

WASTE MANAGEMENT FOR FOOD STALLS

Khau galli, Sinhagad road, Pune

ADITYA KULKARNI



PROJECT OVERVIEW

In waste management for food stalls , the main purpose of the project is to understand the waste generation at food stalls, it's impact on the hygiene of the overall surrounding, segregation of waste and focusing on gaps in the waste management system and implementing solutions to make the system work smoothly and increase the overall hygiene issue in the entire process.

In this study the main focus is on a ecosystem Khau galli at Sinhagad road, Pune. The research is conducted through various methodologies and analytical methods to find out the major opportunities to work .



HYPOTHESIS

Improper waste management around food stalls causes hygiene issues in the neighborhood.

RESEARCH METHODOLOGIES

Secondary research

- Research paper
- Regulatory bodies
- Guidelines

Primary research

- Physical surveys
- site visit
- Stakeholder interactions



SECONDARY RESEARCH

Research paper

Food Waste Management: Study of Restaurants in Baner, Pune

Dr. Shefali Joshi

ABSTRACT

Food business is growing tremendously in Pune especially in developing areas like Aundh, Baner, Kalyaninagar etc. According to a statement, NRAI IFSR 2019 estimates Indian food service industry's market size at **Rs 4,23,865 crore in 2018-19**, which is expected to grow at a CAGR of 9 per cent to reach **Rs 5,99,782 crore by 2022-23**. Vast number of foreign brands have entered Indian food business, even in Baner, there are many restaurants which has opened doors. Double income, hectic life style, new trends in restaurant market, young crowd staying in the locality have increased the foot fall at existing restaurants and also given birth to many. But with new restaurants and food business rising, there are many problems show casing their presence. There are problems like parking, crowded places, **garbage disposal problems, littering and problem like tremendous wastage of food**. The huge amount of food going waste is major worry or it will harm environment in big way. This research paper is an effort to make everyone and especially restaurant owners at Baner to be aware about the food waste management practices by collecting the accessible resources responses from the restaurant owners and employees working in those restaurants.

Keywords: Restaurants, Baner, Food, Waste Management

LITERATURE REVIEW

Restaurant are the massive producer of waste. So it is very imperative to have on the food waste management plan in place for particular locality. Because of **less awareness** it is giving rise to many future issues. Hence to pay immediate attention to this problem is necessary.

Following are the thoughts which have been shared -

Cornell (1975), states in their study that **restaurants are one of the major waste producers in the field of commercial kitchen.**

Barton (2000), Writes in his study that the **cost of food waste is estimated to the 40 percent of a plated meal.**

Ferris (1995), Found in their study that a number of variables influences the amount of wastage these are government regulation, storage capacity, beliefs of the organization, labor cost etc.

National Restaurant Association (2010) **The estimated food waste is approximately 53 percent by the year 2010 in take away services.** This clearly shows that this kind of practices generates more wastage of food. So the suppliers should work on the effective portion control practices, so that the waste can be minimized

MSW Manual (2000) states that Composting of hotel food waste is one of the best way to manage it. Compost is a perfect soil conditioner.

Curry (2012) writes in his study that almost **50 percent of total waste of hotel industry comes from the food waste.**

Kirk (1995) Suggests that we can reduce the food waste by focusing on the packaging techniques and by the method of disposal.

Vikas Mohan (2017) stated that hotels do require commitment of the management and staff to manage their waste they need to spare time out to work and implement waste management strategies.

SECONDARY RESEARCH

Regulatory bodies in Pune

Pune Municipal Corporation (PMC)

The PMC is the primary municipal authority responsible for waste management and public hygiene in Pune. It oversees the collection, segregation, and disposal of food waste through its various departments and initiatives.

Maharashtra Pollution Control Board (MPCB)

MPCB regulates and monitors environmental pollution, including waste management and disposal practices. It sets standards and guidelines for the treatment and disposal of food waste to prevent environmental pollution.

Food Safety and Standards Authority of India (FSSAI)

FSSAI is responsible for setting standards for food safety and hygiene. It provides guidelines for food handling, storage, and waste management to ensure safe food practices.

FSSAI prescribed hygiene rules



(Please Mention Your License no.) ■ Fruit and Vegetable Retail

Registration No.

With Us You Will Get Safe Food
I Follow These 10 Golden Rules

Hygiene Rule Codes	Hygiene Rule Codes
1 Keep vending premises/cart clean and pest free	6 Wear clean clothes/uniform
2 Use potable water for washing fruits and vegetables	7 Wash hands before & after handling food and after using toilets, coughing, sneezing, etc.
3 Keep sliced fruits & vegetables covered and at cold temperature	8 Use water proof bandage to cover cuts or burn wounds
4 Wash chopping board knives, etc. with clean water before and after use	9 Do not handle food when unwell
5 Keep dustbins covered	10 Use clean and separate dusters to clean surfaces and wipe utensils

