IFC Food Loss and Waste Prevention Advisory for

Manufacturers (processing)

Fias THE FACILITY FOR INVESTMENT CLIMATE ADVISORY SERVICES

GAFSP global agriculture & food security program

Canada

IFC International Finance Corporation WORLD BANK GROUP

What is Food Loss and Waste (FLW)?

Food Loss and Waste (FLW) – the decrease in quantity or quality of food intended for human consumption, of either edible or inedible status, caused by actions and decisions of all actors along the food supply chain.

Food Loss (FL) – the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers and consumers.

Food Waste (FW) – the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers.

Food Surplus (FS) – food and inedible parts that are sent to the following: redistribution to people (e.g. through a charity or commercial redistributor), animal feed or bio-based materials/biochemical processing (e.g. feedstock for other industrial products).

As applicable to the Manufacturing (processing) stage of the Food Supply Chain, Food Loss (FL) is the primary concern.

Why is FLW important?

- Approximately one-third of all food produced globally by weight is lost or wasted along the food supply chain annually (FAO, 2013).
- Despite producing enough food to feed everyone, 733 million people still face hunger globally (FAO, 2024).
- Of all municipal solid waste generated globally, organic waste represents 40% (World Bank, 2018).
- The cost of global food loss and waste (FLW) is estimated at $1 trillion (UNEP, 2024).
- Concerning impacts to the environment, FLW causes about 8-10% of global Greenhouse Gas (GHG) emissions (UNFCCC, 2024).

Focusing on food manufacturers (processors):

- The processing sector accounts for around 5% to 10% (depending on category of food and scope of operations) of the 30% of food that is lost in food production.
- Food loss incurs hidden costs and inefficiencies for food manufacturers.
- The manufacturing (processing) stage represents a central part of the food supply chain with access to farmers, wholesalers upstream and retailers, food service and households downstream. This means that they can drastically reduce the amount of food that is wasted in the processing stage.
- Main causes of food loss within manufacturing are related to 'inefficiencies' (i.e., poor transportation, interrupted production, product changes, human errors, and product defects). Food manufacturers need to identify these inefficiencies and determine if they are avoidable.
- Food loss generated at the manufacturing stage has a high valorization potential, as the food loss streams are present in large, concentrated and homogeneous quantities.

The FL Reduction Journey

Here are actions food manufacturing businesses can consider when tackling FL generation.

1. Governance

- Establish a FL Task Force.
- Develop a FL strategy including specific FL goals, objectives and a FL reduction target.
- Develop a FL Reduction Plan.

2. Measure and Track

- Define the scope of measurement.
- Define the separation and measurement protocol.
- Collect primary data, perform data gap analysis and extrapolation.

3. Food Loss reduction plan

- Establish aligned definitions of FL and food surplus.
- Conduct an assessment and analysis to identify where FL occurs. Identify priority areas.
- Evaluate the economic, environmental and social impacts of FL.
- Decide on the key actions to be taken.
- Ensure that reduction actions are communicated effectively to all relevant stakeholders.
- Involve employees, suppliers, customers, and other relevant stakeholders in the development of the FL Reduction Plan.
- Foster collaboration and cooperation between different stakeholders to gain insights, perspectives, and support for implemention of FL related initiatives.
- Explore the use of technology solutions such as data analytics, sensors, monitoring systems, applications and automation to optimize operations and minimize FL.
- Establish monitoring mechanisms to track progress towards FL reduction goals and targets. Set KPIs.

4. Food Recovery

- Develop a redistribution program for food surplus that can be channeled to human consumption and/or animal feed.
- Follow the FLW hierarchy to designate destination for your FL generation. Ensure that FL that can't be prevented or reused is treated appropriately, recycled in biogas production and/or composted, with last option as landfilling.

5. Reporting

- Report progress, best practices, lessons learned and actions taken.
- Communicate progress to consumers to promote best practices, improve brand image and make them part of the company's identity.
- Share progress with other manufacturing businesses in order to have a greater positive impact on the global FL prevention and reduction.

