TERMS OF REFERENCES

Endline Assessment of Municipal Solid Waste and Plastic Leakage in Jakarta, Bogor, Depok Cities Using Waste Wise Cities Tool (WaCT) and Waste Flow Diagram (WFD) Methodologies

Background

In 2020, the World Wide Fund for Nature (WWF) was awarded the Norwegian Broadcasting Channel's Telethon, "TV-Action" (TVA) to conduct the programme "An Ocean of Opportunities". The aim of the programme is to reduce plastic leakage to nature by 30% in nine cities in Southeast Asia (Bogor, Depok and Jakarta in Indonesia; Manila in the Philippines, Hat Yai, Koh Samui, Songkhla, and Surat Thani in Thailand; and Hue in Viet Nam).

Further, the programme has five outcomes: 1) City Authorities have committed to become Plastic Smart Cities and are implementing evidence-based Action Plans, 2) Reduced use of key plastic products, 3) Increased proportion of households with access to basic waste collection services, 4) increased city recovery rate for plastics, and 5) improvement in landfill management. In 2021 all nine cities conducted comprehensive baseline studies to inform the activities of the project, using the methodologies Waste Wise Cities Tool (WaCT), Waste Flow Diagram (WFD) and Wasteaware Benchmark Indicators (WABI). The programme is now coming to a close and WWF wishes to rerun some of the methodologies to produce an endline assessment.

Mandate

The WWF seeks to engage a consultant to conduct an endline assessment with a narrative report for the TV-Action project conducted from 2021-2025 in Jakarta, Bogor, Depok Cities.

Objectives

The key objective of the endline assessment is to leverage primary and secondary data on the municipal solid waste management system in Jakarta, Bogor, Depok Cities. The endline assessment will compare the results against the baseline assessment conducted in 2021. The endline assessment will be conducted using the methodologies Waste Wise Cities Tool (WaCT) and Waste Flow Diagram (WFD).

Scope of work

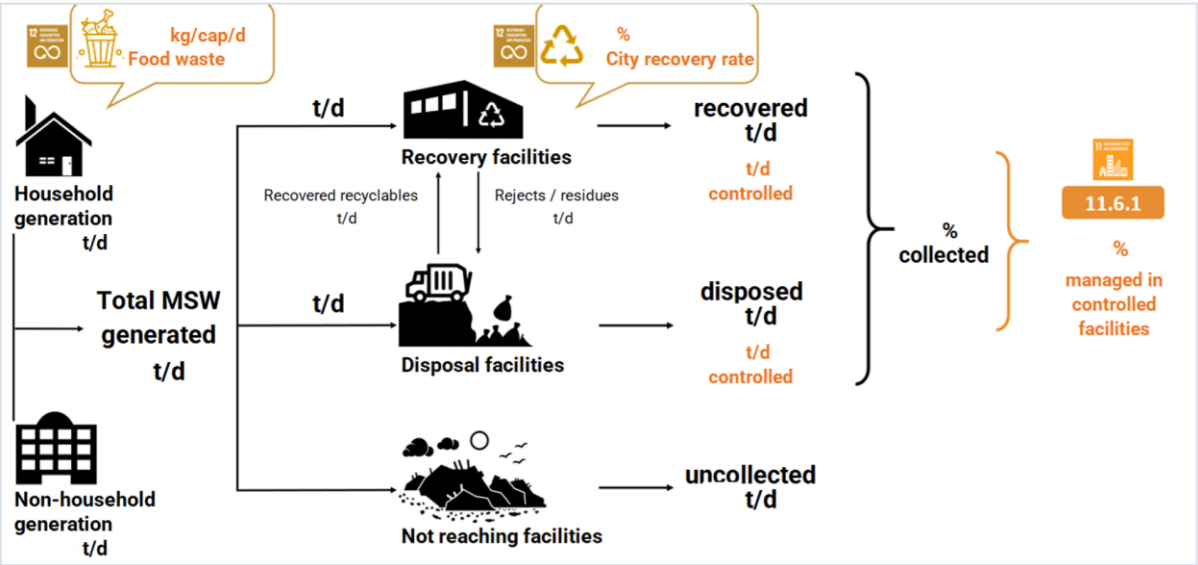
A. Methodologies

The Waste Wise Cities Tool (WaCT)

The WaCT is the result of a joint effort, led by the UN-Habitat, to develop a methodology to support municipalities in the assessment and monitoring of the Sustainable Development Goal (SDG) indicator 11.6.1: "Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal solid waste generated, by the city". Finalized in 2021[1], the WaCT provides a rapid overview of the physical components of the solid waste management (SWM) system in place and quantifies parameters that will help cities and countries to better manage resources, mitigate and prevent environmental pollution, create business, employment and livelihood opportunities and shift towards

[1] https://unhabitat.org/wwc-tool

a circular economy. Apart from SDG 11.6.1, it provides information for two additional SDG indicators related to circular economy in cities: “Food waste generation” (SDG 12.3.1) and “Resource recovery systems” (SDG 12.5.1) in cities. The results from the WaCT process can be visualized in the figure below, that will be completed with the actual figures from the analysis in Jakarta, Bogor, Depok Cities.

