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Deconstructing Food Losses Across the Value Chain

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Introduction

The importance of reducing food loss and food waste has captured the public imagination since it became one of the targets of the United Nations Sustainable Development Goals. The urgency of this issue and the awareness of its significance to the development community has been growing steadily. Even so, policies to address food insecurity or the increasing pressure on the world's available land that is being caused by growing populations and changing diets have aimed mainly at increasing agricultural yields and productivity. These efforts are often cost- and time-intensive and do not consider food loss and waste reduction as a tool to help meet growing food demand; nor do they consider food loss reduction as a means to ease pressure on land. Food loss also entails unnecessary greenhouse gas emissions and excessive use of scarce resources including land (FAO 2019); thus, policies to reduce food loss will also benefit the environment. Finally, cutting food loss can help disadvantaged segments of the population, as the loss of marketable food can reduce producers' incomes and increase consumers' expenses.

Most of the literature uses the terms postharvest losses (PHL), food loss (FL), food waste (FW), and food loss and waste (FLW) interchangeably, but they rarely refer consistently to the same concept. Recent publications (FAO 2014, 2019; HLPE 2014; Lipinski et al. 2013) have tried to clarify this by defining FL as unintentional reductions in food quantity or quality before consumption, that is, from the producer to the wholesale market, inclusive. These losses usually occur in the earlier stages of the food value chain—between production and distribution. This definition, however, does not include crops that are lost before harvesting or are left in the field; nor does it include crops that are lost due to poor harvesting techniques or sharp price drops; nor crops that are not produced because of a lack of adequate agricultural inputs, such as fertilizer, or because of a shortage of available labor.

In 2019, the FAO developed the Food Loss Index (FLI), following the definition of food loss mentioned above. According to the FLI, an estimated 14 percent of food produced is lost every year. The major losses are in Central Asia and Southern Asia (20.7 percent), as compared to sub-Saharan Africa, which experiences a 14 percent food loss (FAO 2019), and Latin American and the Caribbean where 11.6 percent is lost. When examining losses in terms of food groups, the highest level of loss is reported in

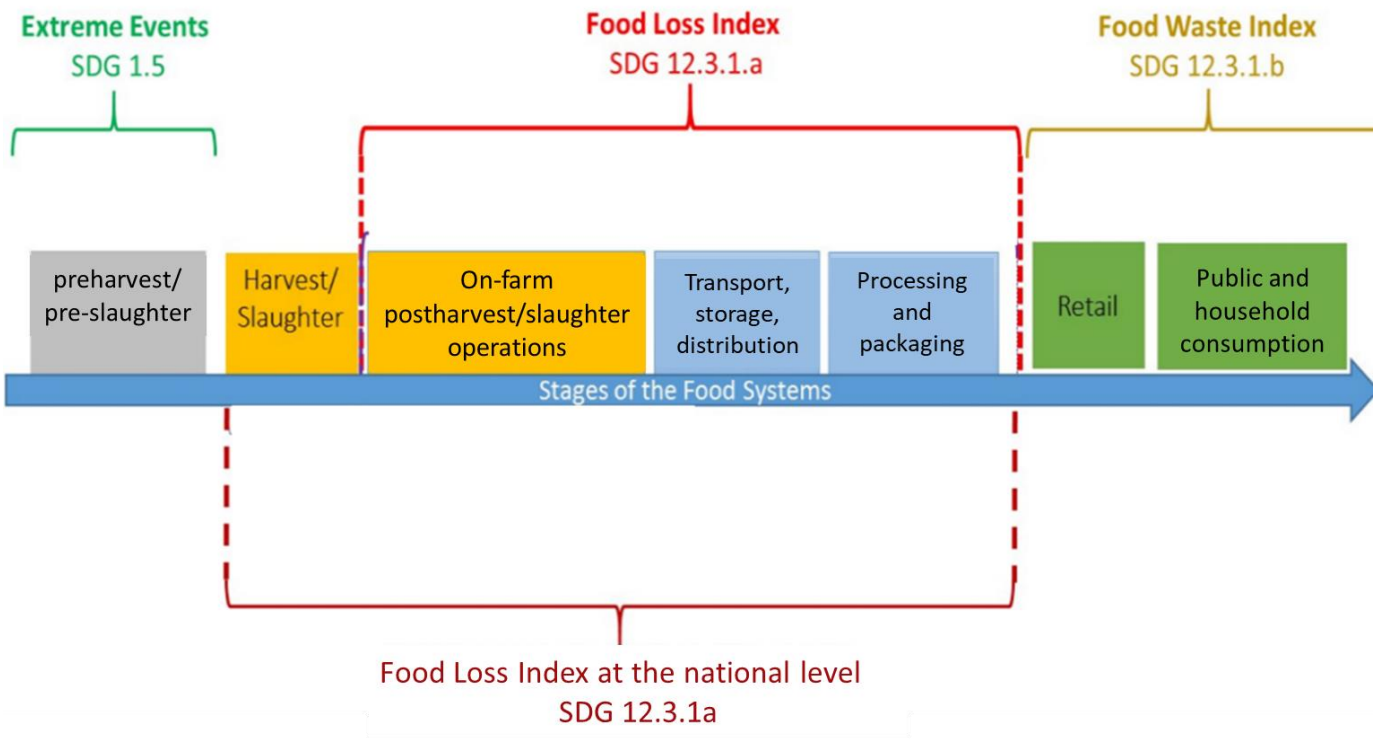
roots, tubers, and oil-bearing crops, followed by fruits and vegetables. It is not surprising that fruits and vegetables incur high levels of loss (more than 20 percent) given their highly perishable nature.

