



Brussels Policy Briefing no. 28

Addressing Food Waste in Times of Crisis

26 June 2012

European Commission, Borschette Building, Room 2D

<http://brusselsbriefings.net>

Context

Food production must clearly increase significantly to meet the future demands of an increasing and more affluent world population. Considering the number of people starving worldwide - 925 million in 2010¹ – and the growing population – 9 billion people by 2050 – the subject of food losses and waste has become one of utmost concern.² It is also a critical issue due to its links to agriculture, food security, trade, energy and environment and the complex causes, effects, actors involved and sectors affected.³ The exact causes of food losses and waste vary in low-income, medium- and high-income countries and largely depend on the specific conditions and local situation in each country.⁴ In this context, it is necessary to increase awareness of the economic, social and environmental challenges related to food losses and waste, and to emphasize the importance of respecting food through responsible consumer behavior and changes in attitudes to food.⁵

'Postharvest loss' (PHL) refers to the measurable quantitative and qualitative food loss in the postharvest system and comprises interconnected activities from the time of harvest to crop processing, marketing and food preparation, up until the final decision by the consumer to eat or discard the food. The term 'food loss' can be defined as any reduction in food available for human consumption taking place in the food chain from the moment of harvest until the moment of consumption.⁶ At later stages of the food supply chain, the term 'food waste' is applied and generally relates to behavioral issues and a deliberate discarding of edible food.⁷

The Scale of Food Waste

Estimates relating to the scale of global food waste vary, yet there is consensus that waste is substantial.⁸ Today, the volume of food produced globally is more than sufficient to feed the population, but due to the significant amounts of food around the world that is lost or wasted after harvesting – approximately one-third of food produced (1.3 billion tonnes per year) - large amounts of the resources used to produce food are used in vain.⁹ Overall, on a per-capita basis, much more food is wasted in industrialized countries than in developing countries. It is estimated that the per capita food waste by consumers in Europe and North-America is 95 – 115 kg/year.¹⁰ In the European Union, the total food loss is estimated at 89 million tonnes per year, with households (43%) and the food industry (39%) taking the largest share of food loss.¹¹ Households in the United Kingdom waste an estimated 6.7 million tonnes of food every year,

¹ FAO. 2010. The State of Food Insecurity in the World: Addressing food insecurity in protracted crises. Food and Agriculture Organization of the United Nations, Rome. <http://www.fao.org/docrep/013/i1683e/i1683e.pdf>

² Roels, Kris and Dirk van Gijseghem. 2011. Loss and Waste in the Food Chain. <http://lv.vlaanderen.be/nlapps/docs/default.asp?id=2647>

³ Ministry of Agriculture, Nature and Food Quality, The Netherlands. 2010. Fact Sheet: Food Waste in the Netherlands. <http://www.scp-knowledge.eu/sites/default/files/knowledge/attachments/LNV%20-%20Factsheet%20drieluik%20A4%20Voedselverspilling%20Eng.pdf>

⁴ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention.

⁵ The Guardian. 2012. 'World Needs to Stabilise Population and Cut Consumption, says Royal Society'.

<http://www.guardian.co.uk/environment/2012/apr/26/earth-population-consumption-disasters>

⁶ Roels, Kris and Dirk van Gijseghem. 2011. Loss and Waste in the Food Chain.

<http://lv.vlaanderen.be/nlapps/docs/default.asp?id=2647>

⁷ Parfitt, Julian, Mark Barthel and Sarah Macnaughton. 2010.

<http://rstb.royalsocietypublishing.org/content/365/1554/3065.full.pdf+html>, p. 3066

⁸ BSR, Gur Morgan and Kai Robertson. 2011. Waste Not, Want Not: An Overview of Food Waste.

http://www.bsr.org/reports/BSR_Waste_Not_Want_Not_An_Overview_Food_Waste.pdf, p. 1

⁹ Ibid.

¹⁰ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention.

¹¹ Roels, Kris and Dirk van Gijseghem. 2011. Loss and Waste in the Food Chain.

<http://lv.vlaanderen.be/nlapps/docs/default.asp?id=2647>

around one third of the 21.7 million tonnes purchased. This means that approximately 32% of all food purchased per year is not eaten. Most of the food waste (4.1 million tonnes or 61%) is avoidable and could be eaten if it were better managed.¹² In the US, 30% of all food, worth US\$48.30 billion (EUR32.5 billion), is thrown away each year. It is estimated that about half of the water used to produce this food also goes to waste. Losses at the farm level are probably about 15-35%, depending on the industry. The retail sector has comparatively high rates of loss of about 26%. Overall, losses amount to around US\$90 billion – US\$100 billion a year.¹³ In the Netherlands alone, €2 billion worth of food and food ingredients is wasted annually in the food chain; during harvesting or processing, upon storage, and in retail distribution.

