

# Food waste in Germany – Baseline 2015 –

## Summary Thünen Report 71

**Thomas Schmidt, Felicitas Schneider, Dominik Leverenz, Gerold Hafner**



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## Summary

### Background

In February 2019, the German Federal Cabinet adopted the 'National Strategy for Reducing Food Waste', setting a framework for the future direction of this initiative. Among other things, it stipulated that an inter-ministerial "Indicator 12.3 Working Group" should prepare the data bases and methods for nationwide balancing of food waste generation (baseline). Based on existing 2015 data, this status quo analysis will be used as a starting point to agree on milestones for the respective sectors. It is also the starting point to assess progress and for continuous monitoring. Over the course of time, the working group will coordinate reporting for the German Sustainability Strategy and the Waste Framework Directive to the European Union as well as for the 2030 Agenda. The Thünen Institute shall prepare a proposal for this baseline 2015 as a basis for decision-making and discuss it with the working group. The Thünen Institute drawn the University of Stuttgart into this process, as it has great expertise with the preparation of a first national balance of food waste in 2012<sup>1</sup> and has further developed methods in research projects such as the joint project REFOWAS<sup>2</sup>.

The baseline 2015 meaning food waste along the entire value chain, divided into five sub-sectors (primary production, processing, trade, out-of-home catering, private households), must be calculated in order to determine the achievement of set targets and their interim steps. This indicator is intended to report on food waste in tons of fresh mass and serve as a basis for continuous reporting between 2020 and 2030. The necessary monitoring builds on this baseline and will be successively expanded in subsequent years to reflect developments.

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<sup>1</sup> Hafner et al. (2012) Ermittlung der weggeworfenen Lebensmittelmengen und Vorschläge zur Verminderung der Wegwerfrate bei Lebensmitteln in Deutschland. Universität Stuttgart.

<sup>2</sup> <https://refowas.de/>

**Data and methods**

The Delegated Decision (EU) / of the Commission, of May 3, 2019, supplements the Directive 2008/98 / EC of the European Parliament and of the Council with regard to a common methodology and minimum quality requirements for the uniform measurement of the volume of food waste. It allows the following measurement methods (see Figure S.1).

**Figure S.1: Permissible and non-permissible measurement methods according to delegated decision – Annex 3**

Measurement Methods					
Direct Measurements			✓	✓	✓
Mass Balance	✓	✓			
Analysis of the waste composition				✓	✓
Questionnaires and surveys		✓			
Coefficients and statistics on generation	✓	✓			
Counts and Scans			✓		
Records				✓	✓

 Applied admissible measurement methods  
 Non-admissible methods

Source: Own illustration, in accordance with Annex III to the draft DELEGATED (EU) ... / ... COMMISSION Decision supplementing Directive 2008/98 / EC of the European Parliament and of the Council with regard to a common methodology and minimum quality requirements for a uniform measurement the volume of food waste from May 3, 2019.

The direct measurements, mass balances, waste analyses, surveys, coefficients, statistics, counts and records are the results of a combination of different methods and sources, comprising the best available data at the time of the study. Trade surveys and coefficients were also developed in cooperation with relevant stakeholders In addition to the methods recommended in the Delegated Decision. This methodological supplement was used in order make orientation statements despite the rudimentary data.

