



Ministry of Housing
and Urban Affairs
Government of India



SUSTAINABLE
DEVELOPMENT
GOALS

A Study Of Knowledge, Attitudes, and Practices On Solid Waste Management

In 10 Wards of Dehradun



TABLE OF CONTENTS

INTRODUCTION	2
OBJECTIVE	3
EXECUTIVE SUMMARY	3
STUDY METHODOLOGY	4
Questionnaire Design	4
Sampling Design & Procedure	4
Data Collection	5
RESULTS & FINDINGS	6
Knowledge: Understanding of Solid Waste Management	6
Attitude: General Attitude & Behaviour Towards Waste Management	8
Practices: Current Solid Waste Management Practices	10
CONCLUSION	12
ANNEXURE	13
REFERENCES	19

INTRODUCTION

The state of Uttarakhand, with an estimated population of 11.09 million, generates about 1458.46 metric tonnes of solid waste per day, out of which 1378.99 metric tonnes (94.5%) is collected, and 779.85 metric tonnes (56.55%) is treated.⁽¹⁾ There are 91 Urban Local Bodies (ULBs) and 09 Cantonment Boards that are responsible for implementing the Solid Waste Management Rules, 2016, in the state.

Uttarakhand has secured the third rank in the state category with less than 100 Urban Local Bodies with a score of 2245 in the latest Swachh Survekshan 2022 rankings issued by the Ministry of Housing and Urban Affairs, Government of India.⁽²⁾ Meanwhile, the capital city of Dehradun has secured the 69th position with a score of 4524.48 in the category of cities with a population between 1 lac to 10 lac in the latest rankings, registering an improvement of 13 places from the 2021 ranking of 82nd. The city is divided into 100 wards which generates about 290 metric tonnes of solid waste per day, of which 250 metric tonnes is collected and treated.⁽³⁾

Waste Warriors Society has been actively working in the Dehradun region for the past eight years, generating awareness among citizens about responsible solid waste management practices and working with the government for successfully implementing the Solid Waste Management Rules, 2016. Waste Warriors Society has also been successfully operating a Material Recovery Facility (MRF) in Dehradun since 2019 and has managed to collect and process over 1166 MT of dry waste from the region.

To bolster these efforts, Waste Warriors Society has collaborated with the United Nations Development Programme (UNDP) and HDFC Bank Parivartan, the CSR wing of HDFC Bank Ltd., to raise awareness in 10 wards of Dehradun. Under this program, citizens of these wards will be sensitized about responsible solid waste management through community engagement and outreach. One of the significant aspects of this program is conducting a Knowledge, Attitude, and Practices (KAP) survey in ten wards of Dehradun and collecting information on the current status of solid waste management in the area.

The details of the wards selected under the program are as follows:

S.no	Zone	Ward number	Ward Name	Population (Nos.)
1	Zone - 1	4	Rajpur	8,726
2	Zone - 1	6	Doon Vihar	7,302
3	Zone - 1	7	Jakhan	6,788
4	Zone - 2	20	Race Course (North)	7,046
5	Zone - 2	21	MKP	6,902
6	Zone - 2	28	Dalanwala (North)	7,129
7	Zone - 2	30	Dalanwala (South)	7,334
8	Zone - 4	86	Sevlakala	8,643
9	Zone - 5	87	Pitthuwala	7,395
10	Zone - 5	97	Harrawala	7,561
			Total	74,826

OBJECTIVE

The objective was to conduct a rapid Knowledge, Attitudes, and Practices (KAP) survey concerning solid waste management in the selected ten wards of Dehradun.

The specific objectives of this survey were to:

- Assess the current status of waste management in these wards regarding generation practices, source segregation levels, waste collection services, and collection frequency.
- Evaluate knowledge of the community by asking questions about different categories of waste, importance of source segregation, recycling, and their understanding of the Swachh Bharat Mission, among other questions.
- Get insights on the general public's behaviour and attitude towards waste, and its management.
- Analyse responses and organize awareness programs and community engagement initiatives based on the findings from the study.

EXECUTIVE SUMMARY

Under this project, Waste Warriors Society aims to raise awareness of responsible solid waste management in 10 wards of Dehradun. Before starting with awareness raising, it is essential to understand the baseline status of solid waste management in the area. In order to understand this, a rapid Knowledge, Attitudes, and Practices survey was conducted in these selected wards. A detailed awareness plan can be drafted to address issues based on the current status of solid waste management in these areas.

A questionnaire was prepared using Google Form and data was collected from 750 units, 75 surveys per ward. The number of units to be surveyed was selected using a stratified random sampling method. These included different types of establishments such as households, Resident Welfare Associations (RWA), high-rise apartments (HRA), and businesses.

The survey showed that while door-to-door waste collection services are available in the areas, and the majority of the community are using these services, the average level of source segregation is only 46%. The observations further go on to show that there is a lack of knowledge and information regarding solid waste, its life-cycle, recyclability, and management. The findings also show that the community is open to learning about solid waste management and are willing to participate in engagements associated with increasing their level of knowledge. Community-focussed IEC will help improve their perception and behavior towards waste.

