



**International
Standard**

ISO 20001

**Food loss and waste management
system — Requirements for the
prevention and minimization of
food loss and waste across the food
supply chain**

*Système de management des pertes et du gaspillage
alimentaires — Exigences relatives à la prévention et à la
réduction des pertes et du gaspillage alimentaires dans
l'ensemble de la chaîne d'approvisionnement alimentaire*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 20, *Food loss and waste*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 General

ISO supports in principle and through the development of its standards the implementation of the United Nations' 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). This includes SDG 12 to "Ensure sustainable consumption and production patterns", and its Target 12.3:

"By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses".^[7]

In addition to helping to achieve UN SDG Target 12.3, reducing food loss and waste (FLW) supports the delivery of 14 of the other 17 UN SDGs.

FLW has significant economic, social and environmental impacts. Various studies have indicated that FLW results, among other things, in:

- the loss of a significant amount of food produced for human consumption;
- major economic losses;
- increased food insecurity and malnutrition;
- wasted agricultural resources including water, fertilizer and land use;
- a negative effect on climate including increased emissions from global food systems.

Reducing FLW, therefore, has a financial benefit for businesses in the food supply chain and beneficial social impact, including alleviating world hunger. It also reduces pressure on climate and natural resources.

0.2 Adoption of a food loss and waste management system

The adoption of a food loss and waste management system (FLW management system) is a strategic decision for an organization that can help improve its overall performance in mitigating FLW.

The potential benefits to an organization of implementing an FLW management system based on this document are:

- the ability to facilitate the measurement, quantification, monitoring, prevention and minimization of its FLW, including calculating the economic cost of FLW;
- the ability to communicate and report on its FLW and the actions it is taking to prevent and reduce FLW;
- improving existing production and processing methods and enriching and adding value to by-products;
- the production of products and services that meet customer and applicable statutory and regulatory requirements;
- identifying and addressing risks and opportunities associated with its FLW objectives;
- the ability to demonstrate conformity to specified FLW requirements, and the objectives set out in an organization's sustainability, environment, social and governance (ESG) or circular economy strategy.

This document employs the process approach (see 0.5), which incorporates the Plan-Do-Check-Act (PDCA) cycle (see 0.5.2) and risk-based thinking (see 0.5.3).

0.3 FLW management system principles

Risks of FLW and opportunities for the mitigation of FLW exist at each stage of the food supply chain and within each food organization. Therefore, FLW prevention and minimization actions throughout the food supply chain are essential and mitigation is ensured through the combined efforts of all the parties involved in the food supply chain. In some cases, governments and non-profit organizations are also able to support

the overarching objective of reducing FLW. Measures to reduce the risk of FLW should not compromise food safety.

This document specifies the requirements for an FLW management system that is based on the principles that are common to ISO management system standards.

0.4 Principle-based framework for the prevention and minimization of excess food and FLW

The principle-based framework for the prevention and minimization of excess food and FLW (see [Figure 1](#)), hereinafter referred to as “principle-based framework”, provides a useful principle-based framework to help organizations prioritize their FLW prevention and minimization actions in their own operations and/or food supply chains in a way that maximizes the economic and societal benefits of those actions, at the same time as minimizing the environmental impacts of FLW without compromising food safety.

