D4.7 A pan-European simulation of selected interventions
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List of abbreviations

FSC  Foos Supply Chain
FW  Food Waste
Executive summary

REFRESH is a EU research project dedicated to contributing to the achievement of the Target 3 of Sustainable Development Goal 12, which aims to halve per capita food waste at the retail and consumer level as well as reducing food losses along the food chain by 2030. Partners across Europe are collecting data on methods to reduce or repurpose food waste.

In developed countries, an estimated 30 to 40% of food is wasted. About half of this waste stems from consumers, while the remaining part is lost through the other phases of the Food Supply Chain (FSC): farm practices, transport and processing, and the retail sector (FAO, 2011; Godfray et al., 2010). To meet target 12.3 of the Sustainable Development Goals, a better understanding of the drivers of food waste are needed, both at the consumer and at the retail level. More importantly, the effectiveness of interventions designed to reduce food waste at every level of the FSC needs to be assessed.

A pan-European simulation of selected interventions

This work is part of a collection of reports on household food waste prediction for EU28, Member Countries and European Regions. This collection consists of a methodological report, REFRESH D4.8 - A roadmap to reduce food waste in Europe, which represents the theoretical base for two additional reports, REFRESH D4.6 Pan-European scenarios of food waste levels, where food waste predictions are developed for each European Country and REFRESH D4.7 A pan-European simulation of selected interventions, where food waste scenarios for EU28 and for each European Country are elaborated.

In particular, REFRESH D4.7 A pan-European simulation of selected interventions consists in a series of reports developing estimates for household food waste levels under four different scenarios for each European Country and for the whole EU28.

The first scenario represents the baseline REFRESH scenario developed with the Road Map tool¹ and presented in REFRESH D4.6 Pan-European scenarios of food waste levels.

The second scenario provides food waste predictions in a situation with an increase of income per capita, tertiary instruction level and national employment rate.

The third and the fourth REFRESH scenarios take into account the impact of an intervention reducing food waste of 10% of for the average household. REFRESH scenario three simulates the impact of a policy intervention on the baseline scenario, while the REFRESH scenario fourth describes the impact of a policy intervention on REFRESH scenario 2, where income per capita, tertiary instruction level and national employment rate are increased.

¹https://refresh-determinants-of-consumers-food-waste.shinyapps.io/predicted_food_waste/
The parameters used for the four scenarios are presented in the table below.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Income per capita (PPP)</th>
<th>Tertiary education level</th>
<th>National employment rate</th>
<th>Intervention impact on FW</th>
</tr>
</thead>
<tbody>
<tr>
<td>REFRESH Baseline</td>
<td>Current</td>
<td>Current</td>
<td>Current</td>
<td>None</td>
</tr>
<tr>
<td>REFRESH 2: Socioeconomic</td>
<td>Current</td>
<td>120% of Current value</td>
<td>110% of Current value</td>
<td>None</td>
</tr>
<tr>
<td>improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFRESH 3: Intervention on</td>
<td>Current</td>
<td>Current</td>
<td>Current</td>
<td>-10%</td>
</tr>
<tr>
<td>current situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFRESH 4: Intervention on</td>
<td>Current</td>
<td>120% of Current value</td>
<td>110% of Current value</td>
<td>-10%</td>
</tr>
<tr>
<td>socioeconomic improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The intervention introduced in the model to simulate a reduction of food waste of 10% has been based on the work of Lorenz-Walther et al. (2019). The choice of using a specific intervention as a proxy for a more general impact assessment is due to the scarcity of literature on quantification of impact of external interventions on reduction of household food waste.

The study presented by Lorenz-Walther et al. represents one of the first attempts to measures the impact of interventions addressing food waste reduction. The study applies a quasi-experimental baseline-intervention design to analyse how the display of information posters and the reduction of portion sizes take an effect on personal, social and environmental determinants in a structural equation model.

Every single chapter of this work represents a single country report, where the predictions of household food waste level for the different scenarios are presented, on the basis of current and simulated values of Gross Domestic Product per capita (expressed in Purchasing Power Parity), tertiary education level and national employment level, as described in the previous table.