STUDY METHODOLOGY

The study methodology was divided into three main parts:

1. Questionnaire Design
2. Sampling Design and Procedure
3. Data Collection

Questionnaire Design

The questionnaire consisted of 21 questions/parameters in total (refer [Annexure](#)). The questionnaire was designed to capture the following aspects:

1. Personal details such as name, age, gender, qualification, profession, and address of the respondent.
2. Facility status – to classify the facility as a household, bulk waste generator, business, or a RWA.
3. There were ten questions based on solid waste management, designed to cover the aspects of knowledge, attitudes, and practices.

The survey was tested randomly before deployment to assess the duration of the survey per respondent. It is important to keep the questionnaire concise to retain audience attention and get accurate responses. On average, it took about 5 minutes to record a response during the test.

Sampling Design and Procedure

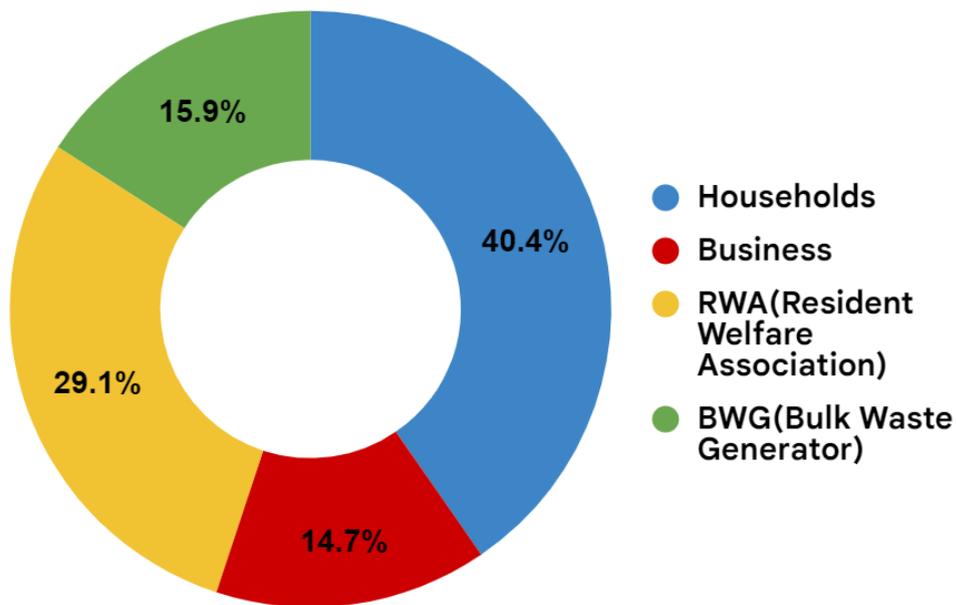
For this survey, a stratified random sampling method was used to quantify the number of respondents. The stratified random sampling method divides the population into smaller groups based on a few characteristics. From these smaller groups, surveys are conducted on a random basis.

The ward population was divided into four categories based on the facility status:

1. Households
2. Bulk Waste Generators (BWG)
3. Businesses
4. RWA/HRA

The estimated total population of these ten selected wards is 74,826. The sample size of 750 units is 1% of the total population; 75 surveys per ward. The team surveyed 303 households, 119 bulk waste generators, 110 businesses, and 216 people living in RWAs and HRAs.

Facility Status	No. of Survey	% Of Total
Households	303	40.4 %
Bulk Waste Generators	119	15.9 %
Businesses	110	14.7 %
RWA/HRA	218	29.1 %
Total	750	100%



Data Collection

The questionnaire was prepared on Google Forms. Local community mobilizers were hired and trained to collect data in real-time through their smartphones.

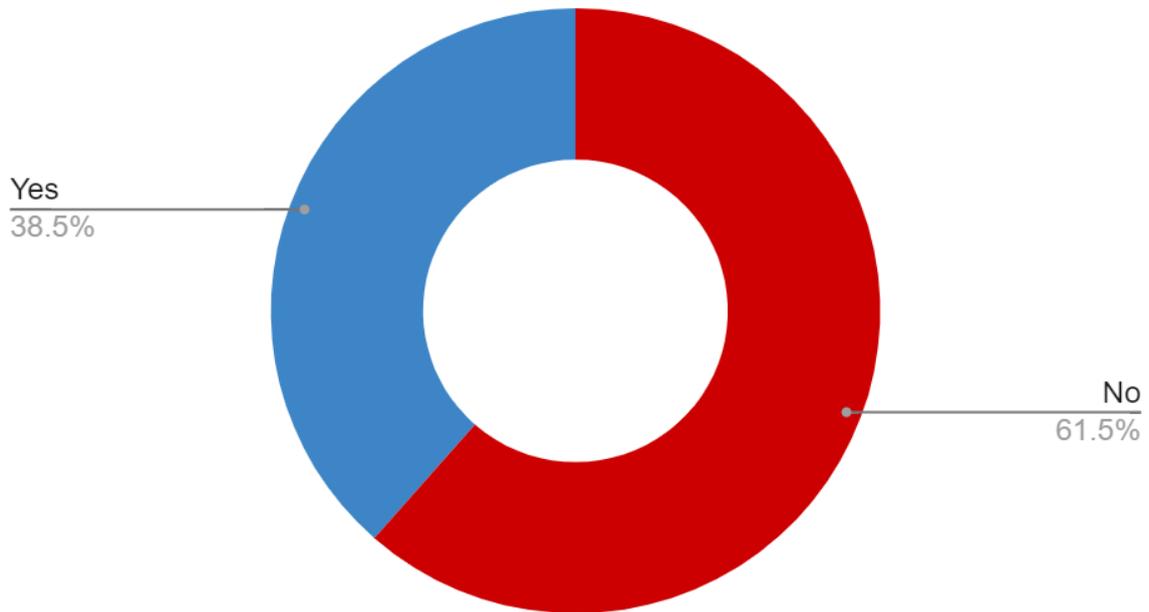
The timestamps and the responses were recorded in Google Sheets, linked to the Google Forms. The data was analysed on the same sheet. The survey started on 5th December, 2022 and ended on 3rd January, 2023.