If any concern

Call toll free
1800 112 100

SMS or Whatsapp
9868686868

Always quote FSSAI Number for quick action

Give your Feedback to Company Name

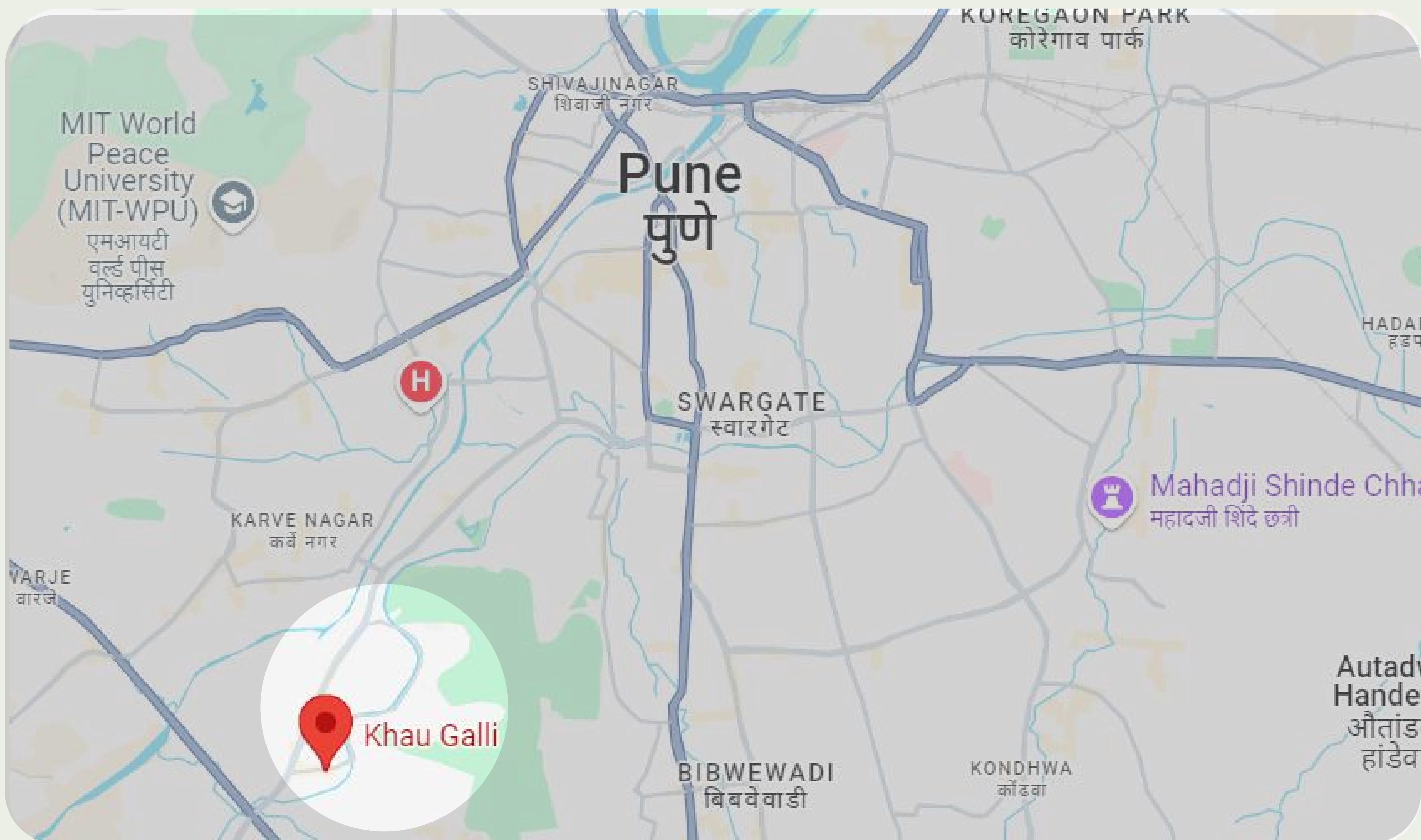
(Company Name)
(Contact Details)

Download FSSAI APP
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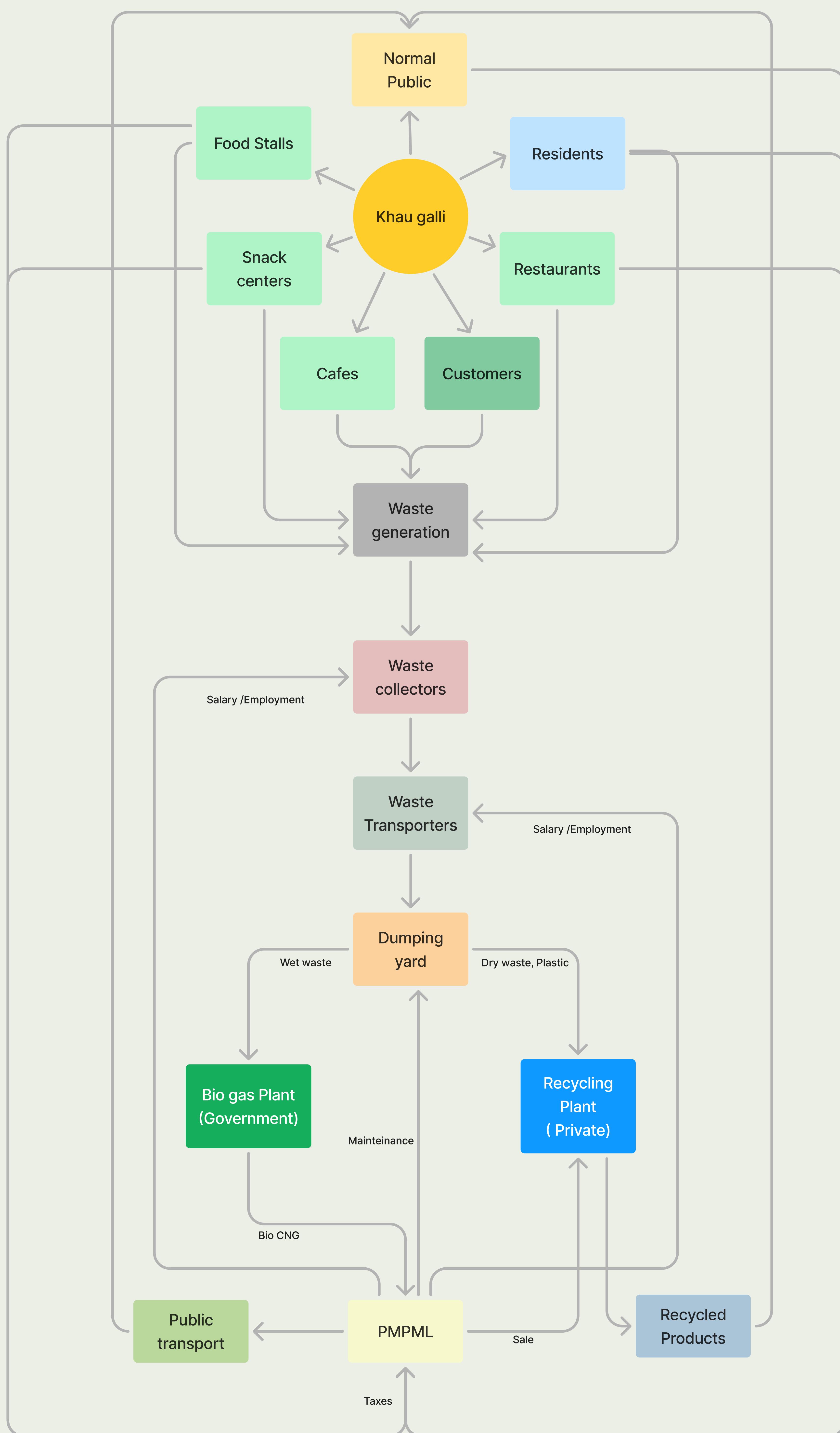