**Method and limitations**

The estimates are elaborated through the web-based tool developed within REFRESH D4.8 - A roadmap to reduce food waste in Europe which is built on REFRESH D4.3 Model integration - Integrated socio-economic model on food waste and REFRESH D4.4 Behavioural Economics: Linking Bayesian and agent-based models to assess consumer food waste.

These simulations represent a first attempt to develop food waste predictions in the European Union and its Member States.

The work had to face, among others, two important limitations in terms of data availability on food waste amounts and impact of interventions.

To overcome the first constraint related to the availability of data and gather data in a format suitable for the development of the model, UK data derived from WRAP (2013) Household food and drink waste in the UK 2012 has been used. After a number of simulations this dataset proved to be the most reliable to address the needs of the hierarchical mixed-effects modelling approach.
The underlying assumption of this choice implies a general similarity between European countries. However, trends in UK data may not accurately reflect variations in household food waste elsewhere, considering the complexity of factors driving households’ behaviour and decisions concerning food consumption and management. This because behaviours related to food waste are affected by several determinants related to economic, cultural and social factors, which are often influenced by the community where consumers belong.

Therefore, utilization of the UK dataset as a proxy to extend food waste data to other EU countries represents also a potential source of bias. In order to address this likely source of bias, a pan-European, standardized study design, – as also advocated by Reynolds et al (2019) - may improve generality, facilitate interpretation, and provide more robust predictions of household food waste that capture underlying socio-economic characteristics at national and regional scales.

However, beside this limitation the model provides a set of new and interesting information regarding the influence of a set of socio-economic determinants and of external interventions on food waste generation. This is potentially suggesting some of the targets that policy interventions might consider to prioritize.

To solve the second data weakness, the model builds on a study developed in a German university canteen (Lorenz-Walther et al., 2019) that has been used as a proxy to simulate the effectiveness of a policy intervention.
1 Introduction

Food waste (FW) is a widespread and complex problem, which relates to the functioning of the food supply chain (FSC) as a whole. Estimates suggest that, in the EU-28, annual FW amounts to 88 million tonnes, i.e. 173 kilograms per person (Stenmarck et al., 2016). Food waste has become a major global concern because of its diversified and interconnected implications on the different of the FCS (Canali et al., 2016; Parfitt et al., 2010; Piras et al., 2016).

The generation of food waste stems from a complex set of interacting behaviours of both food consumers and suppliers. Therefore, a complete approach to the problem requires an analysis of both sources of waste. This complexity can be tackled though a modelling approach that fits this purpose, allowing the study of complex systems. More precisely, a combination of approaches based on Bayesian Networks (BN) and Agent Based Models (ABM) can be an effective way to understand the drivers that underpin the FW phenomenon.

While being powerful tools for the analysis of complex systems, these modelling approaches require reliable data to be able to produce robust predictions.

Following these approaches, integrated models of household food waste as an emergent property of a complex system were generated. Machine learnt Bayesian Networks and Agent Based Models were utilized to develop systems maps of the consumer food waste nexus. Through those models, different linkages were emphasised both in the retail environment and in the home predicted food waste. Therefore, modelling of consumer behaviour should not be restricted to a single environment and the key element for each of them should be identified.

Finally, an integrated whole-of-system modelling approach was built to allow the creation of a decision-relevant and dynamic support tool as base for the development of a road map to the reduction of European FW by 50% by 2030.

A first version of the integrated model was developed in (Grainger et al., 2018). As stated above, the use of a simulation approach is crucial for assessing food waste since empirical data are still limited in scale or have a high potential for bias (such as self-reported consumer food waste). This leads to high levels of uncertainty in the available data, additional to the complexity associated with understanding the socio-economic drivers of food waste.

Bayesian Networks (BNs) can incorporate uncertainty and complexity in the model structure, but are less effective at incorporating behavioural factors (i.e. specific biases of single actors, and interactions among actors) and temporal dynamics (interaction among variables or actors across time). For these types of information, Agent-Based Models (ABMs) are much better suited. To better represent food system complexity whilst incorporating the interactions among and within actors (businesses, consumers, etc.), there is a need for BNs and ABMs to interact dynamically.

