

FOOD LOSSES AND WASTE

Globally, around one-third of all food produced is lost or wasted along the food chain, from production to consumption (HLPE, 2014). In a world where hundreds of millions of people go hungry, that is a stark indication of the inefficiency of current food systems. Food losses and waste often translate into economic losses for farmers and others stakeholders within the food value chain, and higher prices for consumers, both of which affect food insecurity by making food less accessible for vulnerable groups. Reducing food losses and waste would increase the supply of available food and strengthen global food security.

Food losses and waste also hold back the transition to environmentally sustainable food systems. They represent a considerable waste of land, water, energy and agricultural inputs, and cause the emission of millions of tonnes of greenhouse gases. Future efforts to address climate change will need to find ways to reduce food losses and waste. Because food production is responsible for a large share of GHG emissions, reducing food losses and waste contributes to climate change mitigation. At the same time, because climate change threatens food production in many food insecure areas, reducing food losses and waste can be an important part of climate change adaptation strategies (Bellú, 2016).

QUANTIFYING TRENDS IN FOOD LOSS AND WASTE IS NOT EASY

Measuring food losses and waste is difficult, in part because food supply chains are long and involve many actors, including small farmers, transporters, processors, retailers and households. FAO defines food losses and waste as a 'decrease in quantity or quality of food', i.e. a reduction in the availability of food, a decline in its nutritional and/or economic value, and/or a deterioration in food safety. Food waste results from the 'discarding or alternative (non-food) use of safe and nutritious food for human consumption all along food supply chains'.

Although the difference between food loss and food waste is not cut and dry, food loss is seen as accidentally occurring for reasons not under the direct control of the agents concerned, such as inadequate technology, lack of knowledge and skills, poor logistics and malfunctioning markets, while food waste is characterized by an element of intended or unintended behaviour, i.e. the removal of food fit for consumption by choice or negligence.

Although food waste is often associated with final consumption, the deliberate discarding of food may occur at all stages of the supply chain.

The distinction between food loss and food waste is important, because it underscores their different underlying causes. Policies and strategies need to take these into account when seeking solutions to the problem.

THE CAUSES OF FOOD LOSSES AND WASTE VARY GREATLY BY REGION

Accurate and time-wise estimates of losses and waste in the food system are unavailable. However, evidence to date indicates that, every year, about 670 million tonnes of food is lost or wasted in high-income countries, and 630 million tonnes in low- and middle-income countries - a total of 1.3 billion tonnes, or one-third of the edible part of food originally intended for human consumption.

Food losses and waste are caused by different factors at different levels:

- Micro-level causes resulting from the actions of agents at the same stage of the food supply chain (e.g. poor harvest scheduling and timing, poor harvest practices, careless handling of produce, lack of appropriate storage space, lack of transportation facilities, consumer behaviour).
- Meso-level causes related to a whole food supply chain, i.e. decisions or lack of decisions of agents in that particular chain (e.g. poor coordination, too long chains, failure to meet product standards, pesticide-contaminated processed products).
- Macro-level causes arising from the overall socio-economic environment, such as lack of infrastructure, inadequate legislative frameworks and price incentives and subsidies that promote excess production (HLPE, 2014).

In low-income countries, significant levels of food losses occur upstream, at harvest and during post-harvest handling, owing to poor infrastructure, low levels of technology, a limited knowledge base and lack of investment in production. Food losses also tend to be caused by managerial and technical constraints in harvesting, storage, transportation, processing, packaging and marketing. The greatest losses occur in small- and medium-scale agricultural and fisheries production and processing sectors. Uncertainty about weather and market conditions, and weak institutional frameworks, also contribute to losses. Each year in Africa, around 13 million tonnes of cereals, or more than 15 percent of total cereal production, are lost during post-harvest operations.

In all regions, except South and Southeast Asia, food losses and waste account for more than 30 percent of food originally intended for human consumption. However, the extent of losses and waste along the food supply chain differs across regions (HLPE, 2014). In North America, Europe, Japan and China, around 15 percent of food is lost or wasted in the distribution and consumption stages. This percentage is lower in North Africa and Central Asia (11 percent) and much lower in Latin America, South and Southeast Asia and sub-Saharan Africa (5.9 to 7.8 percent). In contrast, North America, Europe, Japan and China lose or waste only around 15 percent of food in the harvest and post-harvest stages. In sub-Saharan Africa, where food losses and waste are particularly high at 36 percent, some 5.9 percent occurs in the retail and consumption stages, while more than 30 percent occurs in the harvest, post-harvest and processing stages.

In the United States of America, food waste at the retail and consumer levels is estimated at more than 60 million tonnes per year. This represents 31 percent of the total available food in the food supply chain and

corresponds to around 1250 calories per capita per day (Buzby, Wells and Hyman, 2014). In the European Union, more than 100 million tonnes of food are wasted each year (European Commission, 2016). With rapid urbanization and growth of supermarket chains in low- and middle-income countries, the level of food waste in their urban centres is increasing.

GREATER AWARENESS HAS SPURRED CALLS FOR ACTION

Mounting evidence of the extent of food losses and waste has led to calls for global coordinated action to address the problem. 'Zero food loss and waste' is one of the pillars of the 'Zero Hunger Challenge', which was launched by the UN Secretary General in 2012. In 2015, world leaders committed themselves to addressing this challenge and set out to halve per capita food waste and to reduce food losses by 2030 within the context of the 2030 Agenda on Sustainable Development and as part of Sustainable Development Goal (SDG)12, which aims to ensure sustainable consumption and production patterns.

The strong focus on reducing food loss and waste in the SDGs has increased the attention being paid to research, measurement, monitoring and actions in this area. Coordinated efforts to improve reporting are important because studies of global trends in food loss and waste often use different estimation methods.

