
POLITICAL ECONOMY OF FOOD LOSSES AND WASTES IN THE SUPPLY CHAIN: ANALYSIS AND POLICY INTERVENTIONS

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Food losses and food waste within the food supply chain have become a global concern, with significant economic, environmental, and ethical implications. This review paper explores the political and economic factors contributing to food losses and waste and examines potential policy interventions to address this critical issue. By analyzing the complex interplay between various stakeholders, government policies, and market forces, we aim to shed light on the underlying causes and propose strategies for reducing food losses and waste.

Keywords: food loss, policy, interventions, supply chain, economy

INTRODUCTION

Food losses and food waste have emerged as a critical global issue with profound ethical, economical, and environmental consequences. The Food and Agriculture Organization (FAO) has estimated that roughly one-third of all the food produced for human consumption, which is equivalent to almost 1.3 billion tons annually, is either lost or wasted. These staggering statistics underscore the urgency of addressing the issue to ensure a sustainable future for our planet and to develop innovative solutions to mitigate the problem at hand.

To quantify the extent of food losses and waste, the FAO's "Global Food Losses and Food Waste" report serves as a comprehensive overview to know about the overall global scenario. This report emphasizes that these losses occur at various stages along the food supply chain i.e., from production to consumption, and are driven by an intricate web of political and economic factors (FAO, 2011).

Apart from that food losses and food waste are fundamentally an ethical concern. In a world where nearly 9% of the global population suffers from chronic hunger (FAO, 2021), allowing vast quantities of food to go to waste while millions go hungry is morally unacceptable. Moreover, food waste exacerbates social inequalities and inequities in access to food resources (Buzby et al., 2014).

The economic impact of these food losses and food waste is substantial. It leads to financial losses for the farmers, producers, and consumers. In developing countries, food loss is mainly due to inadequate infrastructure and post-harvest management contributes significantly to these losses (Gustavsson et al., 2011). Additionally, the disposal of wasted food generates costs for waste management and negatively affects the business's profitability (Kummu et al., 2012) along with the rise in negative environmental concerns.

Analytical analysis of the food losses and food waste shows severe environmental repercussions. The resources invested in producing, processing, and transporting wasted food, such as water, energy, and land, are squandered. Furthermore, food waste in landfills decomposes and generates methane, a potent greenhouse gas that contributes to climate change (FAO, 2013). Addressing food losses and waste is integral to achieving global food security and sustainability goals. By reducing losses, more food can reach those who need it, improving food security. Moreover, decreasing the environmental impact of food production and waste disposal contributes to a more sustainable future (HLPE, 2014).

Food losses and food waste do not occur in isolation but are deeply influenced by political and economic factors. The interplay of market forces, government policies, and consumer behavior shapes the dynamics of food losses and waste throughout the supply chain (Gustavsson et al., 2011).

Factors Contributing to Food Losses and Waste

There are several factors that contribute to food losses and food waste and some of the major players in this category are the marketing strategy, logistics and infrastructure, and consumer behaviour. Some of the key features are discussed below:

Price Volatility and Fluctuation

The demand for aesthetically pleasing produce at lower prices often leads to the rejection of imperfect but perfectly edible fruits and vegetables (Gunders and Bloom, 2017). Consumers often associate quality with

appearance, and retailers respond by selecting only the most visually appealing products for sale, leaving cosmetically imperfect ones unsold and destined for waste (Buzby et al., 2014).

Overproduction and Excess Inventory

The pursuit of economies of scale and just-in-time inventory management practices can result in surplus production and subsequent disposal (ReFED, 2016). In an effort to meet market demand and ensure product availability, producers often overproduce, leading to inventory excess. When these goods fail to sell or meet retailer demands, they are discarded, leading to food waste (Gustavsson et al., 2011).

Strict Superficial Standards

Retailer's demands for uniform appearance contribute to the rejection of aesthetically imperfect items (Buzby et al., 2014). Retailers often enforce stringently improving standards, only accepting produce that meets specific visual criteria, such as size, shape, and colour. This practice results in the rejection of perfectly edible but visually non-conforming items, ultimately contributing to food waste (Gunders and Bloom, 2017).

Promotions and Bulk Sales

Overstocking and aggressive marketing strategies lead to consumers buying more than they can consume, resulting in the generation of waste (FAO, 2013). Retailers frequently employ promotions, discounts, and bulk sales to boost sales so that minimum to no produce goes to waste, enticing consumers to purchase larger quantities than needed. On the other hand, these practices often lead to food being discarded from the consumer's side because when the produce exceeds its shelf life (Stuart et al., 2019) it will ultimately be deemed as unfit for consumption and thus discarded.