Improving Measurement of Losses

To create better strategies for reducing food loss and waste, it is essential to measure losses accurately and consistently. It is important to identify where in the value chain the losses occur and what determinants are behind those losses. Researchers supported by the CGIAR Research Program on Policies, Institutions, and Markets (PIM) developed innovative methodologies relative to the traditional methodology that only measures self-reported quantity of losses as an aggregate for the full value chain. The two new methodologies—one based on commodity attributes and the other based on the quality categories recognized by the market—quantify food loss both in terms of quantity and quality and identify how and where food loss occurs for different commodities and value chain nodes.

The methodology incorporates components of the Food Loss Index for SDG 12.3.1 (Figure 1), that is, on-farm postharvest, transport, storage and distribution, processing, and packaging. It also includes losses identified at the preharvest and harvest levels, thus capturing the entire value chain before retail.

Figure 1: Scope of the Food Loss Index along the food supply chain

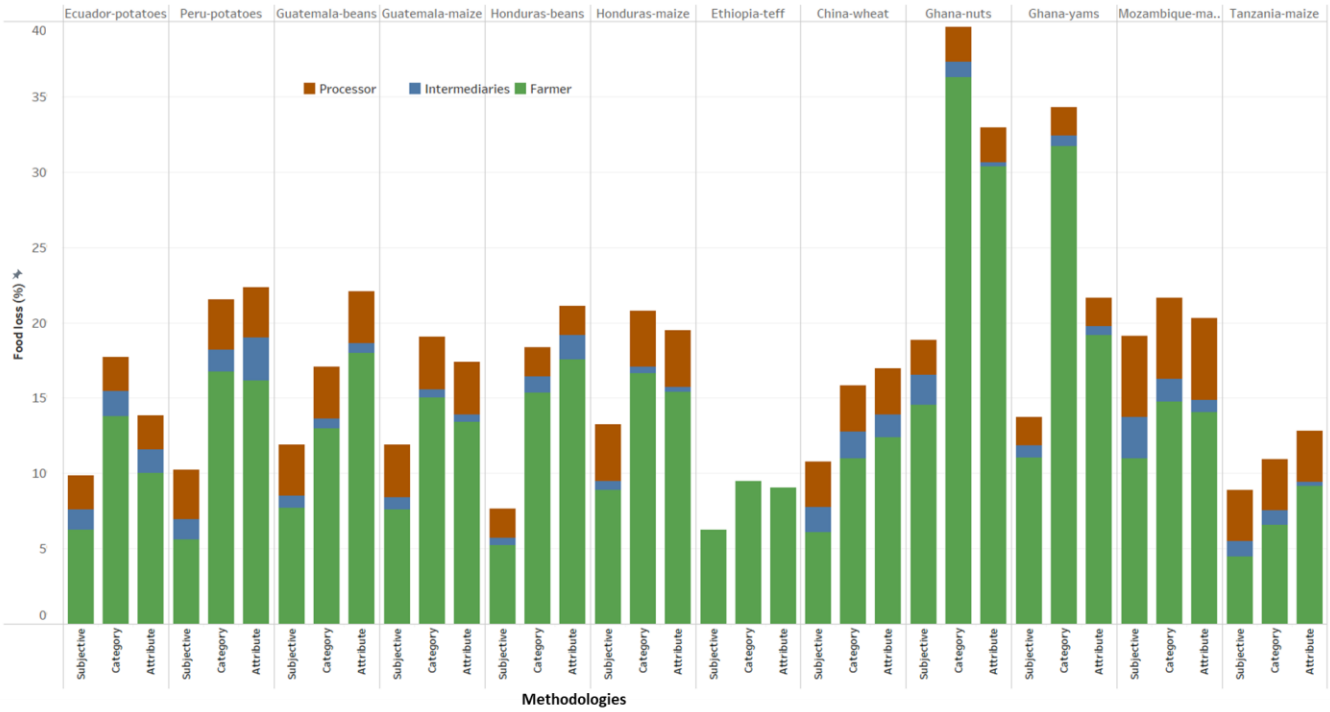


Source: FAO (2019).

All three methodologies can measure losses at different stages of the value chain and can be applied across crops and regions. The “aggregate self-reported method” is based on reporting by the producers, intermediaries, and processors regarding the food losses they each incurred; the “category method” is based on the evaluation of a crop and the classification of that crop into quality categories; and the “attribute method” is based on the evaluation of a crop according to inferior visual, tactile, and olfactory product characteristics.

This methodology was implemented in nine countries: Ecuador (potatoes), Peru (potatoes), Guatemala (maize and beans), Honduras (maize and beans), Ethiopia (teff), China (wheat), Ghana (groundnuts and yams), Mozambique (maize) and Tanzania (maize). Figure 2 shows level of losses (in value) separately at the producer, intermediary, and processor levels; it does so for the three estimation methodologies listed above, that is, the aggregated self-reported (S), the category (C), and the attribute (A) methods. As shown in Figure 2, loss figures are consistently largest at the producer level and smallest at the intermediary level. Across the different estimation methodologies, loss at the producer level represents between 60 and 80 percent of the total value-chain loss, while the average losses at the intermediary and processor levels are around 7 and 19 percent, respectively.

