



Faculty of Design

2020

Systemic design for household waste management

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Suggested citation:

Hassani, Harshita and Kumar, Naveen (2020) Systemic design for household waste management. In: Proceedings of Relating Systems Thinking and Design (RSD9) 2020 Symposium., 9-17 Oct 2020, Ahmedabad, India. Available at <http://openresearch.ocadu.ca/id/eprint/3689/>

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Systemic Design for Household Waste Management in India

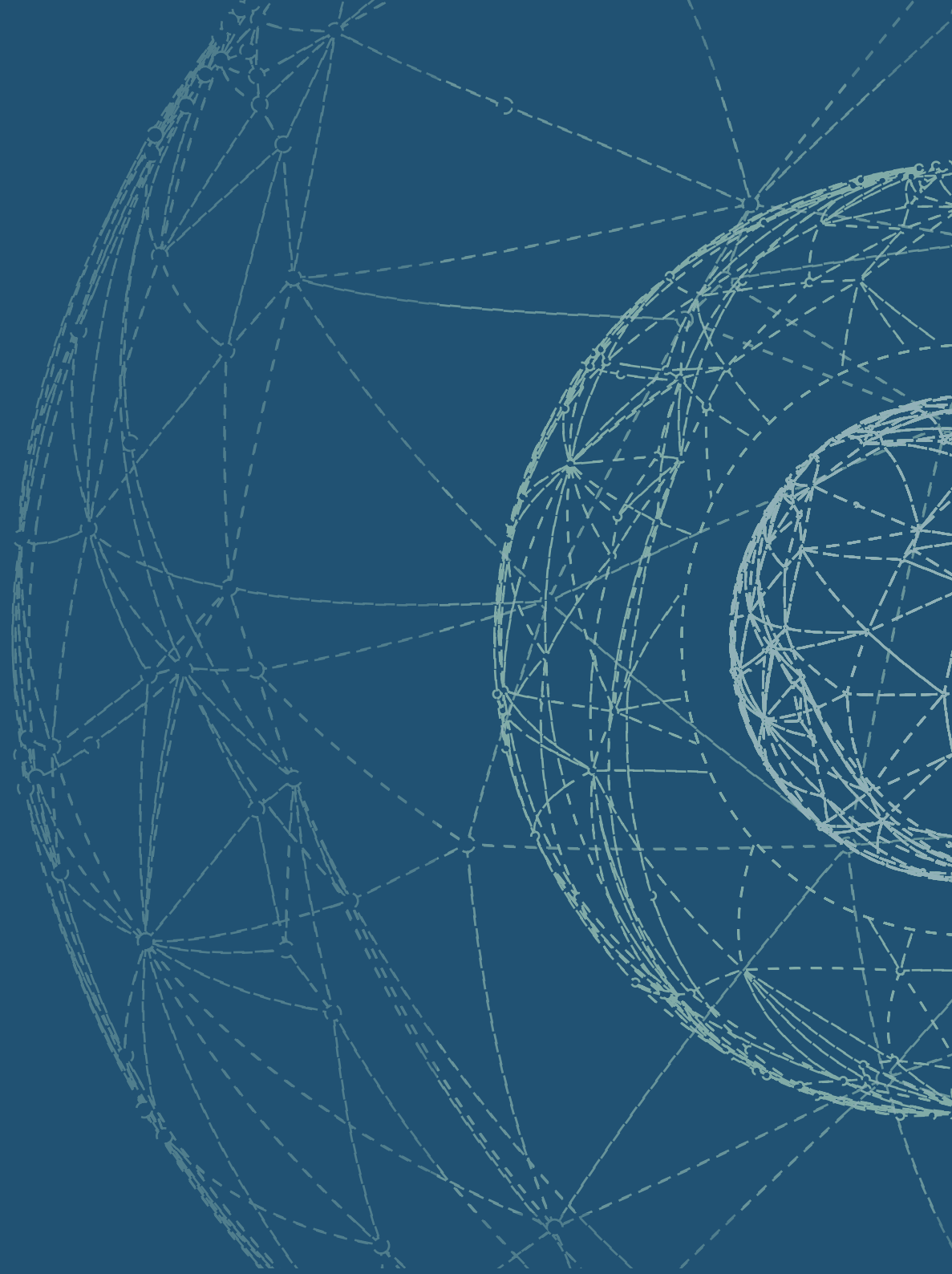
SUSTAINABILITY | ECOLOGY, TRACK 10

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Introduction

Indians are facing major natural difficulties related to waste generation and deficient waste gathering, transport, and its treatment.

Financial constraints, institutional weaknesses, improper choice of technology and public apathy towards municipal solid waste have made this situation worse.

Household waste is generated faster than other industrial and environmental pollutants.



The SWM Rules, 2016 define segregation as sorting and separate storage of various components of solid waste.

Source Segregation is mandatory according to SWM Rules, 2016 but the compliance continues to be weak.