These modelling developments represented the basis for the development of REFRESH D4.8 - A roadmap to reduce food waste in Europe, which is addressing food waste generation at the household level and allows simulations - based on a
Bayesian hierarchical mixed-effects modelling approach - that quantify the relationships between socioeconomic and demographic indicators and household food-waste.

These models allowed the development of a web based tool simulating food waste and the impact of interventions both at the Regional, National and European level. The web based tool allows to easy simulate a number of different scenario, based on a set of socioeconomic variables, such as income per capita, tertiary education rate and national employment rate.

Simulations are based on UK data (WRAP, 2013), therefore the extension to other European countries might suffer of bias related to specific UK patterns and dynamics. This choice is due to the statistical characteristics of WRAP dataset: while being UK specific, these data has the principal advantage of providing a validated measure of household food-waste. This aspect makes this dataset reliable for the simulation approach adopted in the roadmap, despite its limited territorial coverage.

This work builds on the baseline simulation developed in REFRESH D4.6 Pan-European scenarios of food waste levels to predict the impact of selected interventions.

The intervention introduced in the model to simulate a reduction of food waste of 10% has been based on the work of Lorenz-Walther et al. (2019). The choice of using a specific intervention as a proxy for a more general impact assessment is due to the scarcity of literature on quantification of impact of external interventions on reduction of household food waste.

The study presented by Lorenz-Walther et al. represents one of the first attempts to measures the impact of interventions addressing food waste reduction. The study applies a quasi-experimental baseline-intervention design to analyse how the display of information posters and the reduction of portion sizes take an effect on personal, social and environmental determinants in a structural equation model.

The parameters of the three REFRESH scenarios are presented in Table 1.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Income per capita (PPP)</th>
<th>Tertiary education level</th>
<th>National employment rate</th>
<th>Intervention impact on FW</th>
</tr>
</thead>
<tbody>
<tr>
<td>REFRESH Baseline</td>
<td>Current</td>
<td>Current</td>
<td>Current</td>
<td>None</td>
</tr>
<tr>
<td>REFRESH 2:</td>
<td>110% of Current value</td>
<td>120% of Current value</td>
<td>110% of Current value</td>
<td>None</td>
</tr>
<tr>
<td>Socioeconomic improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFRESH 3:</td>
<td>Current</td>
<td>Current</td>
<td>Current</td>
<td>-10%</td>
</tr>
<tr>
<td>Intervention on current situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFRESH 4:</td>
<td>110% of Current value</td>
<td>120% of Current value</td>
<td>110% of Current value</td>
<td>-10%</td>
</tr>
<tr>
<td>Intervention on socioeconomic improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the following paragraphs 29 reports are presented, one for the whole EU28 and one for each of the 28 EU Member Countries. Each report is organized in the four scenarios described in table 1.

**Methodological background**

This work is part of a collection of reports on household food waste prediction for EU28, European Countries and European Regions. The collection consists of a methodological report, *REFRESH D4.8 - A roadmap to reduce food waste in Europe*, which is the theoretical base for two other reports, *REFRESH D4.6 Pan-European scenarios of food waste levels* and *REFRESH D4.7 A pan-European simulation of selected interventions*, where food waste scenarios for EU28 and for each European Country are presented.

Methodologies and results presented in *REFRESH D4.8 - A roadmap to reduce food waste in Europe* are based on the results presented in *REFRESH D4.3 Model integration - Integrated socio-economic model on food waste* and in *REFRESH D4.4 Behavioural Economics: Linking Bayesian and agent-based models to assess consumer food waste*.

**Limitations and future developments**

The hierarchical mixed-effects modelling approach utilized to develop these estimations represents a first attempt to predict food waste at the EU level using a simulation model and it had to face, among others, two important limitations in terms of data availability on food waste amounts and impact of interventions.

To overcome the first constraint related to the availability of data and gather data in a format suitable for the development of the model, UK data derived from WRAP (2013) *Household food and drink waste in the UK 2012* has been used. After a number of simulations this dataset proved to be the most reliable to address the needs of the hierarchical mixed-effects modelling approach.