In low-income countries food is mainly lost during the early and middle stages (production-to-processing stages) of the food supply chain; much less food is wasted at the consumer level.¹⁴ Crop losses usually occur due to pests and natural hazards, along with food waste in storage, distribution, marketing and at the household level.¹⁵ For non-perishable food crops, grain losses occur due to physical losses (spillage, consumed by pests) or a loss in quality.¹⁶ For perishable crops, losses can occur during handling or storage, with the largest losses occurring for fruit and vegetables.¹⁷

In many African countries, the post-harvest losses of food cereals are estimated at 25% of the total crop harvested. For some crops, such as fruits, vegetables and root crops, being less hardy than cereals, post-harvest losses can reach 50%. In East Africa and the Near East, economic losses in the dairy sector due to spoilage and waste could average as much as US\$90 million/year. In Kenya, each year around 95 million litres of milk, worth around US\$22.4 million, are lost. Cumulative losses in Tanzania amount to about 59.5 million litres of milk each year, over 16% of total dairy production during the dry season and 25% in the wet season. In Uganda, approximately 27% of all milk produced is lost, equivalent to US\$23 million/year.¹⁸

Causes of Food Losses and Waste

Food is lost or wasted at all stages of the supply chain, from the initial agricultural production to the final household consumption.¹⁹ While food waste and loss vary by region and by stage in the food supply chain, we can say that overall food loss in low-income countries occurs in the production, storage and distribution stages of supply chains, as opposed to the consumption stage in medium- and high-income countries.

Indeed, food losses in low-income countries mainly occur due to lack of appropriate storage and inadequate distribution system. At the middle stage of the supply chain, food is lost during processing, wholesale and retail.²⁰ Food losses and waste mainly occur due to financial, managerial and technical limitations in food production and post-harvest processing techniques, storage and cooling facilities in difficult climatic conditions, infrastructure, packaging and marketing systems²¹, as well as other factors such as high insect infestations, unwanted microbial growth, injuries and blemishes due to improper handling or transportation, as well as high temperatures and humidity during growth and harvesting.²²

¹² Parfitt J., Barthel M. and Macnaughton S. 2010. Food Waste within Food Supply Chains.

<http://rstb.royalsocietypublishing.org/content/365/1554/3065.full>, p. 3067

¹³ Nellemann C., MacDevette M., Manders T., Eickhout B., Svihus B., Prins A.G., Kaltenborn B.P. (Eds). 2009. The Environmental Food Crisis – the Environment’s Role in Averting Future Food Crises, http://www.unep.org/pdf/FoodCrisis_lores.pdf, p. 32

¹⁴ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention.

¹⁵ UNEP. 2011. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – A Synthesis for Policymakers. http://www.unep.org/greeneconomy/Portals/88/documents/ger/GER_synthesis_en.pdf, pp. 36 – 37

¹⁶ Parfitt J., Barthel M. and Macnaughton S. 2010. Food Waste within Food Supply Chains.

<http://rstb.royalsocietypublishing.org/content/365/1554/3065.full>

¹⁷ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention.

¹⁸ UNEP 2009. The Environmental Food Crisis – the Environment’s Role in Averting Food Crises.

http://www.unep.org/pdf/FoodCrisis_lores.pdf

¹⁹ Roels, Kris and Dirk van Gijseghem. 2011. Loss and Waste in the Food Chain.

<http://lv.vlaanderen.be/nlapps/docs/default.asp?id=2647>

²⁰ Foresight Land Use Futures Project. 2010. The Government Office for Science, London., http://www.bis.gov.uk/assets/foresight/docs/land-use/luf_report/8614-bis-land_use_futures_exec_summ-web.pdf, p. 3

²¹ Ibid.

²² Lundqvist, J., C. de Fraiture and D. Molden. 2008. Saving Water: From Field to Fork – Curbing Losses and Wastage in the Food Chain. Stockholm International Water Institute Policy Brief.

http://www.siwi.org/documents/Resources/Policy_Briefs/PB_From_Filed_to_Fork_2008.pdf, p. 24

The largest PHL occur on or near the farm, where the initial choice of crop type and variety and the success of harvesting and consolidation methods are fundamental in keeping losses low.²³ In many African countries, the PHL of food grains are estimated at 25% of the total crop harvested and up to 50% for other crops, such as fruits, vegetables and root crops.²⁴ Depending on the crop, approximately 15 – 35% of food may be lost in the field due to poor agricultural techniques and other factors, including droughts, flooding and pests. Another 10 – 15% is lost during processing, transport and storage due to a lack of modern facilities, trucks and access to refrigeration.²⁵ Another cause of PHL is the damage caused to crops during handling, for example grains may be scattered, dispersed or crushed.²⁶

In middle and high-income countries, food is wasted to a significant extent at the consumption stage, with food usually being discarded in spite of its suitability for human consumption.²⁷ Processing, distribution and retailing are also responsible for the amount of food losses. Over-ordering of stock, cosmetic imperfections (weight, size, shape and appearance) and other issues contribute to food waste.²⁸ Furthermore, higher 'appearance quality standards' from supermarkets for fresh products have led to increased food waste.²⁹ Increasingly strict rules and labeling of food due to consumers' increasingly high standards and expectations lead to a large part of the food supply being unsold or withdrawn from the food supply chain. Expiration dates are also a leading cause of food wastage and are often considered as 'safety dates', resulting in food being discarded although it is still edible.

