



Policy Brief:

Curbing River Plastic Pollution

and empowering Nepal's Informal Waste Sector



GRID ARENDAL
A UNEP Partner

NGI

creasion
Envisioning the Change

doko
RECYCLERS
WASTE MANAGEMENT SOLUTIONS

ISWA
International Solid Waste Association

Key findings

- The absence of a systematic national mandate and policies addressing plastic pollution has resulted in significant plastic waste leakages into Nepal's rivers and environment.
- The informal recycling sector plays a significant role in solid waste management in Nepal, filling the gaps left by municipal bodies and other entities in providing adequate solid waste management services.
- There has been a 20% increase of workers in the informal recycling sector in Kathmandu since 2014, with an approximate 20,000 informal recyclers in 2024.
- Despite their contribution, informal recyclers face several issues, among which are a lack of safety equipment, access to health and hygiene facilities, as well as the absence of gender-responsive infrastructure at the workplace. At the same time, physical strain from long hours is another challenge.
- Most of the informal recyclers belong to Indigenous and marginalised communities, with a higher share of women than men engaged in informal recycling activities.
- Effective plastic recycling is hindered by the poor quality of recovered plastics, lack of adequate technology, and relocation of scrap centers from the riverbanks to the city's outskirts.

River hotspot analysis results

- A river hotspot analysis conducted during the first year of project implementation to assess plastic materials in Nepali rivers found:
  - Polyethylene terephthalate bottles,
  - Packaging made from polypropylene and low-density polyethylene (e.g. milk packets),
  - Polypropylene (e.g., yogurt containers),
  - Multi-layered plastics,
  - Expanded polystyrene styrofoam, and
  - Other plastic products such as footwear, construction related plastic sacks and other high molecular plastics – such as plastic bags made from high-density polyethylene.

  This underscores the varied sources of riverine plastic pollution.
- Much of the plastics recovered from rivers – such as nylon, expanded polystyrene styrofoam, multi-layered plastics and other non-recyclable plastics – are primarily hard to recycle, therefore ignored or discarded and do not have an established recycling value chain, adding complexity to waste management efforts.
- Only a quarter of the plastics found in rivers, including polyethylene terephthalate and high-density polyethylene, were considered easy to recycle.
- Municipalities need facilities capable of processing high volumes of multi-layered plastics, low value plastics and non-recyclable plastics, thus enhancing plastic circularity
- Two decentralised collection centers established as a pilot model to divert plastics and other dry waste are able to divert over 15,000 kgs of waste on a monthly basis.

The RiPl Project

Nepal's vital water sources have been heavily polluted by plastic waste and other contaminants, posing a serious threat to both aquatic ecosystems and the communities that depend on them. In response to this growing environmental crisis, the Preventing Plastic in Nepal Rivers by Boosting the Informal Sector (RiPl) project worked to empower the informal recycling sector and conduct research that will inform effective planning and strategies to reduce plastic leakage into Nepal's rivers. In addition, the project contributed to deepening our understanding of the critical role of human capital in the processes of collection, recycling, and refurbishment:

Identifying hotspots for plastic pollution in Kathmandu rivers: The project identified major factors contributing to river pollution, including dumping sites and areas with high settlement density along the river corridors, sewage leakage, scarcity of scrap centers, and limited waste management services. Waste audits were performed, which facilitated a thorough examination of the types of plastics present. Although the quantities of plastics collected were limited, the waste audits provided crucial insights into the specific materials contributing to the pollution of Nepal's waterways. The majority of low value plastics such as single

use plastics, composite plastics, pharmaceutical packaging, cosmetic packaging, or cement bags do not have an established recycling value chain. Much of this waste ends up in landfills or is contaminating the environment. For technical and market reasons, the informal sector and private waste management companies, which operate most of the municipal door-to-door collection, do not focus on recovering low value, rigid and film plastics. They provided guidance of the materials expected to be gathered on land through the establishment of plastic collection hubs in the plastic pollution hotspots.

Understanding and mapping the challenges of the informal recycling sector: Based on surveys and investigations through the RiPl project, we estimate that there are roughly 20,000 informal recyclers in Kathmandu. Informal recyclers play a crucial role in collecting plastics that are not collected by the municipality or have been improperly disposed of in nature. They also connect with scrap dealers to facilitate recycling of the materials. Surveys and workshops showed that the majority of informal recyclers are migrants belonging to Indigenous and minority communities. Additionally, women are more involved in this work than men and demonstrate high efficiency in their roles.

Some of the main challenges for the informal recyclers in Kathmandu include:

- Social stigma about their work,
- Safety and occupational health issues mainly related to missing personal protective equipment and lack of access to health and hygiene facilities,
- Gender-specific challenges,
- Formal policies affecting their work without incorporating their input, and
- A need for increased financial literacy.

Increasing the recyclability and value of plastics: Through RiPl, collection hubs for waste materials were established and are now operated or supported by informal recyclers from the local community in Dallu in Kathmandu Ward No. 15 and Budanilkantha in Ward No. 1. The project partners organised capacity building workshops on occupational health and safety, solid waste management, the role of the informal recycling sector in the circular economy, and financial literacy.