RESULTS and FINDINGS

Knowledge: Understanding of Solid Waste Management

The survey showed that only 38.5% of respondents knew about the three categories of waste, i.e. dry, wet, and domestic hazardous. In comparison, 61.5% of the respondents either needed to learn about the categories or only knew about dry and wet, and not about domestic hazardous.

Do you know about the three categories of household waste for waste segregation or the color coding system of waste?

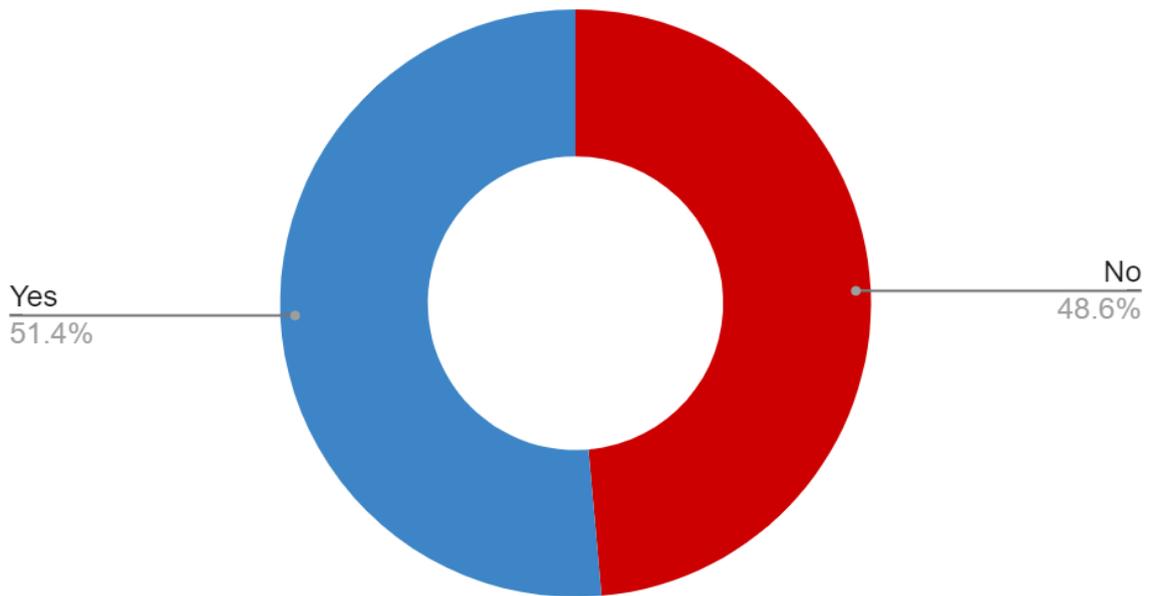


It was found that only half of the respondents (51.4%), knew about the importance of segregating waste at source, while the remaining (48.6%), were unaware of the same.

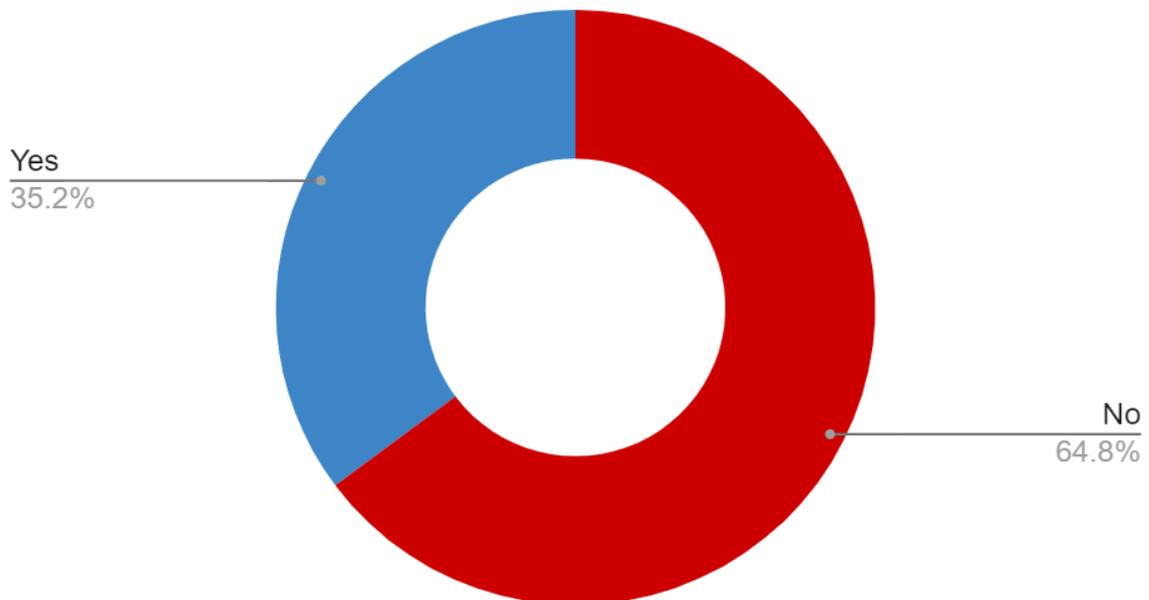
In regards to collection and transportation of waste, only 35.2% of the respondents knew what happens to the waste after it is picked up from their premises.