The underlying assumption of this choice implies a general similarity between European countries. However, considering the complexity of factors driving households’ behaviour and decisions concerning food consumption and management, trends in UK data may not accurately reflect household food waste variations elsewhere. Food waste behaviours are affected by several determinants concerning economic, cultural and social factors, which are often in turn influenced by the community where consumers belong. Therefore, utilization of the UK dataset as a proxy to extend food waste data to other EU countries represents also a potential source of bias. In order to address this likely source of bias, a pan-European, standardized study design, – as also advocated by Reynolds et al. (2019) - may improve generality, facilitate interpretation, and provide more robust predictions of household food waste that capture underlying socio-economic characteristics at national and regional scales.

However, despite this limitation, the model provides a set of new information regarding the influence of socio-economic determinants and of selected interventions on food waste generation. Furthermore, the model can suggest some of the targets that policy interventions might consider to prioritize.
To solve the second data weakness, the model builds on a study developed in a German university canteen (Lorenz-Walther et al., 2019) that has been used as a proxy to simulate the effectiveness of a policy intervention.

To increase the reliability of the results obtained through the roadmap, future research should focus on obtaining more consistent national data on food waste and on the impact of food waste reduction measures. Research on the impact of interventions is particularly urgent since there is a scarcity of reliable and solid quantitative data able to improve the predictive capacity of the model.
2 European Union

According to 2017 Eurostat data, the EU population amounts to 511,373,278. The Gross Domestic Product (GDP) per capita on purchasing power parity is 29,500 euro at the European level, with consistent regional differences, ranging from 14,500 euro per capita in Bulgaria to 74,500 euro per capita in Luxembourg. There are 221,430,500 households, with an average size of 2.3 persons. The average employment rate is 61.1%, while the level of tertiary education is 32.3%.

Figure 1: EU28 - FW estimations before and after intervention

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Austria</td>
<td>95.94</td>
<td>95.68</td>
<td>-0.3%</td>
<td>86.32</td>
</tr>
<tr>
<td>Belgium</td>
<td>98.54</td>
<td>98.54</td>
<td>0.0%</td>
<td>88.4</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>95.16</td>
<td>94.64</td>
<td>-0.5%</td>
<td>85.28</td>
</tr>
<tr>
<td>Croatia</td>
<td>127.40</td>
<td>127.40</td>
<td>0.0%</td>
<td>114.92</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>91.00</td>
<td>96.46</td>
<td>6.0%</td>
<td>86.84</td>
</tr>
<tr>
<td>Cyprus</td>
<td>131.04</td>
<td>131.04</td>
<td>0.0%</td>
<td>118.04</td>
</tr>
<tr>
<td>Denmark</td>
<td>96.98</td>
<td>96.72</td>
<td>-0.3%</td>
<td>87.36</td>
</tr>
</tbody>
</table>

Note: graphical differences are not in the colours, but in the scale.
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in the European Union. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste that goes from the 4.6% of Czech Republic to the 15.1% of the United Kingdom.
# Austria

According to 2017 Eurostat data, the population of Austria amounts to **8,772,865**. The Gross Domestic Product (GDP) per capita on purchasing power parity is **37,400** euro at the regional level, with consistent regional differences, ranging from **26,600** euro per capita in Burgenland to **44,500** euro per capita of the Salzburg region.

There are **3,915,500** households, with an average size of **2.3** persons. The average employment rate is **73%**, while the level of tertiary education is **32.7%**.

**Figure 2: Austria - FW estimations before and after intervention**

![Map of Austria showing FW estimations before and after intervention](image)

