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FOOD SECURITY AND SUSTAINABLE DEVELOPMENT

Clarifying the problem of food loss and waste to improve food and nutrition security

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Abstract

Reducing food loss and waste can contribute to food security and sustainability. Measuring food loss and waste (FLW), identifying where in the food system it occurs, and developing effective policies along the value chain are essential first steps toward addressing the problem. The G20 can play a crucial role with three main actions: (1) Mainstream the implementation of a Global Baseline of FLW with a common and validated measurement methodology across the value chain with concreate targets at regional and country level; (2) Promoting the implementation of context-specific cost-benefit analyses must be systematically carried out to identify the most sustainable, cost, energy, and socially-efficient FLW reduction interventions; and (3) Promoting the coordinating between MDBs, Regional Banks and International Organizations through the technical platform on measurement and reduction of food loss and waste launched by IFPRI and FAO as result of the Turkey G20 on December of 2015.

Challenge[1]

Food loss and food waste have become an increasingly important topic in the development community. In fact, the United Nations included the issue of food loss and waste in the Sustainable Development Goal target 12.3, which aims to "halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses" by 2030, FAO and IFPRI had developed the Technical Platform on Measurement and Reduction of Food Loss and Waste, the EU has developed a Platform on Food Losses and Food Waste, under Further Food 12 organizations partner to reduce food waste by 50% in USA, there is a Global Initiative on Food Loss and Waste (Save Food), and many others. Food loss and food waste have caught the attention of both researchers and policymakers for several reasons. First, growing populations and changing diets associated with greater wealth are increasing the pressure on the world's available land, constituting serious threats to food security, especially in developing countries. Policies to reverse this situation have mainly aimed at increasing agricultural yields and productivity, but these efforts are often cost- and time-intensive. Second, food loss and waste entail unnecessary greenhouse gas emissions and excessive use of scarce resources other than land. Third, the loss of marketable food can reduce producers' income and increase consumers' expenses, likely having larger impacts on disadvantaged segments of the population. Therefore, by reducing food loss and waste, we can improve food availability and food access without increasing the use of agricultural inputs, scarce natural resources, or improved technologies on the production side.

1 This is based on Delgado et.al 2017

The implementation of a strategy to reduce food loss faces three important challenges. First, no accurate information exists about the extent of the problem (especially in developing countries). The available estimates suggest that food loss is alarmingly high and may account for at least one-third of total global food production (FAO, 2011). For the most part, calculations of food loss hinge upon accounting exercises that use aggregate data from food balance sheets provided by national or local authorities (see FAO, 2011; Kummu et al., 2012; Lipinski et al., 2013 for food loss estimations at the global level; see, for example, Venkat et al., 2011, or Buzby et al., 2014 for the estimation of food loss and waste in the US). These "macro" estimations are subject to considerable measurement error (in both studies on developing and developed countries), and rely on poor quality data or are not based on representative samples (mainly in studies on developing countries)[2]. Moreover, they only quantify the volume of food that is lost and do not take into account potential deterioration of quality that also affect farmers and consumers through respectively lower prices and the consumption of lower quality products.

More recently, efforts have been made to use micro data to estimate food loss. These estimations rely on surveys collected among different actors across the food value chain. However, they tend to be based on case studies that are not representative of a country's larger populations and of trends over time. Additionally, these studies use different survey instruments to assess food loss, hampering comparisons across different areas and crops. Due to their lack of representativeness and differences in their methodologies, the available micro-based estimates are widely variable and yield inconclusive evidence about the extent of food loss.

The second challenge is the scarce evidence regarding the source of food loss. Food loss is associated with a wide array of factors (e.g., poor agricultural management skills and techniques, inadequate storage, deficient infrastructure, inefficient processing, lack of coordination in marketing systems, etc.) and can occur in different stages of the value chain (i.e., production, harvesting, post-production, processing, distribution, or consumption, see FAO, 2011; HLPE, 2014; Lipinski et al., 2013). Because of the aggregate nature of their data, macro studies are unable to capture the critical stages at which food loss occurs. Arguably, due to the cost of primary data collection, most micro studies capture total food loss based on farmers' self-reported estimates but do not capture detailed information regarding the amounts and relative amounts of food loss by the different sources and thus do not disentangle the relevant production phases in which losses are generated. For example, studies using the nationally representative Living Standard Measurement Surveys – Integrated Surveys

2 See Archer et al. (2016) and Muth et al. (2011) for a discussion on the limitations to the use of USDA LAFA data for the documentation of food loss and waste in the US. See Fusions (2013) for a discussion on the shortcomings of the use of food balance sheets for the estimation of food loss and waste at the global level.

on Agriculture (LSMS – ISA) ask farmers to assess the proportion of their crops lost to rodents, pests, insects, flooding, rotting, theft, or other reasons; these studies can only provide global estimates. A few studies have collected more comprehensive information about the particular stages in which losses occur; however, these studies are based on small samples in particular locations, making their results difficult to extrapolate.