What are the challenges food manufacturing businesses might be facing?

Food manufacturers may face the following challenges when tackling FL:

- Varying quality of inbound raw materials - especially those impacted by unpredictable weather events.
- Meeting customer order requirements without over-producing.
- Inefficient machinery and factory kit can be costly to maintain/replace/improve.
- High staff turnover especially for seasonal products can imped training and awareness on FL challenges.
- Brand and high product quality standards.
- Poor storage conditions for raw materials or finished goods.
- New products development can adversely affect average FL figures due to the unpredictable demand forecast.
- Packaging defects or lack of suitable packaging for products.
- Failure of processing equipment and machines.
- Poor storage conditions: poor management of temperature and humidity and poor handling of delicate products.
- Large quantities of food discards.
- Contamination of produce.
- Product recall.

Collecting FL Data

- The scope of the FL inventory should include all food and associated inedible parts, covering all operations the business owns or directly controls.
- The measurement method does not need to be highly technical or fully comprehensive, but must be consistent and reliable, and focused on the objectives agreed.
- Food manufacturers will be motivated to think about FL solutions, but data collection can be challenging.
- The FL inventory must be reported in weight.

Please note that for food manufacturers, this is usually looked at in tonnages & values and then measured as an intensity (%).

- There is no one specific method to quantify FL, but the main quantification approaches for food manufacturers are:
    - **Direct measurements:** Weighing or volumetric assessment of food if it has been collected and separated from other materials.
    - **Estimate based sampling:** Sampling designs can involve counting or weighing sample amounts of a product at agreed upon points during the packing, storage, and transportation stages. This data is then scaled up across the entirety of production to arrive at an overall estimate of food surplus and waste.
    - **Mass balance:** Indirect method to calculate FL using data from other mass flows, not waste ones and statistical data.
    - **Questionnaires and interviews:** Methods for collecting data that are measured or estimated.

What are the benefits for food manufacturing businesses?

Here are some of the benefits food manufacturers can obtain from beginning their FL reduction journey:

Environmental (including Climate)	• Reducing FL in manufacturing reduces the use of inputs (i.e. energy, water and land), and utlimately reduces the carbon footprint of food production. • Engagement in FL can help deliver climate goals both for own operations and with supplier base.
Social	• FL reduction may enhance food availabilty and accessibility, and therefore improve food security. • Increasing employee and customer awareness on the impact of FL and benefits of reduction. • Increasing positive local community engagement by creating partnerships with charities, food banks for donation of food surplus.
Financial	• A reduction in costs of between 5 - 6% in cost of goods (COGs) is estimated when FL practices are improved (McKinsey, 2022). • Improving efficiency in operations when FL is taken into account and managed responsibly. This will reduce hidden costs which are associated with improper FL management. • Reducing FL means reducing costs as wasted materials need to be processed and/or lose value. • Being aware of the FL that occurs and knowing how to prevent it can increase operational functionality and effectiveness of the company.
Legislative	• Reducing FL ensures ahead of time adherence to emerging FLW legislations obliging actors from the food industry to report and monitor their FL generation. • Accounting for FL generation allows companies to be preprared in case they want to sign voluntary FLW agreements i.e., WRAP / Champions 12.3 / 10x20x30 / 10x20kx30.
Reputational (Brand)	• Improving corporate responsibility. • Meeting customer expectations of companies to deliver sustainability measures in their operations, in the products that they sell, and in their supply chains. • Inspiring more conscious marketplace and positive change.

Sample questions for food manufacturing businesses

Understanding where business is on its FL journey is essential before taking any steps setting reduction targets and developing roadmaps. Asking questions such as the ones below helps to establish the current status and define the next steps accordingly.

