



STEP 03: NON-HOUSEHOLD MSW GENERATION

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| Complete Urban Waste Equation



Household Waste
(Assessed in Step 2)



Non-Household Waste
(Assessed in Step 3)



Total MSW Generated

- Household waste provides only a partial picture of municipal solid waste (MSW).
- Without measuring commercial, institutional, and public spaces, evidence-based planning and infrastructure allocation remain impossible.

Non-Household MSW Generation Survey

- Household waste is only one part of the total MSW generated in a city.
- Commercial establishments (e.g. markets, restaurants, shops, hotels, etc.) and institutions (e.g. schools, administrative buildings, offices, etc.) as well as public spaces (e.g. parks and streets) also contribute considerably to the total amount of MSW generated.



Exclusions: Industrial waste, municipal sewage, and construction/demolition waste are explicitly excluded from this specific MSW definition.

Pathways to Waste Estimation

Resource vs. Accuracy Matrix

Pathway A: Random Sampling



Accuracy



Resources

Involves physical waste sampling from non-household sources. High accuracy but highly resource-intensive.

Pathway B: Proxy Estimation

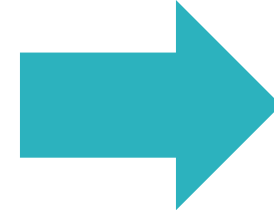


Accuracy



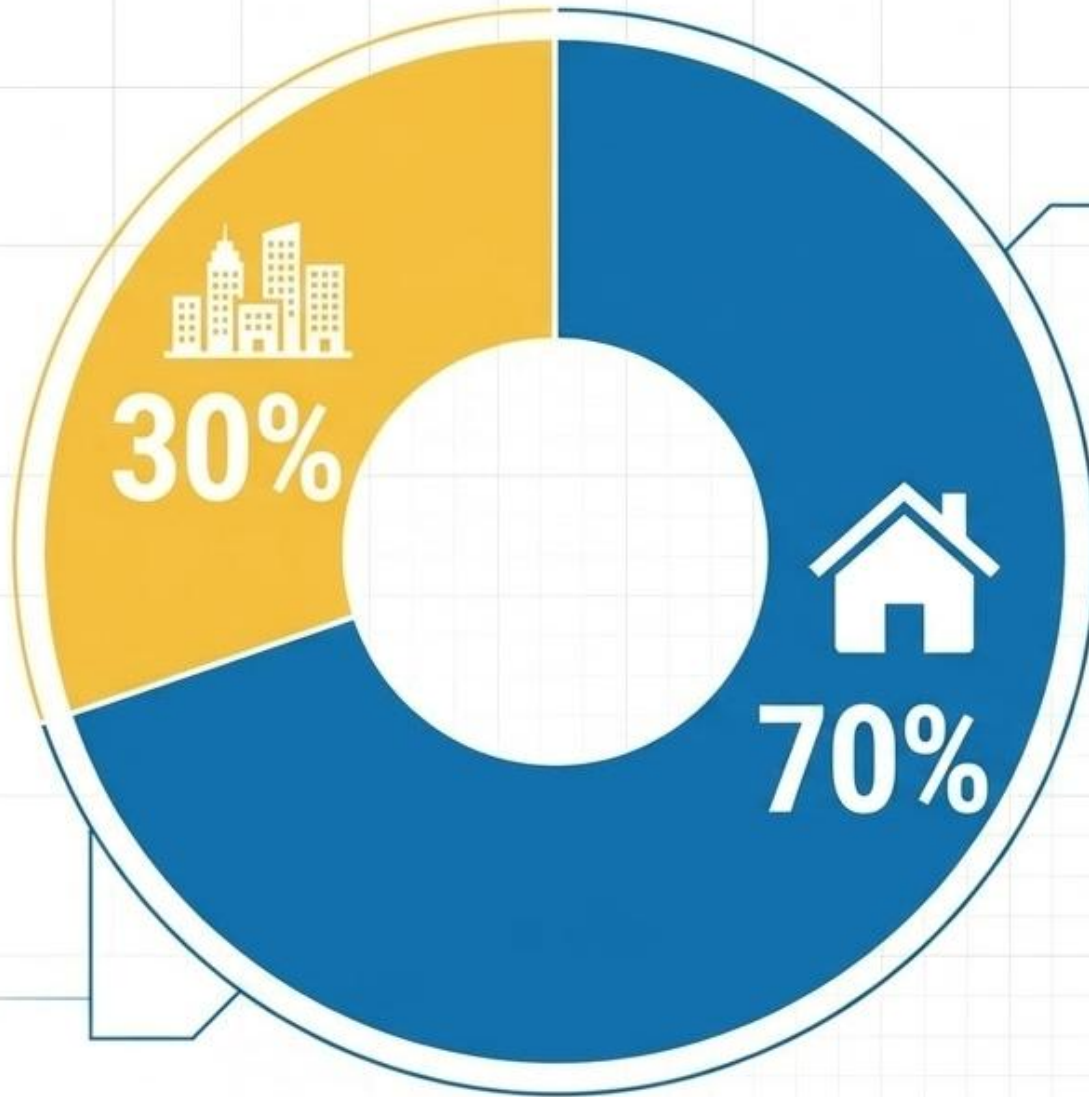
Resources

Uses the historical 30% rule-of-thumb. Applied when resources and data are strictly limited.



UN-Habitat
Research on the
historical data of
OECD countries.

Pathway B: The 70/30 estimation



The Rationale

Based on historical OECD country data, suggesting a general 30% non-household to 70% household waste split.

The Application

Used exclusively when reliable municipal business licensing data is absent or resources are severely constrained.