The extent of waste is partly a reflection of prices: food is cheap enough for consumers to not worry about wasting it.³⁰ As reported by UNEP, food waste is responsible for several environmental problems that range from a wasteful use of chemicals, such as fertilizers and pesticides to an increase in fuel being used for the transportation and production of chemical inputs, and rotting food creating methane - one of the most harmful greenhouse gases that contributes to climate change.

What are the Options to Prevent and Minimize Food Losses?

As stated by the European Commission, good waste management begins with the prevention of waste.³¹ Food loss reduction strategies should take into account the various sectors that are strongly interrelated, for instance, investing in storage and cold chain infrastructure alone is not enough to be effective. Instead, investments should be made in improving road networks, transportation, electricity supplies and communication, as well as post-harvest handling of drying, cleaning, grading, packing or otherwise conditioning of the products to be stored. Furthermore, investment in the storage structures should be accompanied by the provision of advice and training on the design, ownership and proper management.

Capacity building should be carried out targeting farmers, traders and other stakeholders in the chain to create common knowledge and understanding of the technical factors that impact the safety, quality and value of the food products stored as well as their marketing.

The political enabling environment and institutional framework should be conducive for the establishment and operation of food storage, for example with regard to taxation, quality regulations and incentives. Making the food chain more efficient through waste reduction measures will reduce pressure on resources required for food production and lower greenhouse gas emissions.

Increased public awareness and education on these issues are needed, in order to change consumers' attitudes towards food.³²

²³ Hodges, R.J., J.C. Buzby and B. Bennett. 2010. Postharvest Losses and Waste in Developed and Less Developed Countries: Opportunities to Improve Resource Use. *Journal of Agricultural Science*. <http://www.bis.gov.uk/assets/foresight/docs/food-and-farming/science/11-561-sr15-postharvest-losses-and-waste>, p. 4

²⁴ Lundqvist, J., C. de Fraiture and D. Molden. 2008. Saving Water: From Field to Fork – Curbing Losses and Wastage in the Food Chain. Stockholm International Water Institute Policy Brief.

http://www.siwi.org/documents/Resources/Policy_Briefs/PB_From_Filed_to_Fork_2008.pdf

²⁵ BSR, Gur Morgan and Kai Robertson. 2011. Waste Not, Want Not: An Overview of Food Waste.

http://www.bsr.org/reports/BSR_Waste_Not_Want_Not_An_Overview_Food_Waste.pdf, p. 2

²⁶ Hodges, R.J., J.C. Buzby and B. Bennett. 2010. Postharvest Losses and Waste in Developed and Less Developed Countries

²⁷ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention

²⁸ The Worldwatch Institute. 2011. State of the World – Innovations that Nourish the Planet. <http://www.worldwatch.org/sow11>

²⁹ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention

³⁰ The Economist. 2011. Waste not, want not. Special Report: Feeding the World. <http://www.economist.com/node/18200694>

³¹ European Commission. 2010. *Being wise with waste: the EU's approach to waste management* (p.13). Luxembourg: Publications Office of the European Union. <http://ec.europa.eu/environment/waste/pdf/WASTE%20BROCHURE.pdf>

³² Ibid.

Research and reliable loss estimates for the different foods and stages in the postharvest chain are needed to identify where food waste can be minimized efficiently. More research is also needed on how agricultural policies (for example output-based subsidies) might promote over-production and thus increase food waste and on whether other policies could provide meaningful incentives to reduce food waste.³³

In developing countries, investment in new, appropriate technology to reduce post-harvest waste and to upgrade storage facilities and cooling chains³⁴ should be a priority before encouraging producers to increase productivity. A better dissemination of research results would be useful as well as an increased access to market information. The use of Information and Communication Technologies (ICTs) and mobile phones in particular, could help improve market information and allow producers to make better decisions about timely supply to markets, avoiding or at least reducing seasonal gluts. The food supply chains in developing countries need to be strengthened by, *inter alia*, encouraging small farmers to organize, 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.

