



Food Losses and Waste in the Context of Sustainable Food Systems the HLPE report on the way forward to reduce global food losses and waste

Food Losses and Waste (FLW): a global concern

One-third of all edible food produced is lost or wasted each year: That's 1.3 billion tonnes. The UN's proposed Sustainable Development Goal 12 aims at a 50% reduction in food waste per capita at the retail and consumer level and includes general recommendation on reducing food losses along production and supply chains, including post-harvest losses. The HLPE report "Food Losses and Waste in the Context of Sustainable Food Systems" synthesizes state-of-the-art knowledge about best food waste reduction practices and suggests a way forward. This policy brief synthesizes the HLPE report's major conclusions, including definitions, challenges to food waste prevention, future pathways and finally provides an overview of important on-going regional and global initiatives.

Challenges in tackling FLW

The High Level Panel of Experts (HLPE) report presents three major challenges to the prevention of FLW:

- The lack of a common definition and reliable data
- The multitude of causes
- The multitude of impacts at different system levels

These challenges are discussed in detail below.

The lack of a common definition and reliable data

Common definitions and reliable data can direct prevention measures where they are most needed and enable progress monitoring over time. However, FLW is fundamentally approached from different perspectives: the "waste" perspective and the "food" perspective. The "waste" perspective focuses on waste minimisation for resource efficiency and environmental impact reduction. The "food" perspective focuses on making more food available for human consumption. Historically these two perspectives have resulted in different terms, definitions and quantification methods, which make it almost impossible to evaluate and compare the estimates made.

Definitions and terms used in the HLPE Report

Food Loss and Waste (FLW): A decrease, at all stages of the food chain from harvest to consumption, in mass of food that was originally intended for human consumption, regardless of the cause.

Food Quality Loss and Waste (FQLW): The decrease of a quality attribute of food (nutrition, aspect, etc.), linked to the degradation of the product, at all stages of the food chain from harvest to consumption.

Food System: Gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes.

Sustainable food system (SFS): A food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

POLICY RECOMMENDATIONS

The HLPE panel recommends taking action to reduce Food Losses and Waste by following four parallel tracks in an inclusive and participatory manner:

1. Improve data collection and knowledge sharing on Food Losses and Waste (FLW)
2. Develop effective strategies to reduce FLW at appropriate levels
3. Take effective steps to reduce FLW
4. Improve coordination of policies and strategies in order to reduce FLW



About one-third of global food production is lost and wasted at different stages in the food supply chain, amounting to about 1, 3 billion tonnes each year. Photo by SP Food and Bioscience.

Available estimates differ with regards to system boundaries of the food supply chain and the inclusion or exclusion of inedible parts and/or drinks. Frequently accepted estimates include:

- 1.3 billion tonnes of global food losses and waste each year, including edible food from production to consumption, not including drinks (FAO, 2011);
- 90 million tonnes of food waste in EU each year referring to edible and inedible food parts, excluding primary production and drinks (BIOIS, 2010);
- 7 million tonnes of total household food and drink waste in the UK (WRAP, 2013).

The multitude of causes

FLW has hundreds of causes among types of food, stages in the food supply chain, cultural context, and regions of the world. This means it's not possible to pinpoint and solve any "universal causes" of FLW. Identifying the causes of FLW demands a systematic, holistic approach since the causes are context-specific and are not always found where the FLW arises. For example, FLW at the retail or consumption stage may be caused by actions at the harvest/production stage. The HLPE report approaches this complexity by exemplifying causes on the micro, meso and macro levels. The micro

Table 1. Examples of potential impacts of FLW on the sustainability of food systems

Potential impacts of FLW on the sustainability of food systems	Economic	Social	Environmental
Micro (household or individual enterprise)	<ul style="list-style-type: none"> • Businesses and consumers spend a larger portion of their budget on foods that will not be sold or consumed 	<ul style="list-style-type: none"> • Lower wages • Consumers with fewer resources for purchase • Lack of products 	<ul style="list-style-type: none"> • Amount of garbage and waste • Contamination of individuals in rural and urban areas
Meso (food chain)	<ul style="list-style-type: none"> • Imbalance in production flows and need for more investments such as construction of silos and warehouses for intermediate stocks • Profit reduction • Inefficiencies in supply chain • Costs of disposal and treatment of waste 	<ul style="list-style-type: none"> • Low labor productivity • Difficulties for companies to make their planning 	<ul style="list-style-type: none"> • Multiplication of landfills
Macro (food system and beyond)	<ul style="list-style-type: none"> • Unrealized economic effort • Public investment in agriculture and infrastructure being less productive and turning into an opportunity cost • Reduction in financial resources for investment in other areas 	<ul style="list-style-type: none"> • Higher level of food prices and difficulties in access to food • Larger number of people below the poverty line 	<ul style="list-style-type: none"> • Pressure on natural resources: water and soil • Emission of greenhouse gases • Occupation of forests and conservation areas • Depletion of fishery resources; • Pressure on wildlife • Greater spending on nonrenewable energy

HLPE (2014)

level indicates causes at the same stages of the supply chain as the FLW occurs; the meso level shows more structural causes which can be found at other stages than where the FLW occurs; and the macro level of causation could be a malfunctioning food system due to e.g. surrounding policy conditions. This complex hierarchy of FLW causes calls for actions by different actors and on different levels. Some causes can most likely be solved by individual actors in the supply chain (micro level); whereas other causes require cooperation between several actors (meso level) and still other causes require involvement of authorities and policy makers (macro level).

