

Policy Brief

Controlling Food Loss through Resilient Storage and Preservation Systems

Executive Summary

Food loss in the agricultural and supply chains is a pressing global issue. The loss of food jeopardizes food security, hampers economic development, and intensifies environmental concerns. Every year, a staggering one-third of the world's food intended for human consumption is lost, predominantly in the early stages of production, harvesting, and distribution. This represents a substantial economic burden, particularly in low and middle-income countries where agriculture plays a pivotal role in economic activity. Food loss exacerbates poverty among smallholder farmers and undermines global food security efforts, perpetuating a cycle of scarcity in regions already grappling with hunger and malnutrition. The environmental consequences of food loss, including wasted resources, increased

greenhouse gas emissions, and land degradation, also contribute to an already dire climate crisis. This policy brief examines the profound implications of food loss, provides an in-depth overview of an earlier synthesis report and offers recommendations for policymakers to address this multifaceted challenge. The recommendations underscore the necessity for a coordinated approach to food loss, which encompasses post-harvest best practices, investment in storage and transportation infrastructure, and the adoption of innovative technologies. We also recommend prioritizing sustainable, efficient and inclusive systems across the food supply chain to mitigate food loss and safeguard economic stability while promoting environmental conservation.

Introduction

The issue of food loss has gained currency in recent times as the world battles to feed its rapidly growing population. Food loss refers to the decrease in food quantity or quality during production, post-harvest handling, processing and distribution before it reaches the consumer (Irani et al., 2018). Food loss, particularly in the agricultural and supply chain stages, constitutes a critical concern that transcends regional boundaries. It results in severe economic losses, exacerbates global food insecurity, and contributes to environmental degradation. The urgency to address food loss is underlined by its role in intensifying challenges associated with a rapidly growing global population. In the absence of robust policy responses, particularly in low and middle-income countries which are heavily reliant on agriculture, the problem of food loss intensifies. This is especially the case in many developing countries where due to inadequate finances and lack of technology, governments struggle to find lasting solutions to mitigate the predicament. This policy brief is based on a synthesis report that sought to identify the key policy options, barriers, enablers and solutions to the problem of food loss both nationally and globally.

Research Approach

Evidence for this policy brief draws on a synthesis report published by the Data Repository and Advocacy for Policy (DARAP) project. The synthesis report was based on a comprehensive synthesis of literature on the topic from various academic databases, peer-reviewed journals, books, conference proceedings, and reputable online repositories. A thorough search was conducted to identify relevant studies, reports, and publications that discuss the topic of food loss. Both qualitative and quantitative studies were included in gathering extensive information on food loss. In addition, we obtained qualitative data from in-depth interviews with key informants in the sector.

Results

The research revealed that food loss occurs across the agricultural, processing, transportation, and storage stages of the supply chain. Key causes include poor post-harvest handling, inadequate infrastructure,

and lack of technology adoption. These factors have severe implications for farmers' incomes and contribute to overall food loss. We also found that the significant amounts of food wasted every year is causing substantial economic loss, both locally and globally, to stakeholders, from smallholder farmers to large-scale agribusinesses.

Furthermore, food loss is exacerbating the global food crisis, leading to increased food insecurity among vulnerable populations. The urgency to address food loss becomes even more apparent as the world grapples with feeding a growing global population. According to FAO (2011), production-related losses account for an estimated 24% of total food loss, while poor storage facilities account for an estimated 15%. These estimates vary across different crops and regions, with sub-Saharan Africa recording the worst estimates. In addition, food loss significantly contributes to environmental degradation due to excessive resource consumption, greenhouse gas emissions, and land degradation. As our study reveals, tackling food loss is therefore not only essential for food security, but also for sustainable agricultural practices, and environmental preservation.

Conclusion and Recommendations

The results of our research leave little doubt that food loss is a multifaceted issue with severe consequences. To address this problem effectively it is essential to improve post-harvest handling, invest in infrastructure and technology, and implement policies that provide incentives for the reduction of food loss. We therefore propose the following policy options for uptake in addressing with urgency this predicament:

Infrastructure Investment

- Allocate resources for the construction of modern warehouses, cold storage facilities, and transportation networks in areas with insufficient infrastructure.
- Enhance perishable food storage and preservation capabilities through strategic investments in critical infrastructure.

We recommend these policy options for uptake locally by the Ministry of Food and Agriculture

(MoFA) or relevant agricultural agencies in Ghana and globally by the United Nations Development Programme (UNDP), World Bank or International Finance Corporation (IFC).

Technology Adoption for Preservation

- Promote the use of advanced technologies, such as cold storage facilities, controlled environment storage, and intelligent monitoring systems, to extend the shelf life of perishable food items.
- Encourage the adoption of Internet of Things (IoT) devices, data analytics, and monitoring systems to track and manage environmental conditions during storage and transportation.

We propose these policy options to the Ministry of Environment, Science, Technology and Innovation in Ghana, in collaboration with MoFA. Globally, these recommendations can be considered by the Food and Agriculture Organization (FAO) of the United Nations, International Telecommunication Union (ITU).

Collaboration and Knowledge Exchange

- Facilitate cooperation among stakeholders, including producers, processors, wholesalers, retailers, transporters, and policymakers, to share best practices and expertise in food preservation.
- Develop comprehensive guidelines and standards for controlling food loss throughout the supply chain through collaborative efforts.

We recommend these policy options to the Ministry of Trade and Industry, in collaboration with MoFA and local agricultural associations and businesses, and to the Food and Agriculture Organization (FAO) of the United Nations and International Trade Centre (ITC) for uptake at the global level.

