Karlsruhe Institute of Technology

STOA-Project “Technology Options for Feeding 10 Billion People”

Study 4: Options for Cutting Food Waste

Key Findings of the Study

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Origins and Reasons for Food Losses/Waste along the Supply Chain

Contributory Factors				
Agricultural Production	**Manufacturing**	**Distribution and Wholesale/Retail**	**Hospitality Industry and Catering**	**Households**
➢ Sorting out of products at farm gate due to rigorous qualitative standards ➢ Market prices that do not justify the expense of harvesting ➢ Overproduction due to supply agreements with retail chains ➢ Crop damaged during harvesting	➢ Irregular sized products trimmed to fit or rejected entirely ➢ Inconsistency of manufacturing processes leading to misshapen products ➢ Contamination in production process ➢ Food spoilage due to packaging problems ➢ Surplus production of supermarket's own brands ➢ Excess stock due to 'take-back' systems and cancellation of orders	➢ Interruption of the cold chain ➢ Packaging defects resulting in product damage ➢ Overstocking due to inaccurate ordering and forecasting of demand ➢ Obligation for retailers to order a wide range of products and brands in order to get beneficial prices ➢ Failure to comply with legal food safety standards ➢ Marketing strategies like 'buy one get one free'	➢ Oversized dishes ➢ Offer of buffets at fixed prices encouraging people to take more than they can eat ➢ Separation out of catering sized packages in hotels and catering or use of individual portion packs that do not meet the customer's needs ➢ Difficulties in assessing the demand ➢ EU hygiene rules, e.g. two-hour guarantee on unrefrigerated products	➢ Lack of planning/knowledge concerning food purchase, preparation and storage ➢ Impulse purchases ➢ Purchasing of new products that the consumer then 'do not like' ➢ Inadequate package sizes (e.g. oversized ready to eat meals) ➢ Confusion about date labels ('best before', 'use by') ➢ Preparing oversized meals ➢ Lack of skills for recombining leftovers into new meals