The Formula

$$\text{Total MSW} = (\text{Total MSW from households}) / 70\%$$

Pathway C: Interview Based Approach

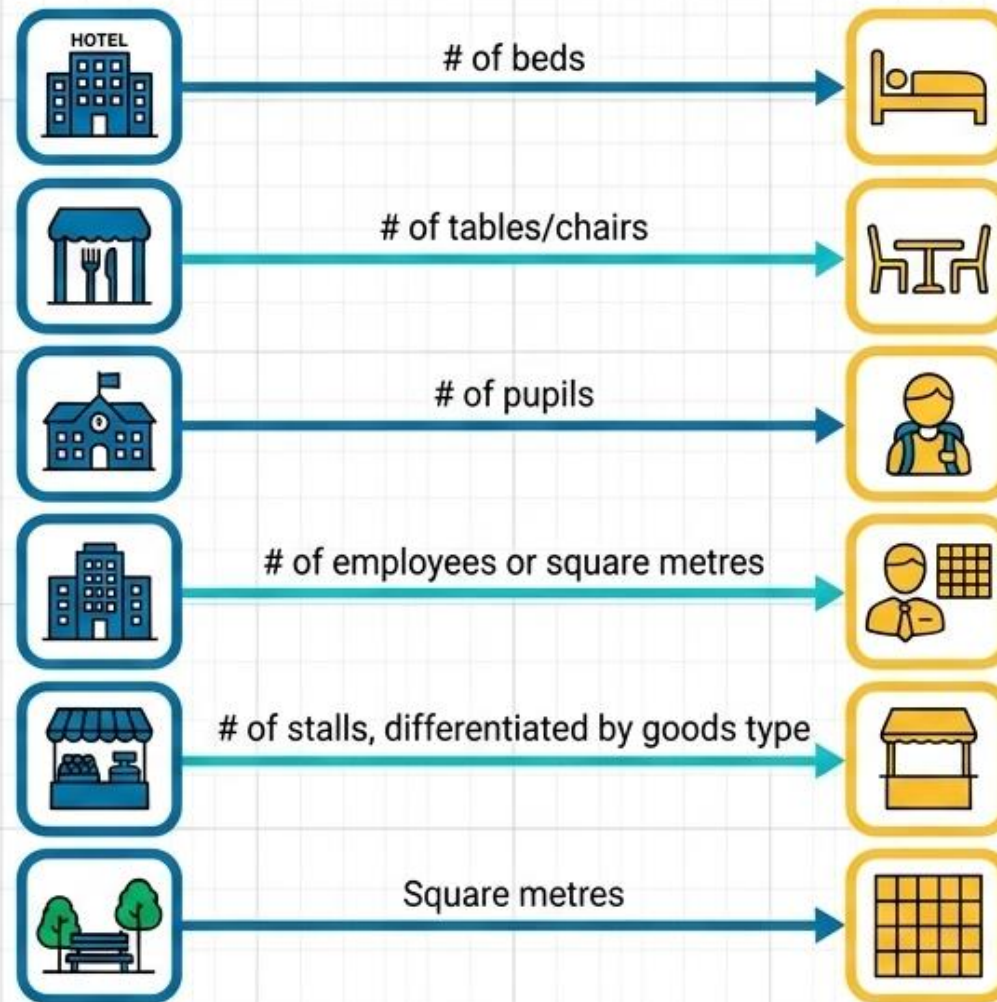


Calculation of Non-Household Waste Data

Waste Generation Premises	Unit	Total Number of Unit in the City	Waste Generation per Unit	Waste Generation
Hotels	# of beds			
Restaurants	# of tables/chairs			
Schools	# of pupils			
Offices	# of employees/square meters			
Shopping Malls	# of entries/# of shops			
Public Spaces	# of square meters			
Total				Total Non-Household Waste Generation of Maseru City

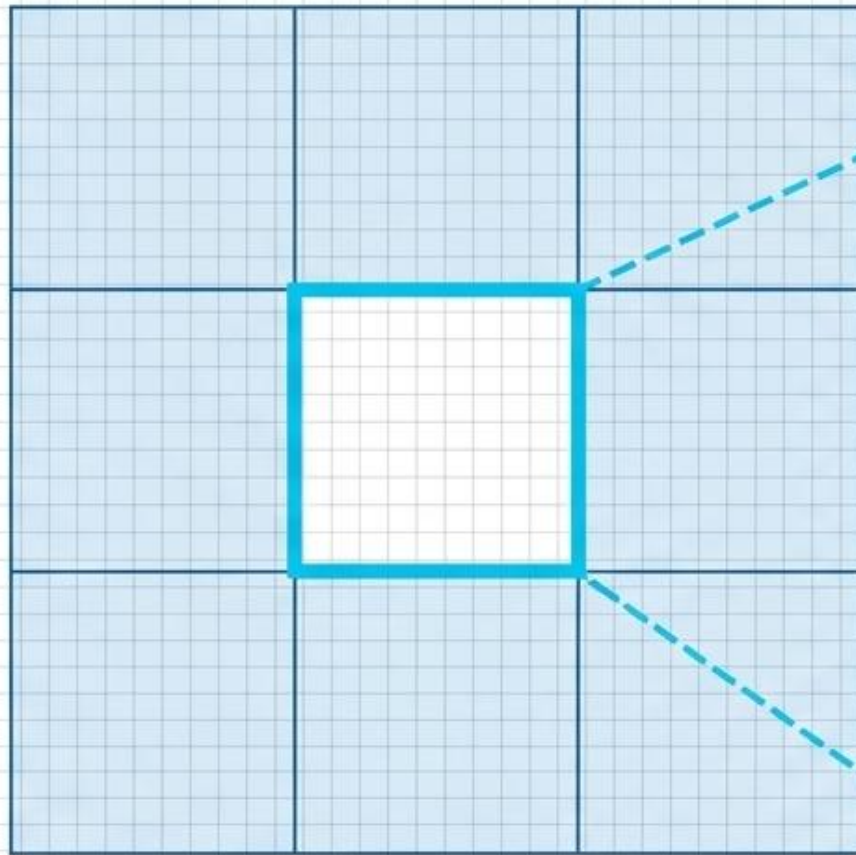
Establishing Units of Calculation

Unlike household waste (calculated per capita), non-household waste requires specific **proxy units** derived from city **business licensing data**.



 **Rule of Thumb:** Assess canteens or shopping centres located within other institutions (like hospitals or hotels) separately as restaurants/retail.