Inadequate Transportation and Storage Facilities

Insufficient infrastructure in developing countries can lead to spoilage and losses during transit and storage phases (Kummu et al., 2012). Poor road networks, lack of refrigeration, and inadequate storage facilities result in food being damaged or spoiled before reaching the actual markets. These infrastructural shortcomings contribute significantly to food losses in developing nations.

Lack of Cold Chain Infrastructure

Temperature-sensitive products are particularly highly susceptible to spoilage when proper cold chain facilities are lacking (FAO, 2019). Without an uninterrupted cold chain, which includes refrigerated transport and storage, perishable goods like dairy products, meats, and fresh produce are vulnerable to spoilage due to temperature fluctuations.

Confusion Over Date Labelling

Ambiguously dated labels can often mislead consumers to discard food prematurely (Neff et al., 2019). Many consumers misinterpret date labels as indicators of food safety when, in fact, they often refer to quality or freshness. These misunderstanding prompts consumers to discard items prematurely, contributing to food waste. There is a huge need for awareness campaigns that help consumers as well as producers to reduce food waste.

Lack of Awareness

Consumers often underestimate the environmental and economic impact of food waste (Qvested et al., 2013). There is a general lack of awareness regarding the resources (water, energy, land) required to produce food and the environmental consequences of its disposal. Heightening consumer awareness is crucial to reducing food waste (Visschers et al., 2016).

The Political Economy of Food Losses

Coming to the political economy of food losses, some of the key features that can be observed are government policies and their influence on food loss, the role of international trade, and food redistribution programs on the amount of food being lost.

Subsidies and Incentives

Government subsidies that favor overproduction or specific crops can intensify food losses (Gunder and Bloom, 2017). When farmers are incentivized to produce more of a particular crop, it can lead to an oversupply of that product, increasing the likelihood of surplus produce and eventual disposal (Gustavsson et al., 2011).

Food Safety Regulations

Stringent food safety regulations can sometimes result in the disposal of safe but non-compliant food items (Buzby et al., 2014). Producers and retailers may discard products that do not meet these strict standards, even if the food is still perfectly safe for consumption. This contributes to the unnecessary wastage of food.

Tax Incentives

Tax policies that provide incentives for food donations can help reduce waste (Hall et al., 2013). By offering tax benefits to businesses and individuals who donate surplus food to food banks or charitable organizations, governments can encourage the redirection of excess food and other edible produce to those in need instead of it going to waste.

Trade Agreements

Trade dynamics significantly influence the distribution of food losses, with surplus-producing nations often exporting imperfect or excess food (Priefer et al., 2016). In an attempt to maximize profits and maintain market competitiveness, countries may export food products that do not meet their domestic market's cosmetic standards or that have exceeded their shelf life, leading to food losses in the exporting country.

Export Restrictions

On the contrary, some countries restrict food exports during shortages, leading to surpluses domestically (Martin, 2010). Export restrictions are often imposed to ensure food security within the country. However, these restrictions can result in surpluses of certain products domestically, which may eventually go to waste if not managed effectively.

Government-Led Initiatives

Government-led programs aimed at redistributing surplus food to vulnerable populations can effectively mitigate losses (HLPE, 2014). These initiatives involve partnerships with food banks, charities, NGOs, and other local bodies to collect surplus food from producers, retailers, and manufacturers and distribute it to those in need. By diverting food from landfills to those who are food-insecure, these programs reduce waste while addressing social issues.

Tax Incentives for Donations

Offering some form of tax benefits to businesses and individuals who donate unsold food items encourages surplus food to be redirected to those in need (Hall et al., 2013). These tax incentives will serve as a valuable tool to incentivize food donations, reduce waste, and contribute to the overall food security efforts.

To provide a detailed outlook on the political economy of food losses, it is shaped by a combination of government policies and international trade dynamics. Government interventions, such as subsidies, food safety regulations, and tax incentives, can either exacerbate or mitigate food losses. Similarly, international trade agreements and export restrictions can influence the distribution of food losses. Food redistribution programs, both government-led and incentivized through tax benefits, play a crucial role in redirecting surplus food to those in need, addressing food waste while alleviating food insecurity.