In industrialized countries, consumers and all of the other actors in the food chain need to be informed about food waste and its environmental and economical impacts, and of the easily applicable and effective prevention methods.³⁵ Campaigns to highlight the extent of waste and the financial benefits of reducing it are needed. A product with better quality or an improved shelf life, which comes as a result of alternative processing or preservation techniques, may reduce food wastage while simultaneously lowering the costs of distribution, as well as minimizing energy usage during processing and transport.

A cost-efficient, mass-produced sensor technology that can detect spoilage in certain perishable foods should also be developed and used. This would allow more sophisticated food management than merely relying on estimated 'best before' dates in retail food labeling and has the potential to ensure food quality as well as reduce waste.

Research is being conducted on the role of packaging in prolonging the shelf life of food products and reducing their wastage as well as the use of food that is no longer fit for human consumption as animal feed or as a source of energy through processes such as anaerobic digestion. Thus, the impetus is on public and private efforts to make better use of available food supplies by recovering food safe for consumption that would otherwise be wasted.³⁶

Objectives of the Briefing

To improve information sharing and promote networking, CTA, the DG DEVCO from the European Commission, the ACP Secretariat, Concord organise bimonthly briefings on key issues and challenges for rural development in the context of EU/ACP cooperation. The Briefing on 26 June 2012 will address issues related to food losses and food waste. It will: (i) raise awareness in ACP countries on the key challenges affecting post-harvest losses (ii) increase exchange of information and expertise on strategies to avoid and minimize food losses (iii) facilitate networking amongst development partners.

Target Group

Around 100 ACP-EU policy-makers and representatives of EU Member States, civil society groups, research networks and development practitioners, and international organisations based in Brussels.

Available Material

Input and comments before, during and after the meetings will be included in the Briefings blog: <http://brusselsbriefings.net>. A short report and a Reader in printed and electronic format will be produced shortly after the meeting.

³³ Hodges R.J., Buzby J.C. and Bennett B. 2010. Postharvest losses and waste in developed and less developed countries: opportunities to improve resource use. <http://www.bis.gov.uk/assets/foresight/docs/food-and-farming/science/11-561-sr15-postharvest-losses-and-waste>

³⁴ FAO. 2011. Global Food Losses and Waste: Extent, Causes and Prevention

³⁵ H.K. Koivupuro. 2011. *FOODSPILL - Food Wastage and Environmental Impacts*. HENVI SEMINAR SERIES. Food and Environment - Sustainable food cycle, 19 October 2011 <http://www.helsinki.fi/henvi/yvv/esitykset/Koivupuro.pdf>

³⁶ Scott Kantor L., Lipton K., Manchester A. and Oliveira V. 1997. Estimating and Addressing America's Food Losses. <http://www.ers.usda.gov/publications/foodreview/jan1997/jan97a.pdf>



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8h00-8h30 Registration

8h30-8h45 Objectives of the Briefing and Programme
Introductory remarks: *European Commission, ACP Group, CTA*

8h45-10h30 Panel 1: Causes and Extent of Food Losses

Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. This panel will discuss the main causes of food losses and what impact they have on food security, food quality and safety, economic development and the environment.

Panellists:

- Food losses, food waste: a global perspective
Robert Van Otterdijk, Agro-Industry Officer, Rural Infrastructure & Agro-Industries Division, FAO
- Why do we throw away vast amounts of food and what should we do about it?
Tristram Stuart, Writer and activist, United Kingdom
- Overview of the Grain Postharvest Losses of Smallholders in Sub-Saharan Africa
John Orchard, Director of Research, Natural Resources Institute, University of Greenwich
- Building successful business partnerships to reduce waste
Andy Dawe, Head of Food and Drink, Waste & Resources Action Programme (WRAP), United Kingdom

10h30-10h45 Coffee break

10h45-13h00 Panel 2: Strategies to Prevent and Reduce Food Waste

This panel will discuss possible ways of preventing food losses and waste and the necessary policy frameworks. It will also share practical cases on how to avoid and minimize food waste.

Panellists:

- Preventing food wastage and optimizing the use of agrofood materials: a European approach
Toine Timmermans, Programme Manager Sustainable Food Chains, WUR, The Netherlands
- Transforming Food Waste into a Resource
Andrea Segrè, Professor and Dean of the Faculty of Agriculture at the University of Bologna, President of Last Minute Market, Italy; and Silvia Gaiani, Research Fellow, University of Bologna
- Addressing Post-harvest losses: perspectives from the farmers
Onya Akonopeesa, Farmer Leader and Board Member of Uganda National Farmers Federation
- What solutions are there for losses in the horticulture sector?
Stephen Mbithi, Chief Executive Officer, Fresh Produce Exporters Association of Kenya (FPEAK) and Coordinating CEO of the Horticulture Council of Africa (HCA)
- Growing oyster mushrooms on the remains of the coffee harvest
Jan Willem Bosman, Green Recycled Organics (GRO), The Netherlands

Conclusions

Networking Lunch