Positively, 77.3% of the respondents were aware about the Swachh Bharat Mission, whereas 22.7% did not know.

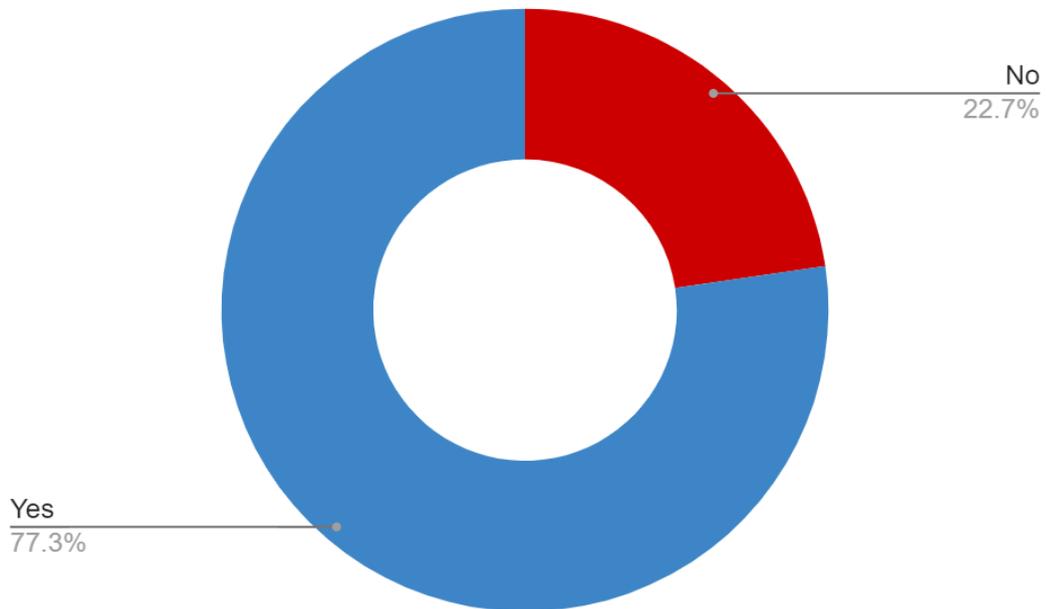
Do you know the importance of source segregation of waste?



Do you know what happens to the waste after being picked up from your place?



Do you know about Swacch Bharat Mission?