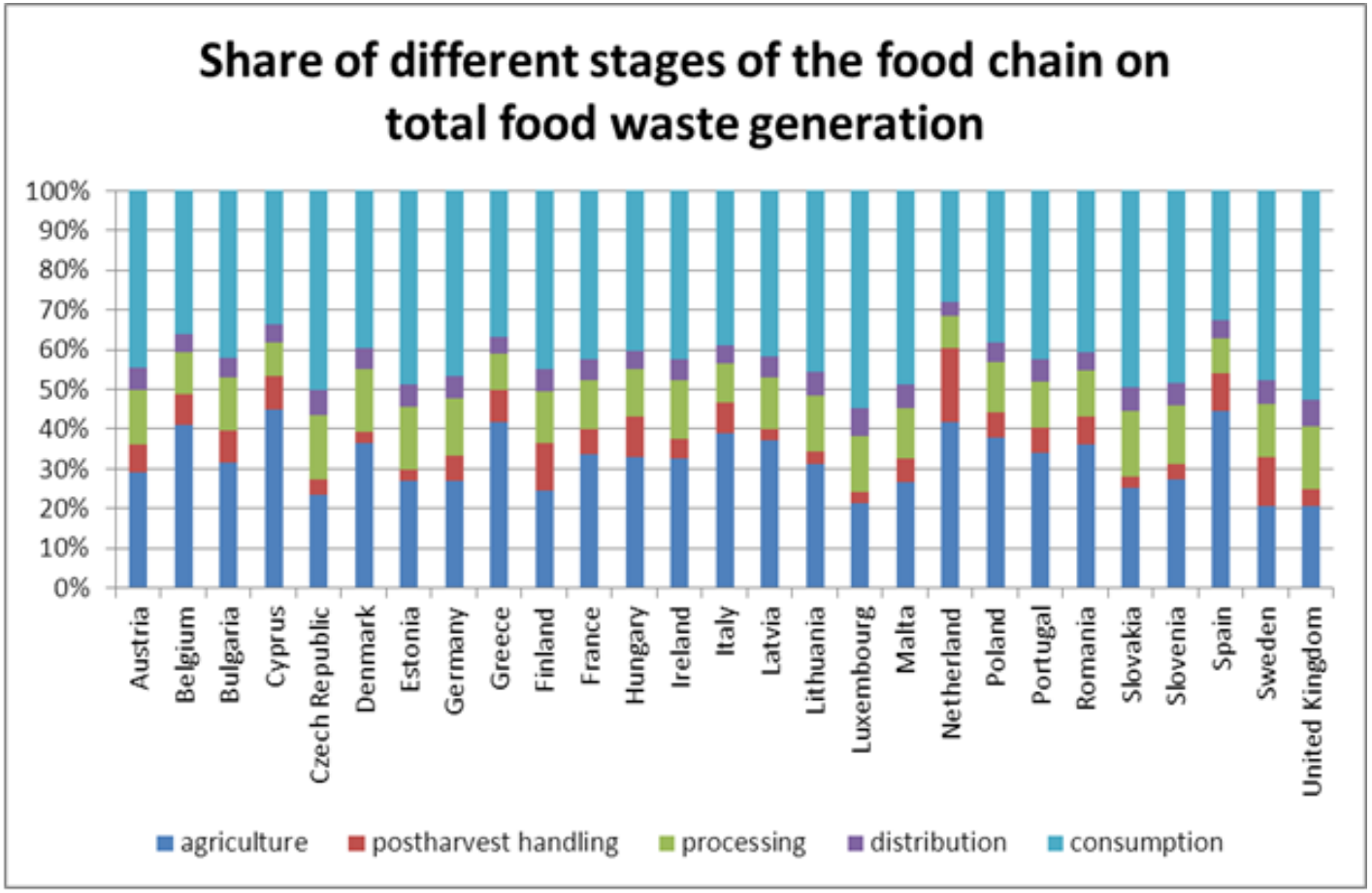
Availability and Liability of Data

- Pan-European study ‘Preparatory study on food waste across EU-27’ on behalf of the European Commission
- FAO-study with data for Europe
- Various national studies

Food Waste at Household Level [in %]	Country	Source
61	Germany	Hafner et al. 2012
74	Germany	Monier et al. 2010
58	UK	Monier et al.2010
74	UK	Lee & Willis 2010
31	Italy	Monier et al. 2010
45	Italy	Garrone et al. 2011
72	Italy	BCFN 2012
28	Portugal	Monier et al. 2010
31	Portugal	Baptista et al. 2012
67	Sweden	Jensen et al. 2011
44	Sweden	Monier et al. 2010

→ **Spectrum of results concerning the same subject: food waste generated at household level**

Results of ITAS-Calculations



Source: ITAS-calculation

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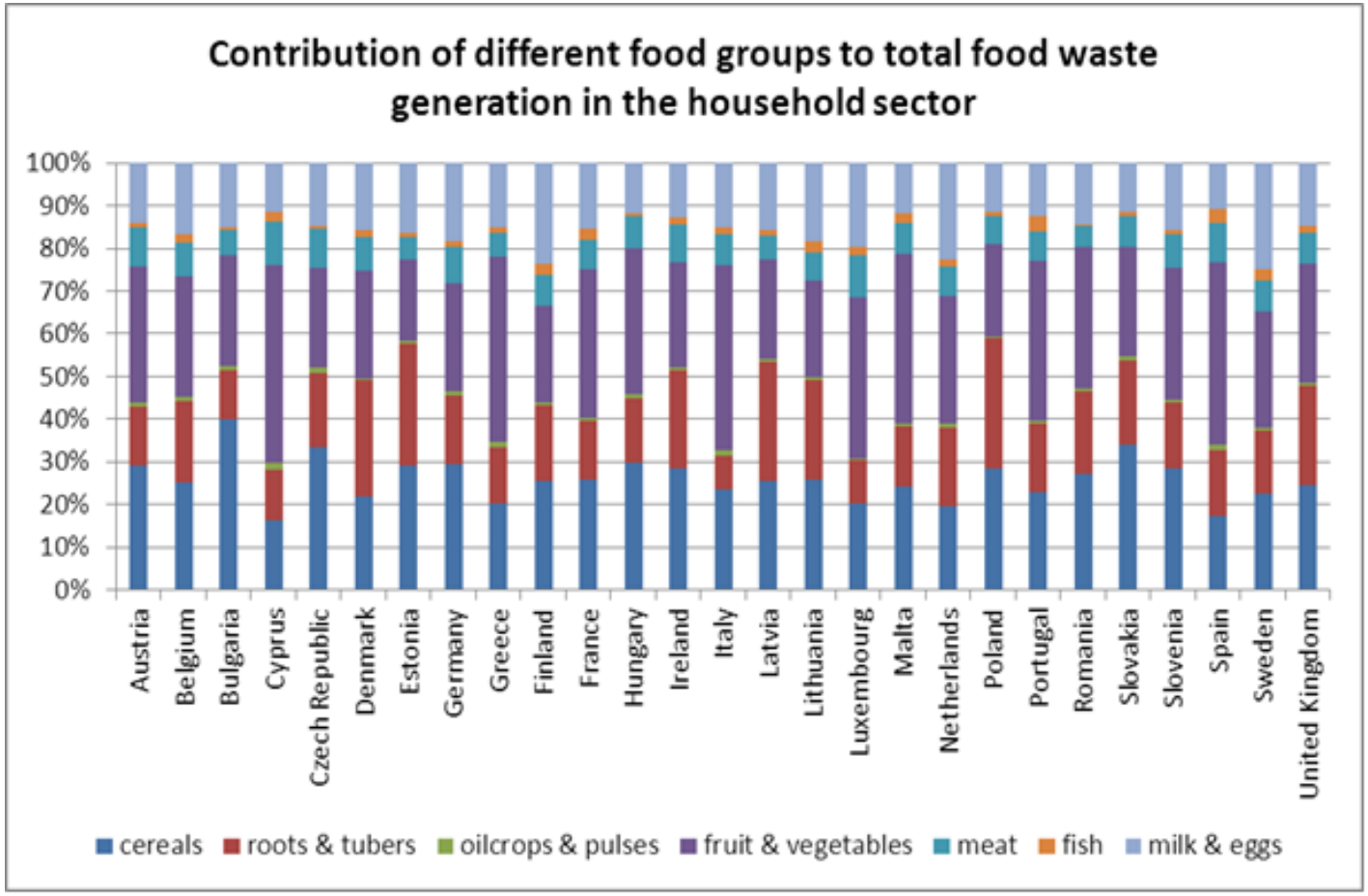

