

Plastic Waste Management in Nepal



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Background

- ❖ Plastics, a derivative of petrochemical processes, accounted for an estimated 4.5% of GhG in 2015 & directly link to emissions creating climate change.
- ❖ Global demand for plastics is estimated to be growing at 4%/year, thus emissions will only increase further
- ❖ By 2050, plastic production is estimated to reach 26 billion tons; half of it will be waste, given that only 9 % of it has so far been recycled.
- ❖ Plastic is extensively utilized in every area of daily existence.
- ❖ It is estimated that over 5 trillion plastic bags are manufactured on a global scale annually.
- ❖ The average individual worldwide utilizes over 300 plastic bags each year.

Plastic Mismanaged

- ❖ South and Southeast Asia and Sub-Saharan Africa are the most concerning regions, where 80–90 % of waste is mismanaged.
- ❖ In practice, policy and regulatory initiatives so far have proven largely ineffective, due to 4 general reasons:
 1. inadequate policy development, financial support, infrastructure, and enforcement capacity.
 2. lack of business models and de-risking mechanisms for developing alternatives to plastic products, recycling and upcycling.
 3. resistance from interests linked to plastics production; and
 4. consumer unwillingness to shift away from plastics.

Challenges & Opportunities for Managing Plastic Waste in the South

- ❖ The simplest response is to **ban single-use plastics**, yet governments throughout the South have attempted this with limited results.
- ❖ For example, like **India, the Bangladesh Government** pledged to **ban the import of plastic waste in 2020**
- ❖ A second response is to **reuse plastic waste** by breaking it down, thus creating “**new**” plastic.

One of the **primary challenges with reducing plastic waste is that plastic materials and their qualities **differ** significantly.**

- ❖ logistics and initial infrastructure investment costs are serious barriers to shifting towards a recycling supply chain.
- ❖ In short, a new supply chain linking input waste providers, **pre-processors (e.g. sorting, washing, shredding, pelletizing)**, recyclers and retail customers has to be forged

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Opportunity

- ❖ There are multiple benefits to plastic **waste upcycling** such as
 - a) capturing the **embedded value of polymers** in plastic waste;
 - b) reducing the need of the **virgin polymer** from fossil fuel; and
 - c) **diminishing the need of long-haul transportation** of virgin materials.
- ❖ emerging upcycling businesses in the South, they are exceptions. Several “demonstration” **houses made of plastic bottles** are starting to receive attention around the world for the potential to use upcycled plastic as **a building material**.

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In Southeast Asia

❖ the Incubation Network and TerraCycle Global Foundation are supporting plastic [upcycling start-ups](#).

In Vietnam, PLASTIC People has garnered regional attention. They receive segregated and cleaned plastic waste from enthusiastic community members across Vietnam and create high quality [boards and beams](#).

❖ Their products are supplied to

- a. high-end clients in the form of [furniture, flooring, walls, roofs, interior materials](#),
- b. and [social housing](#).

In the Philippines, Envirotech Waste Recycling converts SUPs into

- ❖ [school chairs, furniture, planters, garbage bins](#),
- ❖ and construction materials such as [bricks and tiles](#).

Unfortunately, in 2023, the PLASTIC People factory burned down underscoring the health and safety challenges of upcycling flammable plastics.

Fact of Upcycled Material

- ❖ Using plastic waste is better than allowing it to accumulate or burning it,
- ❖ However the costs of accumulation and the environmental externalities are not yet adequately recognized or fully understood.
- ❖ The fact that upcycled materials tend to be **more expensive** than virgin materials (not considering externalities).

Plastic waste in the context of Nepal

- ❖ it has been observed that approximately 16% of the total urban waste consists of plastic materials.
- ❖ This amounts to a daily output of approximately 2.7 tons of plastic waste.
- ❖ Since the early 1990s, Nepal has witnessed the use of heavy quantities of plastic and plastic bags, resulting in significant waste management and environmental challenges.
- ❖ The country is facing issues like
 - inadequate source segregation,
 - substandard waste collection services,
 - and the prevalence of open dumping landfills.