## Results

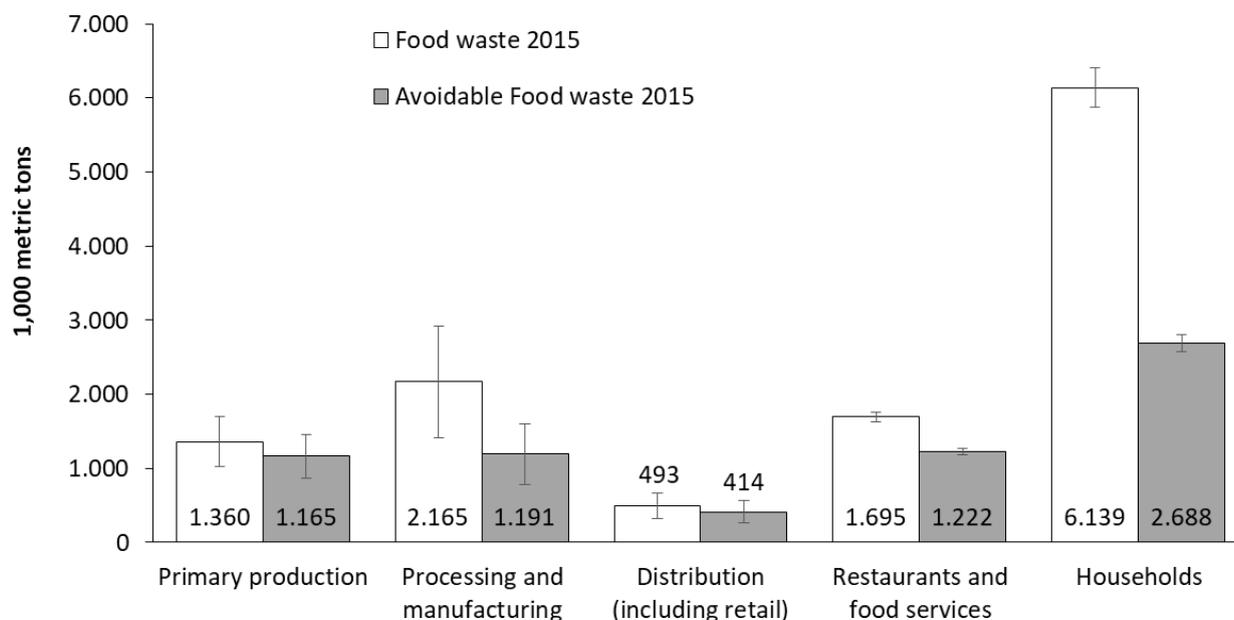
The ranges of food waste in Germany as well as its avoidable shares are summarized in Table S.1 according to the areas of the value chain for food:

**Table S. 1: Food waste in Germany in 2015 – Summary of the results of the five subsections**

2015 Parts of the value chain	Food waste in million t			Avoidable food waste in million t		
	From	To	MW	From	to	MW
Primary Production	1.03	1.69	1.36	0.87	1.46	1.17
Food Processing	1.42	2.91	2.17	0.78	1.60	1.19
Trade	0.32	0.67	0.49	0.27	0.56	0.41
Out-of-home consumption	1.63	1.76	1.69	1.18	1.27	1.22
Households (exclusive drains)	5.87	6.40	6.14	2.57	2.80	2.69
<b>Food waste</b>	<b>10.27</b>	<b>13.43</b>	<b>11.86</b>	<b>5.67</b>	<b>7.69</b>	<b>6.68</b>

Source: Own illustration.

Summarizing the averages of these ranges for simplification, the total amount of food waste in 2015 was about 11.86 million tons, of which around 6.68 million tons were theoretically avoidable. Figure S.2 illustrates the ranges of food waste in Germany as well as their avoidable shares, broken down by the investigated areas of the food value chain. Often no reliable statistics are available for the determination of food waste in Germany. The extrapolation of waste quantities and the designation of avoidable fractions are based largely on non-representative samples from the literature. Against this background, the quantities determined and their avoidance potential are estimates and do not allow any statements regarding statistical accuracy.

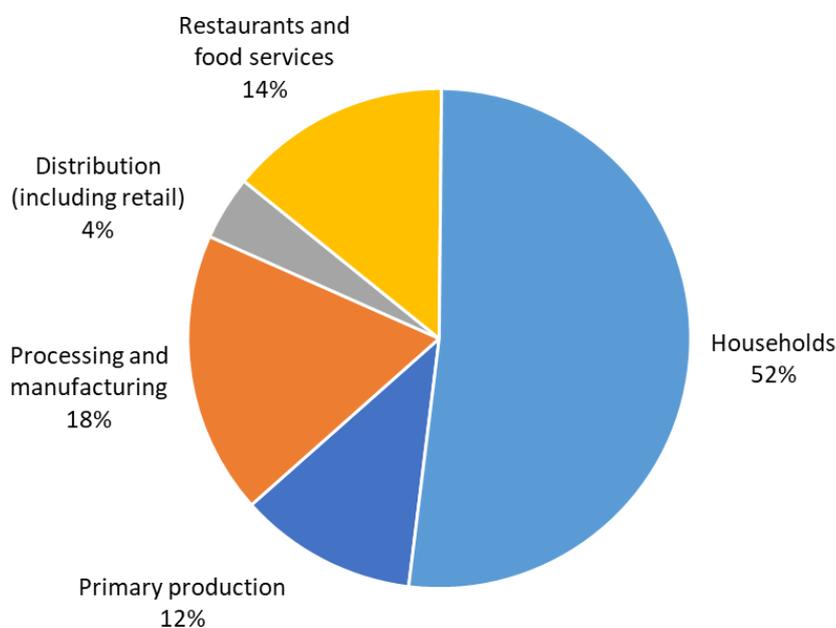
**Figure S.2: Food waste (2015) and avoidable shares in Germany (1,000 t / a)**