Third, there is little evidence regarding how to successfully reduce food loss across the value chain. There have been efforts to introduce particular technologies along specific stages of the value chain (e.g., silos for grain storage, triple bagging for cowpea storage, or mechanized harvesting and cleaning equipment for wheat and maize). However, little evidence exists regarding adoption rates or the economic sustainability of these efforts. In particular, there is a need to better understand how to introduce economic incentives for actors from farm-to-fork, taking into account the upstream and downstream linkages across the value chain.

Proposal

Proposal 1. A Global Baseline of FLW - Mainstream a common measurement methodology for food loss and waste across the value chain with concreate targets at regional and country level

SDG 12 "ensure sustainable consumption and production patterns" has target 12.3 "by 2030, halve the per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses"; the Committee of World Food Security (CFS 41st session) called on all public, private and civil society actors to promote a common understanding of FLW and create an enabling environment based on the "food use-not-loss-or-waste" hierarchy, especially for monitoring, measurement, and reporting targets; and the in May 2015 under the Turkey Presidency, the G20 agriculture ministers highlighted the extent of food loss and waste (FLW) as "a global problem of enormous economic, environmental and societal significance" and encouraged all G20 members to strengthen their collective efforts to prevent and reduce FLW. In this context identifying the magnitudes, causes and costs of FLW across the value chain is critical to promoting reduction interventions and setting priorities for action. In addition, the identification of critical bottlenecks calls for an integrated value chain approach and the coordination of a wide diversity of actors, including multi-disciplinary researchers, policymakers, private sectors, and civil society actors. Addressing FLW first requires a common understanding of the

concept by all actors,[3] as well as a collaborative effort to collect better micro-data across different commodities and contexts. To be able to comply with target 12.3 we need to set concrete FLW targets at regional and country level and specifically address the needed differences between developing and developed countries. On the later the priority focus should be on waste and on developing countries on FL but also keeping in mind how to leapfrog in the best practices to reduce waste. In that sense we propose a pilot in which the World Bank in partnership with IFPRI will implement Delgado et.al 2017 methodology for food loss and use existing best practices to measure food waste (see Fusions 2014) on additional 5-12 countries (including Mexico, Nicaragua, Argentina, Honduras, Bangladesh, India, Sri Lanka and Myanmar) in the next 12 months, on their country-led processes, helping them better understand and define incentive structures and design action plans to achieve their targets as a way to prove the concept to then scale it up. This pilot should then be scaled up to G20 countries and to all other possible developing countries with the support of the G20 and the relevant MDBs.

Proposal 2. Context-specific cost-benefit analyses must be systematically carried out to identify the most sustainable, cost-energy, and socially-efficient FLW reduction interventions

FLW can be driven by strict food-safety concerns and regulations which can lead to safe food to be rejected for import (Fonseca and Njie, 2009) or removed from markets (e.g., Waarst et al., 2011; FAO, 2013), while more systemic causes relate to discrepancies between the technologies promoted or changing consumption demands and actual national capacities to adopt innovations or respond to changing consumption patterns. Thus, context-specific cost-benefit analyses have to be systematically carried out to identify the most sustainable, cost, energy, and socially-efficient FLW reduction interventions. In addition, it should also include environmental benefits, distributional effects and general equilibrium impacts.

Proposal 3. Coordination between MDBs, Regional Banks and International Organizations through the technical platform on measurement and reduction of food loss and waste launched by IFPRI and FAO as result of the Turkey G20 on December of 2015[4]

To identify the actors responsible for specific FLW reduction interventions and the

3 A good step in this direction has been made by the multi-stakeholder" Food Loss and Waste Standard and Protocol" initiative, although this initiative does exclude pre-harvest losses from its definition.

4 See http://www.fao.org/platform-food-loss-waste/background/en/

needed investments to reduce them by the Governments and private sector it is essential to increase coordination among MDBs, Regional Banks and International Organizations to properly target interventions and investment to the specific causes of FLW identified in that sense there is a clear need to reinforce the Technical Platform of Food Loss and Waste. In addition, this platform should bring evidence to identify where the public sector should play a role and where the private sector role is. Governments role should focus on actions that fall within the public-sector responsibility (e.g. related to information on best practices, food safety, educations, on access to roads, and on regulation on standards[5] and on market failures). Specifically when targeting value chains of small holders with small surpluses and facing substantial market failures the role of the public sector could go further than providing public goods but also could imply supporting smallholders in reducing the market failures they face by for example reducing losses because of lack of appropriate storage facilities (FAO, 2011; Liu, 2014), efficient transport systems (Rolle, 2006), enacting policies that improve access to credit , identifying where market incentives can support improved food safety as in the case of aflatoxins[6], and improving access to varieties which are more resistant to weather shocks. . However, causes, ranging from crop variety choices, pre-harvest pests, and processing and retail decisions, are also important and here is where the private sector can also play a role especially when this will imply that their profits could increase.

5 Promoting food quality and safety standards not only serves an important prerequisite for exporting produce grown in Africa to international destinations, but it also helps ensure that smallholder farmers and their families fully benefit from high quality, nutritious food grown locally

6 See Unnevehr, Laurian J. and Grace, Delia. 2013.

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