



Food and Agriculture
Organization of the
United Nations

Working paper

DEFINITIONAL FRAMEWORK OF FOOD LOSS



Global Initiative
on Food Loss
and Waste Reduction

SAVE FOOD: Global Initiative on Food Loss and Waste Reduction

Definitional framework of food loss

Working paper

27 February 2014

This document is unedited and made available as presented by its authors.

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

© FAO, 2014

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO as the source and copyright holder is given and that FAO's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org.

FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

Contents

Introduction.....	1
Definitions	3
Scope of work.....	7
Acknowledgements.....	11

Introduction

In recent years the topic of food loss and waste (FLW) has been gaining importance, both in the public and private sectors of the global food systems. Many initiatives are being undertaken world-wide to reduce FLW. Many definitions and terminologies are being used by various actors and stakeholders in the global food systems. Sometimes definitions are the same, but different terms are being used; sometimes the terms are the same, but their meanings can be a bit different.

Therefore FAO's 'Global Initiative on Food Loss and Waste Reduction' has taken a coordinating role, to enhance information exchange, collaboration, synergy and harmonization of strategies and methodologies. In this respect, it is important to agree on, and accept, a common definition of food loss and waste. It will provide an opportunity towards achieving a globally harmonized approach improving data collection, data comparability, and evidence-based regulatory and policy decisions for FLW prevention and reduction.

FLW has an impact on food security, on local and national economies, on the natural resource base, on waste streams and the environment. FAO's main focus in formulating the definition of FLW is the food security dimension.

One thing became very apparent in the process: a definition on FLW is not a mathematical or physical law, it has many different logics which are equally good, and therefore it is just a matter of choice on what to accept as the Definition. FAO offers this Definition as a global reference for any stakeholder dealing with FLW, and to use it within the context of their operations. It is not cast in stone, and after one year of feedback we will evaluate the functionality of the definition and adjust it if necessary.

Essential terms and concepts in this definition are:

- Food waste is a *part of food loss*, however not sharply distinguished; the term “food loss and waste” is nevertheless maintained in regular communication.
- ‘Intended for human consumption’ (already embedded in the Codex definition of ‘Food’).
- Plants and animals produced for food contain ‘non-food parts’ which are not included in FLW.
- Food redirected to non-food chains (including animal feed) is food loss or waste.
- Quantitative FLW = the mass (kg) reduction.
- Qualitative FLW = reduction of nutritional value, economic value, food safety and/or consumer appreciation.

It has to be noted that the supplementary notes are an integral part of the definition and are as important as the actual definition points.

In addition, this document contains the scope of work in the Global Initiative on FLW Reduction. This Initiative is one of the many programmes in FAO’s Strategic Framework, and the selection of food products and work areas in this programme does not imply that FAO considers other products and areas as less important. This also applies to products that are not labelled as food loss or waste by the definition, such as non-food parts, food packaging.

Definitions

1. Food loss (FL)

The decrease in quantity or quality of food.

2. Quantitative food loss

The decrease in mass of food.

3. Qualitative food loss

The decrease of quality attributes of food.

4. Food

Any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of "food" but does not include cosmetics or tobacco or substances used only as drugs. (Codex Alimentarius Commission, Procedural Manual, 2013)

5. Food plants and animals (FPA)

Plants, animals and their derived products for food.

6. Non-food parts of food plants and animals

The parts of food plants and animals which are not intended to be consumed by humans.

7. Food supply chain (FSC)

The connected series of activities to produce, process, distribute and consume food.

Supplementary notes to the definitions

1. **Food loss (FL)** in the production and distribution segments of the FSC is mainly caused by the functioning of the food production and supply system or its institutional and legal framework.
2. An important part of food loss is called **food waste (FW)**, which refers to the removal from the FSC of food which is fit for consumption, by choice, or which has been left to spoil or expire as a result of negligence by the actor – predominantly, but not exclusively the final consumer at household level.
3. Food waste is not sharply defined. However it is still recognized as a distinct part of food loss, because the underlying reasons, economic framework and motivation of the FSC actors for wasting food are very different from the unintended food loss, and subsequently the strategies on how to reduce food waste are conceived in a different, targeted manner. Although the term ‘food loss’ encompasses “food waste”, the term **‘food loss and waste’ (FLW)** will continue to be used to emphasize the importance and uniqueness of the waste part of food loss.
4. Quantitative food loss can also be referred to as physical food loss. It does not include the reduction of mass resulting from food processing operations such as drying, heating, ripening, fermentation. It does however include the removal of food for cosmetic or other market reasons by food processing operations such as grading and sorting.
5. The decrease of quality attributes results in the reduction of nutritional value, economic value, food safety and/or consumers’ appreciation:
 - a. Nutritional value refers to macro and micro nutrients such as proteins (including essential amino acids), fats (including essential fatty acids), carbohydrates (including dietary fibres), vitamins, and minerals and trace elements, as well as non-nutrient bioactive compounds found in plant-based foods such as phytochemicals (e.g. flavonoids, phytoestrogens, and tannins, etc), in a way that it affects the nutritional status and health of the consumer.