Some studies have shown that toxic gases released from landfill sites are even responsible for lung and heart diseases in humans

With changing consumption patterns and rapid economic growth it is estimated that urban municipal solid waste generation will increase to 165 million tonnes in 2030

Process Wet Waste within the premises

SEGREGATION AT SOURCE

Municipal bodies are encouraging people to segregate waste so that efforts to reduce and recycle garbage could succeed



■ An official explains the concept to residents. SONU MEHTA

6,000 blue and green dustbins are being distributed in north Delhi's Shakti Nagar, Pushpanjali (Rohini), New Rajendar Nagar, Vivekanand Puri, Indira Colony; and Dilshad Garden East Loni Road and Jhilmil Colony in east Delhi.

Residents, RWAs and shopkeepers have been asked to throw only biodegradable wastes in green bins and recyclable ones in blue bins. MCDs have also redesigned their waste collection 'auto tippers' to have blue and green compartments.

HOW YOU CAN RECYCLE HOUSEHOLD WASTE

- Segregate dry and wet waste into separate garbage bins
- Use vegetable peels, egg shells, remains of boiled tea leaves, etc, as manure to plants in the kitchen garden
- Newspapers can be made into a pulp and converted into vases, baskets, pots and other decorative items

HOW CAN YOU REDUCE WASTE?

If household waste is segregated and recycled it will reduce the generation of waste by at least 60%



SEGREGATION:

Separate wet and dry waste by keeping a bin for recyclable (such as paper, glass, wood, cardboard) waste and another one for biodegradable waste (such as food and kitchen waste)



COMPOST:

Set up community compost bins in your area. You can use the manure for plants



RECYCLE:

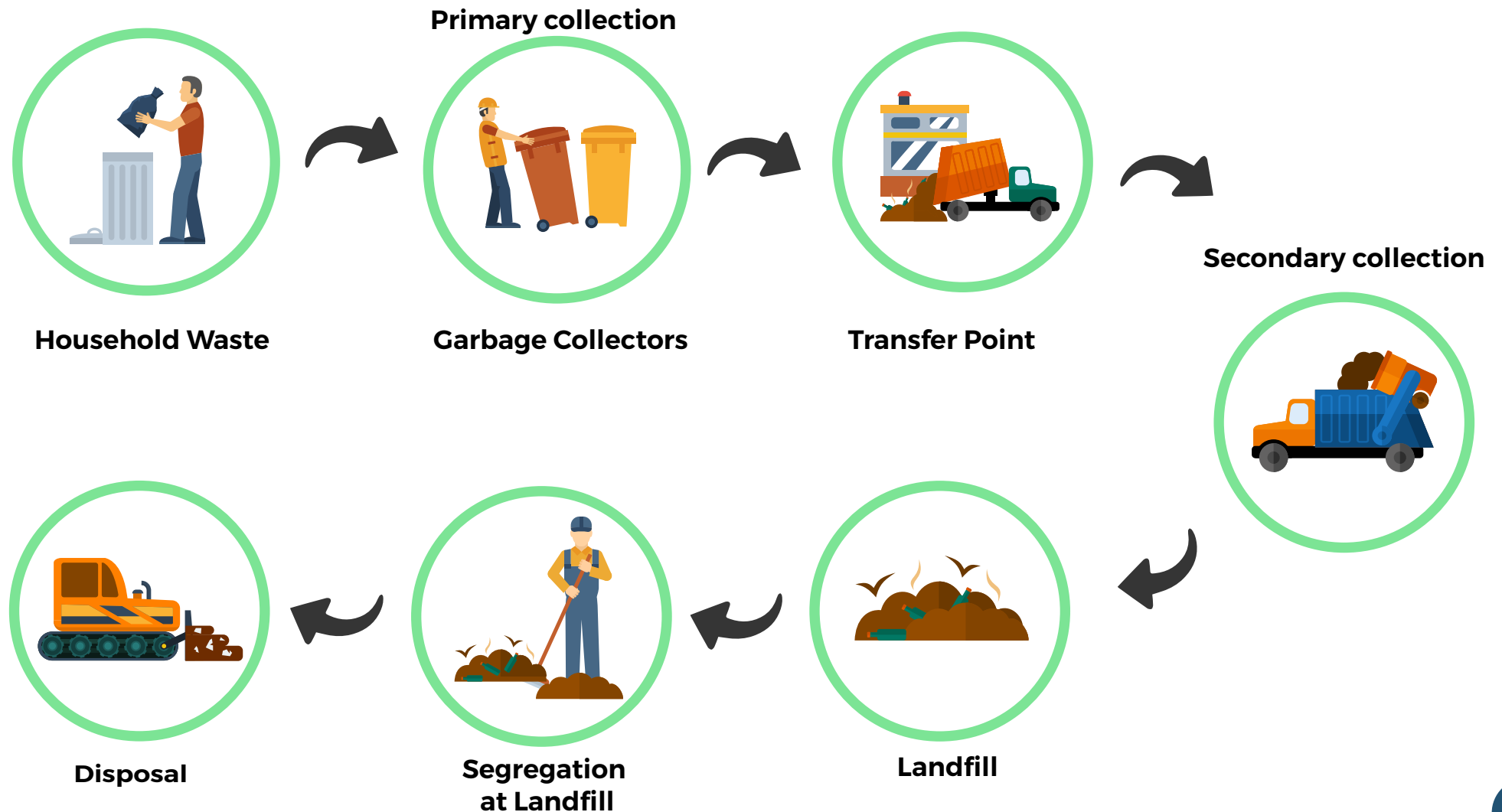
Collect your paper and cardboard trash and sell them. Re-use as much plastic and glass as you can



