

Slide 1: Module 5: Monitoring, Evaluation, and Continuous Improvement

Slide 2: Session 2: Monitoring, Evaluation, and Continuous Improvement

Slide 3: Introduction

The introduction emphasizes the importance of monitoring and assessing food waste to understand patterns, identify reduction opportunities, and evaluate the effectiveness of interventions. It explains that effective food waste monitoring requires tailored methods and tools suited to specific contexts and objectives. By integrating these methods and tools, stakeholders can design comprehensive systems to drive impactful action and inform policy development.

Slide 4: Methods for Food Waste Monitoring and Assessment (Part 1)

This slide lists the methods and tools for waste monitoring and assessment:

- Waste audits
- Smart sensors and IoT devices
- Plate waste studies
- Surveys and questionnaires
- Data analysis and reporting tools
- Benchmarking and indicators framework
- Food waste tracking software
- Observational studies
- Life cycle assessment
- Mass-balance method

Slide 5: Methods for Food Waste Monitoring and Assessment (Part 2)

This slide describes Waste Audit method:

Waste Audit is a direct analysis of waste streams to measure the quantity and types of food waste generated by using tools such as sorting stations (physical setups for segregating waste into categories), Scales (for weighing waste by type), Data Sheets or Digital Apps (for recording waste quantities and classifications).

Process

- Identify waste sources (kitchen, consumer plates, etc.).
- Conduct waste segregation and categorization.
- Measure and document results.

Slide 6: Methods for Food Waste Monitoring and Assessment (Part 3)

This slide describes Surveys & Questionnaires:

Surveys & Questionnaires consist of the collection of self-reported data from households, businesses, or institutions to understand food waste generation and disposal habits by using tools such as Online survey platforms (e.g., Google Forms, SurveyMonkey), Structured interview guides, Mobile data collection apps (e.g., KoboToolbox).

Process

- Develop structured surveys.
- Distribute to stakeholders (employees, consumers, households).

- Analyze responses for actionable insights.

Slide 7: Methods for Food Waste Monitoring and Assessment (Part 4)

This slide describes Observational studies and Smart sensors and IoT Devices: Observational studies consist of monitoring of food waste practices in real-time to gather qualitative and quantitative data by using tools such as observation checklists. Smart sensors and IoT Devices consist of the Use of technology to measure waste quantities and composition in real-time by using tools such as bin sensors that measure weight or fill levels, IoT-enabled scales linked to software platforms.

Process

- Install sensors in waste bins;
- Use connected software to collect and analyze data.

Slide 8: Methods for Food Waste Monitoring and Assessment (Part 5)

This slide describes Data Analysis & Reporting Tools and Life Cycle Assessment: Data Analysis & Reporting Tools consist of the compilation and analysis of data to identify trends and generate actionable insights by using tools such as Spreadsheet software (e.g., Microsoft Excel, Google Sheets), Statistical analysis tools (e.g., SPSS, R, Python), Visualization platforms (e.g., Tableau, Power BI).

The Life Cycle Assessment consists on the analysis of the environmental impact of food waste throughout its lifecycle by using tools such as LCA software and Carbon footprint calculators.

Slide 9: Methods for Food Waste Monitoring and Assessment (Part 6)

This slide describes Plate Waste Studies and Benchmarking & Indicators Frameworks Plate Waste Studies Benchmarking & Indicators Frameworks measure of the amount of food left uneaten on plates in restaurants, schools, or institutions by using tools such as Food residue scales, Sampling sheets and Image recognition apps for estimating waste.

Process

- Weigh food portions before and after service;
- Record and analyze the difference.

Benchmarking & Indicators Frameworks consist on the comparison of food waste data against established benchmarks or indicators for examples FAO Food Loss Index for global comparisons, WRAP Toolkit for detailed food waste analysis and benchmarking and Sustainable Development Goal (SDG) indicators, particularly SDG 12.3 (food loss and waste).

Slide 10: Methods for Food Waste Monitoring and Assessment (Part 7)

This slide consists of Mass-Balance method and Food Waste Tracking Software Mass-Balance method consists on the comparison of the input (e.g., food purchased) and output (e.g., food sold, consumed, wasted) in a system.

Process

- Collect data on food inputs and outputs;
- Identify discrepancies to estimate waste levels.

Food Waste Tracking Software are software solutions specifically designed for logging and analysing food waste data (efficient tracking in commercial kitchens, food service, or manufacturing). Examples: Leanpath, Winnow, Phood

Slide 11: Methods for Food Waste Monitoring and Assessment (Part 8)

Tools for Food Waste Monitoring and Assessment:

- Manual tools: scales, sorting bins, waste audits sheets
- Digital tools: smart bins, IoT sensors, food waste software
- Statistical and analytical tools: Spreadsheets software (Excel, Google sheets..), Data visualisation tools (Tableau, Power BI..)
- Camera-based analysis: User AI and Image recognition (e.g. Winnow, Vision)
- Mobile Apps: User AI and Image recognition (e.g. Winnow, Vision)

Slide 12: Methods for Food Waste Monitoring and Assessment (Part 9)

This slide provides practical considerations for effective food waste monitoring:

- Define objectives clearly to align monitoring efforts with goals like compliance, cost savings, or waste reduction.
- Engage stakeholders—including staff, customers, and management—in data collection.
- Use standardized methods for consistent and comparable data.
- Pilot tools and methods on a small scale before implementing them broadly.

Slide 13: Challenges in Food Waste Monitoring & Assessment

The main challenges in food waste monitoring and Assessment are the following:

- Inconsistent Data Collection Methods
- Lack of Standardized Measurement Tools
- High Costs of Advanced Technologies
- Limited Stakeholder Engagement
- Difficulty in Tracking Waste Across the Supply Chain
- Data Accuracy and Reliability Issues

Slide 14: Best Practices for Effective Food Waste Monitoring

To face the challenges in food waste monitoring and Assessment the following best practices can be adopted:

- Define Clear Objectives for Waste Monitoring
- Utilize a Combination of Quantitative and Qualitative Methods
- Engage Stakeholders in the Monitoring Process
- Leverage Technology for Real-Time Tracking
- Analyze and Act on Data to Reduce Waste
- Continuously Review and Improve Monitoring Strategies

Slide 15: Case Studies of Successful Food Waste Monitoring

There are several case studies on successful food waste monitoring strategies as for examples:



- Leanpath: Reducing waste in commercial kitchens with AI
- WRAP (UK): Large-Scale food waste benchmarking and reduction
- Too Good To Go: Using Apps to minimize consumer-level waste
- Supermarkets' dynamic pricing strategies to reduce waste based on factors such as demand, expiration dates, and inventory levels
- Government initiatives on food waste policies and incentives (for example, France was the first country to ban supermarkets from destroying unsold food (February 2016)).

Slide 16: Thank you