Policy intervention is the other facet of the issue concerning food waste and food loss. One of the key characteristics or useful interventions is to standardize the date labelling system which reduces the confusion between safe consumption and ideal date of consumption. "Implementation of clear and consistent date labeling regulations to reduce consumer confusion and prevent premature discarding of food items"

Standardized date labeling is crucial to reducing consumer confusion and the unnecessary disposal of food. Many consumers misinterpret date labels, such as "best before," "use by," and "sell by," leading them to discard perfectly safe and edible food (Neff et al., 2019). To address this issue, governments can implement regulations that standardize date labels, making them more understandable and consistent across products. Clear labeling can help consumers distinguish between safety and quality dates, reducing the likelihood of prematurely discarding food.

Investing in infrastructure and logistics improvements, particularly in developing countries, to reduce spoilage during transit and storage. Investing in supply chain infrastructure and logistics is essential to minimize food losses, especially in developing countries with limited resources (Kummu et al., 2012). Improved transportation and storage facilities, as well as the development of a robust cold chain, can help ensure that food products reach their destination in optimal condition. This reduces spoilage, extends shelf life, and minimizes losses due to inadequate handling, storage, or transportation.

Table 1: Food Losses at Different Stages of the Supply Chain

Supply Chain Stage	Food Losses (%)
Production and Post-Harvest	20%
Processing and Packaging	25%
Distribution and Retail	15%
Consumer	35%
Total	95%

Source: Adapted from Gustavsson et al., 2011.

Launch public awareness campaigns to inform consumers about the environmental and economic consequences of food waste. Educating consumers about the consequences of food waste is critical to changing behavior. Public awareness campaigns can highlight the environmental and economic impacts of food waste, such as the carbon footprint associated with production and disposal and the social implications for food-insecure populations (Visschers et al., 2016). By increasing awareness, consumers can make more informed choices, plan their meals better, and reduce food waste at the household level.

Table 2: Economic and Environmental Impacts of Food Waste

Impact Category	Description
Economic Costs	
Loss of Food Value	Billions of dollars are wasted annually due to food that is discarded before consumption.
Increased Prices	When food is wasted, it contributes to higher prices for consumers.
Resource Losses	Wasted resources used in production, including water, energy, and land, result in economic loss.
Environmental Impacts	
Greenhouse Gas Emissions	Food waste in landfills produces methane, a potent greenhouse gas contributing to climate change.
Energy Consumption	Wasted food represents a loss of the energy invested in its production, transportation, and refrigeration
-Water Usage	Considerable amounts of water are used in agriculture and food production; wasted food implies wasted water resources.

Provide tax incentives and legal protections to encourage businesses to donate surplus food to food banks and charities. To encourage businesses to redirect surplus food to those in need rather than discarding it, governments can offer tax incentives and legal protections (Hall et al., 2013). Tax benefits, such as deductions or credits, can offset the costs associated with food donations, making it financially attractive for businesses. Legal protections can shield donors from liability concerns, ensuring that they won't be held responsible for the food's safety once it leaves their possession. These incentives help incentivize the redistribution of surplus food to food banks and charities, reducing food waste while addressing food insecurity.

To provide an overview, policy interventions address various aspects of the food loss and waste issue, from consumer behavior to supply chain efficiency. By implementing standardized date labeling, optimizing supply chains, raising awareness, and incentivizing food donation, governments and stakeholders can work together to reduce food losses and waste, leading to a more sustainable and equitable food system.

CONCLUSION

The issue of food losses and waste represents a complex and multifaceted challenge that affects societies worldwide. This review has highlighted how the political economy of food losses and waste is deeply intertwined with market forces, government policies, and consumer behaviors. To effectively address this issue, a comprehensive approach is necessary, taking into account economic drivers and the political landscape.

Policy interventions play a crucial role in mitigating food losses and waste. Standardized date labeling can reduce consumer confusion, while supply chain optimization, particularly in developing countries, can minimize spoilage during transit and storage phases. Public education and awareness campaigns can help change consumer behavior, and incentives for food donation can redirect surplus food to those in need, rather than letting it go to waste.

It is also essential to emphasize that there is a need for coordinated efforts from governments, businesses, and consumers to create a more efficient and sustainable food supply chain. Reducing food losses and waste not only contributes to food security but also aligns with broader sustainability goals. Moreover, addressing this issue helps alleviate the social, economic, and environmental costs associated with food losses and waste.

In conclusion, tackling the challenge of food losses and waste requires a holistic approach, driven by policy interventions and collaborative efforts across various sectors. By doing so, we can work towards a more sustainable and equitable food system, ultimately benefiting both present and future generations.

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