AREA STUDIED

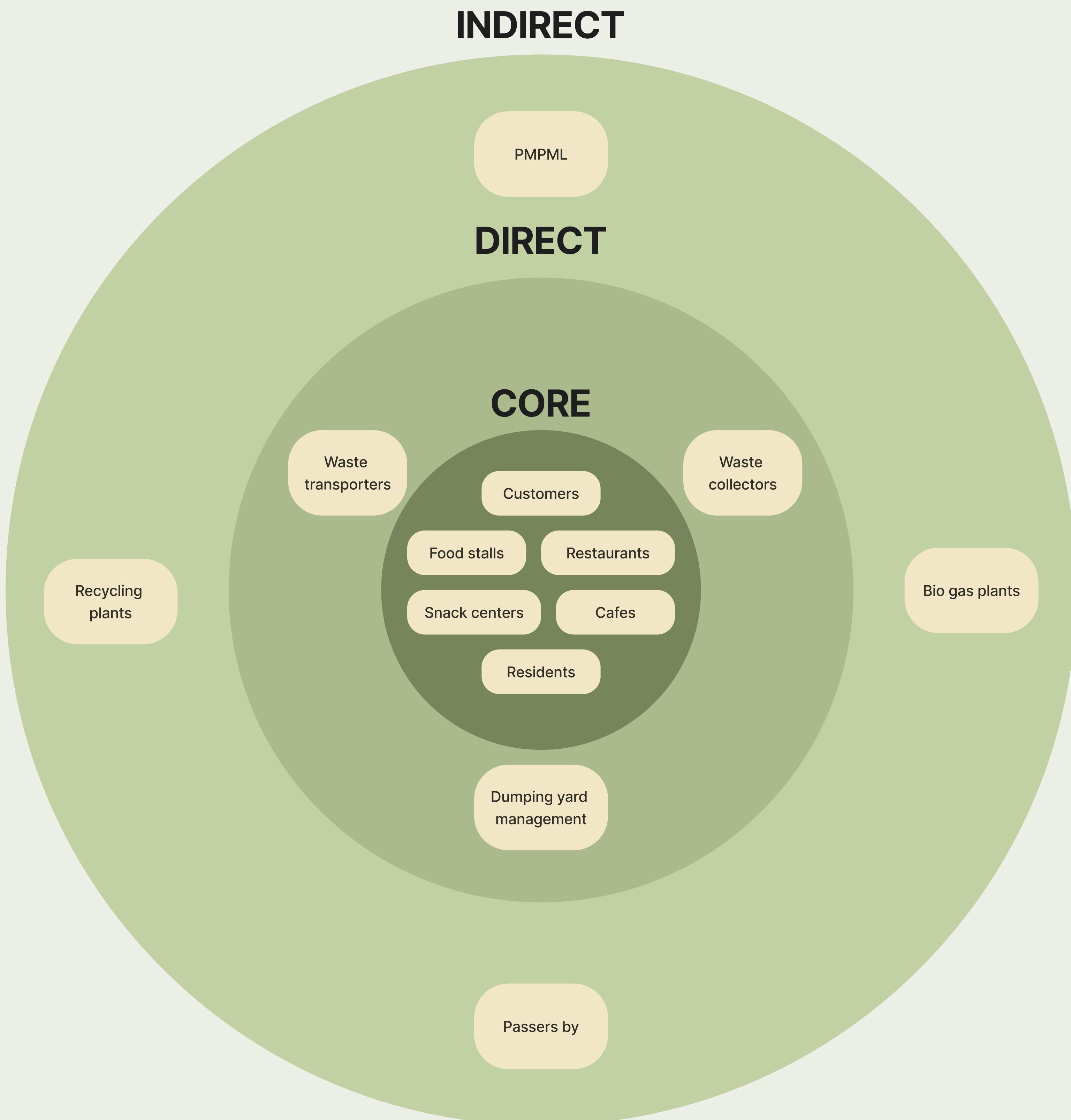


Ecosystem - Khau galli, Manik Baug, Sinhagad Rd, Pune

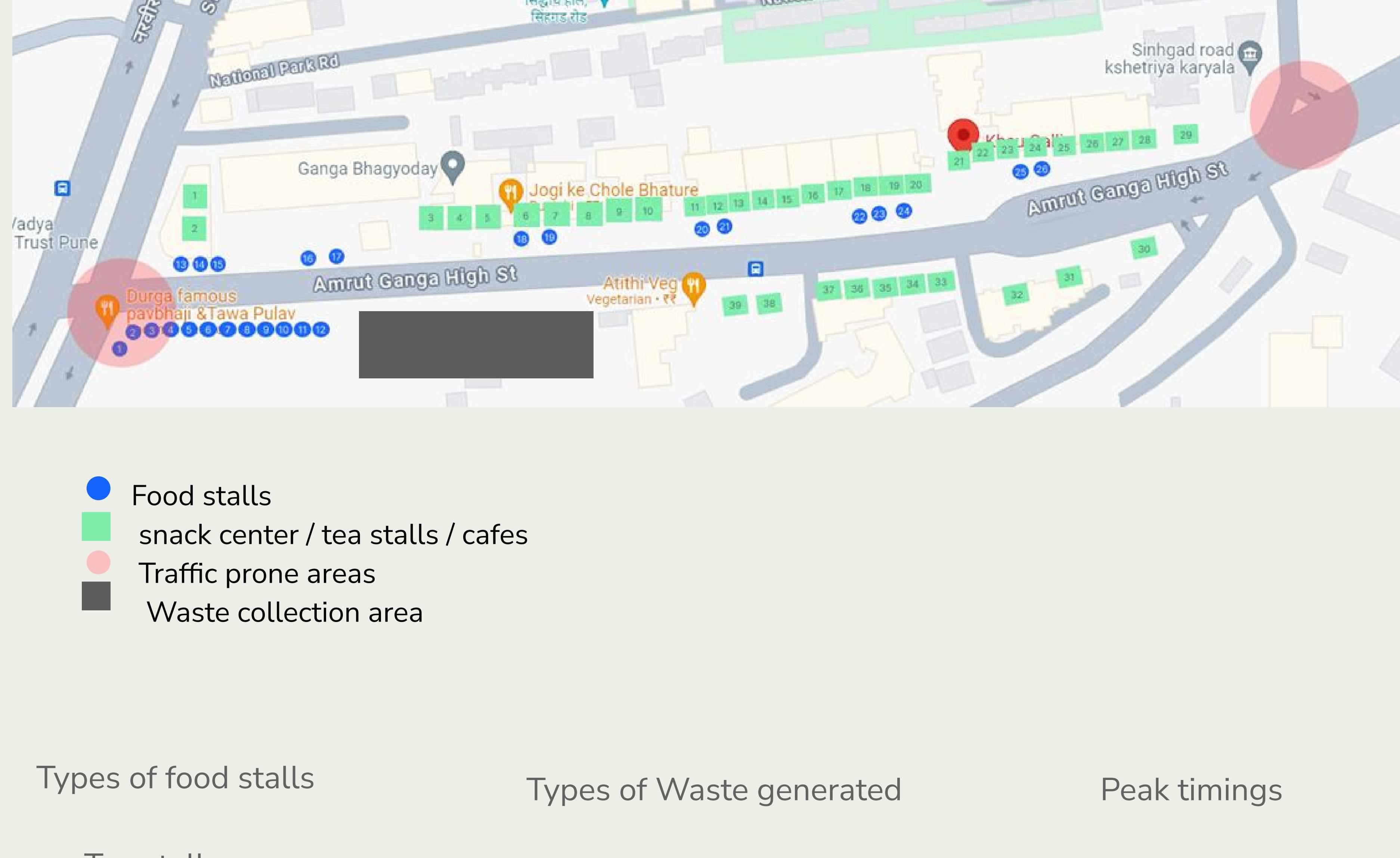
SYSTEM FLOW



STAKEHOLDER MAPPING



1. KHAU GALLI



- Food stalls
- snack center / tea stalls / cafes
- Traffic prone areas
- Waste collection area

Types of food stalls

- Tea stalls
- Bakeries
- Momos
- Pani puri
- south Indian food
- Chinese Food
- Pav bhaji
- Shawarma stalls
- Anda bhurji stalls
- Ice cream stalls.

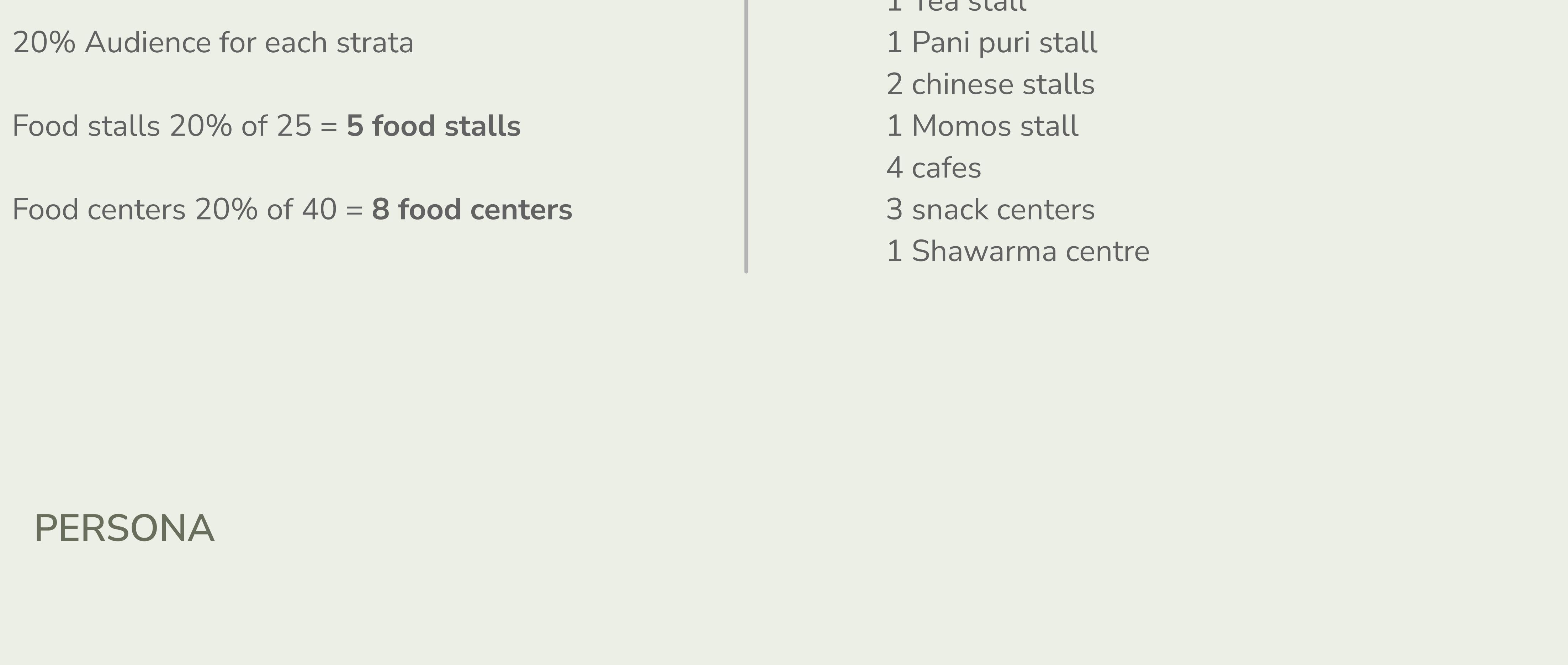
Types of Waste generated

- **Dry waste**
(Plastic, paper)
- **Wet waste**
(food leftovers, vegetable waste)
- **Liquid waste**
(Dirty water, wash water)

Peak timings

- Evenings (office timings)
- Weekends
- Weekly markets

Timeline of waste generation and collection



SAMPLING

Type of sampling - Stratified sampling

20% Audience for each strata

Food stalls 20% of 25 = 5 food stalls

Food centers 20% of 40 = 8 food centers

These include

- 1 Tea stall
- 1 Pani puri stall
- 2 chinese stalls
- 1 Momos stall
- 4 cafes
- 3 snack centers
- 1 Shawarma centre

PERSONA



Suresh Chavan

ABOUT
He is Owning a cafe in Khau galli, Sinhgad road since 10 years . He is the first one from his family in the food business.