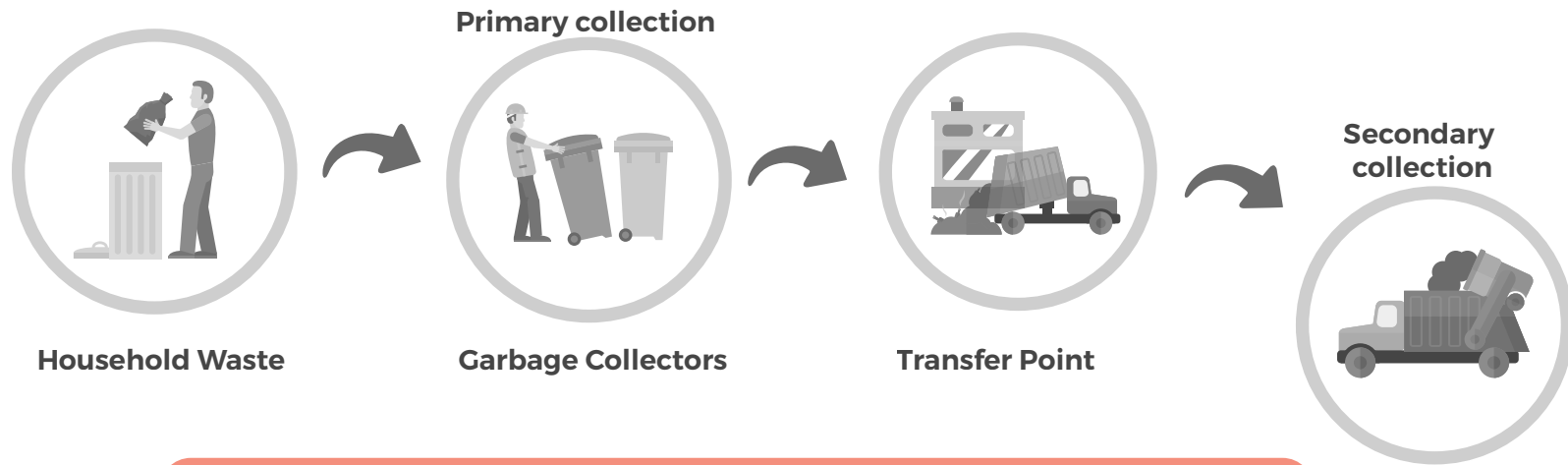
REDUCE:

Avoid using items such as sachets, aluminum foil and thermocol plates. Don't wrap gifts. If you must, put them in gift bags that can be reused later

Existing Waste Management System







Waste pickers collect household waste and many hundreds of thousands of waste pickers in India depend on waste for an income, despite the associated health and social issues.