Education and Training

- Establish training programs and workshops in collaboration with industry experts to educate farmers, producers, and stakeholders on effective post-harvest handling and preservation techniques.
- Organize educational campaigns and training programs to increase consumer awareness of proper food handling, storage, and consumption practices.

We propose these for local adoption by the Ministry of Education, MoFA and local agricultural extension

services. Additionally, we recommend them to UNESCO and the World Food Programme (WFP) for global action.

Policy and Regulation Support

- Create and implement regulations that discourage food loss and encourage sustainable behaviors among food producers and businesses.
- Promote the distribution of surplus food to those in need and provide policy support for environmentally friendly packaging solutions.

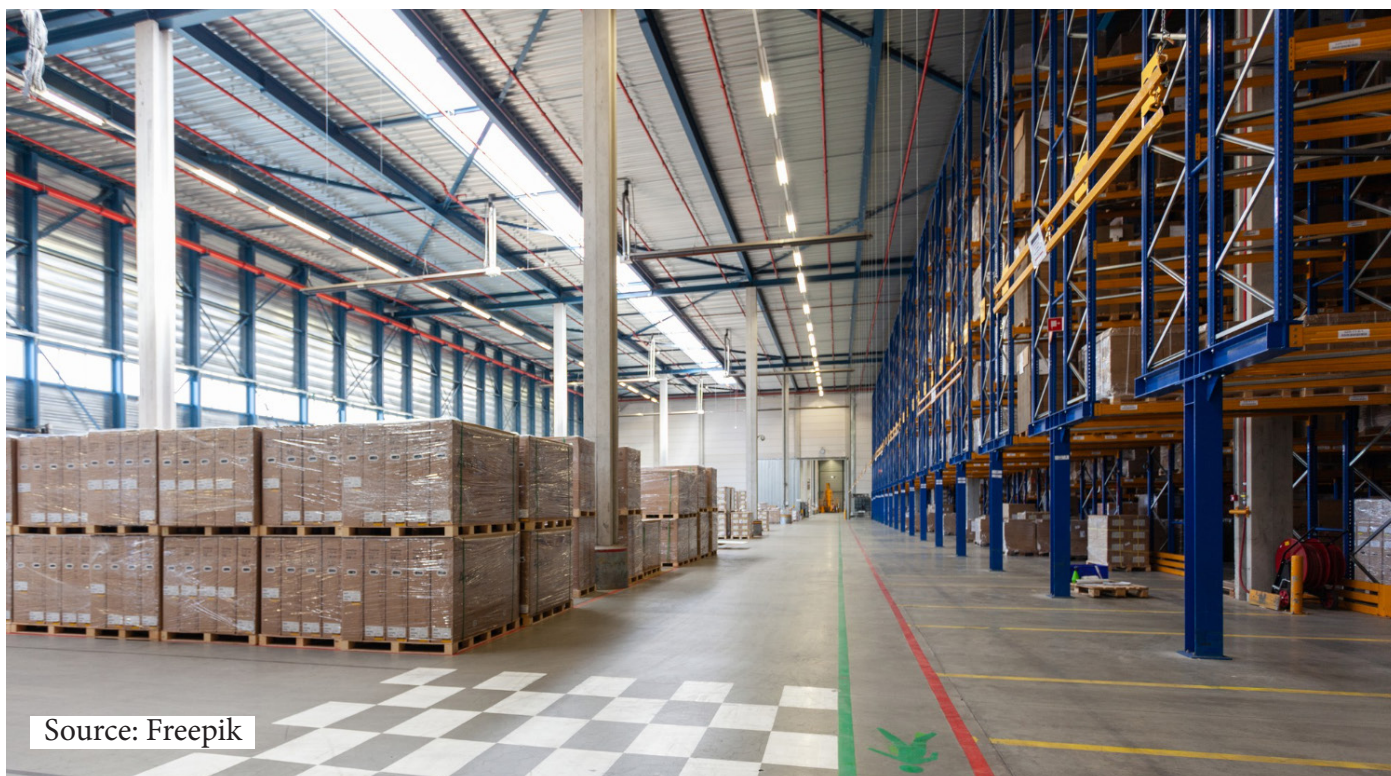
We recommend these policy options for uptake locally by MoFA, Environmental Protection Agency and Ghana Standards Authority and globally by the United Nations Environment Programme (UNEP) and World Trade Organization (WTO).

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This brief presents findings and policy recommendations on food loss outlined in a synthesis report developed by researchers engaged under the DARAP Project. The report, titled “Controlling food loss and food waste through resilient sustainable protection, storage and preservation systems” is accessible via the DARAP website, www.darap.isser.edu.gh. Opinions stated in this brief and the report it draws from are those of the author(s) and do not necessarily reflect the views of DARAP and its partners.



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About DARAP

The **Data Repository and Advocacy for Policy (DARAP)** project focuses on promoting the access and effective use of data and knowledge products to influence policymaking processes and outcomes. It contributes to evidence-led policymaking through data management services and capacity building in research data interpretation and usage, collaborating with civil society organisations and academics. DARAP is funded by The Open Society Institute and based at the Measurement, Learning, and Evaluation (MLE) Unit at the Institute of Statistical Social and Economic Research (ISSER), University of Ghana.

Website: www.darap.isser.edu.gh;

Email: darap.isser@ug.edu.gh

About the Author

Freda E. Asem, Ph.D, Department of Agricultural Economics & Agribusiness, University of Ghana. fasem@ug.edu.gh, feasem@gmail.com