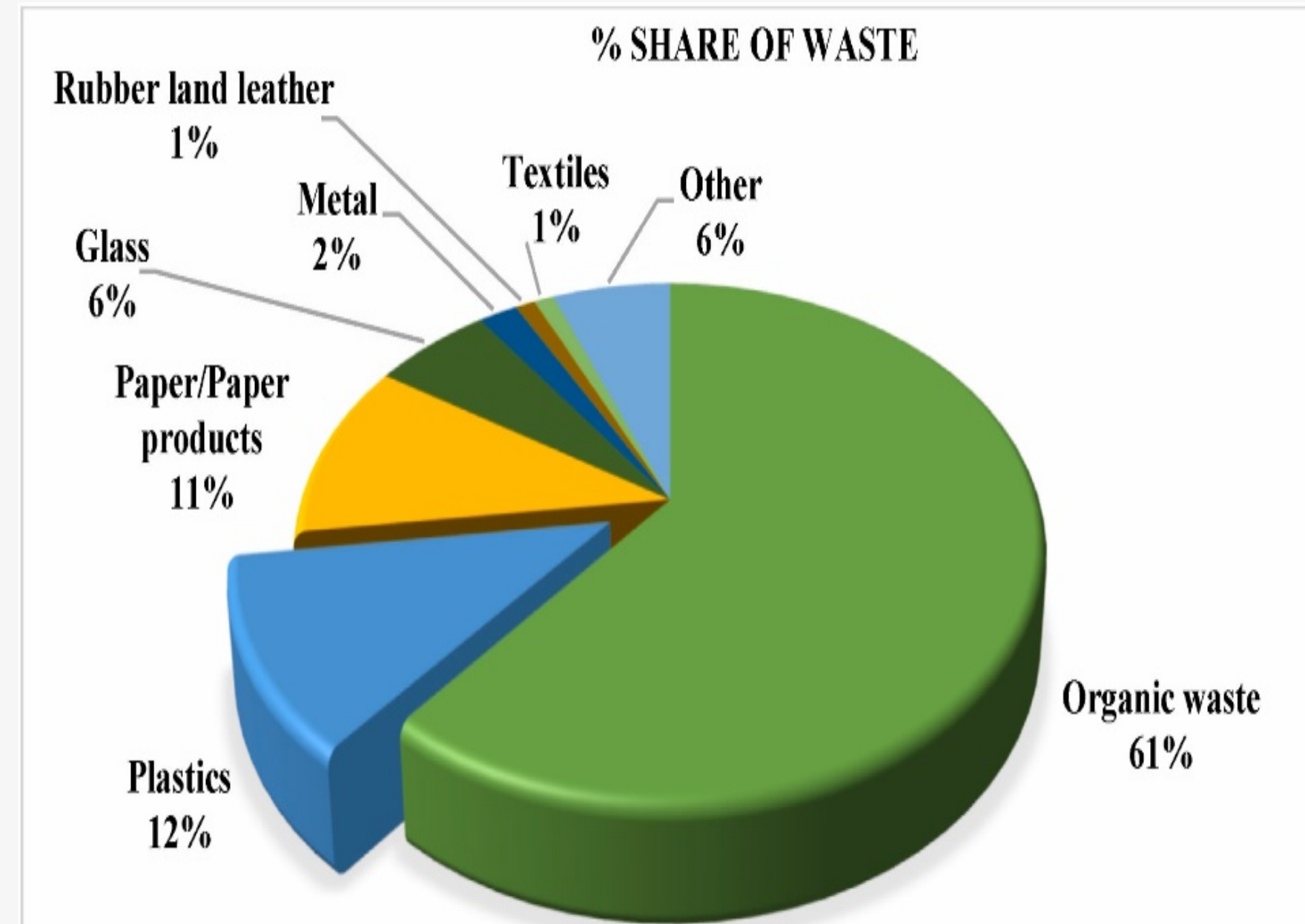


Figure: Composition of solid waste in Nepal

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- ❖ In the fiscal year 2021/22, Nepal imported 380,000 tons of plastic, while domestic production was around 165,000 tons.
- ❖ With inadequate plastic management, approximately 20.7-kilo tons (9 % of total consumption) leak into the environment annually due to the absence of effective policies
- ❖ Nepal lacks a
 - ❖ plastic sorting and
 - ❖ collection system,especially acute in rural areas, thus leading to an accumulating landfill of waste, despite long efforts to ban plastic bags