Selecting the Sample Premises



Per Area Quota

-  2 Hotels
-  2 Restaurants
-  2 Schools
-  2 Offices
-  1 Shopping Mall/Supermarket
-  1 Market
-  1 Hospital

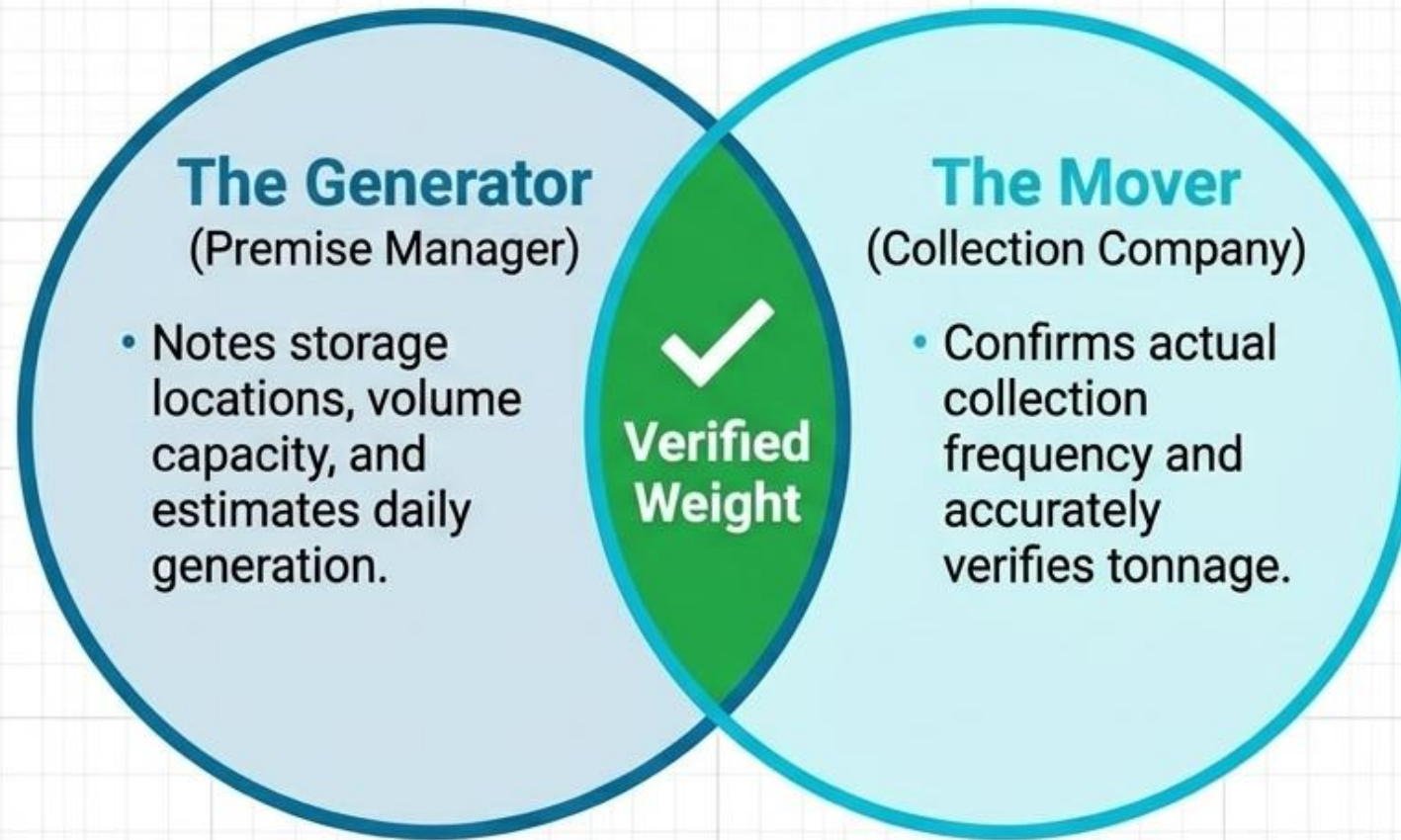
The Target: Select representative premises from across the 9 defined survey areas. (Note: 15 areas required for megacities).

| Conduct Interviews

- Prepare questionnaire for interview:
- Both the premises generating MSW, as well as their contracted collection companies need to be interviewed.
- You can find model questionnaires in Annex 5 of the WaCT Guide



Verifying Survey Responses



Premise Visits: Ask managers about volume. For difficult sites like markets, organise a physical weighbridge measurement of a stall's daily generation.

Service Provider Calls: Identify the contracted collector from the premise interview, then contact them to verify the actual collected amounts.

Quantifying Public Areas

Data Collection Steps:

Step 1:

Identify the specific municipal entity or department responsible for public space cleaning.