Source: ITAS-calculation

Options for Action - Overview

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Option 1: Target Setting

Option 2: Improvement of the Data Basis

Option 3: Reviewing EU Legislation on Food Safety

Option 4: Amendment of European Marketing Standards

Option 5: Opening of Alternative Marketing Channels for Agricultural Products

Option 6: Streamlining Food Date Labelling

Option 7: Improving Workflows and Supply Chain Management

Option 8: Awareness Campaigns

Option 9: Combating Food Waste in the Hospitality Sector

Option 10: Economic Incentives

Option 11: Taxes and Fees on Waste Treatment

Option 12: Promotion of Food Redistribution Programmes

Option 13: Sharing Networks for Surplus Food

Option 14: Assessment of Technological Development

Options for Action

- **Option 2: Improvement of Data Basis**
  - Agreed and binding definition of the term ‘food waste’ and standardisation of the methods used for the collection of data
  - Separate collection of food waste at all stages of the food chain

- **Option 3: Reviewing EU Legislation on Food Safety**
  - Review of the current regime of food safety regulations
  - Need for further research in order to decide where limits may be revised without running a risk for food safety

- **Option 4: Amendment of European Marketing Standards**
  - Replacing the current system of general and specific marketing standards for fruit and vegetables by another type of standards related to quality

Options for Action

- **Option 6: Streamlining Food Date Labelling**
  - Revision of existing regulations on food date labelling
  - Setting of new best-before dates according to true shelf life of products and repealing of expiration dates for stable foods
  - Initiation of information campaigns on labelling

- **Option 10: Economic Incentives**
  - Review of tax regulations, mainly the Value Added Tax (VAT) Regulation, in order to remove all incentives that may encourage the generation of food waste

- **Option 14: Assessment of Technological Development**
  - Need for further research to evaluate the different technological options for cutting down on food waste, taking into account country-specific conditions and integrating all affected stakeholders of the food supply chain

Thanks for your attention!

For further information please contact:

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Pictures of the awareness campaign 'Love Food Hate Waste' initiated by the British Waste Prevention Programme WRAP

Definitions used in the Present Study

Distinction between ‘Food Loss’ and ‘Food Waste’

Food loss is understood as the amount of food, which is produced for human consumption, but gets out of the supply chain for different reasons.

Food waste is a subset of food loss and represents the amount of food, still suitable for consumption, which is discarded as a result of human action or inaction. This differentiation is made because, especially at the earlier stages of the food chain, residues can be reused in the production process. Thus, not all food losses are getting waste. On the other hand, food that was originally dedicated to human consumption, but is removed from the supply chain, is considered as food waste, even if it is brought to a non-food use.

Definitions used in the Present Study

Distinction between ‚avoidable' and ‚unavoidable' food waste

Avoidable food waste are products that are still fit for human consumption at the time of discarding or products that would have been edible if they had been eaten in time.

Unavoidable food waste are products or ingredients which are not suited for human consumption in accordance with today's food standards. This encompasses non-edible components (e.g. banana peels, bones, egg shells), as well as products that are so damaged due to weather, diseases or pests, that they cannot be consumed.

Political Activities on European Level

- EP Resolution ‘How to avoid food wastage: Strategies for a more efficient food chain in the EU’ (2012), which requests the Commission to:
  - → take practical measures to reduce food waste
  - → make an analysis of the entire food chain in order to identify ‘hotspots’
  - → create specific food waste prevention targets for the Member States, as part of the waste prevention targets to be reached by each Member State by 2014
  - → designate 2014 as the European year against food waste
- The European Commission has set the target to halve the disposal of edible food in the EU by 2020 in its ‘Roadmap for a Resource Efficient Europe’
- Two EU-projects: the FP7-project ‘FUSIONS’ and the Interreg-project ‘GreenCook’