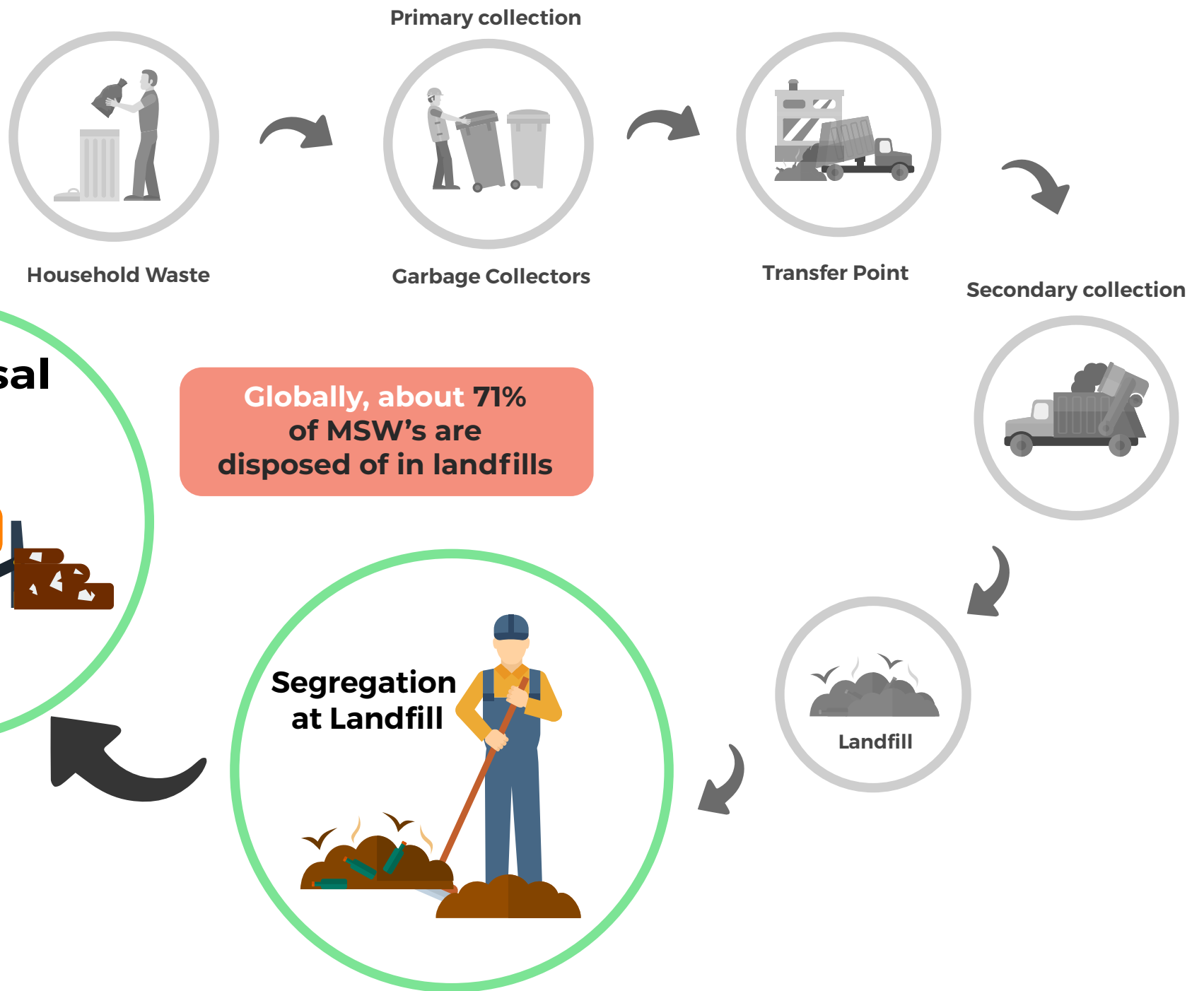
Disposal



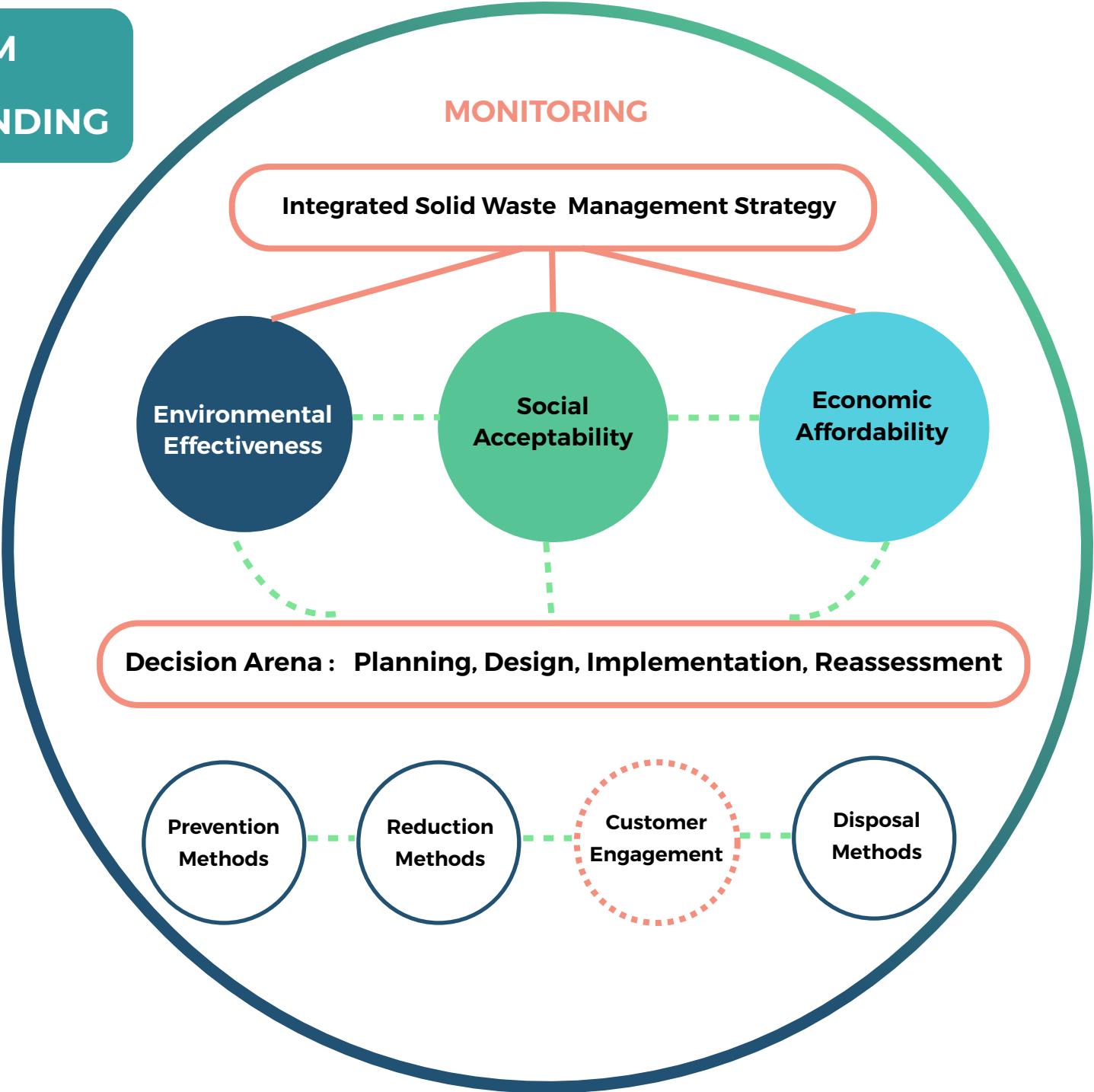
Segregation at Landfill



