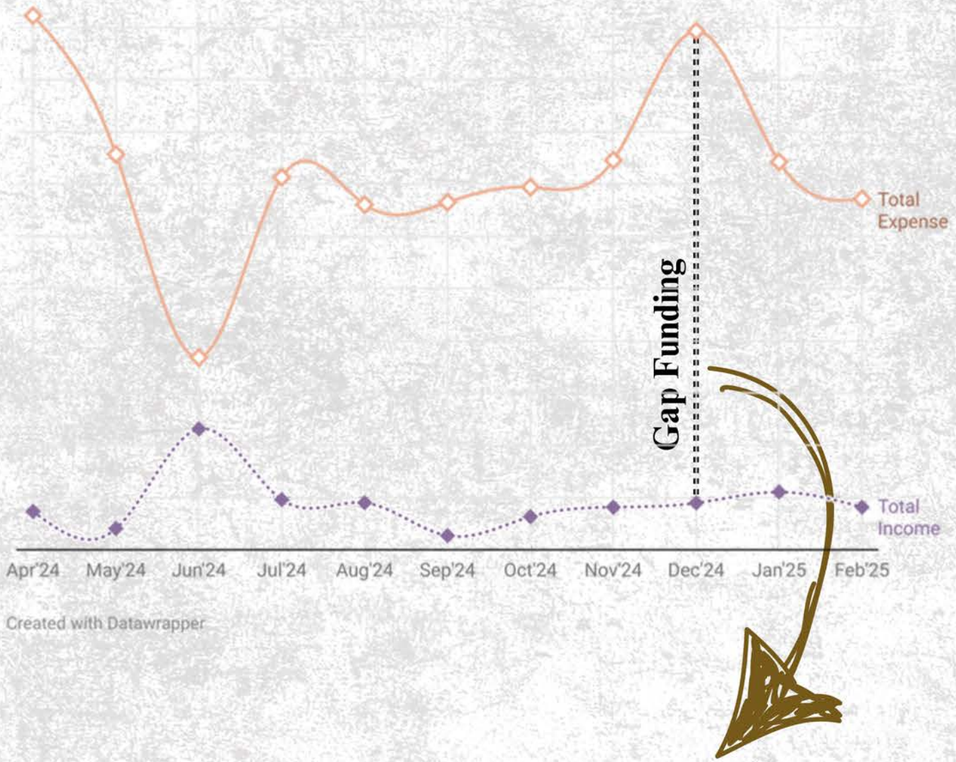
i. **Geographically Weighted Funding Model:** Instead of relying solely on population-based allocations, the government should introduce a weighting system that considers the higher costs associated with service delivery in remote and mountainous regions

ii. **Tourism-Linked Revenue Streams:** Given that tourism significantly contributes to waste generation, a portion of tourism-related revenue, such as environmental fees or taxes on tourist accommodations, should be earmarked for waste management in affected villages.

Monthwise Income under Uttarkashi Waste Management Model (April 2024 - February 2025)



Monthwise Total Income and Total Expense under Uttarkashi Waste Management Model (April 2024 - February 2025)



Gap Funding is additional fund to bridge the financial gap between the income and expense for running waste management operations.

Roadblocks & Possible Solutions

Disintegrating the key problems in running a waste management model in GWS and possible solutions

Roadblock 1

The financial sustainability of the model remains an area for improvement. Currently, 99% of the operational and management costs are covered by gap funding through CSR initiatives. Achieving full penetration will require increased user fee generation and greater financial participation from local government bodies, such as allocating GPDP funds to waste management in their respective villages. These measures can help cover daily wages and other operational costs, including transportation, installing informative signboards, and conducting awareness campaigns

Solution 1

- Access to well-equipped Material Recovery Facilities (MRFs)
- Implementation of Extended Producer Responsibility (EPR) for low-value plastics
- Operations and Maintenance (ONM) contracts from local government for the greenworkers
- Need for active Swacchta Samitis (cleanliness committees) for monitoring operations
- Transportation of collected waste can be covered by the Forest Department, and an ecotax can be levied on tourists

Roadblock 2

Due to limited understanding of waste and its impact on the environment, plastic waste management is not a top priority for communities in this Himalayan belt. The GPDP plan, prepared with local participation, can only superficially include waste management in its annual planning unless the community actively prioritizes it.

Solution 2

- Effective Information, Education, and Communication (IEC) initiatives for reducing, reusing waste and better segregation at source
- Improved userfee collection to be achieved by increasing the community's willingness to pay, and timely so.
- Instilling responsibility within tourists and the hospitality industry which serves them.

Roadblock 3

Allocating waste management funds to Himalayan villages based solely on population, without accounting for the region's geographical challenges, creates funding shortages. This limits the ability of local governments to allocate resources toward plastic waste management solutions.

Solution 3

Special fund allocations from the state and central governments are needed for panchayats in the Upper Himalayan region to address local challenges and transportation difficulties, ensuring a more equitable distribution of resources. These funds should not be based solely on population.

Accountability

Greenworkers and Community Executives

- Onboarding all the units in the village
- Providing waste collection bags to each unit with a unique identification code
- Spreading awareness on waste segregation, anti-littering and anti-burning
- Collection of monthly user fee from each unit
- Weekly dry waste collection from each household
- Segregation of all collected waste at waste banks
- Transporting the recyclable waste obtained from the segregated waste to MRF facility in Dehradun
- Documenting and tracking waste quantity, user fee, households data etc.