Household use and per capita use

- ❖ Nepalese households used and estimated roughly 28,000 single-use plastic bags in 2013 forming an estimated 11 % of solid waste in the Kathmandu Valley, and
- ❖ approximately 204 tons of plastic waste daily across the country. Per capita use of them doubled from 2009 to 16

Microplastics in Mt. Everest

- ❖ Microplastics have been found in the snow of Mt. Everest at a concentration of ~30 microplastics/Liter (MP/ L) and ~1 MP/L in stream water

Amount and the type of plastics imported into the country

Amount

❖ Nepal's imports of plastic products and items were worth US\$627.96 million in 2021, according to the United Nations COMTRADE database on international trade.

Types of plastics imported:

Nepal imports

- i. polyethylene,
- ii. polypropylene,
- iii. and polyvinyl chloride as raw materials for plastics manufacturing.

Plastic waste generated

- ❖ Kathmandu alone uses up to 4,800,000 plastic bags a day,
- ❖ and 800 tons of this non-degradable material is dumped in landfill sites.
- ❖ One plastic bag takes 500 years to completely biodegrade,

Adverse Possible Impact:

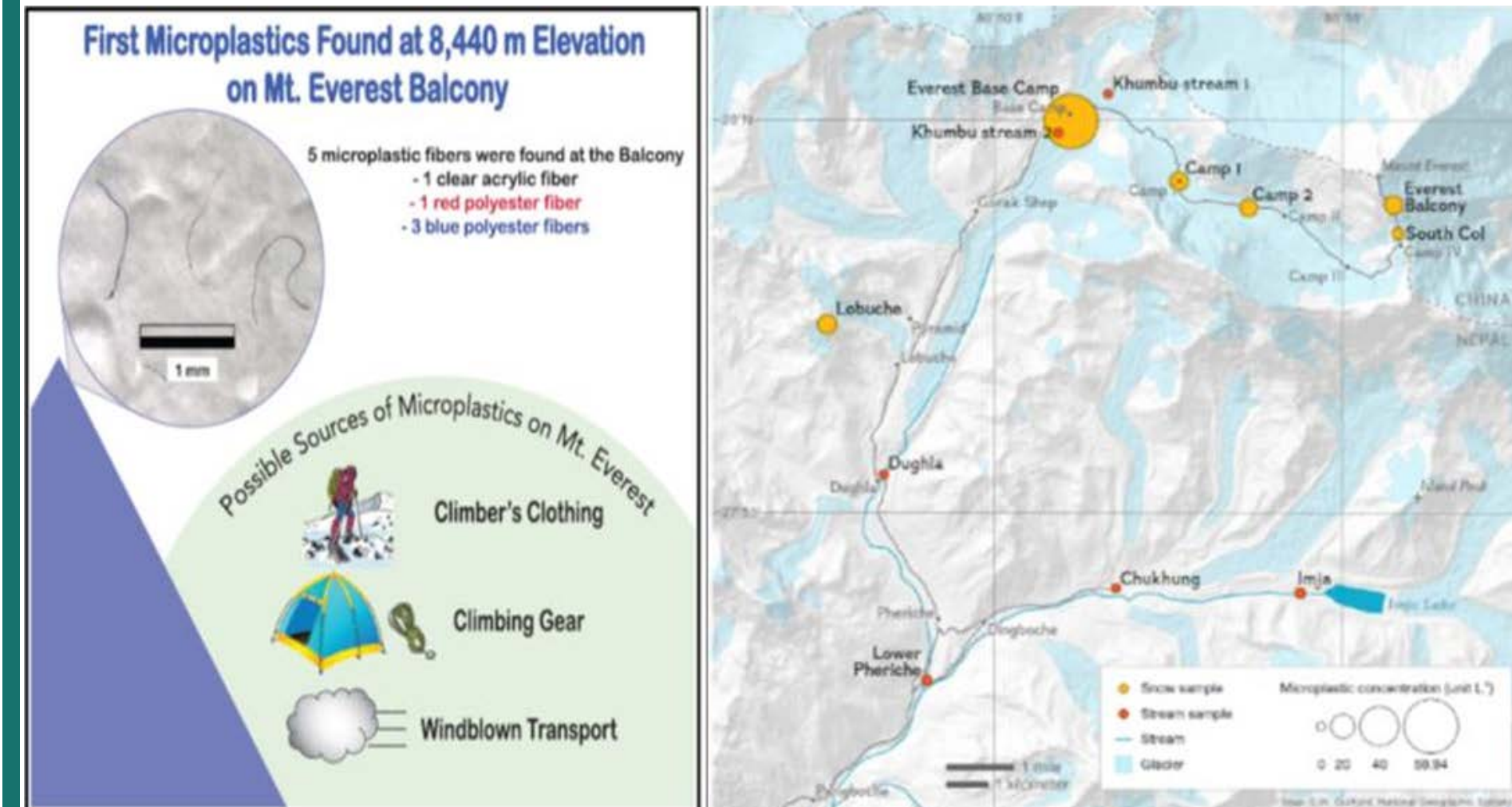
They have now contaminated

- ❖ water, soil, and air and
- ❖ accelerated the climate crisis.

Plastic end in the environment

- ❖ In Nepal, plastic accounts for 16% of urban waste,
 - which means 2.7 tons of daily plastic waste production.
- ❖ Plastic thrown haphazardly into rivers and streams cause
 - flooding and pollution,
 - affects the water cycle, and
 - harms aquatic species and wildlife in the region.
- ❖ Microplastics have been found in Nepal's rivers and have been traced to human blood.

- ❖ Microplastics were also traced in the high Himalayas over 8400 msl on Mount Everest, the peak of the world.