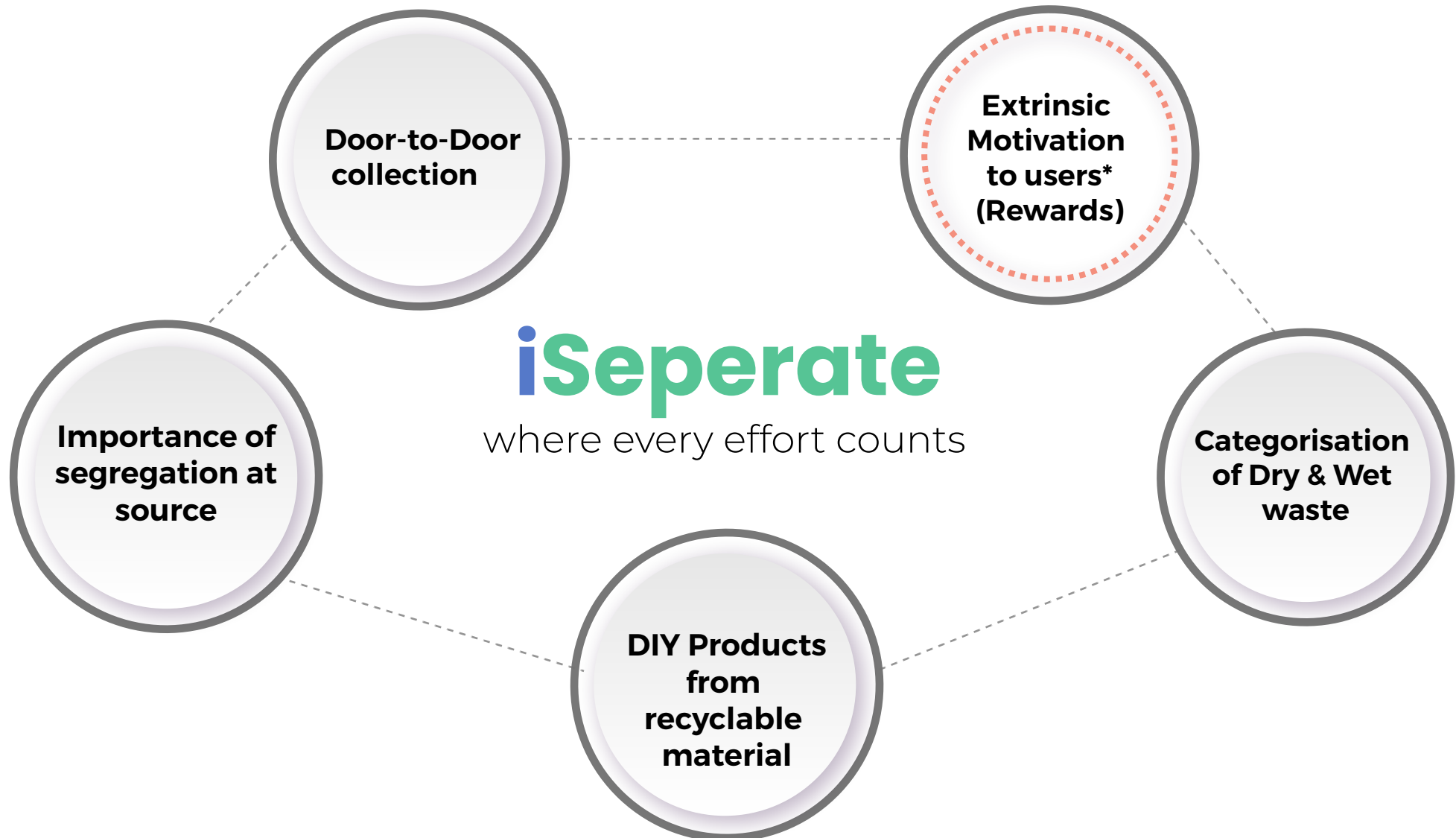
Landfill



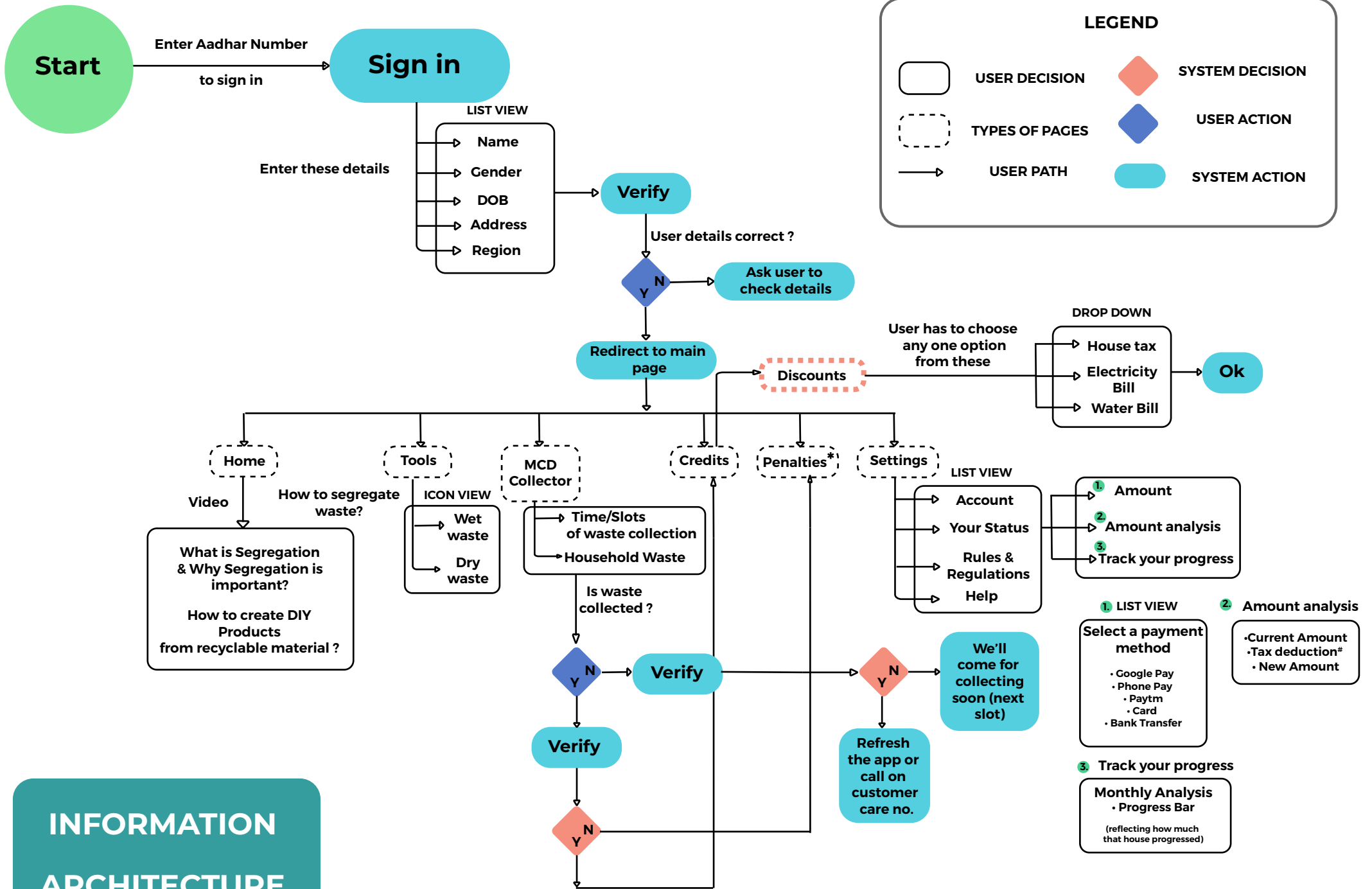
**SYSTEM
UNDERSTANDING**



System Approach



*McMurtry, J. (2017, August 15). The psychology of rewards. Target Marketing.