- Is the company familiar with the definition of FL in its sector?
- Does the company have an estimated volume of their FL generation?
- Has the company estimated the economic cost associated with its FL generation?
- Does the company already have KPIs for FL monitoring?
- Does the company engage in sustainability reporting?
- Is the company considering the role of FL as part of their GHG emissions reductions roadmap / net zero journey?
- Is the company signatory to voluntary FLW agreements and needs support in following these i.e., WRAP / Champions 12.3 / 10x20x30 / 10x20kx30?
- Does impending legislation in FL impact the company? (please note this question is country specific – i.e., France and Spain have legislation and mandatory requirements with regards to FLW measurement and reporting).
- Is the company struggling with cost-of-goods increases and therefore could benefit from the FL prevention and reduction in terms of cost savings?
- Does the company have a process set up to prevent / reuse FL thus avoiding FL?
- Does the company have a process set up to donate / re-distribute surplus food, thus avoiding FL?
- Has the company identified or partnered with local charity associations that could benefit from receiving the food surplus donations?
- Does the company have a process set up to appropriately dispose of unavoidable FL?
- Is the company communicating with its customers to influence behavioral change and attitude towards FL?
- Is the company prepared for the customers' growing demands on sustainability measures in its operations?
- Has the company already identified any hotspots of FL generation in its operations? But does not yet know the cause of it?
- Has the company engaging with suppliers to understand FL across the value chain?
- Are staff trained in identifying FL and food surplus and what do with it?

Insights gathered from these questions will help in designing measurement procedures, reporting standards, and site metrics which can be tailored to the company's needs and amenities.

Potential Interventions

Interventions can be done by:

a. **The company directly** – either before IFC disbursement or after with appropriate reporting back to IFC;

b. **The company works in partnership with IFC**, potentially through Advisory Services engagement.

Examples:

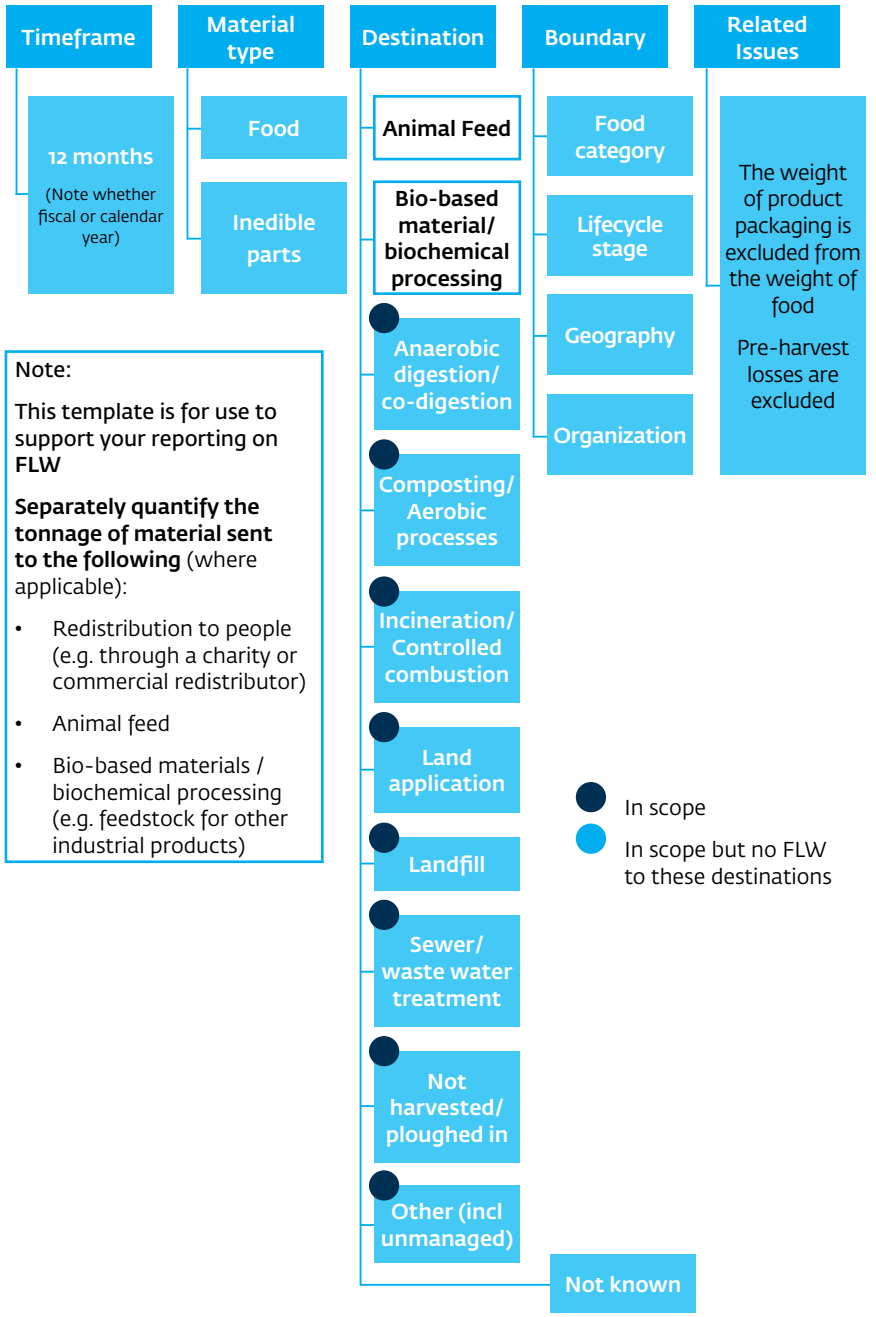
- Initial assessment of status quo.
- FL measurement and monitoring.
- Impact evaluation of actions and interventions.
- Engagement with suppliers by promoting their FL reporting.
- Create culture on FL inside the company through employee awareness and training on FL prevention/reduction.
- Packaging development and optimization.
- Improve inventory management.
- Increase financing for innovation and scaling of promising technologies.
- Improve access to infrastructure and markets.
- Introduce energy-efficient, low-carbon cold chains.
- Improve food handling to reduce damage.
- Optimise production process to eliminate causes of FL (i.e., machine calibration, clean-down routines and frequency, start-up and run-down time).
- Review quality control processes to identify if unnecessary FL is being created by QA process.
- Ensure high forecast accuracy to avoid over-stock especially with short shelf-life items.
- Ensure storage facilities do not contribute to FL occurrence.
- Identify any edible by-products and ensure they are not wasted by reviewing circularity measures and new product development opportunities.
- Ensure new product development is carefully managed to avoid additional FL
- Identify local / national partners for food surplus redistribution.
- Ensure any remaining FL retains highest value by processing via anaerobic digestion.
- Digitization of processes.

IFC FLW Advisory Tools

- **Assessment Tool** permits verification of current FLW status of client and review of existing practices.
- **Training course** introduces key issues on food loss and waste (FLW) in the food supply chains. It is designed to help IFC clients understand the importance of FLW and the need to act. In this regard, this course builds on the global Food Loss and Waste Standard, the most widely system to quantify and report FLW, and guidance on how to set targets and a roadmap.
- **Data Capture Sheet (WRAP)** supports the FLW data analysis and monitoring process. The tool is in line with the principles to Target, Measure and Act in support of UN Sustainable Development Goal 12.3, and it complies with the FLW Standard.
- **Progress Tool** allows to track year on year reductions in FLW and give a monetary value to FLW and food surplus.
- **Data Validation Checklist** enables IFC to check over any data that clients have entered. This is a very high-level checklist, that allows IFC to ensure the key information has been included.
- **Client Tool Checklist** goes into detail about each step of the reporting process and assists with the reporting process for both the WRAP data sheet and the Progress Tool.
- **IFC Food Loss Climate Impact Tool** assists in quantification of FLW in terms of avoided GHG emissions.

NB: IFC FLW Advisory Tools encompass both Food Loss and Food Waste, therefore the terminology used in reference to IFC Tools includes FLW.

Scope of the FLW Inventory



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