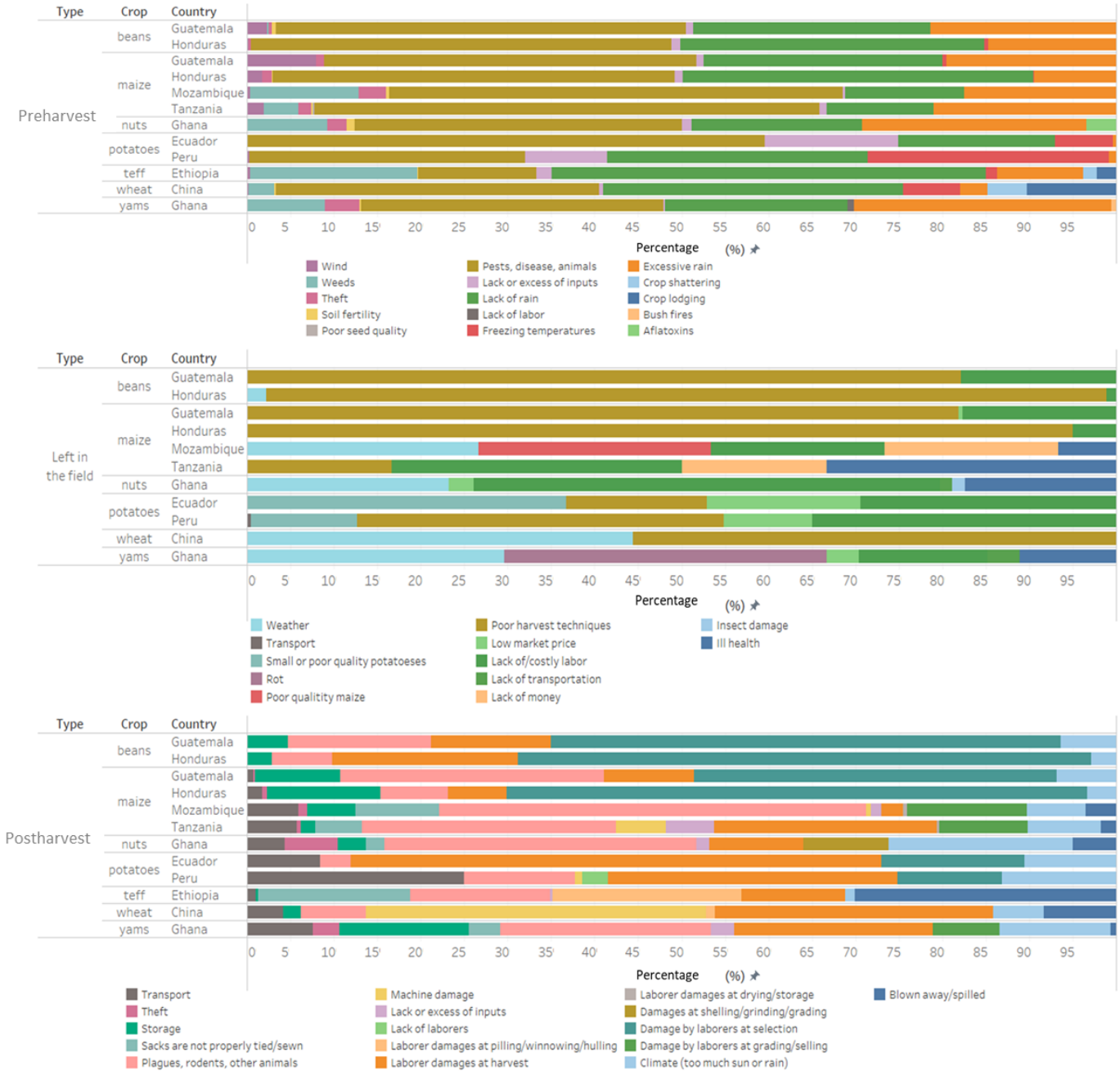
Figure 2: Food loss as a percentage of total value of production (US$)



Source: Delgado et al. (2021a, 2021b) and authors' own elaboration, with FAO data for Mozambique and Tanzania and SNV data for Ghana.

When analyzing the causes of food loss, Figure 3 presents the major reasons for losses reported by the producers at preharvest, crops left in the field, and postharvest. The most commonly reported preharvest factors were pest infestation, disease, and drought; the main reasons for crops being left in the field were inadequate harvesting techniques, lack of laborers, and weather; and the major causes for postharvest losses were plagues, rodents and other animals, and damage caused by workers during harvesting or sorting.

Figure 3: Self-reported causes of loss



Source: Delgado et al. (2021a, 2021b) and authors' own elaboration, with FAO data for Mozambique and Tanzania and SNV data for Ghana.

The Way Forward

Addressing food loss across the value chain requires all actors to have a common understanding of the concept. A collaborative effort is also needed to collect better data across the value chain and across different commodities and contexts. As stated earlier, food loss has been defined in many ways and there is disagreement over the proper terminology and methodology for measuring it.

Policymakers need to work with value chain actors to translate these insights into action. They should focus on collecting evidence-based and consistent information across the value chain and ensuring that public and private sector investments facilitate food loss reduction, with hotspots being specifically targeted.

Understanding definitions is the first step, but it is also important to know how much, where, and why food is lost and wasted. As a second step, we need to be clear about the underlying objectives for reducing food loss and waste related to efficiency, food security, or the environment. Third, we need to understand the cost-effectiveness of food loss and waste interventions and to know how much can be recycled back into the food system. Fourth, we need to know the extent to which food loss and waste and the measures to reduce them affect the pursued objectives: is there evidence on interventions and incentives that can help?

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