Gram Panchayats

- Legalising the solid waste management system at the Gram Panchayat level through the by-laws to overcome conflicts with the communities
- Ensuring healthy participation and discussion on solid waste management in open meetings or Gram Sabhas
- Utilisation of tied funds of waste management based on XV Finance Commission
- Commission funds for waste management systems in villages
- Provide storage and segregation centres to the green workers
- Support greenworkers with the operational expenses like freight, conveyance, equipment and collection contract.
- Set up wet waste composting

Waste Warriors

- Identification of locals from the communities who are inspired to become green workers
- Capacity building of Gram Panchayats for introducing by-laws pertaining to the waste management system in the village
- Stakeholder coordination to provide infrastructure support to the greenworkers— waste banks, waste collection vehicles, and waste processing facility
- Supporting the community workers with IEC material to inform and induce behavioural change in the communities
- Training and capacity building of green workers and community workers along with helping them overcome day-to-day challenges
- Ensuring the financial sustainability of the model and community workers

Block & District Administration

- Construction of MRF, including land identification and provision of the same
- Regular monitoring of Gram Panchayats to check their contribution towards village-level waste management systems
- Spot fines for not paying user fees or dumping and open-burning of waste
- Provide expertise and consultation for the legalisation process.
- Capital costs for setting-up the Material Recovery Facility
- Provide vehicles/e-loaders for transportation of the waste
- Set up an Integrated Command and Communication Centre (ICCC) at block level
- Set up incinerator to tackle sanitary waste
- Provide a scientific landfill within the block for the rejected waste

Recommendations

Geography-Based Fund Allocation for Remote Himalayan Villages

- **Recommendation:** Revise current fund allocation models (e.g., GPDP) to include geographical accessibility and terrain difficulty as key criteria, in addition to population.
- **Why:** Remote villages like Doni and Satta in the Govind Pashu Vihar National Park and Wildlife Sanctuary face higher operational costs and lower access to infrastructure compared to villages near urban centers like Dehradun.
- **Implementation Mechanism:** Weighted fund allocation formula embedded in GPDP and other rural development schemes.

Operational Expenditure (OPEX) Support for Solid Waste Management

- **Recommendation:** Introduce a dedicated OPEX component under the Swachh Bharat Mission (Gramin) and mandate a specific line item within GPDP for SWM in remote villages.
- **Why:** Capital infrastructure is insufficient; sustainability requires recurring funds for transportation, manpower, and equipment.
- **Implementation Mechanism:** Within GPDP, provision separate budget lines for infrastructure (e.g., DWSUs) and manpower/O&M, with district-level guidance to ensure inclusion in remote panchayat plans.

Eco-Tourism Revenue Sharing and Waste Management

- **Recommendation:** Implement a district-wide Eco-Tax Framework, where 80% of collected funds go towards local development (including waste) and 20% towards forest conservation.
- **Why:** High tourist footfall in protected areas like Govind Pashu Vihar National Park and Wildlife Sanctuary demands shared responsibility and benefit among stakeholders.
- **Implementation Mechanism:** Collected funds to be transparently earmarked for SWM, infrastructure, and conservation activities.

District-Level Special Purpose Vehicle (SPV) for Waste Management

- **Recommendations:** Create a Special Purpose Vehicle at the district level (public-private-government model) to plan, coordinate, and manage the implementation of SWM, especially in eco-sensitive areas.
- **Why:** Aligns operational responsibilities, identifies gaps, and ensures all parties contribute to OPEX and monitoring.
- **Outcomes:** Shared action plans, real-time issue resolution, collaborative budgeting.

Creation of Decentralised Waste Banks and Infrastructure (DWSUs)

- **Recommendation:** Provision for Dry Waste Structural Units (DWSUs) in GPDP and Swajal budgets with separate line items for infrastructure and manpower.
- **Why:** Waste needs to be dropped off rather than collected door-to-door in hilly terrain; requires fixed infrastructure points.
- **Implementation Mechanism:** Panchayats to submit proposals; District Authorities to prioritize geographies based on need.

Enforcement & Guidelines for Trekking and Tourist Agencies

- **Recommendation:** Develop and enforce waste management bylaws for trekking and tourist agencies, mandating waste return protocols, fines for littering, and compliance with registration and waste rules.
- **Why:** Need for monitoring of waste generated by tourists and trekking agencies in fragile ecosystems.
- **Imlplementation Mechanism:** Coordination with Range Officers and local enforcement teams.

Strengthen Local Manpower: Swachhta Grahis and Youth Committees

- **Recommendation:** Formalize and fund Swachhta Grahi networks at the village level for community engagement and monitoring under Swachh Bharat Mission Gramin
- **Why:** Decentralized action needs empowered local foot soldiers.
- **Implementation Mechanism:** Train village youth and women to track SWM indicators and lead IEC.

Climate Resilience Integration

- **Recommendation:** Integrate solid waste management as a pillar of climate resilience in district-level Micro Plans, especially in areas vulnerable to plastic-choked rivers and landslides.
- **Why:** Waste mismanagement contributes to flooding, soil degradation, and loss of biodiversity.
- **Imlplementation Mechanism:** Include waste audit indicators in climate vulnerability assessments.

WASTE WARRIORS

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