AGE	30
OCCUPATION	Cafe Owner
LOCATION	Khau galli, Sinhgad road Pune

GOALS

- To attract more and more customers
- To be able to maintain hygiene

PAIN POINTS

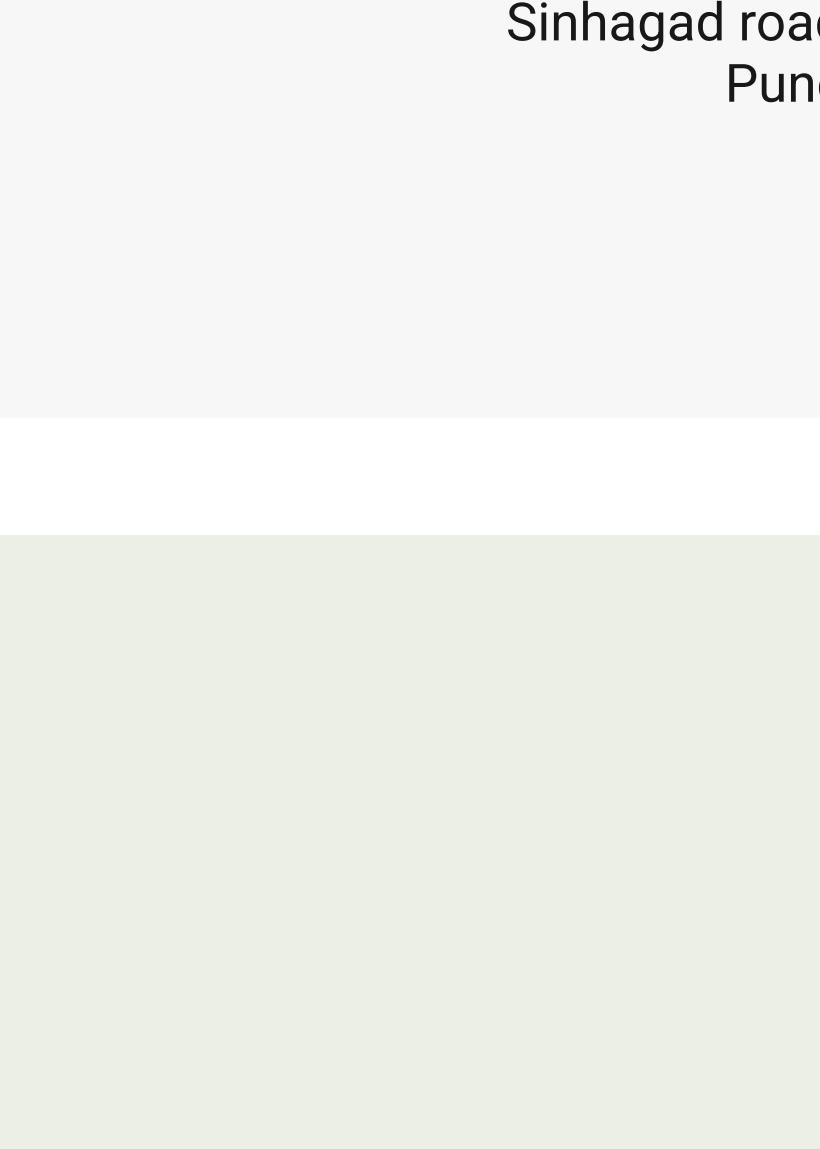
- Difficult to manage garbage when collection truck doesn't arrive
- Keep on changing trash bags from time to time in a day

BEHAVIOUR

- Follows all the health , hygiene and safety rules
- Segregates waste into wet and dry garbage

MOTIVATIONS

Weekends	6
Weekly markets	5
Festivals	8



Kamlesh Yadav

ABOUT
Kamlesh puts a chinese stall by the footpath in Khau galli since 5 years , before that he used to put his stall at some another place.

AGE	25
OCCUPATION	Food Stall Owner
LOCATION	Khau galli, Sinhgad road Pune

GOALS

- To attract more and more customers
- To generate more revenue

PAIN POINTS

- Difficult to maintain cleanliness alone
- Less space on road to manage customers

BEHAVIOR

- Doesn't segregate garbage into dry and wet waste
- Keeps garbage uncovered and the area unclean

MOTIVATIONS

Weekends	4
Weekly markets	6
Festivals	8

MAJOR INSIGHTS FROM INTERACTIONS

Food stalls

- Food stall owners can't maintain every thing all alone.
- They don't have much space and infrastructure to manage customers.
- Mostly affected because of waste generation , as waste collection area is next to it.
- More customers at the time of weekly markets.

Cafes / snack centers

- They are more aware about hygiene related guidelines.
- Less generation of use and throw waste ,as they have good infrastructure and services
- Have more customers during festivals, weekends, etc.

2. WASTE COLLECTION



USER PROFILE



Sunita Kadam

AGE : 32 yrs Female

EDUCATION : Completed 10 grade

OCCUPATION : Waste collector since 12 yrs

BEHAVIOUR

- Doesn't take preventive hygiene measure like wearing gloves and mask, while collecting garbage.
- Doesn't collect garbage in closed bins and doesn't even maintain safe contact with garbage collected.
- Manually segregates wet and dry garbage after collection.

" I frequently keep on falling sick "

FINDINGS THROUGH INTERACTIONS

- They start collecting garbage at **7am** Morning
- They are provided with proper gloves , gum boots, masks, clothes for collecting waste.
- Waste is collected **door to door** in 32 litres waste bins.
- Collection of all the garbage is done by **9 am** ,and it is gathered at the waste collection spot on **khau alli road**.
- They **re segregate** the waste into dry and wet waste.
- The garbage spills on road while segregating and the waste bins are kept **uncovered**.
- Waste collectors wait at the spot till the garbage truck arrives at **12 noon** , for loading garbage.
- While waiting they are sitting with the garbage around , **uncovered** without even wearing **masks**.
- **Birds and stray birds feed** on it when kept uncovered, **creating mess** in the surroundings.
- sometimes when the truck gets over filled , it doesn't take away all the garbage, and it is left behind on the foot paths.
- The collectors don't much know about what would the further process done on the waste.
- The collectors usually fall sick once in a month , but are used to it.
- During festivals, after weekly markets, weekends they collect a lot of waste , at that time managing the extra waste is a problem .

