



How to reduce food loss and waste for food security and environmental sustainability

Why should we worry about food loss and waste?

Along the food supply chain, almost 14 percent of food produced is lost from post-harvest up to, but excluding, the retail stage. Food waste during the retail and consumption stages are likely to be high (though not yet accurately quantified). With more than 820 million people hungry, losing or wasting food is widely perceived as morally objectionable. Furthermore, it means that greenhouse gases (GHG) have been emitted and land and water resources have been wasted to no purpose. Reducing food loss and waste is therefore seen as a way to improve food security and nutrition, reduce GHG emissions and ease pressures on natural resources. The issue is reflected in the 2030 Agenda for Sustainable Development, and Target 12.3 of the Sustainable Development Goals calls for halving per capita global food waste at retail and consumer levels and reducing food loss along production and supply chains by 2030.

Private actors – consumers or producers – can benefit from reducing food loss and waste. However, doing so may have a cost for them, in terms of investments for suppliers along the food supply chain and time for consumers. When the cost to be incurred is perceived by a private actor to be higher than the private benefit, the incentive to invest in reducing food loss and waste will be weak. However, the reduction could bring additional benefits to society as a whole which would justify investing public resources. Therefore, there is a role for public interventions aimed at improving the private incentives to reduce food loss and waste.

Public strategies to reduce food loss and waste must be carefully designed in order to effectively provide public benefits, such as improving food security and environmental sustainability. It cannot be taken for granted that reducing food loss and waste in any part of the world or point in the food supply chain will be equally effective at achieving these societal objectives, or be effective at all. Where the reductions occur – in terms of geography and phase in the food supply chain – matters for the impact. Clarity about the objective is also essential for



KEY MESSAGES

- ▶ Reducing food loss and waste can improve food security and nutrition, lower greenhouse gas (GHG) emissions and reduce pressures on natural resources such as land and water – but the effectiveness depends on where and how it is done.
- ▶ Reductions at earlier stages of the food supply chain (and close to food-insecure people and environmental hotspots) are most effective in addressing food insecurity and/or natural resource stress.
- ▶ Reduction of food waste by consumers and retailers is the best strategy for reducing GHG emissions.
- ▶ Public interventions to reduce food loss and waste must be formulated in line with policymakers' ultimate objective and should be based on evidence on the magnitude, location and causes of food loss and waste.

identifying the most appropriate policies and entry points to reduce food loss and waste.

Reducing food loss and waste to improve food security

In terms of improving food security and nutrition, loss and waste reduction can have the greatest impact if done at early stages in the supply chain, especially on the farm. By reducing on-farm losses, farmers can improve their diets due to increased food availability and higher incomes from increased sales. This can also boost supplies, reduce food prices throughout the supply chain and improve access to food among vulnerable population groups. Such strategies are likely to be particularly effective in lower-income countries with high rates of food insecurity and levels of food loss, especially at the farm stage.

In higher-income countries, food loss and waste is likely to be concentrated at the consumption and retail stages, while levels of food insecurity are modest. Here, reducing waste in

consumption and retail can improve local food security and nutrition through food collection and targeted redistribution. However, it is unlikely to have the positive global food security effects that are often expected, as the increased local food surpluses will hardly reach food insecure populations in distant countries.

Reducing food loss and waste for environmental objectives

GHG emissions affect climate change the same way wherever they occur; therefore, for reducing GHG emissions the geographic location of food loss and waste reduction does not matter. What matters is where along the supply chain it takes place. GHG emissions tend to happen at every step of the food supply chain; consequently, food wasted towards the end of the supply chain carries with it more embedded GHG emissions. Reducing retail and consumer waste – particularly in high-income countries where it is likely to be large – may therefore be an effective strategy for cutting GHG emissions.