*Note: graphical differences are not in the colours, but in the scale.*

**Table 3: Austria – results of FW scenarios simulations**

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline (%)</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline (%)</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>95.94</td>
<td>95.68</td>
<td>-0.3%</td>
<td>86.32</td>
<td>-10.0%</td>
<td>86.32</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Burgenland</td>
<td>96.20</td>
<td>95.68</td>
<td>-0.5%</td>
<td>86.32</td>
<td>-10.3%</td>
<td>86.32</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Lower Austria</td>
<td>96.20</td>
<td>94.64</td>
<td>-1.6%</td>
<td>85.28</td>
<td>-11.4%</td>
<td>85.28</td>
<td>-11.4%</td>
</tr>
<tr>
<td>Vienna</td>
<td>99.58</td>
<td>98.28</td>
<td>-1.3%</td>
<td>88.40</td>
<td>-11.2%</td>
<td>88.40</td>
<td>-11.2%</td>
</tr>
<tr>
<td>Carinthia</td>
<td>96.46</td>
<td>92.04</td>
<td>-4.6%</td>
<td>83.20</td>
<td>-13.78%</td>
<td>82.68</td>
<td>-14.3%</td>
</tr>
<tr>
<td>Styria</td>
<td>94.64</td>
<td>94.12</td>
<td>-0.6%</td>
<td>85.28</td>
<td>-9.9%</td>
<td>84.76</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Upper Austria</td>
<td>98.28</td>
<td>95.94</td>
<td>-2.4%</td>
<td>86.32</td>
<td>-12.2%</td>
<td>86.32</td>
<td>-12.2%</td>
</tr>
<tr>
<td>Salzburg</td>
<td>97.76</td>
<td>96.98</td>
<td>-0.8%</td>
<td>87.36</td>
<td>-10.6%</td>
<td>87.36</td>
<td>-10.6%</td>
</tr>
<tr>
<td>Tyrol</td>
<td>96.20</td>
<td>95.94</td>
<td>-0.3%</td>
<td>86.32</td>
<td>-10.23%</td>
<td>86.32</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Voralberg</td>
<td>97.76</td>
<td>96.20</td>
<td>-1.6%</td>
<td>86.84</td>
<td>-11.2%</td>
<td>86.84</td>
<td>-11.2%</td>
</tr>
</tbody>
</table>

*Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.*
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Austria. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10%. The higher estimated reduction, compared to the baseline scenario, is registered for Carinthia region (−13.8% for Intervention on current situation scenario and −14.3% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction, excluding the national value, is registered in Burgenland and Tyrol regions.
Belgium

According to 2017 Eurostat data, the population of Belgium amounts to 11,351,727. The Gross Domestic Product (GDP) per capita on purchasing power parity is 34,300 euro at the regional level, with consistent regional differences, ranging from 21,600 euro per capita in Luxembourg area to 57,700 euro per capita of the Brussels region. There are 4,761,700 households, with an average size of 2.3 persons. The average employment rate is 61.1%, while the level of tertiary education is 40.6%.

Figure 3: Belgium - FW estimations before and after intervention

![Image: Belgium FW estimations before and after intervention]

Note: graphical differences are not in the colours, but in the scale.

Table 4: Belgium – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>98.54</td>
<td>98.54</td>
<td>0.0%</td>
<td>88.4</td>
<td>-10.3%</td>
<td>88.4</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Bruxelles</td>
<td>103.48</td>
<td>101.40</td>
<td>-2.0%</td>
<td>91.52</td>
<td>-11.6%</td>
<td>91.26</td>
<td>-11.8%</td>
</tr>
<tr>
<td>Antwerpen</td>
<td>98.28</td>
<td>99.06</td>
<td>0.8%</td>
<td>89.18</td>
<td>-9.3%</td>
<td>88.92</td>
<td>-9.5%</td>
</tr>
<tr>
<td>Limburg(BE)</td>
<td>98.28</td>
<td>94.64</td>
<td>-3.7%</td>
<td>85.28</td>
<td>-13.2%</td>
<td>85.28</td>
<td>-13.2%</td>
</tr>
<tr>
<td>Oost-Vlaanderen</td>
<td>96.46</td>
<td>97.24</td>
<td>0.8%</td>
<td>87.62</td>
<td>-9.2%</td>
<td>87.36</td>
<td>-9.4%</td>
</tr>
<tr>
<td>Vlaams-Brabant</td>
<td>97.76</td>
<td>99.84</td>
<td>2.1%</td>
<td>89.96</td>
<td>-8.0%</td>
<td>89.96</td>
<td>-8.0%</td>
</tr>
</tbody>
</table>
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Belgium. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.3%. The higher estimated reduction, compared to the baseline scenario, is registered for Bruxelles region (-11.6% for Intervention on current situation scenario and -11.8% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in West-Vlaanderen (-7.8%).
5 Bulgaria

According to 2017 Eurostat data, the population of Bulgaria amounts to 7,101,859. The Gross Domestic Product (GDP) per capita on purchasing power parity is 14,500 euro at the regional level, with consistent regional differences, ranging from 9,100 euro per capita of Severozapaden area to 23,300 euro per capita of the Yugozapaden region. There are 2,905,400 households, with an average size of 2.3 persons. The average employment rate is 66.9%, while the level of tertiary education is 28.2%.

