



## **Feeding 10 billion people** **Options for Cutting Food Waste**

The reduction of food waste is seen as an important starting point for achieving global food security, freeing up finite resources for other uses, diminishing environmental risks and avoiding financial losses. In its roadmap for a resource efficient Europe the European Commission has set the target to halve the generation of food waste by 2020. The aim of the present study is to discuss approaches for preventing food waste, based on a thorough analysis of the scale, reasons and pattern of food wastage in EU-27. The focus is on measures and instruments that are considered in literature or in the current debate as particularly useful, easy to implement and/or that have already proven their effectiveness in practice. The following options that have emerged from this discussion are considered urgent to reach the goal set by the European Commission. They address European as well as national governments responsible for their implementation.

### ***Option 1: Target Setting***

Under the Waste Framework Directive of the EU, Member States are obliged to develop waste prevention plans by 2013. As part of these plans Member States should set mandatory reduction targets for food waste. Regional and local authorities should break down the national targets to their area of influence. For gauging progress and evaluating the effectiveness of different measures, a regular monitoring of food waste along the entire food chain should be established in all EU-27 States. Individual sectors like manufacturing, retail and hospitality should agree to voluntary commitments on food waste reduction.

### ***Option 2: Improvement of the Data Basis***

All available studies revealed the lack of reliable data as main barrier to the development and implementation of measures to reduce food waste. To overcome this obstacle, an agreed and binding definition of the term 'food waste', which differentiates between avoidable and unavoidable food waste (referring to the non-edible parts of raw products) and by-products, should be provided within the EUROSTAT-framework. Furthermore, the methods used by the Member States for the collection and calculation of data on food waste generation should be standardised. In order to facilitate monitoring, the separate collection of food waste generated at all stages of the food supply chain should be introduced, whether voluntarily or mandatory.

### ***Option 3: Reviewing EU Legislation on Food Safety***

The societal objective of preventing risks to consumers' life and health, which is anchored in various EU regulations, may come into conflict with the ambition of avoiding food waste. Strict norms for contamination, Maximum Residual Levels for pesticides and veterinarian medicines in food as well as hygienic rules concerning the packaging and storage of food must be seen as significant drivers promoting the discarding of edible food. Thus, the current regime of food safety regulations should be reviewed in order to identify provisions that are not mandatory to protect human life, but lead to unnecessary food waste. Further research is required to decide where limits may be revised without running a risk for food safety.

#### ***Option 4: Amendment of European Marketing Standards***

Given the fact that the repealing of specific marketing standards in 2009 did not reach the desired objectives - reducing food waste and increasing consumers' choice - the European legislator should consider to abandon the current system entirely. Critics demand the setting of another type of standard not related to the external appearance of a product, but to its quality for human consumption in terms of taste, natural purity, nutrition value and growing conditions. How this new system should look like, raises a number of difficult questions that should be solved in close cooperation with producers, retailers, civil society organisations and scientific experts.

#### ***Option 5: Opening of Alternative Marketing Channels for Agricultural Products***

To facilitate the marketing of fruit and vegetables that do not meet the European marketing standards alternative marketing strategies should be stimulated. Circumventing the middlemen in the food supply by direct marketing systems in form of e.g. farmers' markets, producer co-operatives, solidarity purchasing groups and Community Supported Agriculture can contribute significantly to the prevention of food waste in the primary production. They establish a closer link between producers and consumers, shorten transport distances and make consumers aware of the fragile conditions of food production and its natural and seasonal limits. Further research is needed to assess the pros and cons of these approaches in some more detail, including possible rebound effects.

#### ***Option 6: Streamlining Food Date Labelling***

Consumer surveys in various Member States have shown that there exists considerable confusion among consumers on food date labelling and the differences between 'best-before' and 'use-by' dates. Thus, the European legislator should consider to revise existing regulations on food date labelling in order to improve the visual presentation of expiration dates. In addition, the setting of new best-before dates according to true shelf life of products and the abolition of expiration dates for stable foods should be considered. Information campaigns on labelling should be initiated by national governments and retailers. The retail sector in cooperation with the food industry should think about the abolition of additional labels like 'display-until' and the introduction of price reductions for products close to the expiry date.

#### ***Option 7: Improving Workflows and Supply Chain Management***

Improving workflows in the food industry is an important approach for a sparing use of raw materials. Manufacturers should use production equipment according to the latest state of technology that should be regularly inspected. Residuals should be monitored and fallen out goods should be reintegrated in the production process. Production should be arranged in a way that containers have to be minimally cleaned and mixing of ingredients starts as late as possible. Food companies should aim at increasing coordination with retailers to come up with an agreement on the range of products and required amounts. Governments should support these efforts by establishing special advising programmes. The aim should be an integrated Supply Chain Management.