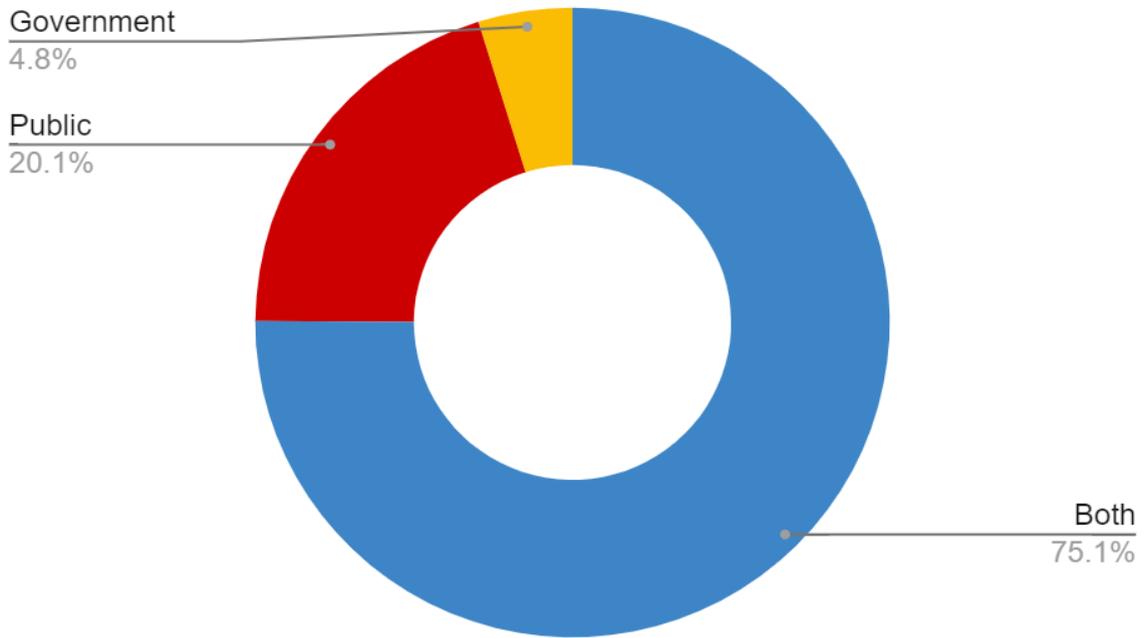


Attitude: General Attitude and Behaviour Towards Waste Management

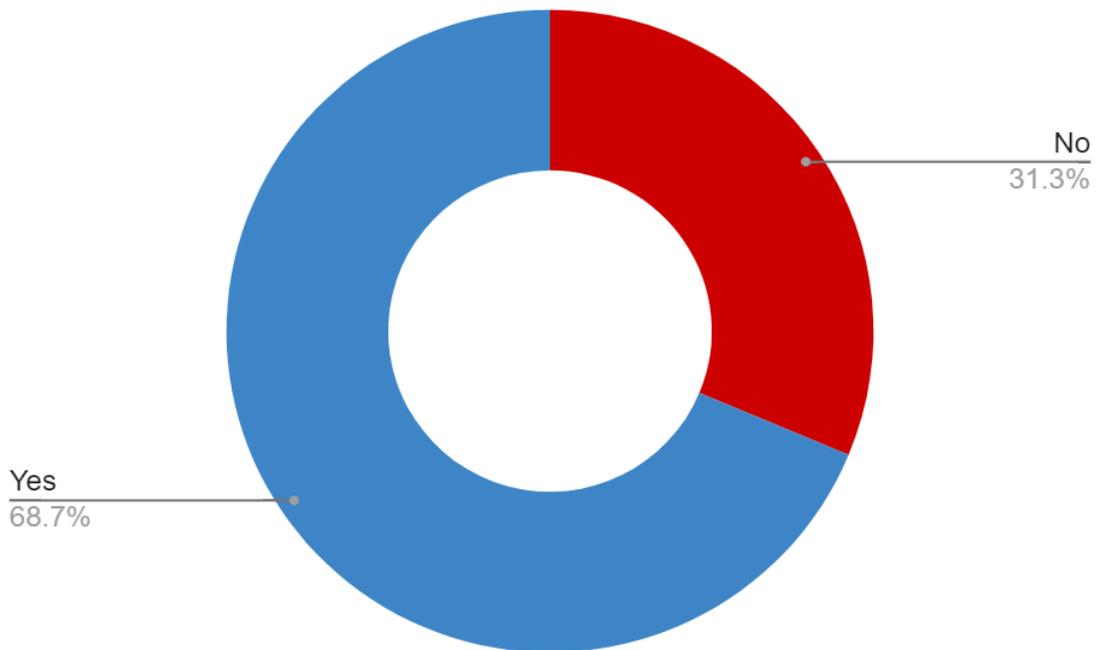
The study showed that 75% of the respondents feel that the responsibility of proper solid waste management has to be shared between public and government, whereas 20% believe that it is the responsibility of the public alone. A meager 4.8% of the respondents felt that ensuring proper solid waste management practices is the sole responsibility of the government.

When asked whether people are open to learning and gaining knowledge about solid waste management, 68.7% of the respondents were on board, whereas 31.3% were not inclined.

In your opinion, whose responsibility is proper solid waste management?



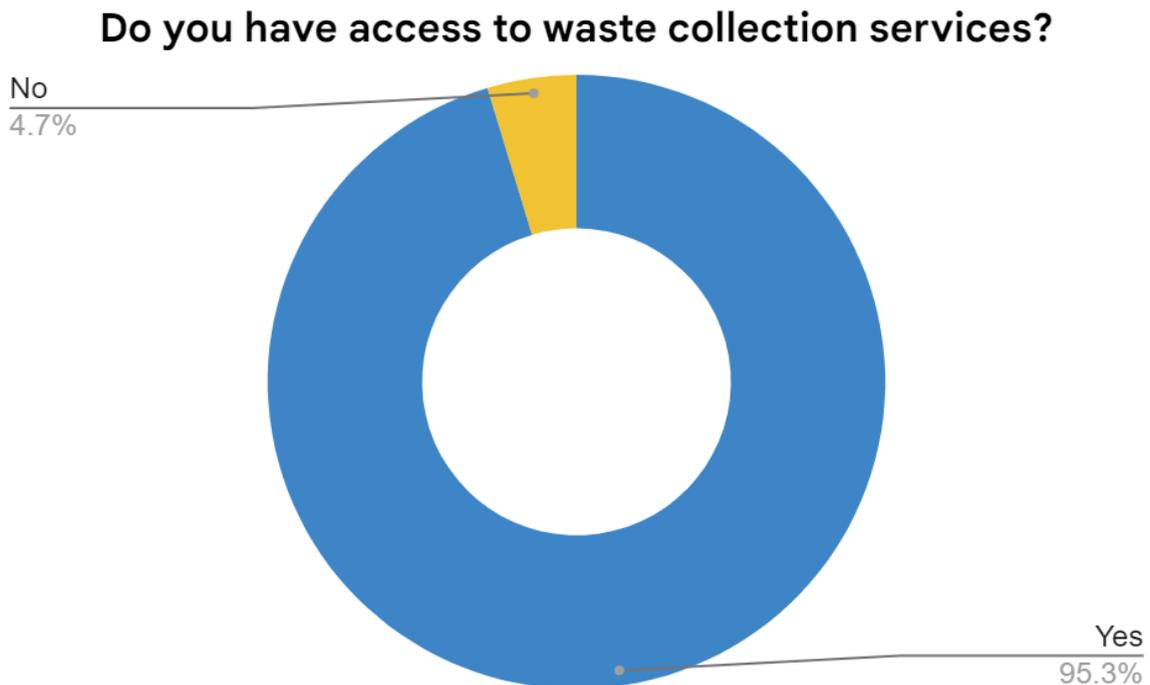
Openness to learn about solid waste management?