Figure 4: Bulgaria - FW estimations before and after intervention
Note: graphical differences are not in the colours, but in the scale.

Table 5: Bulgaria – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>95.16</td>
<td>94.64</td>
<td>-0.5%</td>
<td>85.28</td>
<td>-10.4%</td>
<td>85.28</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Severozapaden</td>
<td>92.56</td>
<td>92.30</td>
<td>-0.3%</td>
<td>83.2</td>
<td>-10.1%</td>
<td>83.2</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Severentzentralen</td>
<td>94.64</td>
<td>94.64</td>
<td>0.0%</td>
<td>85.28</td>
<td>-9.9%</td>
<td>85.28</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Yugoiztochen</td>
<td>96.72</td>
<td>96.2</td>
<td>-0.5%</td>
<td>86.84</td>
<td>-10.2%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Yugozapaden</td>
<td>96.20</td>
<td>96.2</td>
<td>0.0%</td>
<td>86.32</td>
<td>-10.3%</td>
<td>86.32</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Yuzhentzentralen</td>
<td>92.82</td>
<td>92.04</td>
<td>-0.8%</td>
<td>83.72</td>
<td>-9.8%</td>
<td>83.72</td>
<td>-9.8%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Bulgaria. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.4%. The higher estimated reduction, compared to the baseline scenario, is registered for Yuzhentzentralen region (-9.8% for Intervention on current situation scenario and -10.4% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Severentzentralen region (-9.9%).
6 Croatia

According to 2017 Eurostat data, the population of Croatia amounts to 4,254,313. The Gross Domestic Product (GDP) per capita on purchasing power parity is 18,200 euro, 17,500 euro per capita in Jadranska Hrvatska area and 18,200 euro per capita in the Kontinentalna Hrvatska region. There are 2,655,500 households, with an average size of 2.8 persons. The average employment rate is 58.9%, while the level of tertiary education is 25.4%.

Figure 5: Croatia - FW estimations before and after intervention

![Image showing a map of Croatia with a color gradient indicating FW estimations before and after intervention.]

Note: graphical differences are not in the colours, but in the scale.

Table 6: Croatia – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Croatia</td>
<td>127.40</td>
<td>127.40</td>
<td>0.0%</td>
<td>114.92</td>
<td>-9.8%</td>
<td>114.92</td>
<td>-9.8%</td>
</tr>
<tr>
<td>Jadranska Hrvatska</td>
<td>132.08</td>
<td>125.32</td>
<td>-5.1%</td>
<td>112.84</td>
<td>-14.6%</td>
<td>112.84</td>
<td>-14.6%</td>
</tr>
<tr>
<td>Kontinentalna Hrvatska</td>
<td>127.40</td>
<td>129.74</td>
<td>1.8%</td>
<td>117.00</td>
<td>-8.2%</td>
<td>116.74</td>
<td>-8.4%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Croatia. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste almost of 10%.
In particular, the estimated reduction of FW for the whole country is 9.8%. The higher estimated reduction, compared to the baseline scenario, is registered for Jadranska Hrvatska region (-14.6% for Intervention on current situation scenario and 3), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Kontinentalna Hrvatska region (-8.4%).
7 Czech Republic

According to 2017 Eurostat data, the population of Czech Republic amounts to 10,578,820. The Gross Domestic Product (GDP) per capita on purchasing power parity is 26,400 euro, with some regional differences ranging from 18,700 euro per capita of Severozápad area to the 55,200 euro per capita of the Prague region. There are 4,699,000 households, with an average size of 2.3 persons. The average employment rate is 73.6%, while the level of tertiary education is 24.3%.

Figure 6: Czech Republic - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.

