



Reducing Impacts of Food Loss and Waste Proceedings of a Workshop

Significant amounts of food are lost or wasted every day, in every country, and at every stage in the supply chain, from the farm to household. According to a 2011 estimate by the Food and Agriculture Organization of the United Nations (FAO), about one-third of food produced is lost or wasted globally. In the United States, food loss and waste account for approximately 31 percent of food supply at the retail and consumer level each year—a loss of about 133 billion pounds with a total cost of \$162 billion. Costs aside, food loss has significant impacts on food security, environmental conservation, and climate change. There are also lesser known impacts of reducing food loss and waste on farmers, food prices, food availability, and environment.

On October 17, 2018, the National Academies of Sciences, Engineering, and Medicine's Science and Technology for Sustainability program organized a workshop to examine key challenges that arise in reducing food loss and waste throughout the supply chain as well as potential ways to address these challenges. The workshop was intended to shed light on the impacts of food waste in the hope of advancing solutions at all levels, from government to industry.

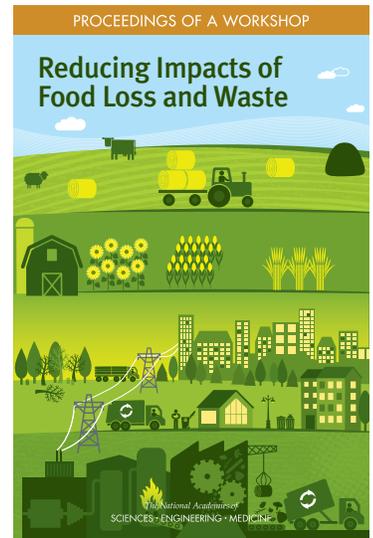
FUTURE NEEDS AND OPPORTUNITIES

During the workshop, chair Ann Bartuska, Resources for the Future, and other planning committee members described themes identified from speaker presentations and panel discussions. Dr. Bartuska reflected on three key points made during the session on metrics for understanding food loss and waste:

- What gets measured gets managed, which underscores the importance of data.
- Examining the entire supply chain is important in determining where adequate data exist and where there are gaps.
- An integrated, holistic approach to reducing food loss and waste includes consideration of land, water, energy, labor, transportation, and other impacts.

COST-BENEFIT IMPACTS OF REDUCING FOOD LOSS AND WASTE ON FOOD AVAILABILITY, FARMERS' INCOME, FOOD PRICES, AND THE ENVIRONMENT

Workshop discussions highlighted many promising examples and case studies from all sectors. One opportunity is “meal-kitization,” a term used by Elise Golan of the U.S. Department of Agriculture in describing popular packaged meals that result in less food waste. A major question is how to communicate the added value of these efforts to consumers. One participant suggested additional research to connect social science and food safety science, as well as more research on consumer acceptance of frozen foods.



RESEARCH GAPS AND OPTIONS FOR IMPROVING EXISTING PRACTICES

Incentives for data sharing are mixed across the food supply chain, which can limit the progress of programs that rely on information transparency. Dr. Bartuska emphasized the need for holistic metrics (such as nutrients per hectare) in which food loss becomes part of the calculation. She also highlighted the significant data gaps discussed in the presentations, especially those related to waste in primary (on-farm) food production. Collecting more and better data across the value chain, including food consumption data (and especially in developing countries), is a priority. While much of food loss and waste data are focused on quantity losses, there is a need to examine quality or nutrition loss. Dr. Bartuska noted that better monitoring would help find cost-effective interventions for reducing food loss and waste in perishable foods.

THE ROLE OF GOVERNMENTS, NGOS, AND THE PRIVATE SECTOR IN ADOPTING BEST PRACTICES

The Food Loss and Waste Accounting and Reporting Standard might help address current inconsistencies across government, nongovernmental organizations, and the private sector in measurement methodologies and units of measurement. Dr. Bartuska also urged consideration of more collaborative strategies and analysis of disincentives, such as some food manufacturers' contractual requirements that prohibit donation of food with their brand labeling. Others proposed work on the possible connection between food loss and waste and labor, for example, labor shortages for seasonal work which may mean leaving crops unharvested, as well as occupational injury and illness relating to food recovery efforts.

OPPORTUNITIES FOR PARTNERSHIPS TO ADDRESS FOOD LOSS AND WASTE

While many examples were identified throughout the day, Dr. Bartuska stated that alternative innovative uses of food waste are needed, such as Toast Ale's efforts to divert surplus bread into craft beer. Overall, it is essential to develop innovative and collaborative approaches to reduce losses of perishable foods by identifying vertical farming technologies. She concluded that an integrated approach is needed to reduce food loss and waste in consideration of land, water, energy, labor, transportation, and other impacts.

PLANNING COMMITTEE ON REDUCING FOOD LOSS AND WASTE: A WORKSHOP ON IMPACTS

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For More Information . . . This Report Highlights was prepared by the STS Program based on *Reducing Impacts of Food Loss and Waste: Proceedings of a Workshop* (2019). The workshop was supported by Bayer CropScience, ConAgra Foods, and the U.S. Department of Agriculture. The Proceedings of a Workshop was prepared by the workshop rapporteurs as a factual summary of what was presented and discussed at the workshop. Copies of the proceedings are available from the National Academies Press, (800) 624-6242; <http://www.nap.edu>.

Science and Technology for Sustainability Program Policy and Global Affairs

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