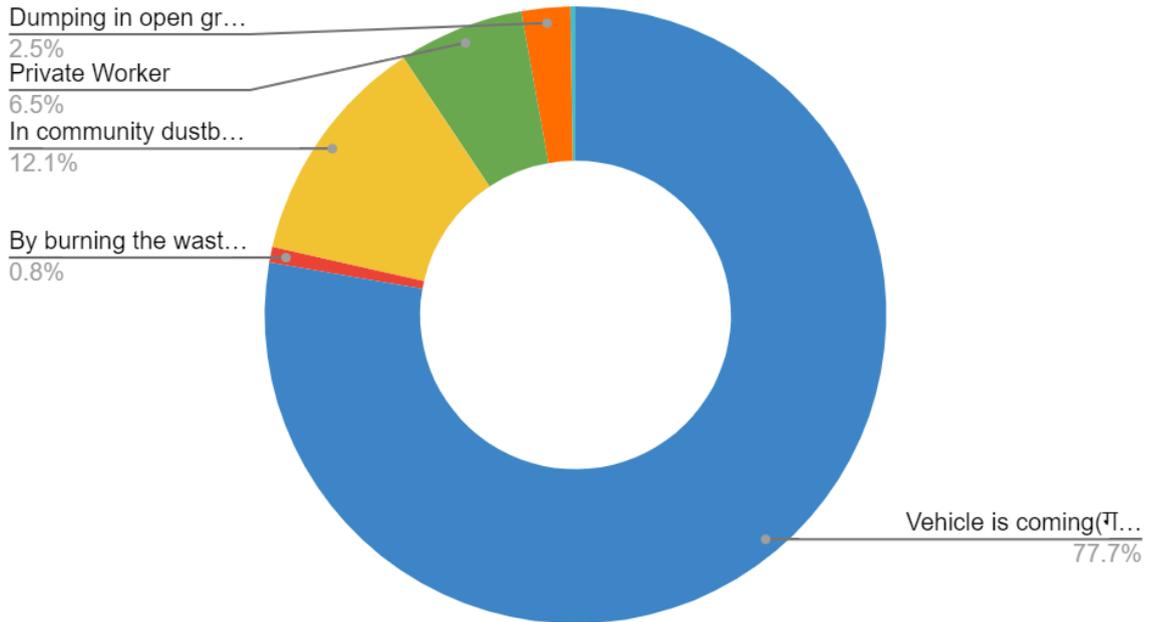
Practices: Current Solid Waste Management Practices

After analysing the responses to the questions based on the current waste management practices, it was found that 95.3% of the respondents have access to waste collection services.

The study showed that 77.7% of the respondents are giving their waste to collection vehicles being operated by Nagar Nigam, Dehradun; 12.1% of the people use community dustbins placed by the ULB, and 6.5% were availing services of private workers and contractors to dispose of their waste.

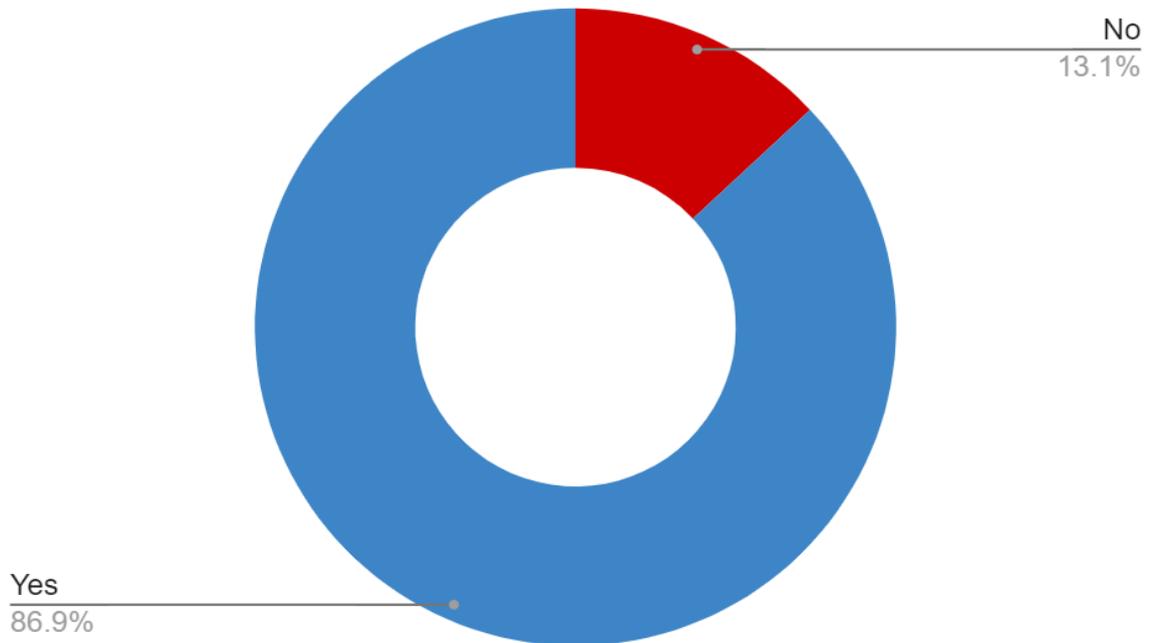


How do you dispose your waste?