Table 7: Czech Republic – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>91.00</td>
<td>96.46</td>
<td>6.0%</td>
<td>86.84</td>
<td>-4.6%</td>
<td>86.8</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Prague</td>
<td>91.52</td>
<td>97.24</td>
<td>6.3%</td>
<td>87.88</td>
<td>-4.0%</td>
<td>87.4</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Střední Čechy</td>
<td>91.52</td>
<td>96.98</td>
<td>6.0%</td>
<td>87.36</td>
<td>-4.5%</td>
<td>87.4</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Jihozápado</td>
<td>90.48</td>
<td>95.68</td>
<td>5.7%</td>
<td>86.32</td>
<td>-4.6%</td>
<td>86.3</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Severozápad</td>
<td>89.96</td>
<td>95.16</td>
<td>5.8%</td>
<td>85.8</td>
<td>-4.6%</td>
<td>85.8</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Severovýchod</td>
<td>90.48</td>
<td>95.68</td>
<td>5.7%</td>
<td>86.32</td>
<td>-4.6%</td>
<td>86.3</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Jihovýchod</td>
<td>91.52</td>
<td>96.72</td>
<td>5.7%</td>
<td>87.36</td>
<td>-4.5%</td>
<td>87.4</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Střední Morava</td>
<td>92.56</td>
<td>97.76</td>
<td>5.6%</td>
<td>88.4</td>
<td>-4.5%</td>
<td>88.4</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Moravskoslezsko</td>
<td>89.96</td>
<td>95.42</td>
<td>6.1%</td>
<td>86.32</td>
<td>-4.0%</td>
<td>85.8</td>
<td>-4.6%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Czech Republic. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food of almost 5%, while the increase of socioeconomic parameters causes an increase in food waste generated at the household level.

In particular, the estimated reduction of FW for the whole country is 4.6%, and all of the Czech regions register a similar amount of food waste at the household level.
8 Cyprus

According to 2017 Eurostat data, the population of Cyprus amounts to 854,802. The Gross Domestic Product (GDP) per capita on purchasing power parity is 25,000 euro. There are 321,200 households with an average size of 2.3 persons. The average employment rate is 65.6%, while the level of tertiary education is 44.1%.

Table 8: Cyprus – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Cyprus</td>
<td>131.04</td>
<td>131.04</td>
<td>0.0%</td>
<td>118.04</td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Cyprus. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%. In particular, the estimated reduction of FW for the whole country is 10.03%.
According to 2017 Eurostat data, the population of Denmark amounts to 5,748,769. The Gross Domestic Product (GDP) per capita on purchasing power parity is 37,700 euro, with some regional differences ranging from 25,800 euro per capita of Sjælland area to the 48,900 euro per capita of the Hovedstaden region. There are 2,395,900 households, with an average size of 2 persons. The average employment rate is 74.2%, while the level of tertiary education is 39.7%.

Figure 7: Denmark - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.

Table 9: Denmark – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>96.98</td>
<td>96.72</td>
<td>-0.3%</td>
<td>87.36</td>
<td>-9.9%</td>
<td>86.84</td>
<td>-10.5%</td>
</tr>
<tr>
<td>Hovedstaden</td>
<td>101.92</td>
<td>101.4</td>
<td>-0.5%</td>
<td>91.52</td>
<td>-10.2%</td>
<td>91.52</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Sjælland</td>
<td>93.6</td>
<td>94.12</td>
<td>0.6%</td>
<td>84.24</td>
<td>-10.0%</td>
<td>83.72</td>
<td>-10.6%</td>
</tr>
<tr>
<td>Syddanmark</td>
<td>94.12</td>
<td>104</td>
<td>10.5%</td>
<td>84.76</td>
<td>-9.9%</td>
<td>84.24</td>
<td>-10.5%</td>
</tr>
<tr>
<td>Midtjylland</td>
<td>98.8</td>
<td>98.28</td>
<td>-0.5%</td>
<td>88.92</td>
<td>-10.0%</td>
<td>88.4</td>
<td>-10.5%</td>
</tr>
<tr>
<td>Nordjylland</td>
<td>96.72</td>
<td>96.2</td>
<td>-0.5%</td>
<td>86.84</td>
<td>-10.2%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Denmark. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.
In particular, the estimated reduction of FW for the whole country is 10.5%. The higher estimated reduction, compared to the baseline scenario, is registered for Sjælland region (-10.6% for Intervention on current situation scenario and -10% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Hovedstaden and Nordjylland regions (-10.2%).
10 Estonia