INFORMATION ARCHITECTURE

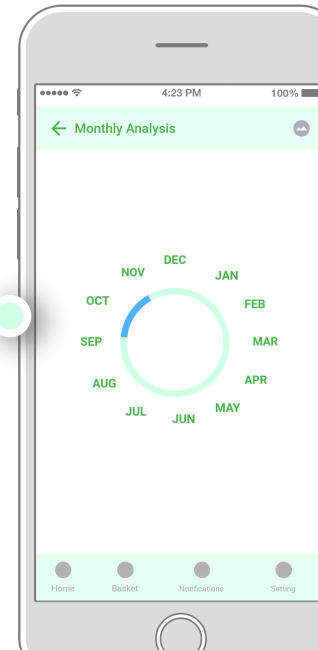
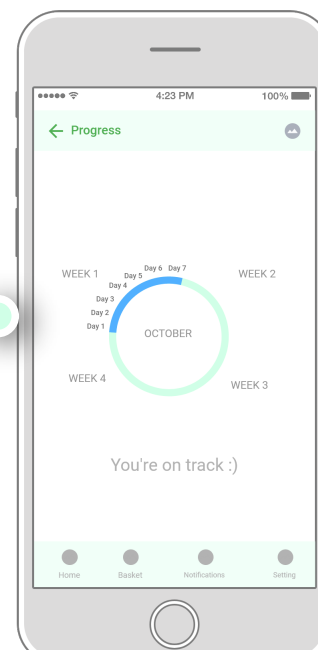
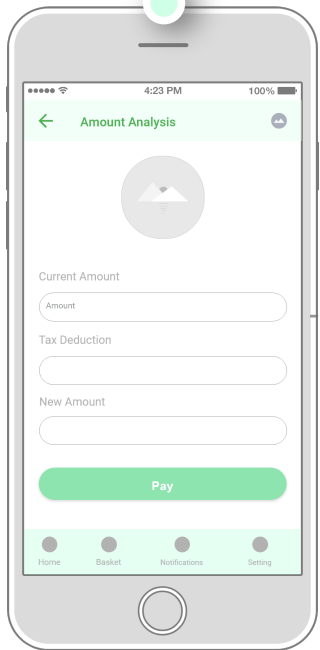
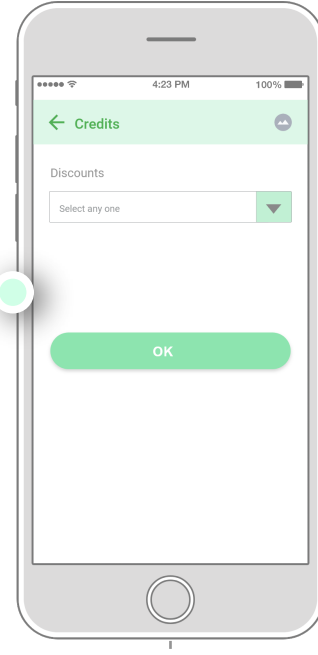
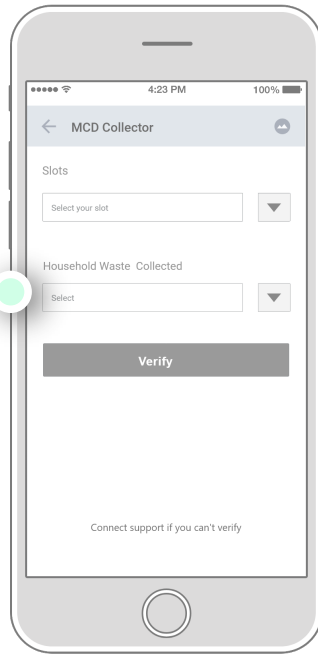
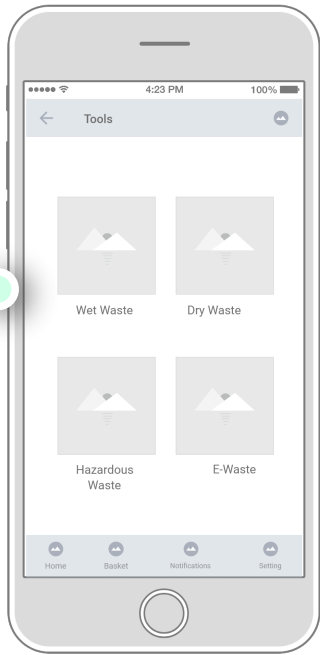
LEGEND