3. DUMPING YARD

Location - Nanded Phata

Distance - 3km from Khau galli
1/2 km from Mula Mutha river



The garbage collected from entire sinhagad road area and khau galli is transported to dumping yard , **Nanded Fata**, which is **3 km** away from khau galli via Prayeja city road. The dumping yard is a approx. **30 acres** of land with a ware house .

The quality of road and traffic is in bad condition.

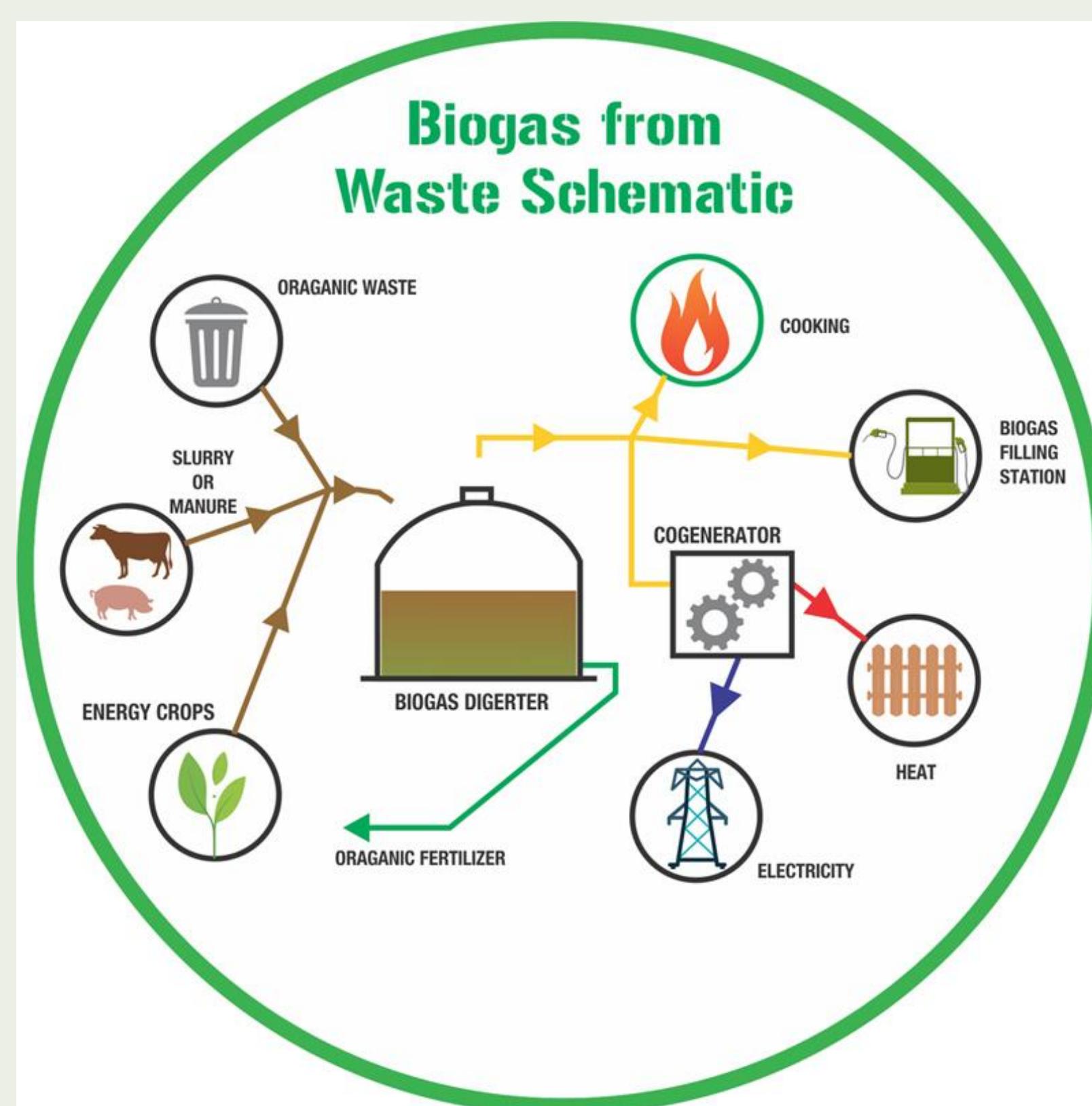
The **wet waste** collected is dumped in the ware house and within a day it is segregated and transported to **Baner biogas plant**.

The **Dry waste** is dumped in the open spaces and once in a week it is transported to **Hadapsar** for recycling process.

4. WET WASTE PROCESSING (16 km from khau galli)

The **wet garbage** collected is converted into a slurry and transported to Baner at **NEX** (Noble exchange environment solutions Pvt Ltd.) Funded by **Adar Poonawala's Clean city Movement**, for Bio methanation process. The wet garbage is converted to **Bio CNG** and used for **PMPML Public transport**.

source - <https://www.pmc.gov.in/en/noble-exchange>



5. DRY WASTE PROCESSING (17 km from khau galli)

The dry waste like plastic and paper collected from the city is transported to Ramtekdi, Hadapsar, at **Rochem Separation systems Pvt Ltd.** for the further recycling process .

Rochem Separation systems Pvt Ltd.