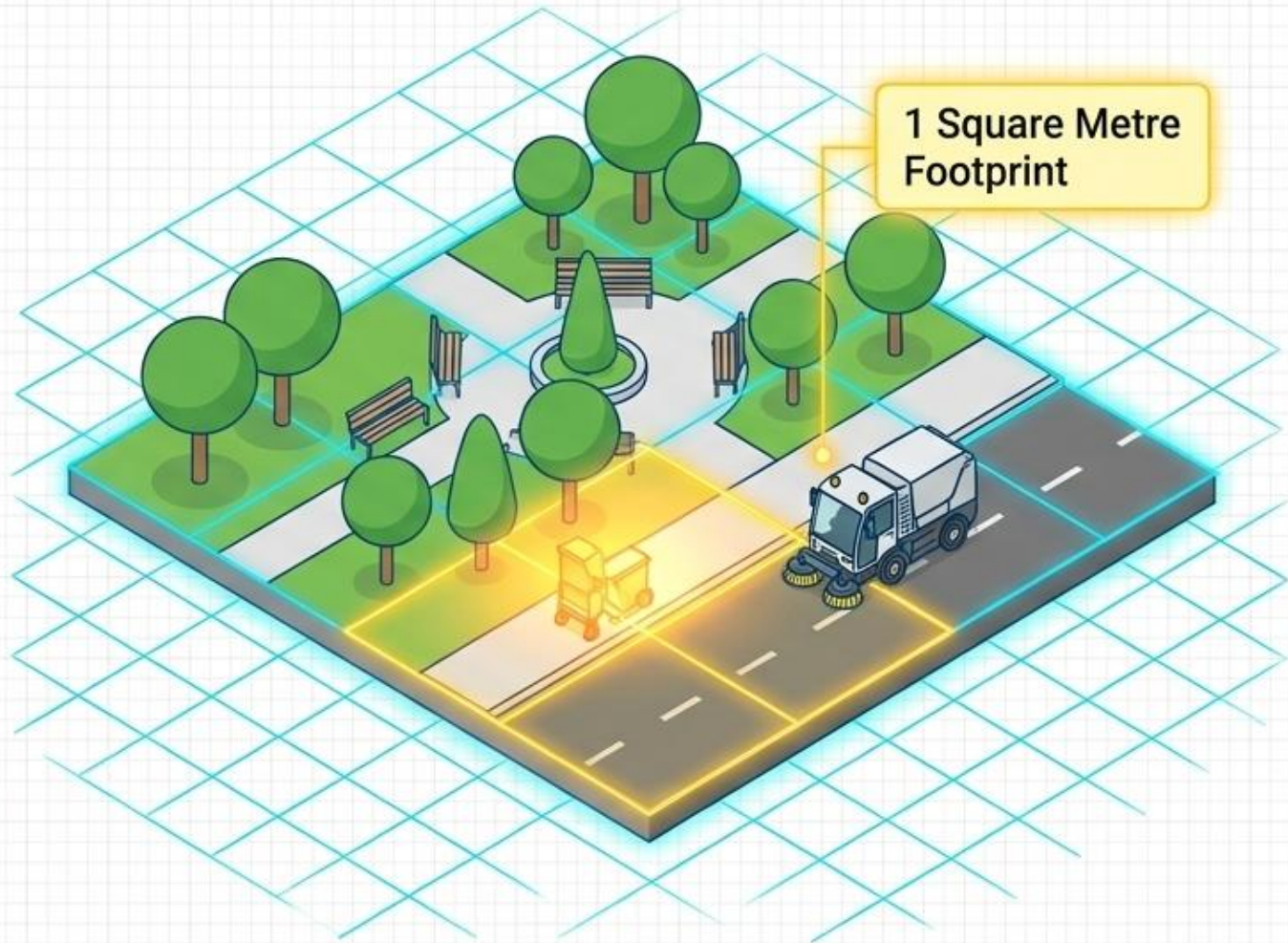
Step 2:

Gather two critical operational data points:

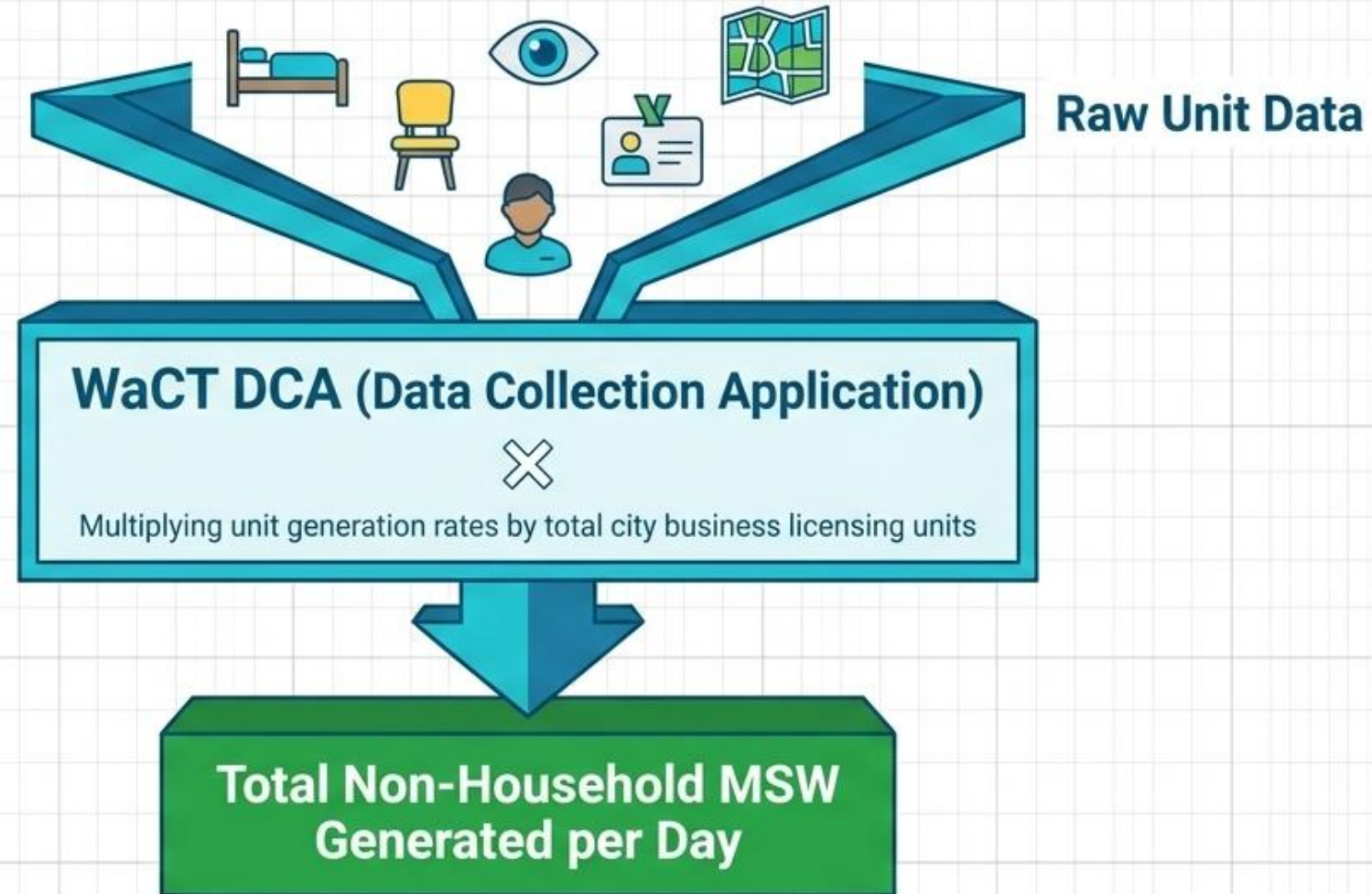
- Average daily collected tonnage.
- Approximate square metres of the specific cleaned area associated with that tonnage.