- ❖ Microplastics were found in snow and stream water samples on Mt. Everest.



Recycling centers for plastic waste

- i. Himalayan life plastics recycling plant - Pokhara
- ii. Doco Recyclers- Bhaktapur
- iii. Enviroplasts Nepal pvt.ltd- Hetauda
- iv. Paper, plastic & steel recycle- Kathmandu
- v. Plastic crusher factory- Biratnagar
- vi. Teku Recycling Materials Collection- Kathmandu
- vii. Shirijansip Sewa pvt.ltd- Lalitpur
- viii. Upcycle Nepal - Kathmandu
- ix. PSD Nepal- Kathmandu
- x. Himal Recycling Centre-Birgunj
- xi. Thulo Kabadi Recycling-Kathmandu
- xii. Green Valley Recyclers - Pokhara
- xiii. Rijal Kawadi Centre- Bharatpur
- xiv. Kabadi Center, Kathmandu
- xv. Thulo Kawadi – Recycling
- xvi. Tankeshwor Kawadi

Recycled plastic amount

- ❖ 1200 tons of plastic is recycled annually in Nepal.
- ❖ Up to seven plastic types can be found in dumping sites, and the lowest-grade plastics reduce the lifespan of the landfills.
- ❖ However, Nepal does not have extended producer responsibility schemes for the manufacturers to recycle plastic items.

Types of Plastics recycled

The types of plastics recycled in Nepal are:

- ❖ PP (Polypropylene)
- ❖ PVC (Polyvinyl Chloride)
- ❖ MLP (Multi-layered Plastics)
- ❖ High Density Polyethylene (HDPE)

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Waste disposal Techniques

Incineration or chemical recycling facility

- ❖ does not have incinerations or chemical recycling facilities for exclusive plastic waste. Some of the hospitals do have incinerators for medical waste.

Open burning of plastics

- ❖ open burning of plastics is a huge problem in our country.
- ❖ In rural areas, plastics are also used as a fuel for cooking meals.
- ❖ Even in other areas, people were using plastic for firing their cooking stoves.