It is a non- government Waste management service which recycles different products like paper, plastic and cloth.

source - <https://www.pmc.gov.in>

DATA ANALYSIS

1. Total Waste generation as per number of dustbins per day collected (32 litres)

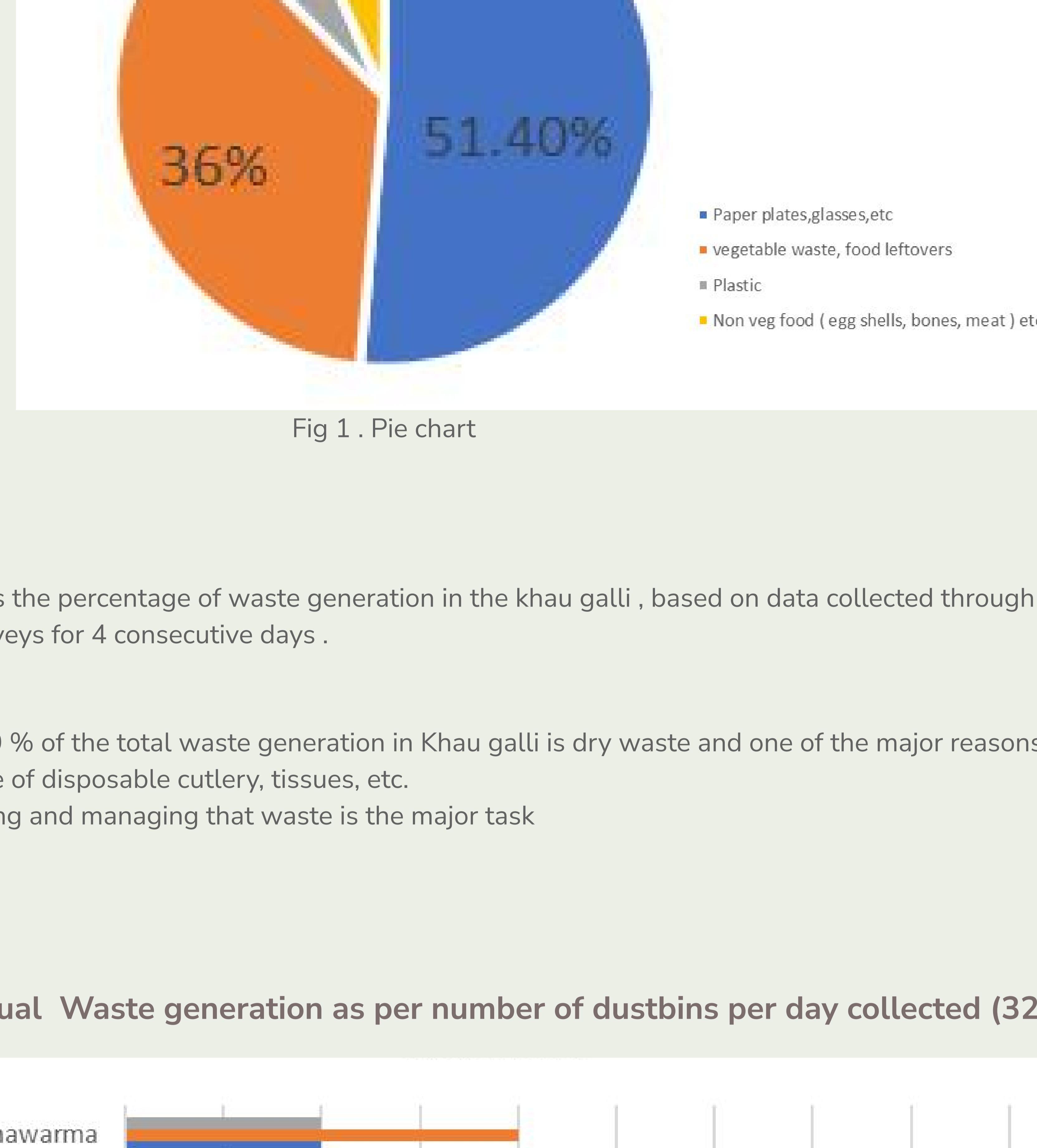


Fig 1 . Pie chart

Fig 1 . shows the percentage of waste generation in the khau galli , based on data collected through physical surveys for 4 consecutive days .

More than 50 % of the total waste generation in Khau galli is dry waste and one of the major reasons for that is use of disposable cutlery, tissues, etc.

