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PLASTIC WASTE CHARACTERIZATION REPORT

creasion
Envisioning the Change

NRRA
Nepal Recollectors & Recyclers Association

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Abbreviations

SWM	Solid Waste Management
ADB	Asian Development Bank
UNDP	United Nations Development Programme
MTD	Metric Tons Per Day
CSR	Corporate Social Responsibility
IEA	Industrial Enterprise Act
NRRA	Nepal Recollectors and Recyclers Association
PET	Polyethylene terephthalate
HDPE	High Density Polyethylene
LDPE	Low density polyethylene
PVC	Poly Vinyl Chloride
KII	Key Informant Interview
CREASION	Center for Research and Sustainable Development Nepal

Introduction

An imperative issue that Nepal is facing is **Plastic Waste Management** which is a part and parcel of Solid Waste Management. With most of its metropolitan cities and municipalities stepping into the trajectory of rapid urbanization, the dependency on plastic goods is increasing daily.

The pervasive practice of dumping plastic waste marks a significant issue for metropolitan cities in Nepal. The major metropolitan cities have started experiencing the stress of rapid urbanization and the additional practice of dumping waste has insinuated flooding in areas where rivers run through residential areas, waterlogging in parks and open spaces, and water contamination. These factors can cause degradation of sanitation for the population, and further affect the environment within and in the periphery of metropolitan areas.

Keeping these issues in mind, the Federal Government of Nepal has enacted the Solid Waste Management Act (SWM) 2011 and Solid Waste Management Rules 2013 to maintain a clean and healthy environment by reducing the adverse effects of solid waste. It also poses threat to human health with the spread of diseases, land/soil pollution, and air pollution. These policies placed the local bodies accountable for the management of solid waste and appropriate autonomy to strategically tackle the issue.

This report provides an overview of the data on different types of plastic waste in Nepal.

Background on Nepal’s plastic waste management

The challenge of managing plastic waste in the cities of Nepal has been getting worse due to increased urbanization, rising fast-moving consumer goods consumption, and rising imports of plastic products. As per a publication by Asian Development Bank (2013), the municipal plastic waste composition in average accounting to households, commercial generation, and industrial generation, is 16 percent. Furthermore, analysis can approximate Nepal's share of plastic waste falls between 11 and 16 percent plastic waste (UNDP, 2021).

In FY 21/22 alone, $9.5 million of plastic materials and articles were imported to Nepal. A study conducted by the World Bank (2014) stated that 600 Metric Tons per Day (MTD) of plastic waste is dumped in landfills across Nepal. Additionally, due to the limited number of recovery and recycling plants in Nepal, most plastic waste is either burnt or dumped along the riversides. The same report highlighted that the main reason for open burning and open dumping (especially along the river areas) is due to the lack of a strong waste collection and management system.

The role of the private sector in using and producing plastic is predominant to manage plastic waste. To contribute to plastic waste management, there is no direct path that can contribute to the provision of Corporate Social Responsibility (CSR) as per the Industrial Enterprise Act 2016 (IEA, 2016). It is mandatory to allocate at least one percent of the annual profit for CSR as mentioned by the IEA.

Methodology

Several private waste enterprises are operating throughout Nepal. For this research, CREASION and Nepal Recollectors and Recyclers Association (NRRA) conducted Surveys and Key informant interviews with 10 private waste enterprises throughout the country, to attain the data for the estimated tonnage and average percentage of different types of plastic waste (PET, HDPE, LDPE PVC) in Nepal. During the study, the team could not pinpoint the data for Ichchhakamana, Golanjor, and Bardibas, therefore, the team derived a composition ratio from the plastic percentage ratio provided in the UNDP (2021) report "Exploring the Avenues of Plastic Waste Management". In Figure 1, the composition ratio was derived out of the total municipalities in Nepal, which can be further applied to the given location after deriving the total tonnage of plastic waste in approximation.

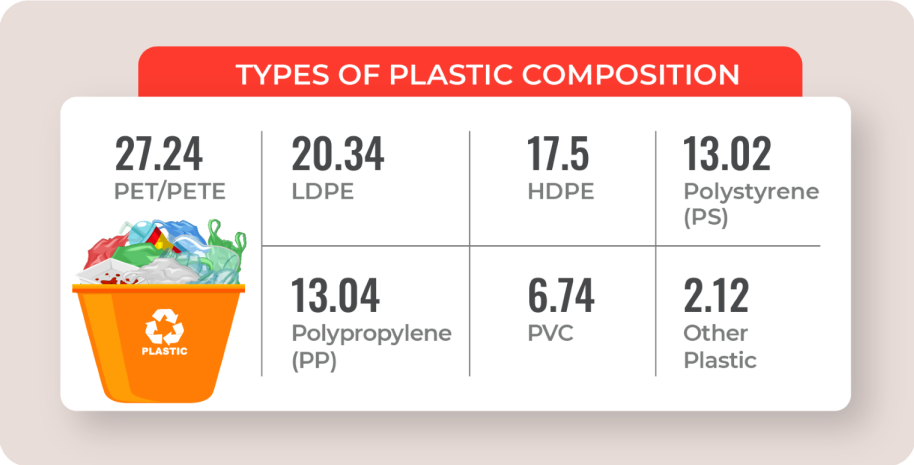

Figure 1: Plastic Composition Ratio

After the surveys and Key Informant Interviews (KIIs) were conducted, the plastic waste composition was derived the team was able to create the plastic characterization ratio in the targeted locations for Kathmandu Valley, Ichchhakamana, Golanjor, Bardibas, Bharatpur, and Hetauda.

In **Table 1**, the plastic waste characterization showcases the composition ratio of all types of plastic waste found in the given locations.

Table 1: Plastic Waste Characterization [Monthly Average (% and Tonnage)]

The following data tables display results from the 2022/23 Disposal Facility-based Waste Characterization Study supported by the Plastic Waste Composition Ratio according to the location.

	BHARATPUR	BARDIBAS	GOLANJOR	ICHCHHAKAMANA	HETAUDA	KATHMANDU VALLEY	
PLASTIC	TONNAGE						TOTAL PLASTIC WASTE
PET	153.11604	30.61776	37.26432	10.3512	147.096	1569.024	1947.46932
LDPE	114.33114	22.86216	27.82512	7.7292	109.836	1171.584	1454.16762
HDPE	98.3675	19.67	23.94	6.65	94.5	1008	1251.1275
Polystyrene (PS)	73.18542	14.63448	17.81136	4.9476	70.308	749.952	930.83886
Polypropylene (PP)	73.29784	14.65696	17.83872	4.9552	70.416	751.104	932.26872
PVC	37.88554	7.57576	9.22032	2.5612	36.396	388.224	481.86282
Other Plastic	11.91652	2.38288	2.90016	0.8056	11.448	122.112	151.56516
TOTAL	562.1	112.4	136.8	38	540	5760	7149.3

Conclusion

The plastic waste characterization report reflects the intriguing development in the plastic composition ratio that can provide a base for programmatic activities in development by CREASION. The core of strategic planning falls on the acquisition of data that can shape the projected milestones and limitations of the intended program or intervention.

The team strives to forecast more insights with further developments as CREASION expands its horizons to establish a strong grip on the plastic waste scenario in Nepal. Diversification of data is required as a section of the study required exploration of secondary data and reverse engineering of the relationship of targeted location demography, per capita income, consumption of plastic, and output of plastic waste.

Therefore, the presentation of plastic characterization shows the trajectory of plastic waste composition for the targeted locations of Kathmandu Valley, Ichchhakamana, Golanjor, Bardibas, Bharatpur, and Hetauda.

SITE PICTURES

References

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