Tailormade technologies, such as manual balers that can be easily operated by both men and women, and a high-capacity shredder, have been sourced to enhance the capacity of hub workers. These machines also increase the number of plastic fractions that the collection hubs can handle and sell, thereby preventing open burning or dumping.

A Memorandum of Understanding has been signed with BioComp Nepal to sell multi-layered plastics and other low-value plastics to them for recycling into composite boards. The RiPl project commenced a pilot test of waste-to-fuel and monitoring of the emissions from such operations. DOKO Recyclers will strive to implement this initiative after the project period, aiming to find a better solution for plastic fractions that currently have no recycling options.

Efforts to tackle plastic pollution

The conventional disposal approach, which ignores the importance of recycling and circular economy, has led to plastic pollution. This issue is challenging for policymakers, think tanks, and development planners to solve. A transition to a circular economy is indispensable for safeguarding our planet and ensuring a sustainable future. This economic model emphasises the reuse, repair, and recycling of resources, drastically reducing waste and environmental impact. Hence, its integration into waste management policies is significant in the long run and reduces the likelihood of plastic leakages and pollution.

National efforts

Nepal's Constitution guarantees the right to a clean environment, and the country's 15th Development Plan prioritises reducing plastic pollution and aims to replace polluting plastics with eco-friendly alternatives. However, there is a need to strengthen Nepal's Solid Waste Management Act and rules to specifically address plastic waste. Recent environmental protection laws and the Solid Waste Management National Policy 2022 provide a strong framework for waste management. They emphasise citizen engagement, public-private partnerships, and innovative waste management solutions. Local governments, empowered by the Local Government Operation Act 2017, are responsible for solid waste management, including plastic waste. To further reduce plastic pollution, Nepal has implemented bans on thin plastic bags. The Plastic Bag (Regulation and Control) Directive 2011 and subsequent amendments have restricted the production and use of such bags.

Global Efforts

Global efforts to combat plastic pollution that may impact the informal waste sector in Nepal include:

- The New Plastics Economy Global Commitment, launched in 2018 by the Ellen Macarthur Foundation and the United Nations Environment Programme,
- Intergovernmental Negotiating Committee on Plastic Pollution led by the United Nations Environment Programme
- The World Bank, with initiatives like the Plastic Waste Reduction-Linked Bond.

The RiPl project is taking these processes into account in our project design and outcomes, contributing to the current efforts. In particular, the World Bank's project overlaps with RiPl in terms of topic focus and results-sharing.

Recommendations

Based on the project's research and implementation outcomes, the following constructive recommendations to address plastic pollution in the Kathmandu Valley are proposed:

1. Identifying hotspot areas along riverbanks where plastic waste is most prevalent to better target collection and processing efforts.

2. Developing a replicable model for entrepreneurs to establish collection and processing centers near hotspots and developing financially viable business plan for sustainable operations.

3. Local authorities should engage with the informal recycling sector in collaborative planning, decision-making, and capacity building for managing plastic waste, recognising them as key partners in the solid waste management sector.

4. Implementing and strengthening extended producer responsibility frameworks would provide a clear responsibility for producers to manage the entire lifecycle of their products (for example – packaging waste), including post-consumer waste. By mandating producers to finance and participate in waste collection and recycling systems, the stakeholders involved in the recycling sector could secure consistent funding and support for collection and recycling.

5. Establishing complementary obligations, including waste collection, sorting, recycling, and disposal of plastics, with clear responsibilities for producers and consumers.

6. Strengthening collaboration between local authorities and government bodies to enhance municipal waste pickup services and prevent waste from entering rivers, as well as engaging with social organisations, youth groups, women's groups, and the private sector to raise awareness of waste management.

7. Prioritising technical solutions. This includes exploring innovative strategies for collecting, sorting, and cleaning different plastics; incentivising the research and development for innovative plastic waste management solutions suitable for the local context; and implementing a regulatory framework that supports the integration of new technologies into existing waste management systems.

8. Learning from international best practices to implement effective policies and strategies, tailored to national characteristics and needs, to address plastic pollution challenges. This can help strengthen extended producer responsibility regulations, promoting circular economy principles, and encourage investment in waste management infrastructure.

9. Increased public education on the importance of waste segregation, recycling, and sustainable consumption can lead to higher-quality recyclables entering the market. Partnerships with local governments and community organisations to promote waste segregation and recycling initiatives would help to improve the quantity and quality of materials available to recyclers. Encouraging household participation in recycling programs through awareness campaigns, incentives, and clear guidance on waste sorting can help build a culture of recycling and waste reduction.

10. Multi-layered plastics and low value plastics pose a significant challenge in waste management as they are difficult to recycle. One potential solution lies in utilising these plastics as feedstock for refuse-derived fuel, a processed fuel used by industries such as cement manufacturing. Refuse-derived fuel can replace coal and other fossil fuels, offering a sustainable disposal pathway for multi-layered plastics. Cement industries need a steady and dependable supply of multi-layered plastics and low value plastics for refuse-derived fuel production. Municipalities can address this by diverting such waste from daily municipal collections through a coordinated approach involving segregation and efficient sorting technologies, thereby reducing the burden on landfills.



Handelens Miljøfond

This project is financed by The Norwegian Retailers' Environment Fund under grant agreement 12439.