So segregating and managing that waste is the major task

2. Individual Waste generation as per number of dustbins per day collected (32 litres)

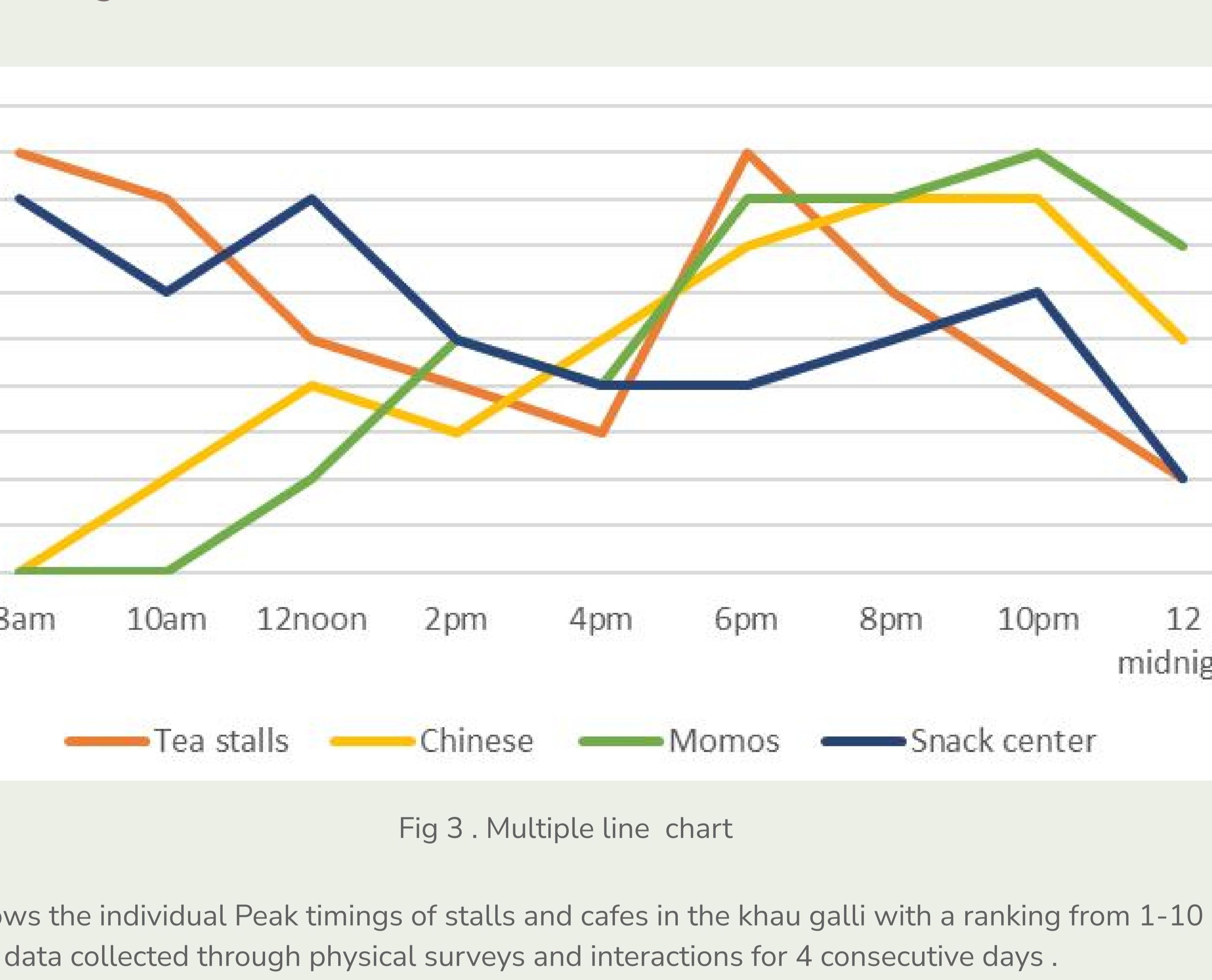


Fig 2 . Multi line Bar chart

Fig 2 . shows the individual waste generation in the khau galli , based on number of dustbins through data collected by physical surveys and interactions for 4 consecutive days .

Most amount of dry waste is generated by tea stalls and that is due to the use of disposable cups , where as most of the wet garbage is produced by snack centers, cafes, etc which is mostly food waste . The good part is very less use of plastic in the area.

3. Peak timings for stalls with rank 0-10

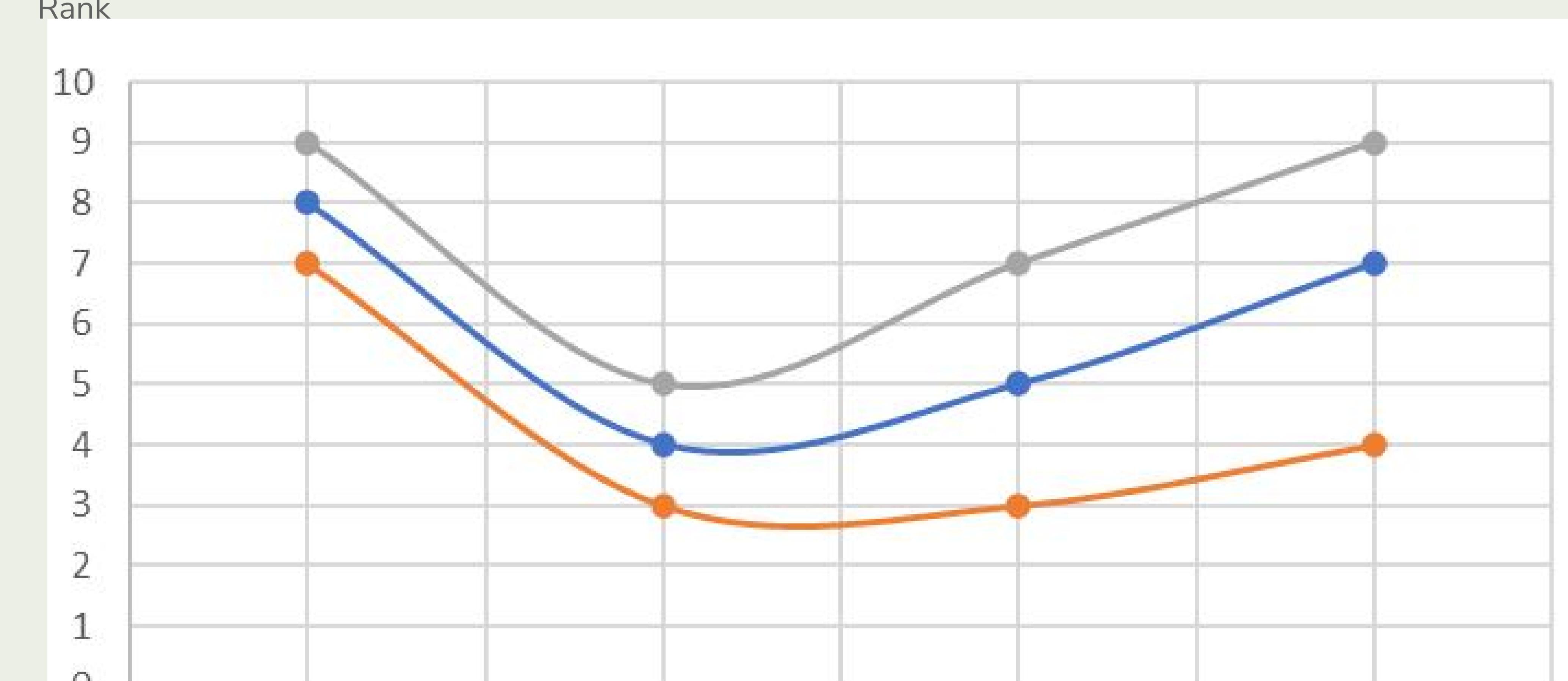


Fig 3 . Multiple line chart

Fig 3 . shows the individual Peak timings of stalls and cafes in the khau galli with a ranking from 1-10 , based on data collected through physical surveys and interactions for 4 consecutive days .

Rank Number of people

- | Rank | Number of people |
|------|---------------------|
| 1 | more than 2 people |
| 2 | more than 4 people |
| 3 | more than 6 people |
| 4 | more than 8 people |
| 5 | more than 10 people |
| 6 | more than 12 people |
| 7 | more than 14 people |
| 8 | more than 16 people |
| 9 | more than 18 people |
| 10 | more than 20 people |

MAJOR INSIGHTS THROUGH RESEARCH AND ANALYSIS

- There is a lot of **time gap** between all the steps in the system.
- The garbage is entirely **exposed** in open spaces causing **hygiene** issues.
- The garbage bins are not used to it's **full capacity**.
- Stray animals and birds feeding on openly kept garbage cause **mess** in the surroundings.
- There is **no space** for **extra garbage** to be kept in the area.
- Garbage **collection method** is causing **health issues** in collectors.
- It is easier for shops with **more staff** to look after **cleanliness** and hygiene more.
- There are different **waste generation timings** for different stalls but collection is done at one same time.