- b. Economic value refers to the price that any supplier in the FSC receives from its buyer, in a way that it affects the revenue of the supplier.
 - c. Food safety refers to the absence, or presence in acceptable levels, of microbiological, chemical or physical hazards in food to prevent risks to the health of the final consumer.
 - d. Consumers' appreciation refers to the perception of the food by the consumer, with regard to sensorial attributes such as appearance, texture, smell, taste.
6. 'Consumption' refers to the ingestion of food by the final consumer.
7. 'Intended' refers to the original purpose for the product in the food supply chain, even if certain actors in the FSC may intentionally discard a wholesome part of the product or divert it to a non-food supply chain. Example: the whole peeled potato is food, even if a french-fry manufacturer disposes of a fraction when slicing the product into uniform sizes.

If at the early stages of the supply chain it is not determined, or not yet known, whether a product will be destined for food or not, absolute food losses can be assessed from percentage losses and statistical information on the fraction of that product which in a specific region and year finally enters a human food market.

8. Whether plants, animals and their parts or products are intended for food depends on the FSC, the food system, and its geographical and cultural context.
9. Fish¹ discards are the portion of total catch which is thrown away or slipped. It comprises the following components:
- a. Species which are intended to be caught, but get spoilt and rendered unfit for consumption by the act of catching; these discards are food loss.
 - b. Species which are intended to be caught, but do not meet the regulatory or quality standards, such as size; these discards are food loss.

¹ Fish includes fish, shellfish and cephalopods.

- c. Species which are not intended to be caught, but which are fit for entering the FSC; these discards are food loss.
- d. Species which are not intended to be caught, and which are not considered food; these discards are not food loss.

10. Non-food parts of FPA are parts which are inedible, or could be edible but in the specific FSC are not destined to be consumed.

11. The FSC starts from the moment that:

- a. crops are harvest-mature or suitable for their purpose;
- b. animals are ready for slaughter;
- c. milk has been drawn from the udder;
- d. eggs are laid by the bird;
- e. aquaculture fish is mature in the pond;
- f. wild fish have been caught by the fishing gear.

The end point of the food supply chain is defined by when food is a) consumed; or b) removed from the food supply chain.

Scope of work in the Global Initiative on FLW Reduction²

1. FPA also include by-products intended for food, from plants and animals produced for non-food purposes. Example: cotton is grown for a non-food purpose, but the cottonseed is a by-product of which the oil can be used as food; sheep are reared for wool, but at the end of their wool-producing life the sheep are slaughtered for food.

2. FLW includes:

- a. By-products or secondary products that are in principle meant for human consumption, but that in specific supply chains cannot be transformed; for instance because of technical limitations, or because of lack of access to a market and therefore are discarded or redirected to non-food use.
- b. Food that is fit to enter the FSC, but intentionally discarded or redirected to non-food use in the pre-harvest phase.
- c. Food that is harvest-mature and unintentionally getting spoilt in the pre-harvest phase.
- d. Food that is fit to proceed in the FSC, but redirected to non-food use or discarded in the post-harvest phase of sorting and grading (fruits, fish discards, etc) without getting spoilt or spilled.
- e. Food that is redirected to animal feed or compost; it is not re-entering a FSC as defined within the scope of work.

3. FLW does not include:

- a. Food that is consumed in excess of nutritional requirements.
- b. Food that incurs a decrease of market value due to over-supply or other market forces, and not due to reduced quality.

² Output 2.2 of Strategic Objective 4 of FAO's Strategic Framework 2014–2019.

4. The scope of work includes:

- a. Prevention (reduction) of FLW.
- b. Utilization and management of FLW, with regard to redirection as animal feed, compost, biofuel.

NB.: It is important to know the alternative use or destination of lost or wasted food, in order to assess the economic loss and the impact on the use of resources when producing this food. If food loss and waste are used for non-food consumption (as animal feed, as biomass), then the economic and environmental impact could be reduced.

5. The scope of work does not include:

- a. Utilization and management of non-food parts of FPA.

6. The scope of work is based on major staple products for food security and includes the following subsectors, apart from derived products listed under 7.:

- a. cereals
- b. roots and tubers
- c. fruits and vegetables, plantains, bananas
- d. oilseeds, pulses, nuts
- e. meat
- f. milk and eggs
- g. fish, including shellfish and cephalopods