PLASTIC POLICY

- i. Nepalaese Constitution, Article 30, Every citizen has the right to live in a clean & safe environment as a fundamental right.
- ii. 15th Five years plan (15th July 2019 to 15th July 2024) clearly had the provision to addresses plastic pollution issues. It clearly obliged the government to prevent the production, use, restriction, and reuse of plastic-containing products, and alternative environment-friendly ways to replace plastic have been sought.
- iii. Environment Strategy 2076, pollution-prone plastic use needs to be replaced by an alternative environmental-friendly means - related strategy & action plan adopted.
- iv. Plastic Bag (Monitoring & Control) Directive 2068 has the provision of restricting the import, storage, sale, distribution, and use of plastic bags of less than 20 microns. Furthermore, central and district level monitoring mechanisms were also envisioned for effective implementation. This guideline became not effective because of an unpredicted earthquake in 2015.
- v. Furthermore, in order to strengthen once again the fight against plastic pollution, GON has once again banned the restriction of production, strategy, sales, distribution, and use of plastic bags of <40 Micron, i20''*35''effective from 2072/11/1 BS, which was not effective because of the earthquake.
- vi. Once again plastic bag control was prioritized and listed among 100-point priority actions of MoFE.
- vii. Solid Waste Management National Policy 2022
- viii. National Environment Policy, 2019
- ix. National Climate Change Policy, 2019
- x. Environment Protection Act 2019 and its Regulation 2020
- xi. Local Government Operation Act 2017
- xii. Solid Waste Management Act 2011 and its Regulation 2013
- xiii. Public Health Service Act 2018
- xiv. Industrial Enterprises Act 2020
- xv. Provincial Environmental Protection Act and Regulations, including some municipalities that have exclusive plastic Acts and based on which they have banned the production and uses of plastics in their jurisdiction (e.g. Dhangadhi Municipality)
- xvi. Solid Waste Management Act, Environment and Natural Resource Protection Act at Local Level
- xvii. Environment Standards (e.g. standards for incinerators, air, water, industrial effluents, emission standards from some industries etc.)
- xviii. Healthcare Waste Management Guidelines, 2014 and Healthcare Waste Management Standards Operating System 2021
- xix. Plastic Bag Ban Action Plan 2021
- xx. Order to Ban the production, import, sale, distribution and storage of plastic flowers 2022
- xxi. Annual Policy and Program 2023/24 etc.

New Plastic Policy

New policies under discussion and formulation specifically on plastics issues are:

- i. Reducing the use of plastics
- ii. Enhancing the reuse of plastics
- iii. Recycling plastics
- iv. Disposal plastics

Note: there is no policy and legal frameworks in place to control the health impacts of plastics, in particular, chemical ingredients in plastics.

Plastic Recycling

- ❖ Nepal does not have an extended producer responsibility mechanism to recycle plastics. However, the Solid Waste Management Act 2011 and the Solid Waste Management Regulation 2013 do have provision on recycling, but it is not specifically for plastic waste.
- ❖ there are no requirements to separately collect plastic waste.
- ❖ there is no prohibition or restriction on certain plastics.
- ❖ there are no laws that require that certain chemical contents are not exceeded in plastics.
- ❖ there is no occupational exposure laws related to plastics.

Government policy on tracking the chemicals used in Plastics

- ❖ Country does not have policies that allow tracking information on the chemicals used as plastic ingredients.
- ❖ The Consumer Protection Act from 2018 has the clear provision of labelling ingredients of the products

Policy for making plastic waste generators responsible for the waste

❖ Country does not have a policy for making plastic waste generators responsible for the waste.

However:

The Solid Waste Management Act from 2021 and its Regulation 2013 have clear provisions that the responsibility of the management of waste lies on its generators²⁹. It defines the following:

1. The local body shall be responsible to manage or cause to manage the solid waste under this Act.
2. Notwithstanding anything written in Sub-section (1) the responsibility for the processing and management within the set standard of harmful waste, health institutions related waste, chemical waste or industrial waste shall be of the individual or body producing such solid waste.

Plastic waste management

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Plastics waste management

Plastic to Ghar (P2G)

- ❖ The P2G project proves that plastic upcycling is a technologically- viable solution to plastic waste management.
- ❖ The main goal of the P2G approach is to reduce plastic pollution through the circular economy of plastic waste upcycling.
- ❖ In the long term, the project aims to achieve this goal by helping the locals build the local innovation capacity and establish the innovation ecosystem:
 - ❖ use existing machinery to develop a wide range of new products,
 - from insulation to roof types to emergency shelters, that are attractive to consumers.
 - This offers the possibility secondary market for plastic waste, especially valuable in the global South's rural areas where the lack of
 - ✓ finance,
 - ✓ technical knowhow and
 - ✓ economies of scale inhibit conventional waste management solutions.

THANK YOU

● FOR YOUR KIND ATTENTION

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