Step 3:

Obtain the total square metres of public space across the entire city to scale the calculation city-wide.



| Final Calculation of Non-Household Waste Data



Enter per-unit waste generation and total city-wide units into the automated WaCT DCA workbook to instantly output the final non-household generation metric.



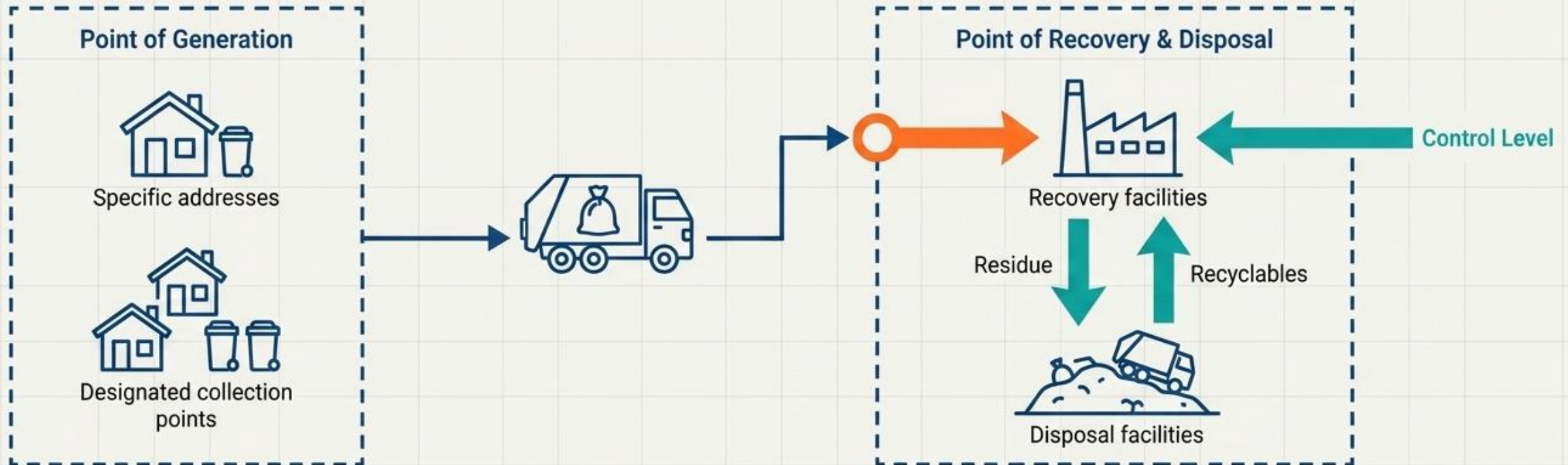
STEP 04: MSW RECEIVED BY RECOVERY FACILITIES AND CONTROL LEVEL OF RECOVERY FACILITIES

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Isolating the recovery variable in the urban waste equation

Step 4 focuses specifically on identifying the volume of MSW received by recovery facilities, quantifying the residue (rejects), and determining the operational control level of these facilities. This data is essential for calculating the true proportion of MSW collected and managed in controlled facilities.



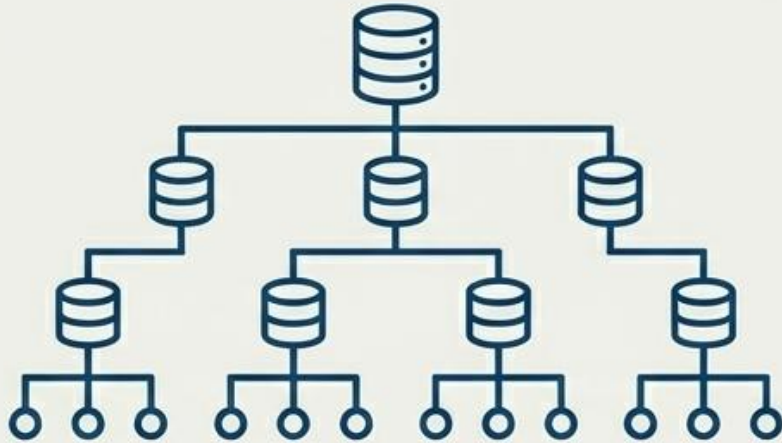
The Four Phases of the Recovery Chain Investigation



Phase 1: Establishing the system boundary and facility list

Municipalities rarely possess a complete register of all recovery actors, especially within the informal sector. A comprehensive assessment requires a dual-track approach to mapping.

Track A: Official Records



Start by extracting data from official business licensing registries on formal recycling and recovery facilities handling MSW generated in your city.

