



Study conducted for the  
International Congress

**SAVE FOOD!**

at Interpack2011  
Düsseldorf, Germany



# GLOBAL F O O D L O S S E S A N D F O O D W A S T E



EXTENT,  
CAUSES AND  
PREVENTION





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International Congress

**SAVE FOOD!**

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## Preface

This publication is based on studies carried out from August 2010 to January 2011 by The Swedish Institute for Food and Biotechnology (SIK) on request from the Food and Agriculture Organization of the United Nations (FAO).

The two studies on global food losses (one for high/medium-income countries and one for low income countries) have been carried out to serve as a basis for the international congress Save Food!, 16-17 May 2011, at the international packaging industry fair Interpack2011 in Düsseldorf, Germany. Save Food! has been co-organized by Interpack2011 and FAO. Save Food! aims at awareness raising on global food losses and waste, and on the impact of these on poverty and hunger in the world, as well as on climate change and on the use of natural resources.

The authors would like to thank Lisa Kitinoja, Adel Kader, Felicitas Schneider, Vaclav Smil and Jesper Stage among other researchers who have contributed helpful inputs throughout the project.

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## Executive summary

The study highlights the losses occurring along the entire food chain, and makes assessments of their magnitude. Further, it identifies causes of food losses and possible ways of preventing them.

The results of the study suggest that roughly one-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year. This inevitably also means that huge amounts of the resources used in food production are used in vain, and that the greenhouse gas emissions caused by production of food that gets lost or wasted are also emissions in vain.

Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. In medium- and high-income countries food is to a significant extent wasted at the consumption stage, meaning that it is discarded even if it is still suitable for human consumption. Significant losses also occur early in the food supply chains in the industrialized regions. In low-income countries food is lost mostly during the early and middle stages of the food supply chain; much less food is wasted at the consumer level.

Overall, on a per-capita basis, much more food is wasted in the industrialized world than in developing countries. We estimate that the per capita food waste by consumers in Europe and North-America is 95-115 kg/year, while this figure in sub-Saharan Africa and South/Southeast Asia is only 6-11 kg/year.

The causes of food losses and waste in low-income countries are mainly connected to financial, managerial and technical limitations in harvesting techniques, storage and cooling facilities in difficult climatic conditions, infrastructure, packaging and marketing systems. Given that many smallholder farmers in developing countries live on the margins of food insecurity, a reduction in food losses could have an immediate and significant impact on their livelihoods.

The food supply chains in developing countries need to be strengthened by, *inter alia*, encouraging small farmers to organize and to diversify and upscale their production and marketing. Investments in infrastructure, transportation, food industries and packaging industries are also required. Both the public and private sectors have a role to play in achieving this.

The causes of food losses and waste in medium/high-income countries mainly relate to consumer behaviour as well as to a lack of coordination between different actors in the supply chain. Farmer-buyer sales agreements may contribute to quantities of farm crops being wasted. Food can be wasted due to quality standards, which reject food items not perfect in shape or appearance. At the consumer level, insufficient purchase planning and expiring 'best-before-dates' also cause large amounts of waste, in combination with the careless attitude of those consumers who can afford to waste food.

Food waste in industrialized countries can be reduced by raising awareness among food industries, retailers and consumers. There is a need to find good and beneficial use for safe food that is presently thrown away.

The study revealed that there are major data gaps in the knowledge of global food loss and waste. Further research in the area is urgent.

Food security is a major concern in large parts of the developing world. Food production must clearly increase significantly to meet the future demands of an increasing and more affluent world population. This study illustrates that one of the first means to fight imbalances and reduce tensions between the necessary increase in consumption and the challenging increase in production, is to also promote food loss reduction which alone has a considerable potential to increase the efficiency of the whole food chain. In a world with limited natural resources (land, water, energy, fertilizer), and where cost-effective solutions are to be found to produce enough safe and nutritious food for all, reducing food losses should not be a forgotten priority.