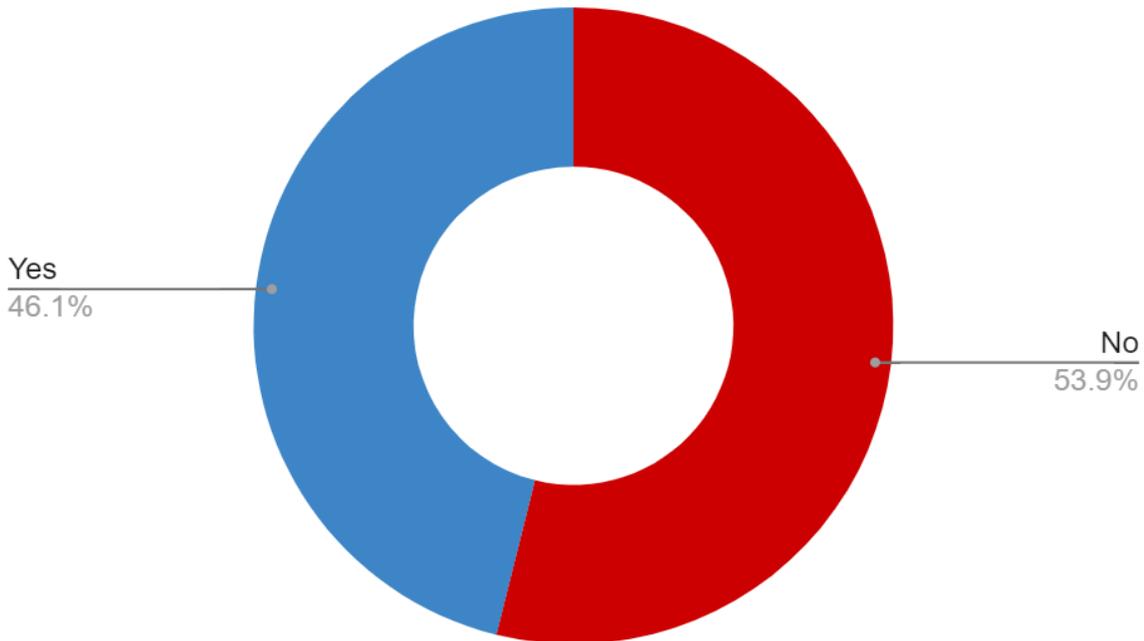


It was found that 87% of the respondents were handling their own waste vs a house help or house aide managing household waste. The study also showed that 46% of the respondents were segregating their waste at the source, into dry and wet, while the other 54% were disposing it in mixed form.

Do you handle your own waste?



Do you segregate waste at source?



CONCLUSION

The study showed that the surveyed communities need access to greater knowledge regarding solid waste. This is more relevant when the categories are diversified to include domestic hazardous, which the communities are not completely aware about. Majority of the areas surveyed have access to doorstep waste collection, through either Nagar Nigam's waste collection vehicle or privately hired/informal collectors. However, access to service is not translating into segregation at source. Access to knowledge and information will lead to better understanding of the importance of source segregation, and a material's life-cycle. In addition to raising awareness among waste generators, it is essential to include the collection staff in training and in efforts to build their capacity. Upon visualizing the journey of waste from source to aggregation to processing, people (both generators and collectors) tend to change their behaviors towards consumption and disposal.

It will be helpful in engaging with the community knowing that they understand the importance of their responsibility in proper waste management of their city. Thus, if there is effective and efficient knowledge sharing, the community can be transformed into citizens who are taking better responsibility for their waste, mobilizing their families and neighbors in doing the same, and importantly, expect and demand better services and infrastructure from the ULB. Fundamentally, the city requires for its residents to segregate waste at source for reduced dumping and landfilling, and greater resource recovery. Targeted community engagement, from the information gathered from this study, will lead to increased knowledge, better attitudes, and residents practicing source segregation and actively participating in keeping their wards clean.

ANNEXURE

12/29/22, 1:18 PM

KAP Survey - WW | UNDP | 2022

KAP Survey - WW | UNDP | 2022

KAP SURVEY FORM

* Required

1. **1. Name of the person collecting data ***

2. **2. Date of survey ***

Example: January 7, 2019

3. **3. Ward Number ***

Mark only one oval.