The mean value of each area of the food value chain is plotted, indicating the range (minimum and maximum).

Source: Own illustration.

Figure S.3 shows the representation of the percentage of food waste by value chain. Primary production accounts for 12 % (1.36 million tons); processing for 18 % (2.17 million tons); trade for 4 % (0.49 million tons), and out of house meals for 14 % (1.69 million tons). The bulk of food waste is generated in private households at 52 % (6.14 million tons), which is equivalent to about 75 kg per capita in 2015. Across all sectors, about half of the waste would theoretically be avoidable. The quality of the data and the data analysis was also evaluated. Uncertainties in the data situation exist above all in the areas of primary production, processing and trade. The system boundaries are sometimes difficult to define in trade, which leads to delimitation problems with the other value creation stages. Food waste from commerce is therefore partly attributed to other parts of the food chain - for example returns from trade, which lead to waste at the producer or food processing levels. Coordinated cooperation with actors from primary production, processing, trade and gastronomy is necessary in order to improve the future data situation in these areas.

**Figure S.3: The shares of food waste in Germany according to the areas of the value creation chain for food in 2015. The averages are presented in tons/annum**



Source: Own illustration.

### Main points

- The average food waste volume in Germany in 2015 was between 10.27 and 13.43 million tons.
- The theoretically avoidable proportion of food waste in Germany was between 5.67 and 7.69 million tons.
- In 2015, approximately 6.14 million tons of food waste was generated by households, of which approximately 5.05 million tons were collected through the Municipal Waste Collection System. The disposal of food waste through the sewage system is not included in this amount.
- In 2015, the theoretically preventable proportion of food waste from households was about 2.69 million tons (excluding drains), of which about 2.21 million tons was disposed of through the Municipal Waste Collection System.
- Transferred to the German population, food waste was about 75.2 kg per capita in 2015, of which 32.9 kg would have theoretically been avoidable.

## Recommendations

Annex III of the EU Delegated Decision sets out different methodological approaches to measure food waste. The report presented here recommends the use of all available data sources, with preference given to more valid data. Physical data, such as waste statistics, supplemented if necessary by waste composition information, represent the most reliable data basis in this context.

The present baseline reports the food waste in tons of fresh mass, without considering its value and the trends. This is not enough for a sustainability assessment. In the future, ecological, economic and social derivations from the baseline would have to follow. For example, they could support the Climate Action Plan 2050. Significant changes over the course of time also shed light on positive or negative trends, and thus provide a gauge of overall trends in combination with measures to reduce food waste.

Long version of the report:

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online: BMEL-Homepage

and

[https://www.thuenen.de/media/publikationen/thuenen-report/Thuenen\\_Report\\_71.pdf](https://www.thuenen.de/media/publikationen/thuenen-report/Thuenen_Report_71.pdf)



Johann Heinrich von Thünen-Institut  
Bundesallee 50  
38116 Braunschweig  
Germany

[www.thuenen.de](http://www.thuenen.de)

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CORRESPONDING AUTHOR

Dr. Thomas Schmidt  
Thünen Institute of Rural Studies  
Bundesallee 64  
38116 Braunschweig  
Germany

Phone: +49 531 596-5507  
E-Mail: [thomas.schmidt@thuenen.de](mailto:thomas.schmidt@thuenen.de)  
[www.thuenen.de/en/lr](http://www.thuenen.de/en/lr)