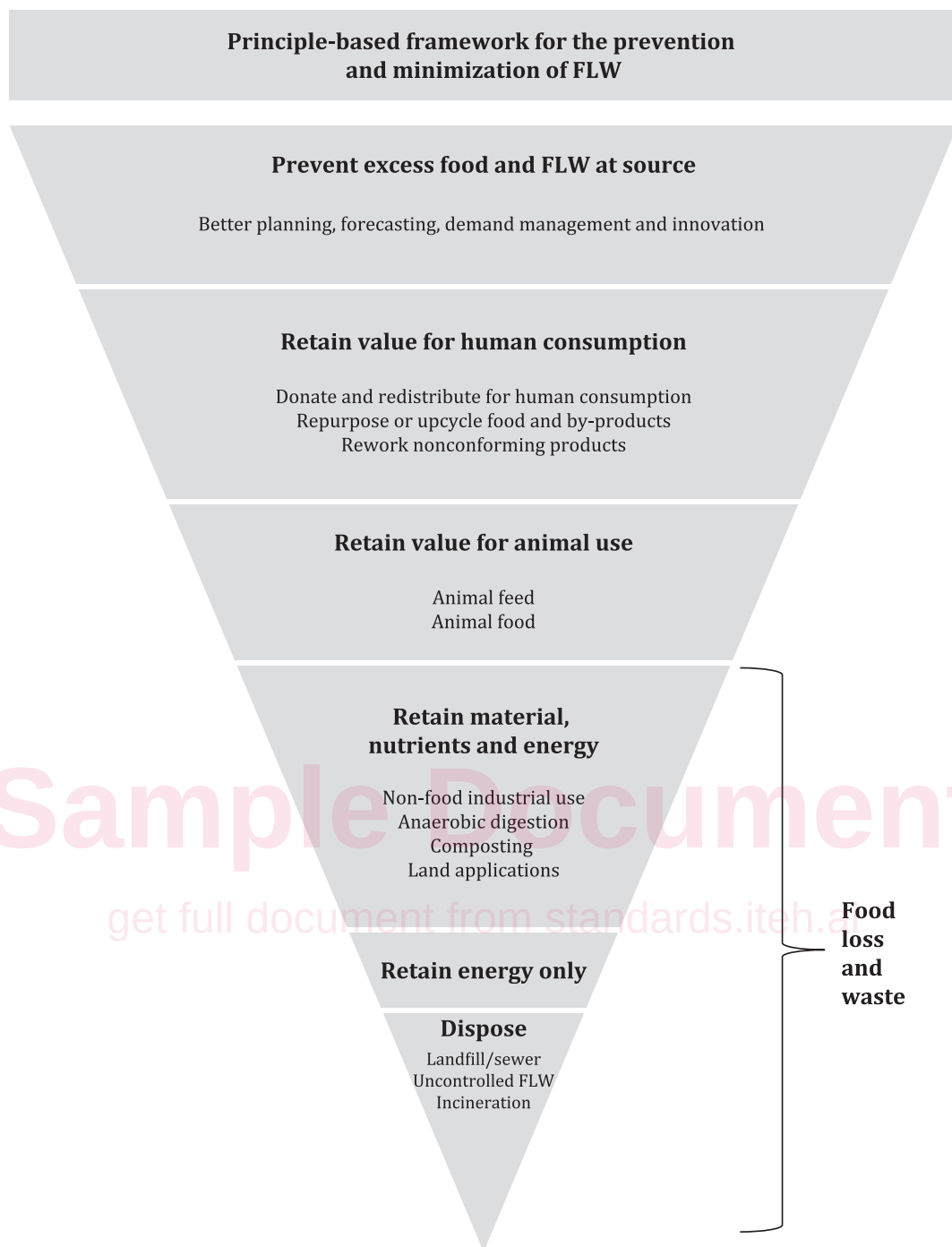
The principle-based framework is based on the FLW hierarchy which is an internationally recognized approach that prioritizes “non-waste” destinations. The principle-based framework encourages organizations to prioritize prevention of excess food and FLW. The other FLW reduction actions that keep food in the human food supply chain are the repurposing and upcycling of food that would otherwise be lost or wasted, into new food ingredients and products, and the redistribution and donation of safe food for direct human consumption (e.g. food relief). When food is not suitable for direct human consumption, the next best option is to use previously lost or wasted food as or in animal feed and food, if suitable. These options (prevention, repurposing/upcycling, redistribution, animal food and feed) allow food to remain in the food supply chain and are preferable over FLW destinations lower in the principle-based framework that result in food leaving the food supply chain.

Any action that moves FLW higher up the principle-based framework out of landfill, adds value to food and FLW, and reduces their environmental impact should still be considered as a positive step. Organizations should use the principle-based framework flexibly. The factors influencing organizations’ decisions can include the type, nature, marketability, edibility and perishability of the food, their position in the food supply chain, the geography in which they operate, the regulations that apply to them, and the infrastructure and resources available to them.

Organizations should seek to engage with relevant interested parties to prevent the generation of excess food and FLW that can occur upstream and downstream in their food supply chains. For example, organizations can collaborate with suppliers and customers to find ways to maximize the utilization of crops or donate food to food redistribution organizations and facilitate the movement of food or FLW up the principle-based framework.

Organizations can also use the principle-based framework to quantify, monitor and report their total FLW and the quantity of FLW that occurs in their own operations or food supply chains at each option of the principle-based framework. This will help them demonstrate the progress they are making to prevent or reduce their FLW and identify opportunities to move food and FLW up the principle-based framework over time.

Organizations can also identify which of their business functions is best suited to implement FLW prevention or minimization actions at each option of the principle-based framework. For example, product development teams can be best placed to bring to market new products or services that result in less food being lost or wasted, while community or ESG teams can support food donation to food redistribution organizations and waste management teams can select the most appropriate or beneficial options for any food that is lost or wasted.



NOTE The framework is principle based. The position of actions within each band can vary depending on food type, perishability, supply chain position, geography, regulations, available infrastructure and organizational objectives. Any action moving upward is a positive step. For details of the categories, see [Annex B](#). Only the bottom three bands represent FLW (i.e. food and any associated inedible parts removed from the food supply chain), while the top three bands aim to prevent and minimize it.