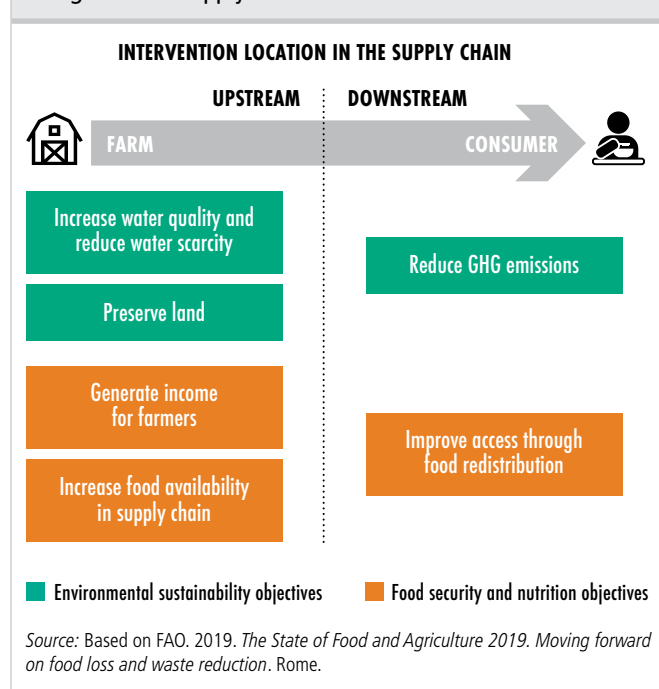
Land and water pressures do not accumulate through the food supply chain to the same extent as GHG emissions. Therefore, food loss and waste reduction will be more effective at reducing pressures on land and water resources the closer it happens to the primary production stage, where the bulk of land and water is used. Indeed, while intervening later in the food supply chain may have an impact on aggregate land and water use, the impact may not be felt where it is most needed. Interventions may be more effective if they occur early in the food supply chain and close to water- and land-scarce regions.

Designing strategic policy interventions

Public interventions – for instance interventions favouring investments in training, technology and innovation – can create incentives for individual suppliers and consumers to reduce food loss and waste. In addition, policies affecting food prices or the cost of managing waste will have implications for such incentives. For example, if food subsidies keep food prices artificially low, or if disposal costs are unrelated to the amount of waste generated, this can create disincentives for food loss and waste reduction. Information campaigns on how much food stakeholders lose or waste, the reduction options available, and the benefits of implementing them can also help. However, the choice of effective interventions and appropriate entry points in terms of geographic location and stage in the food supply chain will depend on the objective (see Figure 1).

More effective interventions require better information than currently available on how much and where food is lost or wasted, as well as on the constraints that prevent action by private actors. Closing this information gap is a priority. To this end, FAO has carried out a number of case studies to identify critical loss points in food supply chains and developed “Guidelines on the measurement of harvest and post-harvest losses” for grains. Three additional guideline documents,

FIGURE 1. Aligning objectives and intervention entry points along the food supply chain



covering other commodity groups, are under development. Capacity development to enhance uptake of the guidelines by countries as well as partnerships between private and public stakeholders, both nationally and internationally, can help generate improved data and facilitate strategic interventions.

In a nutshell

Collecting more detailed data at the country level, and spearheading initiatives that focus on critical loss points and are well targeted to the objectives pursued by countries, will be key. Countries will have different priorities to guide their choices and their use of available financial resources. In lower-income countries, strategies will likely want to focus on improving food security and nutrition, and on reducing pressures on land and water resources. This calls for reducing food loss and waste early in the food supply chain, not least on the farm. By providing or improving public goods, such as roads and other infrastructure, governments can help smallholder farmers gain market access and reduce on-farm losses. Impacts will be strongest when interventions occur close to environmental hotspots or food-insecure populations.

Higher-income countries, striving to meet their commitments under the Paris Agreement, may focus on lowering GHG emissions, which calls for reducing waste at the retail and consumer levels. In this case, information campaigns on food waste avoidance and promotion of food redistribution can play a significant role.