The multitude of impacts at different system levels

To further extend the complex picture of food waste reduction, the



In high-income countries, much FLW is generated in consumer households. Photo by SP Food and Bioscience.

HLPE report relates the hierarchy of causes at different levels in the food system to the three sustainability dimensions, according to Table 1.

Solutions and responsibilities for solutions

Solutions for reducing FLW can be developed on different levels of the food system using different instruments. To encourage decision makers to take appropriate actions the HLPE panel summarized a palette of possible instruments for FLW reduction depending on the type of solution and the stakeholder’s scope of responsibility, according to Table 2.

The suggested solutions involve all relevant actors in the food supply chain as well as policy makers and stakeholders who impact the supply chain. Solutions at the micro level refer to solutions from individual actors of the supply chain, such as technical solutions in transport, processing and packaging, better food preparation techniques at home. The meso level requires changes along the whole supply chain, involving the collaboration of two or more actors, such as investing in adapted cold chain developments, promoting corporate social responsibility, ensuring proper capacity building, educating, training, and extension services. The suggested solutions on the macro level catalyse actions on both the micro and meso level, such as addressing cost and benefits to overcome “winners and losers” constraints in the food system and integrating FLW concern in policies.

The way forward, what does HLPE suggest?

Context-specific causes of food waste need context-specific solutions. Choosing which strategies to adopt requires a thorough analysis of local causes and consideration of winners and losers, as well as costs and benefits for all actors involved. Effective FLW reduction involves many actors along the food supply chain and includes both individual and collective action. Based on this, the HLPE report suggests a way forward, a foundation for locally adapted and properly coordinated FLW reduction strategies. The suggested way forward comprises four main steps as described below.

Information and data

The first step concerns the need for all stakeholders to aim for synchronizing the terminology and definitions of FLW, nationally and globally, in order to identify hotspots and prioritize actions, compare measurements, and monitor progress over time. See “Ongoing initiatives” below for examples.

Diagnosis and strategy

The second step aims to identify the most relevant causes and their solutions building on a multi-level approach as exemplified in Table 1. Further action involves analysis of the costs, identification of beneficiaries, and assigning the actors responsible for implementation of each of the solutions HLPE suggests that states convene relevant actors of the food system to jointly identify hotspots, causes of FLW at different levels, and potential solutions. States will also analyse costs, identify beneficiaries, and assign the actors to implement each solution.

Action

The third step recommends that states make adequate investments in infrastructure and public goods to ensure sustainable food systems, including storage and processing facilities, reliable energy supply and transport between production and consumption. States also should implement an adequate framework for FLW reduction taking into account regulation, incentives and facilitation to tackle unsustainable food consumption patterns; should encourage sector-based audits; should promote and exchange good FLW practices with other stakeholders; should enable and support multi-stakeholder initiatives to improve governance along the supply chain and to reduce food waste; invest in research and development to learn more about FLW minimization and inform consumers how to reduce FLW. HLPE encourages the private sector to include FLW reduction into corporate responsibilities; to collect and share data about it; and to share the costs and benefits of FLW reduction appropriately. The private sector also should initiate collaborative actions for reducing FLW. Supermarket and food retailers need to reform selection practices of farmers’ produce that are based on aesthetic standards. This can be done, for example, by introducing differentiated pricing to prevent economic and nutrition value losses.

Coordination of policies

The fourth step focuses on policy coordination improvement. Many



Poor infrastructure and lack of cold chain has a large impact on FLW in low-income countries. Photo by SP Food and Bioscience.

different sets of global and national policies affect FLW, such as food and agriculture, development, industry and businesses regulations, food safety, bioenergy, waste policies, research and education, social affairs, sustainable consumption and production, health and dietary guidelines. States are encouraged to take a food chain approach and integrate FLW concerns and solutions into agricultural and food policies, development programs, and other policies which could impact FLW. HLPE urges policy coherence to prevent conflicts or collisions. States also should set targets and introduce a food waste hierarchy, with prevention on top and handling options ordered thereafter; support harmonization of national and international food date labelling; and take part in multi-stakeholder initiatives such as the UN Food and Agriculture Organization’s “Save Food”. All stakeholders are encouraged to improve coordination and communication across food supply chains, as an action or decision taken in one segment acts as a driver for FLW prevention in a different supply chain segment.