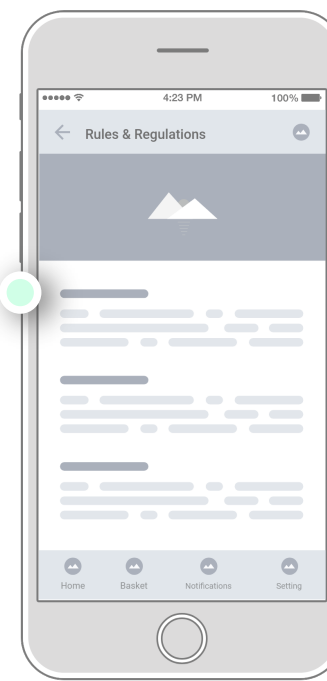
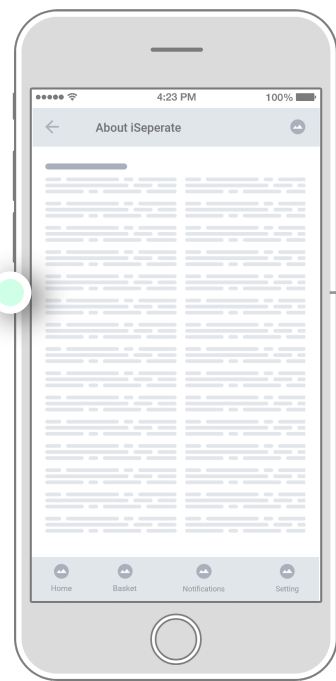
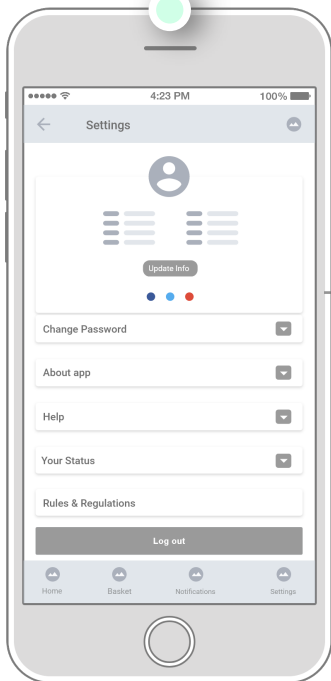
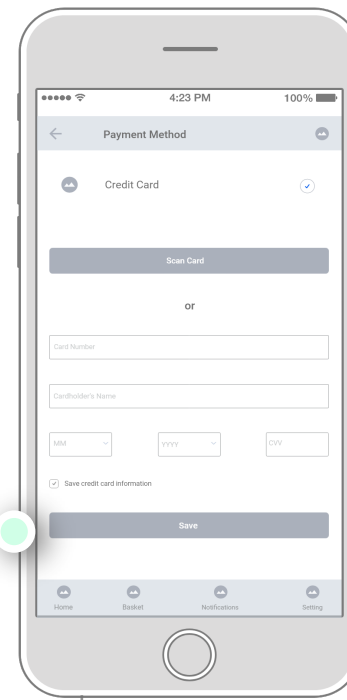
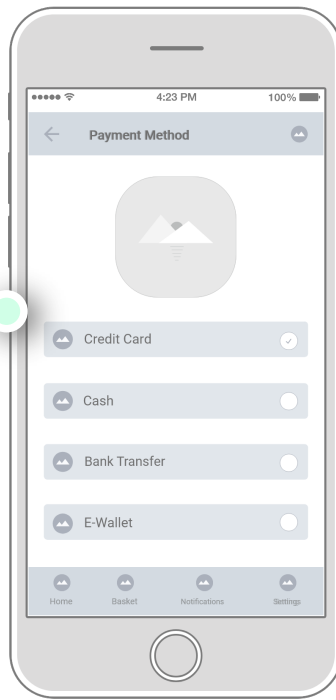
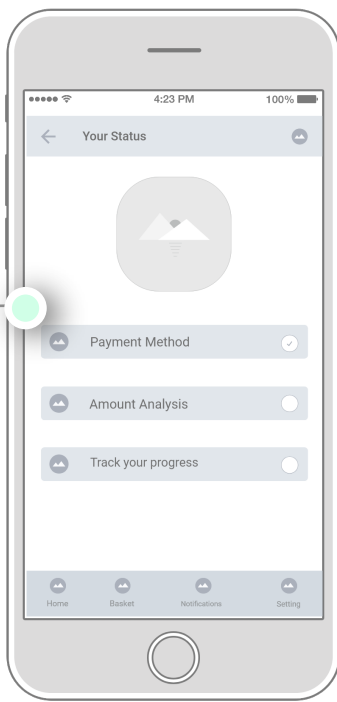
- USER DECISION
- SYSTEM DECISION
- TYPES OF PAGES
- USER ACTION
- USER PATH
- SYSTEM ACTION

From any of the mentioned three choices
 * Penalties feature will be incorporated in Phase 2 after analysing results of Phase 1

WIREFRAMES







How will this help?

ECONOMIC IMPACT

Due to source segregation, better resource recovery from dry waste should take place.

Also, Extrinsic motivation, or our behavior which is driven by the anticipation of being rewarded by others for engaging in specific behaviors(Positive reinforcement)

SOCIAL IMPACT

‘Segregation at source’ has a big impact on the waste pickers and with cleaner waste to work with, the waste worker can sort a higher number of recyclables, thereby improving the earnings. In addition, with no mixed waste, the work area is cleaner without foul smell. The waste worker gets both dignity and better livelihood.

ENVIRONMENTAL IMPACT

Source segregation of waste has not only helped in improving the recycling of waste generated in the city, it has also made positive impact on the environment. In addition, lowering GHG emissions and diversion of waste from the landfill further increased the positive impact on the environment.

Conclusion

In this research, we have tried to analyse the current solid waste management system and found that rules such as “segregation at source is mandatory” are not implementing. Segregation of our waste is essential as the amount of waste being generated today has caused an immense problem.

The idea behind this exploration was that how we can bring this rule in practice at a household level with **extrinsic motivation amongst consumers**.

As stated systems-led design is a way of working that helps us respond to complexity and so in this practice, we have identified significant problems in the segregation of multiple types of waste at the household level and propose a system design and a mobile application as a solution to manage household wastes. The mobile application provides rewards to consumers and help them manage household waste. Through this learning, we conclude that, **‘When waste is managed at source it becomes a resource.’**

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