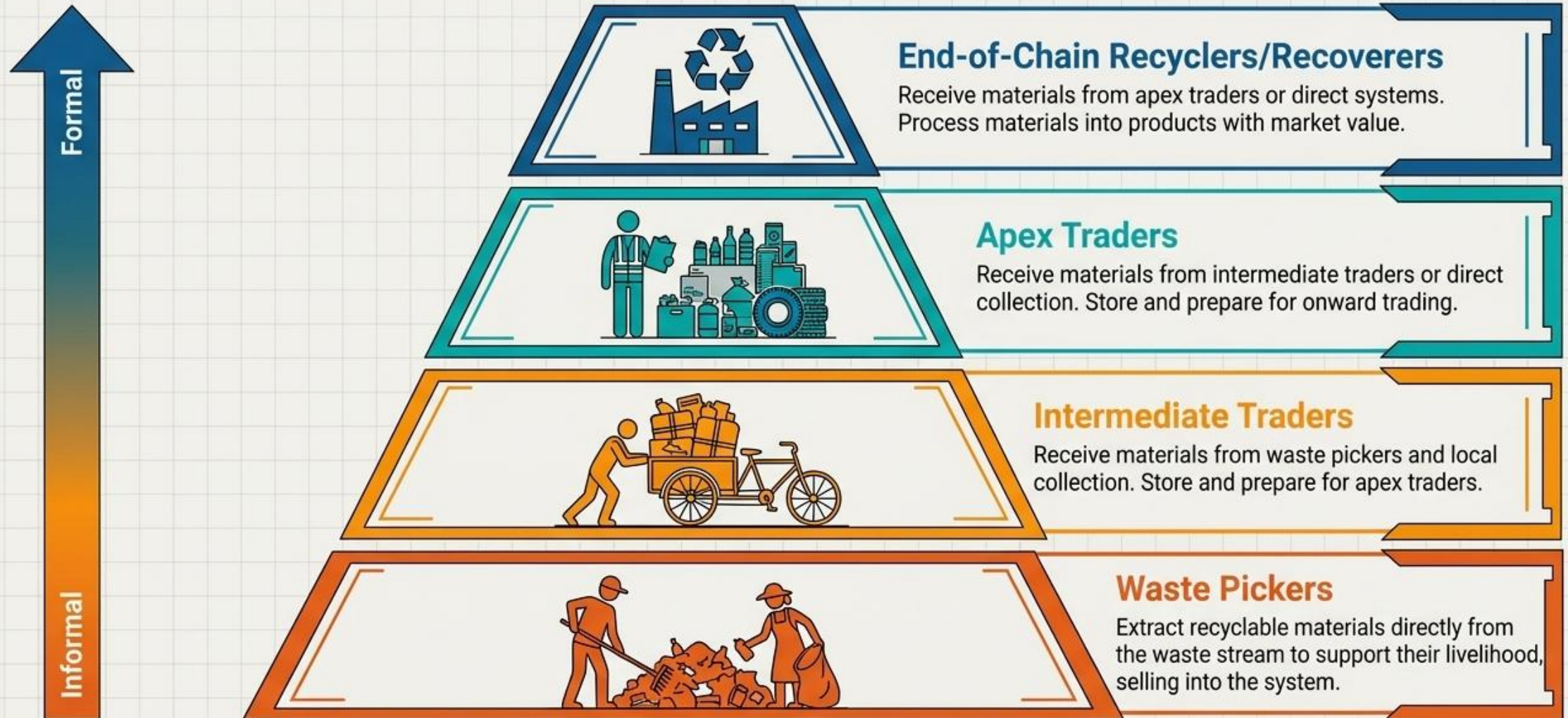
Track B: The Snowball Method



Licensing often misses the informal sector. Surveyors must explicitly ask identified operators who else is involved in the local recovery chain to uncover hidden facilities.

Action: Sketch the entire system and select priority interviews to profile the network, focusing strictly on the *first point of entry*.

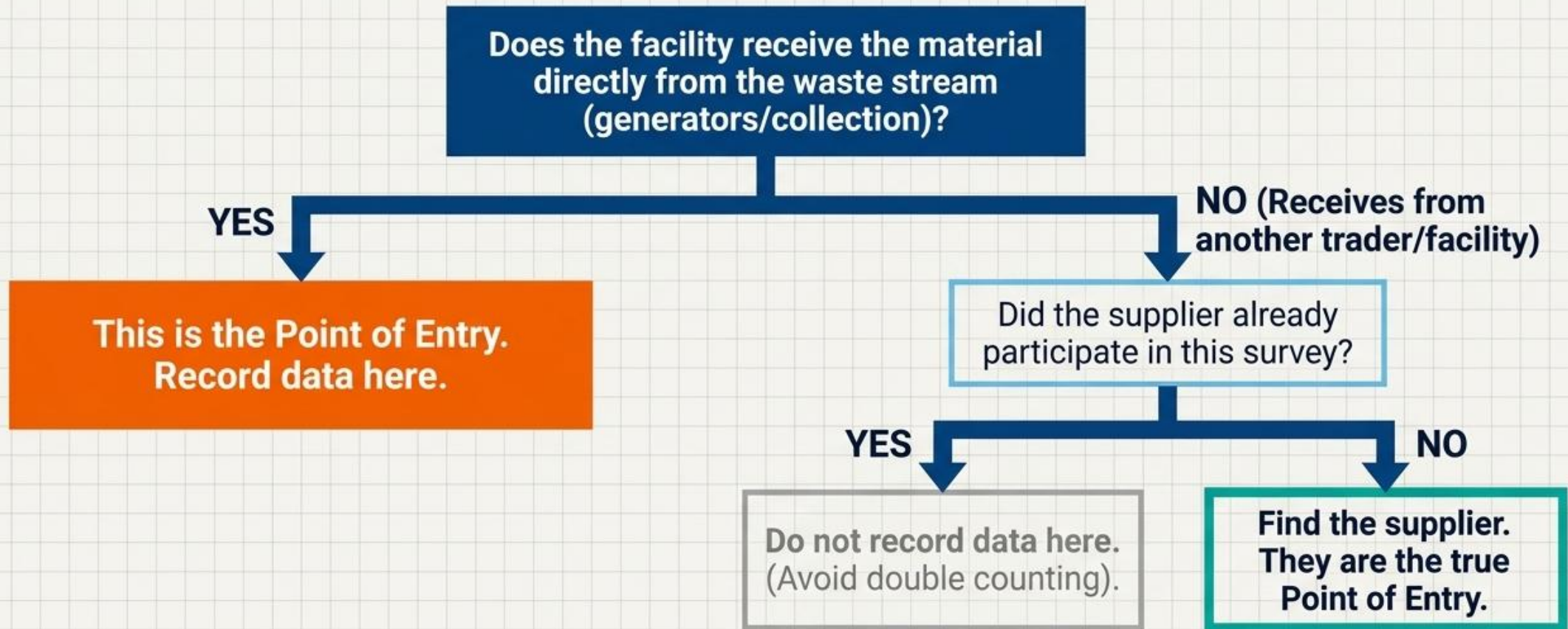
Categorising the complexity of the recovery value chain