#### ***Option 8: Awareness Campaigns***

All available studies agree on the fact that information and education are crucial measures to influence consumers' behaviour. Awareness campaigns aim to draw consumers' attention to the issue of food wastage and to increase their respect for food. They instruct consumers to a more efficient handling of food by providing information and tips on shopping, shelf life, storage, preparation and recovery. National governments should initiate such campaigns, tailored to different target groups, in close cooperation with retailers and the hospitality sector, using various media. Consumer education has to start at infancy; thus, all Member State should include the topic of sparing and careful handling of food into school curricula.

***Option 9: Combating Food Waste in the Hospitality Sector***

The adaption of portion sizes to costumers' real needs would be a simple, but effective approach to reduce food waste in the hospitality sector. There are several ways to implement this requirement, e.g. offering a choice of portion sizes to graded prices or replacing 'all you can eat'-buffets by 'pay by weight'-systems. Restaurants and other food service providers should have the opportunity to test different options for a certain period of time. If it turns out that they do not use voluntarily any of the available possibilities, national legislators should consider the introduction of a statutory obligation to do so. Besides the adaption of portion sizes to consumers' real needs, an improvement of the internal routines for purchasing, storing and freezing, the training of staff, a careful menu planning and the collection and documentation of food waste data are crucial for reducing food waste in the hospitality sector.

***Option 10: Economic Incentives***

There is broad agreement that undervaluing of food arises from its low market value. Against this background, many experts consider economic instruments as particularly promising to recuperate consumers' esteem of food. The EU Member States should review their tax regulations, mainly the Value Added Tax (VAT) Regulation, in order to remove all incentives that may encourage the generation of food waste. It should be considered to eliminate the reduced VAT-rate on food or to introduce different VAT-rates according to the environmental impacts of food items. Any social hardships, caused by tax harmonisation, should be offset by targeted governmental income support, which could be financed from additional tax revenue. As an alternative to the taxation of food consumption also the taxation of food wastage may be suitable.

***Option 11: Taxes and Fees on Waste Treatment***

Taxes and fees on waste treatment like landfill or incineration taxes can be seen as an economic incentive to stimulate waste prevention as they escalate the total costs of waste handling. When using taxes on waste treatment as a tool to prevent food waste, certain requirements have to be met. Firstly, a mandatory separate collection of food waste, both in households and in commercial enterprises (mainly in the retail and hospitality sector) should be introduced. Secondly, the tax rate must be high enough to create a sufficiently strong incentive for waste minimisation. Thirdly, the existing regulations to promote and subsidise the use of renewable energies in Europe should be reviewed in order to identify incentives that run contrary to the objective of food waste prevention. It may lead to conflicting incentives, if national legislators on the one hand would impose high taxes for the treatment of food waste and on the other hand subsidise the production of energy from waste.

***Option 12: Promotion of Food Redistribution Programmes***

Even if all possibilities to combat food waste would be exploited, a certain amount of surplus food would persist. Food redistribution programmes are a proven tool to use this surplus in an efficient way and to the benefit of economically deprived people. It should be checked if the European food law needs an amendment in line with the US American 'Good Samaritan Act' in order to limit the liability of donors and charity organisations that redistribute surplus food. Without any amendment to European food law, they may be driven to discard non-marketable goods in order to avoid liability. It should be further assessed if financial incentives are required to stimulate the further development of the European food bank system.

***Option 13: Sharing Networks for Surplus Food***

Giving away surplus food free of charge to people who have use for it is a reasonable approach to save food from disposal and to make it available for human nutrition also on private level. The goal of consumer-aided networks is not only to provide the infrastructure for food sharing, but also to inform consumers about the right handling of food. National governments should consider to facilitate the further development of private food sharing initiatives by providing financial support and smoothing bureaucratic obstacles.

Research projects accompanying the work of food sharing-networks should be initiated in order to measure and improve their effectiveness.

#### ***Option 14: Assessment of the Technological Developments***

For the different stages of the food chain technological innovations aiming at the reduction of food waste are available. While intelligent ordering systems for retail and RFID-technology collecting data during distribution, are widely used today, various innovations like intelligent labels on packaging, intelligent refrigerators, intelligent supermarket trolleys or intelligent waste bins are highly new technologies. Even if these technologies promise improvements and comfort at the same time, it is not sure if they will really contribute to a reduction of food waste. As all these technological innovations are still in their infancy, there is considerable need for accompanying research and a careful weighing up of the pros and cons. Thus, European as well as national governments should initiate research programmes for evaluating the different technologies, taking into account country-specific conditions. This should also include pilot studies in which the devices are experimentally tested.

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**Editors:**

Institute for Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology as members of ETAG.

**Authors:**

Carmen Priefer, Juliane Jörisen, Klaus-Rainer Bräutigam (ITAS)

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**For further information**, please contact:

Lieve Van Woensel, STOA Unit

Directorate for Impact Assessment and European Added Value, DG Internal Policies

European Parliament

Rue Wiertz 60 - RMD 00J0012, B-1047 Brussels

E-mail: [stoa@europarl.europa.eu](mailto:stoa@europarl.europa.eu)

[www.europarl.europa.eu/stoa/](http://www.europarl.europa.eu/stoa/)