- Ward No. 4 - Rajpur
- Ward No. 6 - Doon Vihar
- Ward No. 7 - Jakhan
- Ward No. 20 - Race Course North
- Ward No. 21 - MKP
- Ward No. 28 - Dalanwala North
- Ward No. 30 - Dalanwala South
- Ward No. 86 - Sevlakala
- Ward No. 87 - Pithuwala
- Ward No. 97 - Harrawala

https://docs.google.com/forms/d/1o-1hTcQ__YJF5WKULEfS2JeB26fRgg9MGUYAbgWCj3E/edit

1/7

4. 4. Address *

5. 5. Facility Status *

Check all that apply.

- Household
- Business
- RWA(Resident Welfare Association)
- BWG(Bulk Waste Generator)
- Other: _____

6. 6. Name of the respondent? (प्रतिवादी का नाम) *

7. 7. Name of the Establishment (संस्थान का नाम)

Only Applicable for RWAs, Bulk Waste Generators & Businesses (केवल आरडब्ल्यूए, बल्क वेस्ट जेनरेटर और व्यवसायों के लिए लागू)

8. 8. Age (आयु) *

9. 9. Gender (लिंग) *

Mark only one oval.

- Male
- Female
- Other: _____

10. 10. Qualification (योग्यता) *

Mark only one oval.

- Illiterate
- Secondary (10th pass)
- Intermediate (12th pass)
- Graduate
- Post Graduate

11. 11. Profession (पेशा) *

12. 12. Do you have access to waste collection services? (क्या आपके पास कचरा संग्रहण सेवाओं तक पहुंच है?) *

Mark only one oval.

- Yes
- No

13. **13. How do you dispose your waste? (आप अपने कचरे का प्रबंधन कैसे करते हैं?)** *

Check all that apply.

- By burning the waste (कचरा जलाते हैं)
- Dumping in open grounds and areas (किसी खाली प्लॉट / जगह पर डंप कर देते हैं)
- In community dustbins near your place (नगर निगम द्वारा लगाए गए डस्टबिन में डाल देते हैं)
- Vehicle is coming (गाड़ी आती है)
- Other: _____

14. **14. Do you handle your own waste?(क्या आप अपना कचरा खुद संभालते हैं?)** *

Mark only one oval.

- Yes
- No

15. **15. Do you segregate waste at source? (क्या आप अपने स्थान पर कचरे को अलग करते हैं?)** *

Mark only one oval.

- Yes
- No

16. **16. Do you know about the three categories of household waste for waste segregation or the color coding system of waste? (क्या आप कचरे के पृथक्करण या कलर कोडिंग सिस्टम के लिए घरेलू कचरे की तीन श्रेणियों के बारे में जानते हैं?)** *

To be marked "Yes" only if the respondent answers the names of the categories correctly (यदि उत्तरदाता श्रेणियों के नामों का सही उत्तर देता है तो केवल "हां" चिह्नित किया जाना चाहिए)

Mark only one oval.

- Yes
- No

17. **17. Do you know the importance of source segregation of waste? (क्या आप कचरे के स्रोत अलगाव के महत्व को जानते हैं?)**

To be marked "Yes" only if the respondent is able to explain the importance with an example (केवल "हां" चिह्नित किया जाना चाहिए यदि प्रतिवादी एक उदाहरण के साथ महत्व की व्याख्या करने में सक्षम हो)

Mark only one oval.

Yes

No

18. **18. Do you know what happens to the waste after being picked up from your place? (क्या आप जानते हैं कि आपके स्थान से कूड़ा उठाने के बाद उसका क्या होता है?)** *

Mark only one oval.

Yes

No

19. **19. In your opinion, whose responsibility is proper solid waste management? (आपकी राय में उचित कचरा प्रबंधन की जिम्मेदारी किसकी है?)** *

Mark only one oval.

Public

Government

Both

20. **20. Do you know about Swacch Bharat Mission? (क्या आप स्वच्छ भारत मिशन के बारे में जानते हैं?)** *

To be marked "Yes" only if the respondent is able to explain ("हां" तभी चिह्नित किया जाना चाहिए जब प्रतिवादी व्याख्या करने में सक्षम हो)

Mark only one oval.

Yes

No

21. **21. Openness to learn about solid waste management? ***
(ठोस कचरे के प्रबंधन के सही तरीके के बारे में जानने का खुलापन?)

Mark only one oval.

Yes

No

22. **22. Any other feedback/suggestion (कोई अन्य प्रतिक्रिया/सुझाव)**

This content is neither created nor endorsed by Google.

Google Forms

REFERENCES

1. Annual Report 2020-21 on Implementation of Solid Waste Management Rules, 2016 CENTRAL POLLUTION CONTROL BOARD DELHI 47447/2022/UPC-II-HO 288 Annual Report on Solid Waste Management (2020-21), CPCB, Delhi. (n.d.). [online] Available at: https://cpcb.nic.in/uploads/MSW/MSW_AnnualReport_2020-21.pdf [Accessed 3 Jan. 2023].
2. ss2022.sbmurban.org. (n.d.). SWACHH SURVEKSHAN. [online] Available at: <https://ss2022.sbmurban.org/#/ranking/stateranking> [Accessed 3 Jan. 2023].
3. www.ijsrp.org. (n.d.). Solid Waste Management of Dehradun City based on its Physical and Calorific Energy Potential. [online] Available at: <https://www.ijsrp.org/research-paper-0521.php?rp=P11311290> [Accessed 3 Jan. 2023].