Ecosystem Pyramid

Isolating the Point of Entry prevents fatal double-counting

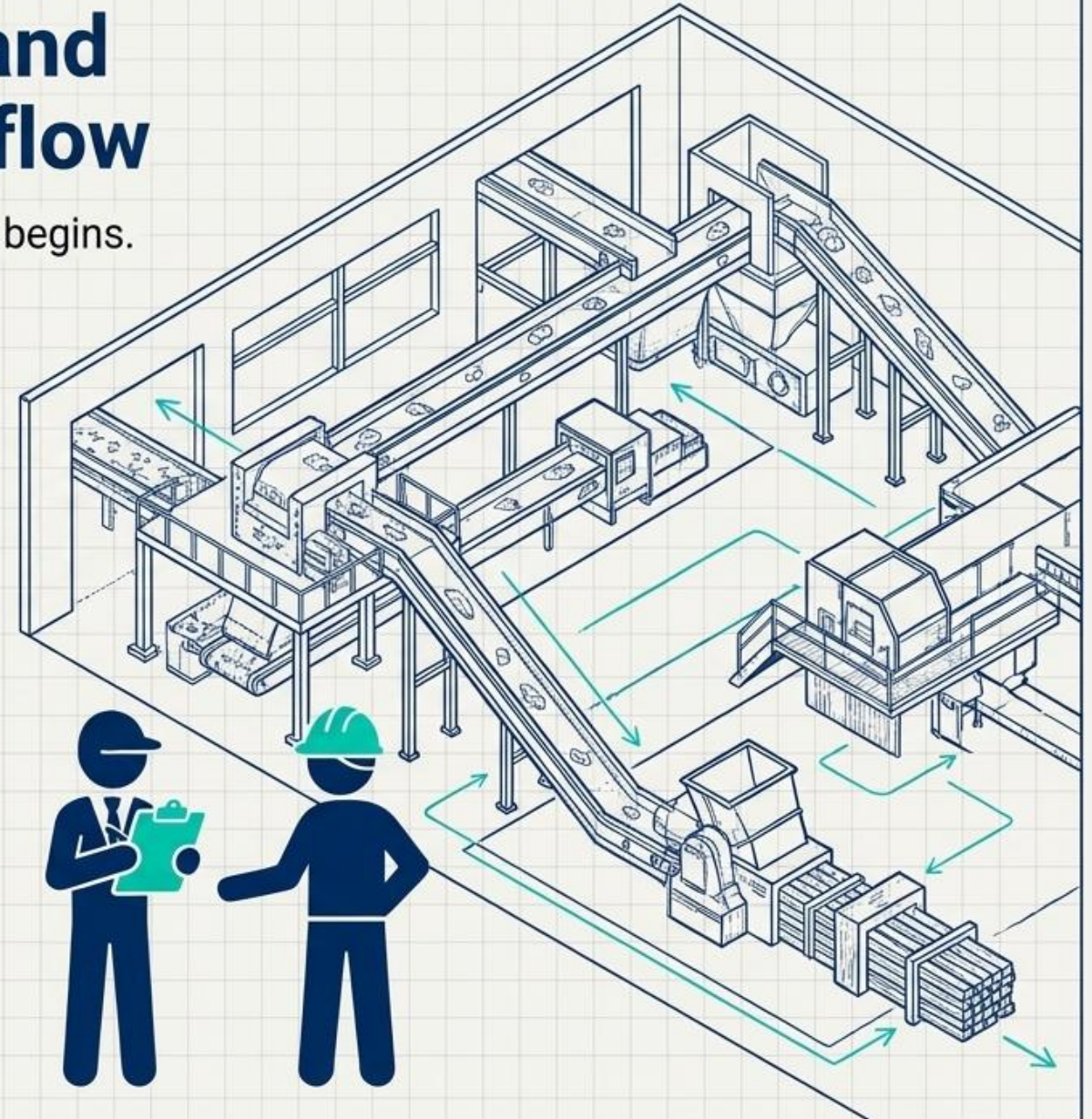
The entire WaCT assessment hinges on identifying the *first discernible location* where waste containing potentially recoverable materials enters the recovery system. We exclude transfers *between* facilities to ensure mathematical accuracy.



Phase 2: Arranging visits and interrogating the material flow

Once the network is mapped, the investigative fieldwork begins.

1	Secure Access and Safety Establish contact to arrange site visits. Secure authority permissions and mandate strict compliance with Environmental Health and Safety (EHS) procedures on-site.
2	The Face-to-Face Interview Use the standard WaCT Annex 6 questionnaire. Ask facility managers the precise quantities of materials received daily and trace their exact origins.
3	Verify the Origin If the facility receives materials from another recovery facility, you have not found the first point of entry. You must trace the chain backwards.



Quantifying Rejects: The 10% Proxy Rule

Not all materials entering the recovery system are successfully recycled. Some 'rejects' leave the system and must be disposed of as waste.

The Efficiency Proxy:

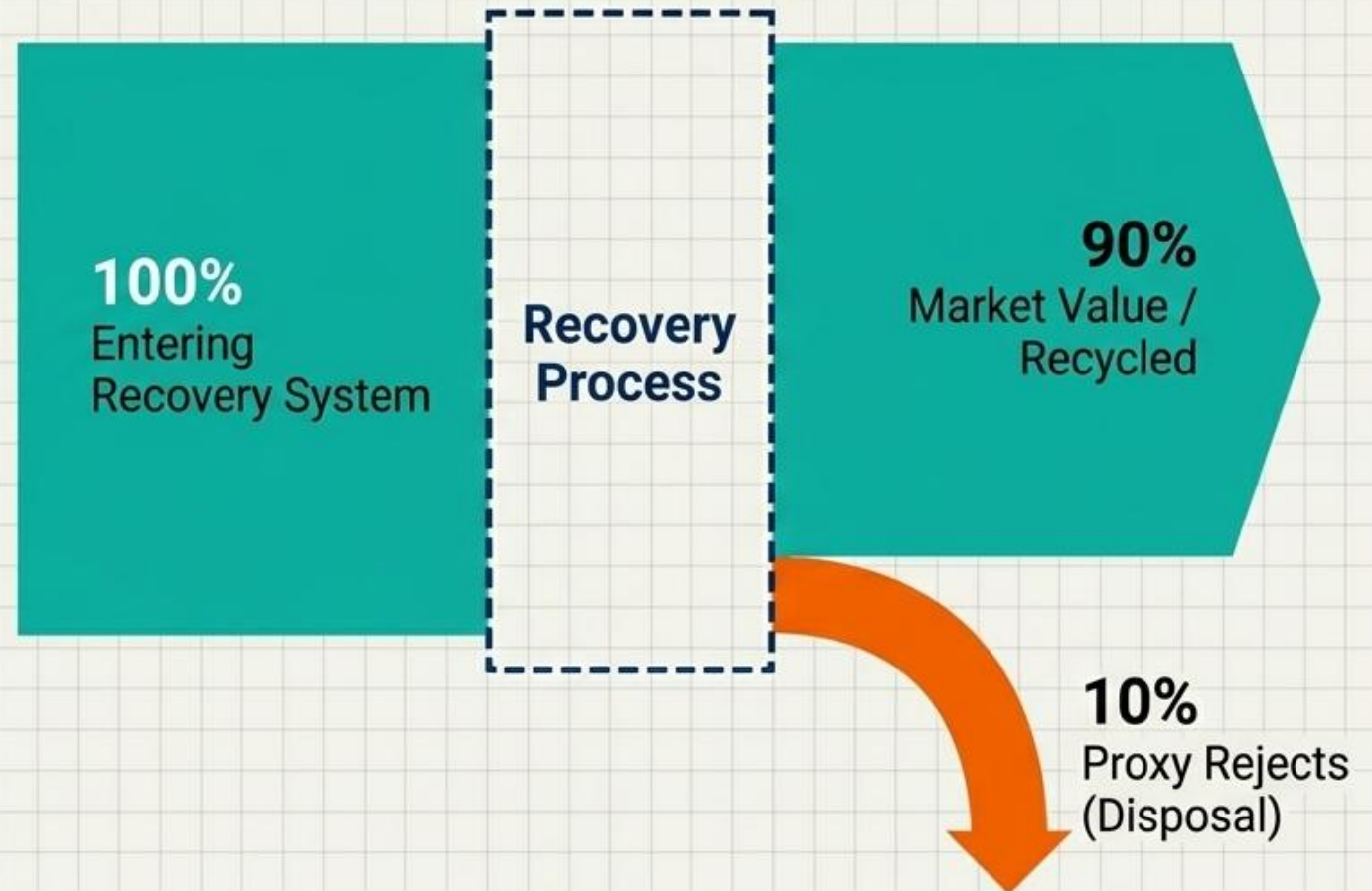
Profiling exact material losses through every stage of a complex value chain requires immense time and budget.

The WaCT Standard:

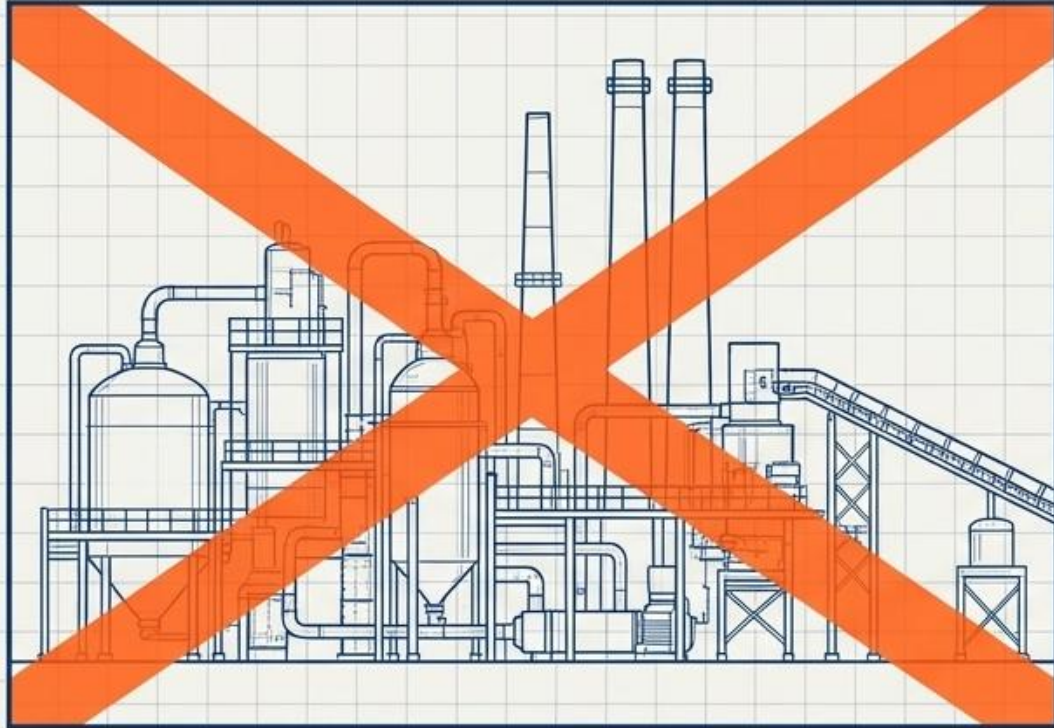
The tool applies a standardised **10% proxy estimate** for material loss within the recovery system.

The Mathematical Impact:

The quantity of MSW collected for recovery will ultimately be 10% higher than the final recycling/recovery rate.



Phase 3: Auditing operational control over engineering design



Constructed to highest global standards, but operated without logging, PPE, or effluent control.



Modest engineering, but strict operational parameters, PPE mandates, and verified waste handling.

The Golden Rule of the WaCT: Emphasis is placed strictly on operational control rather than engineering or design. Reality dictates the score.

From micro-data to macro-policy

The granular mapping of the recovery chain empowers city governments to act.

1. Validate the Informal Sector

Quantify the immense value provided by waste pickers and intermediate traders, paving the way for their formal integration and protection.

2. Target Infrastructure Gaps

Identify exactly where the system leaks and where capital investment in new recovery facilities is required.

3. Drive National Legislation

Provide the empirical evidence required to draft effective Extended Producer Responsibility (EPR) mandates and single-use plastic bans.





You cannot manage what you do not measure.