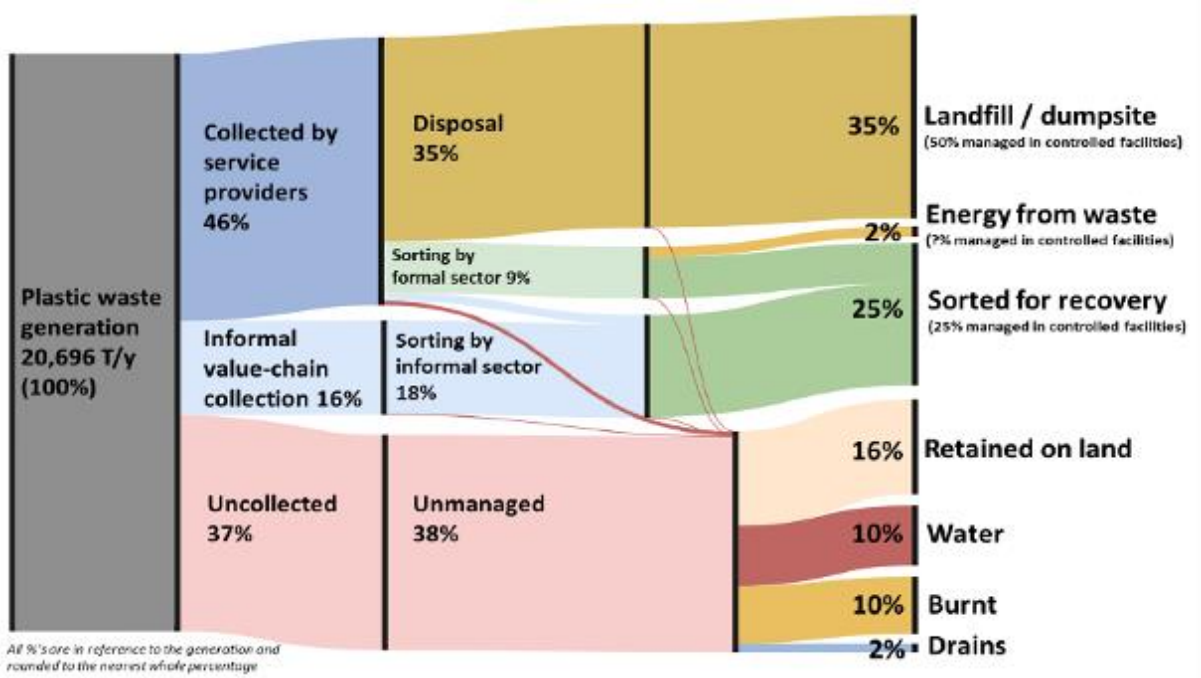


The WaCT consists of 7 steps that guide the collection of data on municipal solid waste (MSW) generated, collected, and managed in controlled facilities, as presented in the figure below and described in further details in the next section.