Table 2. Categories of solutions to reduce FLW on different system levels

Categories of solutions to reduce FLW	Levels		
	Micro	Meso	Macro
Investments	<ul style="list-style-type: none"> Private investments in production, postharvest, businesses and food services 	<ul style="list-style-type: none"> Financial mechanisms Collective private investments Public investments 	<ul style="list-style-type: none"> Support to financial mechanisms Infrastructure Enabling environment Proper incentives
Good practices	<ul style="list-style-type: none"> Good practices in production and postharvest 	<ul style="list-style-type: none"> Capacity building Training 	<ul style="list-style-type: none"> Support to capacity building Multistakeholder initiatives
Behavioural change	<ul style="list-style-type: none"> Behavioural change in businesses and consumers 	<ul style="list-style-type: none"> Corporate social responsibility Community and local engagement 	<ul style="list-style-type: none"> Raising awareness Multistakeholder initiatives
Coordination inside food chains		<ul style="list-style-type: none"> Food chain approach Relationships with other actors in the food chain 	<ul style="list-style-type: none"> Enabling environment (contractual rules and incentives) Policies
Valorization of food and byproducts		<ul style="list-style-type: none"> Food processing Valorization of surplus foods and of by-products 	<ul style="list-style-type: none"> Support and incentives for implementation of a hierarchy of uses
Coordination of policies and actions			<ul style="list-style-type: none"> Policies Multistakeholder initiatives

HLPE (2014)



Consumers prefer stores with a large selection of products and always filled shelves. As the "best before" date expires unsold products are removed and wasted. Photo by SP Food and Bioscience.

Ongoing initiatives

Many ongoing local, national/regional and global initiatives and projects contribute to FLW reduction. In the UK, WRAP has done pioneering research on how to measure, quantify and prevent food waste in households as well as companies. Their work has inspired similar exploration in several other countries. Current activities largely focus on the first step of the proposed FLW reduction framework - carrying out efforts to harmonize terminology, definitions and measurement/quantification methods of FLW. Examples of the ongoing international initiatives are:

The World Resources Institute (WRI) coordinates the Food Loss and Waste Protocol, initiated in 2013, which is also a multi-stakeholder effort to make a global accounting and reporting standard to quantify FLW. It will give guidance to different actors in the supply chain on how to report their FLW in an internationally consistent way to ensure identifying hotspots and further actions needed. The Protocol is also being developed in an inclusive process in which stakeholders are invited to participate in working groups and review processes.

Think.Eat.Save, of the Save Food initiative, is a consumer campaign in partnership between FAO, UNEP and Messe Düsseldorf, and in support of the UN Secretary-General's Zero Hunger Challenge, that shares inspiring initiatives on the Think.Eat.Save webpage.

FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) is a FP7 EU project, initiated in 2012, that promotes resource-efficiency in Europe by significantly reducing food waste. FUSIONS will mainly contribute to the harmonization of food waste monitoring; improved understanding of how European social innovation can reduce food waste; and the development of guidelines for a common Food Waste policy for EU-27. FUSIONS includes 21 partners throughout Europe as well as a European stakeholder platform.

Background of the HLPE Report:

The High Level Panel of Experts on food security and nutrition (HLPE) was created in 2010 to provide the United Nations' Committee on World Food Security (CFS) with evidence-based and policy-oriented analysis to feed into ongoing policy debates and policy formulation. The HLPE report "Food Losses and Waste in the Context of Sustainable Food Systems" (2014) is based on the most current and accurate information available about causes of food losses and waste throughout the food supply chain.

The report also suggests prevention measures for all concerned actors in the food system, aiming to improve food and nutrition security and the sustainability of global food systems. The HLPE report particularly focuses on the nutrition and food security aspects of food losses and waste, as well as the actions necessary to pave the way to prevention and reduction. This policy brief synthesizes the HLPE report's major conclusions, including definitions, challenges to preventing food waste, the suggested way forward and finally provides an overview of important on-going regional and global initiatives aiming to tackle food waste.

The following documents have been reviewed for this brief:

BIOIS (2010) Preparatory study on food waste across EU27. European Commission.

FAO (2011) Global food losses and food waste – extent, causes and prevention. Food and Agriculture Organization of the United Nations, Rome.

Food Loss and Waste Protocol (2015). Addressing the challenges of quantifying food losses and waste, available at: <http://www.wri.org/our-work/project/food-loss-waste-protocol>

FUSIONS (2015) Food Use for Social Innovation by Optimising Waste Prevention Strategies, available at: <http://www.eu-fusions.org/>

HLPE (2014) Food losses and waste in the context of sustainable food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

Think.Eat.Save (2015) Reduce Your Foodprint, available at: <http://thinkeatsave.org/>.

UN (2013a) World Population Prospects: The 2012 Revision. United Nations, Department of Economic and Social Affairs, Population Division, DVD Edition.

UN (2013b) Secretary-General's message on World Food Day. New York, 16 October 2013, available at: <http://www.un.org/sg/statements/index.asp?nid=7206>.

UN (2015) Open Working Group Proposal for Sustainable Development Goals, available at: <https://sustainabledevelopment.un.org/sdgsproposal>.

WRAP (2013) Household Food and Drink Waste in the United Kingdom 2012. Waste and Resource Action Programme, Banbury, UK.

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SP Food and Bioscience wrote the report "Global food losses and food waste – extent, cause and prevention" in 2011, assigned by the FAO and is also part of the FUSIONS consortium.

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