Figure 1 — Principle-based framework

0.5 Process approach

0.5.1 General

This document adopts a process approach when developing and implementing an FLW management system and improving its effectiveness to enhance production of food products and services with less FLW, while meeting applicable safety and other requirements. Understanding and managing interrelated processes as

a system contributes to the organization's effectiveness and efficiency in achieving its intended results. The process approach involves the systematic definition and management of processes, and their interactions, to achieve the intended results in accordance with the organization's FLW policy and the strategic direction of the organization. Management of the processes and the system as a whole can be achieved using the PDCA cycle, with an overall focus on risk-based thinking aimed at taking advantage of opportunities and preventing undesirable results.

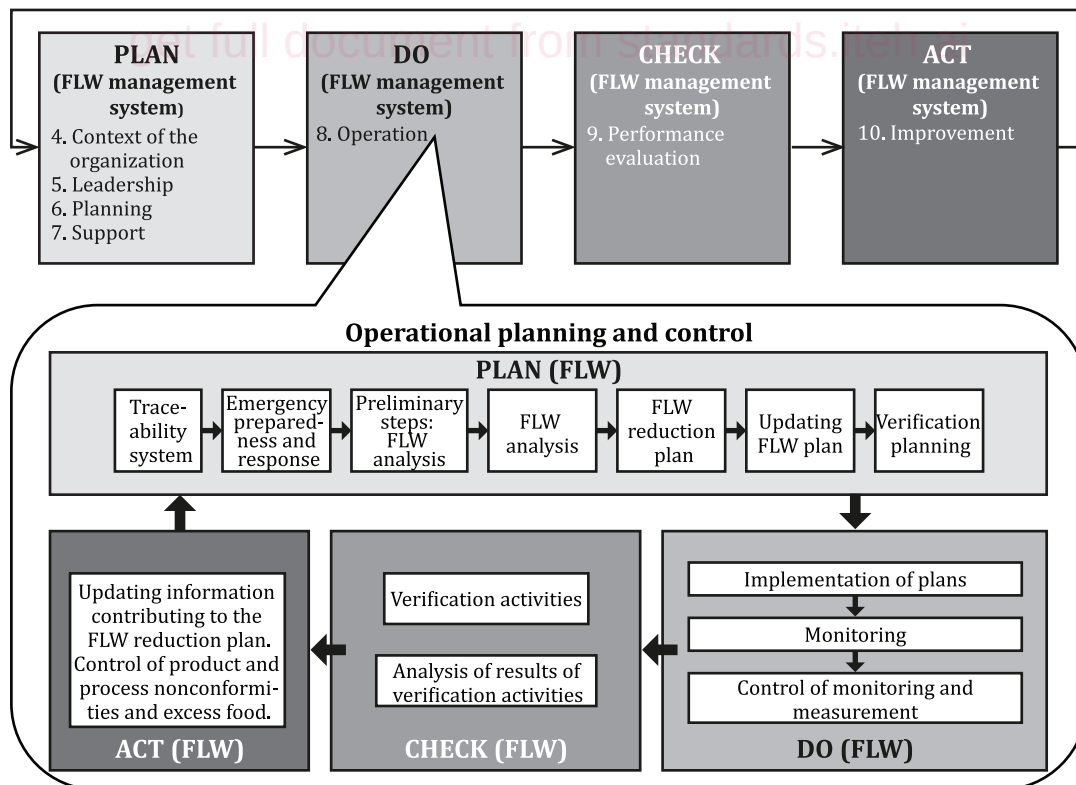
The recognition of the organization's role and position within the food supply chain is essential to ensure effective interactions and communication between organizations throughout the food supply chain.

0.5.2 Plan-Do-Check-Act cycle

The PDCA cycle can be described briefly as follows:

- Plan: Establish the objectives of the system and its processes, provide the resources needed to deliver the results, and identify and address risks and opportunities.
- Do: Implement what was planned.
- Check: Monitor and (where relevant) measure processes and the resulting products and services, analyse and evaluate information and data from monitoring, measuring and verification activities, and report results.
- Act: Take actions to improve performance, as necessary.

In this document, and as illustrated in [Figure 2](#), the process approach uses the concept of the PDCA cycle at two levels. The first covers the overall frame of the FLW management system ([Clause 4](#) to [Clause 7](#) and [Clause 9](#) to [Clause 10](#)). The other level (operational planning and control) covers the operational processes within the FLW management system as described in [Clause 8](#). Communication between the two levels is therefore essential. [Annex B](#) provides examples on implementing this cycle.



NOTE Adapted PDCA model from ISO 22000:—, Figure 1.