To overcome these limitations, several development agencies have established the Food Loss and Waste Protocol, a multistakeholder effort to develop global accounting and reporting standards. The first version of the Food Loss and Waste Standard was released in June 2016. FAO is working on a Global Food Loss Index indicator, which uses the caloric content of food as a common unit of measure for assessing progress in reducing food losses and waste.

To address knowledge gaps, raise

awareness, and reduce food losses and waste through policies, programmes and projects, global public-private partnerships, such as the Global Initiative on Food Loss and Waste Reduction (the 'Save Food' Initiative), have been launched.

The Save Food Initiative is an umbrella programme that hosts various global, regional and international initiatives, projects, campaigns and partnerships.

FOOD LOSSES AND WASTE ARE INCREASINGLY AN ENVIRONMENTAL ISSUE

The urgent need to address climate change and make food systems more environmentally sustainable has pushed the issue of food losses and waste to the forefront. Food losses and waste have negative environmental impacts.

When food is squandered, so too are the water, soil, biodiversity and other natural resources and inputs that were used to produce it and move it through the supply chain. These impacts can be expressed as a 'food loss and waste footprint' on the environment. Studies have estimated that the agrifood sector currently accounts for around 30 percent of the world's total energy consumption, and that the energy embedded in global food losses is 38 percent of the total final energy consumed by the whole food supply chain. This means that more than 10 percent of the world's total energy consumption is for food that is lost and wasted.

Attempts have been made to quantify the global environmental impacts of food losses and waste, especially with regards to greenhouse gas emissions. By one estimate, food losses and waste generate every year more than 3.3 gigatonnes of carbon dioxide equivalent (FAO, 2013), equal to the combined annual carbon dioxide emissions of Japan and the Russian Federation.

Improving the efficiency of food

systems, so that less food is lost and wasted, has been identified as an important way of reducing GHG emissions from the food and agriculture sector without compromising food security.

The redesign of food supply chains and the introduction of sustainable technologies and improved retail models, which are needed to reduce food losses and waste, may also make food systems more energy-efficient and indirectly reduce emissions. More efficient food systems also recycle resources more effectively and require less transport and storage. All of these benefits lead to savings in natural capital, reduced consumption of resources and lower GHG emissions.

FINDING WAYS OF REDUCING FOOD LOSSES IS A DELICATE BALANCING ACT

Approaches to reducing food losses in the food supply chain often involve greater use of energy, especially for the preservation of food products. How this energy is produced and delivered to the different points along the value chain will have an impact on the environment and the local economy. This implies that not all losses should be eliminated, as the economic, social and environmental costs of eliminating them may well exceed the benefits.

The challenge, therefore, lies in weighing the economic, social and environmental costs and benefits of different approaches to reducing food losses, and in determining the approach that best ensures food security, improves environmental sustainability and builds resilience to climate change within a given community.

Reducing food losses in climate-smart ways, i.e. ways that reduce or remove GHG emissions while improving food security, and increasing local capacities to adapt to climate change, is contingent upon the development and uptake of sustainable technologies along the entire value

chain, particularly in post-harvest operations and during processing and storage.

To have maximum impact, climate-smart, food-saving technologies should also be gendersensitive and generally socially acceptable. Women often have limited access to technologies and services, which is an important contributor to food losses in the supply chain. At the same time, technology development should safeguard the nutritional value of food products.

Many potential options for climate change mitigation and adaptation technologies capable of reducing food losses are available in low-income countries. However, to date, relatively little attention has been given to exploring the options. Over the past 30 years, 95 percent of research investments are reported to have focused on increasing production, while only 5 percent were directed towards reducing losses, despite the high potential that food loss reduction has for containing the need for future additional food production (Kader, 2005; FAO, 2004; Aulakh and Regmi, 2013).

By reducing food losses, climate-smart technologies also present an important opportunity for countries to tap into climate finance mechanisms, which can support them in reaching their climate change mitigation and adaptation goals.

REDUCING FOOD WASTE REQUIRES CHANGING PEOPLE'S BEHAVIOUR

In dealing with the problem of food waste, technological fixes do not offer lasting solutions. Responses must address the attitudes and actions of a range of stakeholders throughout the food supply chain. In high-income countries, food waste is caused mainly by consumer behaviour and economic decisions, and by policies and regulations related to other sectors. For example, agricultural subsidies may encourage

the production of surplus food crops.

This excess production helps contain prices but also causes less attention to be paid to food waste, both by value chain stakeholders and by consumers.

Food waste is most often caused by retailers and consumers over-purchasing and then simply throwing away perfectly edible foodstuffs. In addition, food safety and quality standards may remove from the supply chain food that is still safe to eat. At the consumer level, inadequate planning of purchases and failure to use food before its expiry date also contribute to food waste.

In addressing the behavioural causes of food waste, policy makers must recognize that food waste may be rational from an individual's perspective, resulting from the 'optimizing behaviour' of producers, processors, traders, and consumers.

However, there are economic costs and negative externalities that individual economic agents may not consider, owing to imperfect markets and a lack of information.

From the point of view of society as a whole, food waste is considered undesirable because it generates net losses through its environmental impacts and associated socio-economic costs. Policies need to create conditions that enable the behaviour of different individual agents along the food supply chain to achieve a socially optimal level of food losses and waste. These policies include 'getting food prices right' by ensuring that the consumer assumes full responsibility for covering the environmental and social costs of producing - and eventually discarding - food. The recovery and redistribution of safe and nutritious food is another strategy option for reducing food waste.

** Texto extraído do estudo "The Future of Food and Agriculture - Trends and Challenges", publicado pela Food and Agriculture Organization of the United Nations. Rome, 2017. www.fao.org/publications*