7. The scope of work does not include the following subsectors or products:

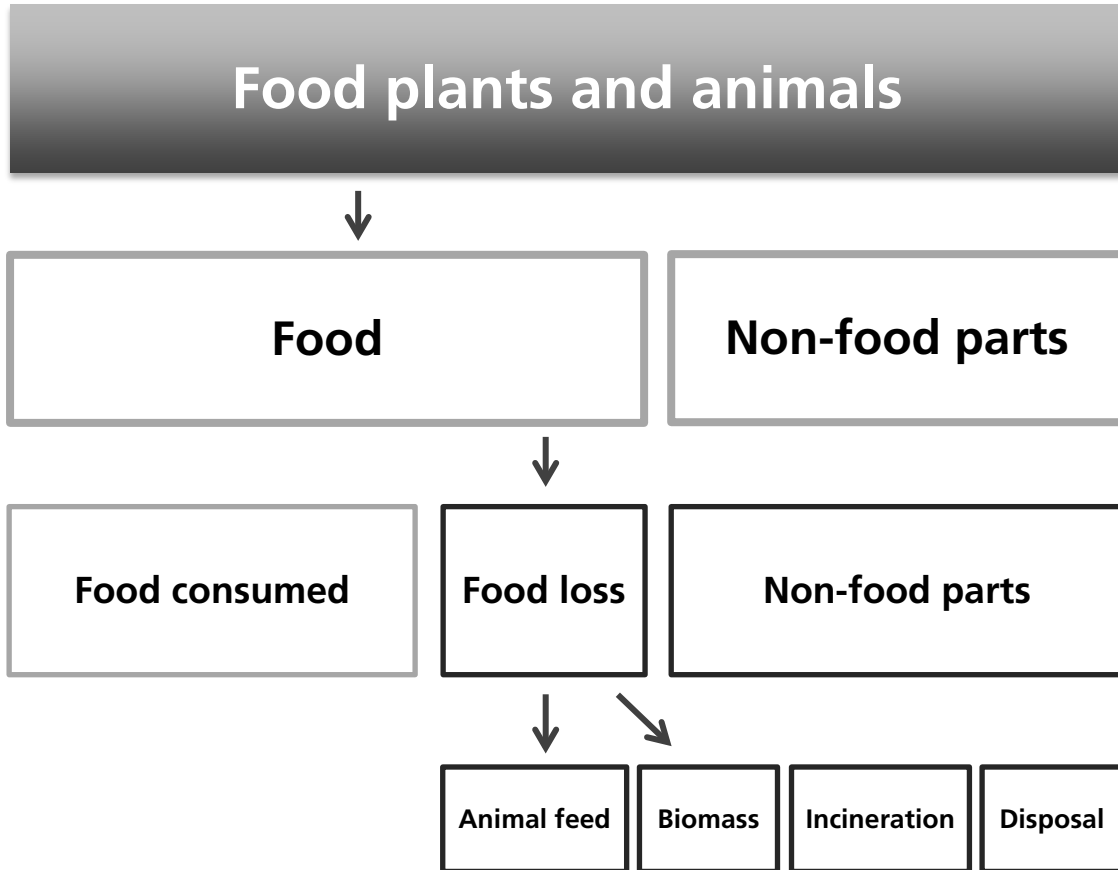
- a. herbs, spices and condiments
- b. coffee, tea, cocoa
- c. sugar, honey
- d. alcoholic beverages
- e. confectionery products

- f. wild animals (apart from fish), insects, snails
- g. wild plants (fruits, vegetables, nuts, mushrooms)
- h. salt
- i. drinking water

8. The contents of the programme:

- a. quantification of FLW
- b. causal analysis of FLW
- c. impact assessment of FLW and their reduction, on:
 - economy (in the food supply chain/micro level, macro level)
 - food and nutrition security
 - social structures
 - environment (natural resources, energy)
- d. identification and development of feasible and cost-effective solutions
- e. strategy and policy formulation
- f. implementation of food loss and waste reduction activities and projects
- g. awareness raising and partnerships

The diagram shows the different product groups as defined. The arrows indicate the scope of work



Acknowledgements

The following institutions and organizations have provided their contributions to the Food Loss and Waste Definition, for which we would like to express our sincere gratitude:

- African Development Bank
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- Natural Resources Institute (NRI), University of Greenwich
- Organisation for Economic Co-operation and Development (OECD)
- ADM Institute for the Prevention of Postharvest Loss, University of Illinois
- Stop Wasting Food movement Denmark (Stop Spild Af Mad)
- FUSIONS project, EU
- Zero Percent, USA
- World Food Programme, Rome
- The Global FoodBanking Network, USA
- IVL Swedish Environmental Research Institute
- Stockholm International Water Institute (SIWI)
- Kenneth S. Marsh & Associates, USA
- Hungarian Foodbank Association
- Waste & Resources Action Programme (WRAP), UK
- Agricultural Economics Research Institute (LEI), Wageningen
- Feeding the 5000, UK
- FAO's technical divisions AGS, AGP, AGA, AGD, NRC, NRL, ESA, ESS, ESP, ESN, FIP, FIR
- FAO's Regional Offices RAF, RAP, RNE, REU, RLC
- FAO's Liaison Offices LOW, LOB, LOJ

SAVE FOOD

Global Initiative on Food Loss and Waste Reduction

www.fao.org/save-food

e-mail: save-food@fao.org

Rural Infrastructure and Agro-Industries Division (AGS)

Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla, 00153 Rome - Italy

www.fao.org/ag/ags

Cover Photo:

Wasted apple – ©Koray