Figure 2 — Illustration of the Plan-Do-Check-Act cycle at the two levels

0.5.3 Risk-based thinking

0.5.3.1 General

Risk-based thinking is essential for achieving an effective FLW management system. In this document, risk-based thinking is addressed on two levels, organizational (see 0.5.3.2) and operational (see 0.5.3.3), which is consistent with the process approach described in 0.5.2.

0.5.3.2 Organizational risk management

Risk is the effect of uncertainty, and any such uncertainty can have positive or negative effects. In the context of organizational risk management, a positive deviation arising from a risk can provide an opportunity, but not all positive effects of risk result in opportunities.

To conform to the requirements of this document, an organization plans and implements actions to address organizational risks (see [Clause 6](#)). Addressing risks establishes a basis for increasing the effectiveness of the FLW management system, achieving improved results and preventing negative effects.

0.5.3.3 Operational processes

The concept of risk-based thinking based on risk analysis principles at the operational level is implicit in this document.

The approach adopted is similar to that used in ISO 22000:—¹⁾. This approach was chosen as many food businesses already have in place a food safety management system and, as a result, will be familiar with the key steps in the approach and will have in hand most of the required information for the analysis.

Decisions taken in the application of the FLW analysis should be based on science, free from bias and documented. The documentation should include any key assumptions in the decision-making process.

0.6 Relationship with other management system standards

This document applies the harmonized approach as published in the ISO/IEC Directives related to the development of management system standards (MSS). The intention is to support alignment and facilitate the integration of the requirements and recommendations of one or more MSS into an organization's management system.

For more information, see <https://www.iso.org/management-system-standards.html>.

For more information on an integrated management system, see Reference [8].

1) Under preparation. Stage at the time of publication: ISO/DIS 22000:2026.

Food loss and waste management system — Requirements for the prevention and minimization of food loss and waste across the food supply chain

1 Scope

This document specifies requirements for a food loss and waste (FLW) management system to enable an organization that is involved in the food supply chain:

- a) to plan, implement, operate, maintain, review, improve and update an FLW management system to minimize FLW within its operations and/or its supply chain;
- b) to put in place arrangements to quantify, measure, monitor, document and report its excess food and FLW;
- c) to contribute to reducing FLW throughout the food supply chain;
- d) to evaluate, assess and collaborate with interested parties within the food supply chain;
- e) to effectively communicate FLW issues to interested parties within the food supply chain;
- f) to ensure that the organization conforms to its stated FLW policy;
- g) to demonstrate continual improvement in its efforts to prevent and minimize FLW to relevant interested parties;
- h) to seek certification or registration of its FLW management system by an external organization or make a self-assessment or self-declaration of conformity to this document.

All the requirements of this document are generic. This document is applicable to all organizations in the food supply chain regardless of size or complexity. Organizations that are directly or indirectly involved include, but are not limited to, farmers, feed producers, animal food producers, harvesters of wild plants and animals, producers of ingredients, food manufacturers, providers of transportation, storage and distribution services, wholesalers, retailers, food charities, organizations providing food services or catering services and organizations providing food waste management services.

This document allows any organization, including small and/or less developed organizations (e.g. a small farm, a small packer-distributor, a small retailer or a food service outlet) to implement externally developed elements in its FLW management system.

NOTE 1 Organizations can also choose to address or take steps to reduce consumer food waste within their FLW management system if this is considered a significant FLW hotspot (see [Annex A](#)).

NOTE 2 Competent authorities seeking to reduce FLW within their jurisdictions can incorporate this document into their activities.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

action criterion

measurable or observable specification for *monitoring* (3.33) *food loss and waste* (3.22)

3.2

audit

systematic and independent *process* (3.41) for obtaining evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Note 1 to entry: An audit can be an internal audit (first party) or an external audit (second party or third party), and it can be a combined audit (combining two or more disciplines).

Note 2 to entry: An internal audit is conducted by the *organization* (3.36) itself, or by an external party on its behalf.

Note 3 to entry: “Audit evidence” and “audit criteria” are defined in ISO 19011.

3.3

by-product

secondary output from a *process* (3.41), of potential *economic value* (3.12), that is produced in parallel with a defined primary product

3.4

competence

ability to apply knowledge and skills to achieve intended results

3.5

competent authority

government authority or official body authorized by the government that is responsible for the setting and enforcement of regulatory requirements

3.6

conformity

fulfilment of a *requirement* (3.42)

3.7

continual improvement

recurring activity to enhance *performance* (3.38)

3.8

correction

action to eliminate a detected *nonconformity* (3.34)

3.9

corrective action

action to eliminate the cause(s) of a *nonconformity* (3.34) and to prevent recurrence

3.10

documented information

information required to be controlled and maintained by an *organization* (3.36) and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media and from any source.

Note 2 to entry: Documented information can refer to:

- the *management system* (3.30), including related *processes* (3.41);