The Waste Flow Diagram Methodology

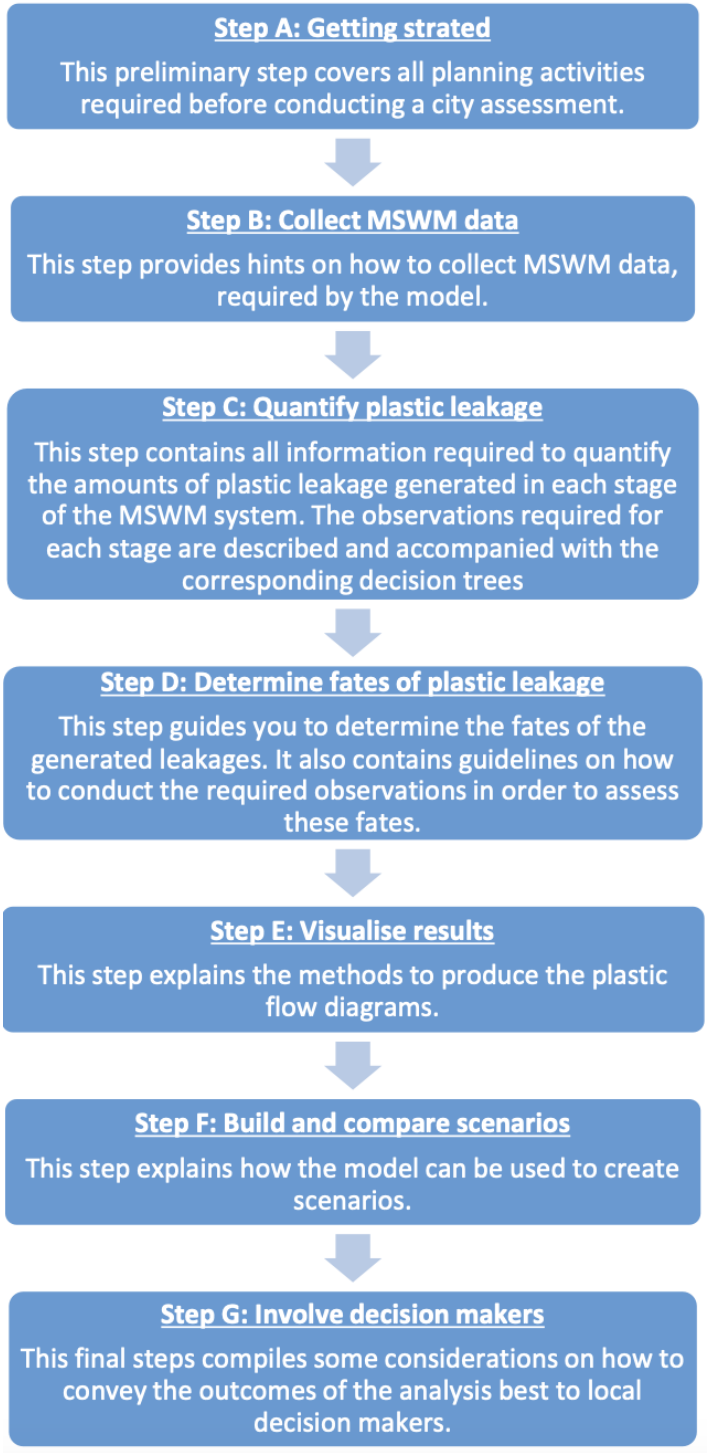
The Waste Flow Diagram (WFD) methodology, developed through a collaboration between GIZ, the University of Leeds, EAWAG and Wasteaware in 2020 aims at mapping the flows of waste in municipal

SWM systems and quantifying the source and fate of plastic pollution[2]. The methodology builds on the monitoring of the SDG 11.6.1 through the WaCT, complemented by observation-based assessment of sources and fate of plastic leakages. The WFD tool provides (i) an estimate of plastic leakage into the environment for each stage of SWM (generation, collection and transport, sorting and recovery, final disposal) and (ii) an estimate of the distribution of this leakage by fate (retained into land, burnt, drainage and into water systems). The result of the WFD for Jakarta, Bogor, Depok Cities will be presented through a Sankey diagram as below:



[2] https://plasticpollution.leeds.ac.uk/toolkits/wfd/

The steps to apply the WFD are as follows:



B. Scope

The endline assessment should be completed in no more than 3 months per city, with approximately 1 month for preparation work, 1 month for fieldwork, and 1 month for analysis, consultation and reporting. The preparatory period should include obtaining the necessary permits to access disposal facilities, as well as other relevant permits.

The scope of the consultancy includes: Conduct the WaCT and WFD assessments for Jakarta, Bogor, Depok Cities, to obtain data on the solid waste management system and plastic leakage of the city. The main findings from each methodology are shown in Table 1. The consultant shall provide information on the parameters in Table 2:

Table 1:	
Expected results	Methodology
Total MSW collected (t/year); Quantity of waste managed in controlled facilities.	WaCT
Quantity of plastic leaking into the environment; Fate of plastic leakage.	WFD

Table 2:		
#	Main data points	Methodology
1	Total MSW generated (t/year); Total household waste generated in the city (t/year).	WaCT Steps 2 and 3
2	Quantification of total household waste; Average per capita waste generation per income level (t/capita/year); Waste composition per income level.	WaCT Step 2
3	Quantification of non-household waste generated.	WaCT Step 3
4	Quantification of recyclable materials received in recovery facilities (per material type) (t/year); Level of control of recovery facilities.	WaCT Step 4
5	Quantification of MSW received in disposal facilities (t/year); Level of control of disposal facilities.	WaCT Step 5
6	Waste composition of disposed waste.	WaCT Step 6
7	Total plastic leakage (KG/Capita/year)	WFD
8	Plastic leakage to water systems	WFD

Analysis of results
Use the provided report template to present the following:

- Comparison of baseline and endline assessment results
- Key MSW differences in the city since the baseline study
- Fact sheet for assessments

Consultant profile

- Minimum of 5 years of relevant experience in municipal solid waste management. Experience in the following activities is considered a plus:
    - Baseline MSW surveys
    - Planning and evaluation of MSW management systems
    - Developing MSW policies and regulations
    - Understanding economic and financial aspects of MSW

    - Working with stakeholders across the service and value chain
- Familiarity with governance aspects for MSW management systems, including:
    - National MSW sector framework conditions
    - Regional/local MSW legal/institutional/organisational arrangements
- Other skills, for example:
    - Communication
    - Familiarity of the survey tools (WaCT, WFD)
    - Analytical skills
    - Communications/stakeholder consultation skills
- Experience in planning and implementing waste-related assessments
- Experience in preparing high quality written outputs
- Experience in organising and moderating stakeholder consultation meetings
- Excellent computer literacy (Microsoft: Word, Excel, and PowerPoint)
- Languages:
    - At least one team member with fluency in spoken and written English
- The Consultants should propose a team which consists of two Key Experts, involved in fieldwork, and a pool of experts to complement additional expertise.
    - Team Leader: Responsible for project management and liaison with the WWF. MSW management experience preferably experience in planning and coordinating surveys.
    - Survey expert: Responsible for conducting the field surveys, including recruiting and managing the survey team. Strong analytical skills, understanding of MSW data, organisational and logistical skills.
    - Pool of experts: As required to complement the key experts for the complete delivery of the project. Key activities will include training the survey team and planning locally for the deployment of the surveys

Team composition and requirement

1. Team leader
    - Advance degree (master's or PhD) on Environmental Engineering, Environmental Science, Urban Planning, Solid Waste Management, or related field
    - Experienced as a team leader or team member of the similar thematic research
    - Familiar with WaCT and WFD methodologies.
    - Experienced as a team leader or team member of the similar thematic research
    - Additional training or certification in WACT, WAC, or WACS, is a plus
    - Strong project coordination and leadership skills, including managing multidisciplinary teams.
    - Experience with work planning, budget oversight, and reporting to donors or government agencies.
2. WaCT/WFD Survey and Methodology Expert
    - Master's degree (or higher) in Environmental Science, Environmental Engineering, Pollution Studies or related field
    - Minimum 5 years of experience working on solid waste management research and conducting waste audits and flow analysis
    - In-depth knowledge of the Waste Wise Cities Tool and WFD framework.
3. Solid Waste Management Specialist
    - Bachelors with 7 years or master degree with 5 minimum experiences or master's degree with 3 years minimum experiences in solid waste management, waste auditing, or related environmental projects.

- Proven experience conducting or managing WACS or similar waste studies in urban contexts.
- Experience with relevant frameworks (e.g., WaCT, WFD, SWM baseline surveys, plastic waste flows).
- Experience working with municipalities or local waste operators is a strong asset.
- Proficient in designing sampling plans and using waste audit tools.
- Knowledge of local and international solid waste categorization systems.
- Data analysis using Excel, SPSS, or other statistical tools.
- Familiarity with circular economy, waste hierarchy, and informal sector integration.

4. GIS/remote sensing and survey assistant
   - Diploma or Bachelor's degree in Geography, Environmental Science, Geoinformatics, Surveying, Urban and Regional Planning, or a related field.
   - Training or coursework in GIS, remote sensing, or field survey techniques is an advantage
   - At least 3 years experiences in spatial data collection, community mapping, GIS data processing,
5. Surveyor team

Deliverables and timeline

All reports are to be submitted in Word and PDF formats, with Arial font, size 11, 1.5 space.

Table 3:

Deliverable	**Size of deliverable**	**Deadline (from project start)**
Fieldwork plan	Maximum 5 pages (Word document) or 20 slides (PPT*)	July 20, 2025
Draft report	Maximum 20 pages (Word document)	August 31, 2025
Final report with WaCT and WFD excel sheets	Maximum 20 pages (Word document)	September 30, 2025
Presentation of report to WWF (PPT format)	Maximum 20 slides (PPT)	October 15, 2025

*PPT: Powerpoint

Acronyms

MSW	Municipal Solid Waste
PPT	Powerpoint
SDG	Sustainable Development Goal
SWM	Solid Waste Management
TVA	TV-Action
WaCT	Waste Wise Cities Tool
WFD	Waste Flow Diagram
WWF	World Wide Fund for Nature

Submission of interest

The interested candidates are requested to submit a proposal, which must include:

a. Covering letter
b. Company description

c. Relevant project references (with copies or online links, to at least two relevant projects)
d. Proposed methodology, workplan and milestone
e. Project team
f. Proposed budget and timeline per activities

Along with the proposal, please also submit the documents below:

a. CVs ok key experts
b. Legality documents (akta pendirian, akta perubahan, SK Kemenkumham terkait Akta, NPWP, SKT, SPPKP, company's bank account number)

Please send the application as an e-mail, with attachments, to procurement@wwf.id, cc: smulatsih@wwf.id . Applications will be accepted until 4th July 2025 and will be reviewed on a rolling basis. WWF reserves the right not to accept any tenders submitted.