According to 2017 Eurostat data, the population of Estonia amounts to 1,315,635. The Gross Domestic Product (GDP) per capita on purchasing power parity is 23,200 euro. There are 584,000 households with an average size of 2.1 persons. The average employment rate is 66.9%, while the level of tertiary education is 44.1%.

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>96.72</td>
<td>96.72</td>
<td>0.0%</td>
<td>87.36</td>
<td>-9.7%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Estonia. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 10.2%.
11 Finland

According to 2017 Eurostat data, the population of Finland amounts to 5,503,297 The Gross Domestic Product (GDP) per capita on purchasing power parity is 32,100 euro, with relevant regional differences ranging from 26,700 euro per capita of North & East Finland area to 41,600 euro per capita of the Helsinki-Uusimaa region. There are 2,655,500 households, with an average size of 2.1 persons. The average employment rate is 70%, while the level of tertiary education is 44.5%.

Figure 8: Finland - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.
Table 11: Finland – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>96.46</td>
<td>96.46</td>
<td>0.0%</td>
<td>86.84</td>
<td>-10.0%</td>
<td>86.84</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Länsi-Suomi</td>
<td>97.50</td>
<td>97.50</td>
<td>0.0%</td>
<td>93.08</td>
<td>-4.5%</td>
<td>87.88</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Helsinki-Uusimaa</td>
<td>99.06</td>
<td>100.10</td>
<td>1.0%</td>
<td>89.18</td>
<td>-10.0%</td>
<td>89.96</td>
<td>-9.2%</td>
</tr>
<tr>
<td>Etelä-Suomi</td>
<td>93.86</td>
<td>93.60</td>
<td>-0.3%</td>
<td>84.24</td>
<td>-10.2%</td>
<td>84.24</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Pohjois- ja Itä-Suomi</td>
<td>94.90</td>
<td>94.64</td>
<td>-0.3%</td>
<td>85.28</td>
<td>-10.1%</td>
<td>85.28</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Åland</td>
<td>95.16</td>
<td>95.16</td>
<td>0.0%</td>
<td>85.80</td>
<td>-9.8%</td>
<td>85.80</td>
<td>-9.8%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Finland. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 10%.

The higher estimated reduction, compared to the baseline scenario, is registered for Etelä-Suomi region (-10.2%), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Helsinki-Uusimaa (-9.2% in Intervention and socioeconomic improvement scenario).
12 France

According to 2017 Eurostat data, the population of France amounts to 66,804,121. The Gross Domestic Product (GDP) per capita on purchasing power parity is 36.600 euro, with relevant regional differences ranging from 10,100 euro per capita of Mayotte overseas area to 52,100 euro per capita of the Île de France region. There are 2,655,500 households, with an average size of 2.1 persons. The average employment rate is 64.7%, while the level of tertiary education is 36.9%.

**Figure 9: France - FW estimations before and after intervention**

Note: graphical differences are not in the colours, but in the scale.

### Table 12: France – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>98.02</td>
<td>97.76</td>
<td>-0.3%</td>
<td>87.36</td>
<td>-10.9%</td>
<td>88.14</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Île de France</td>
<td>101.92</td>
<td>101.66</td>
<td>-0.3%</td>
<td>90.22</td>
<td>-11.5%</td>
<td>91.52</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Champagne-Ardenne</td>
<td>94.64</td>
<td>94.64</td>
<td>0.0%</td>
<td>84.24</td>
<td>-11.0%</td>
<td>85.28</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Picardie</td>
<td>96.20</td>
<td>95.94</td>
<td>-0.3%</td>
<td>85.80</td>
<td>-10.8%</td>
<td>86.32</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Haute-Normandie</td>
<td>98.54</td>
<td>98.28</td>
<td>-0.3%</td>
<td>87.88</td>
<td>-10.8%</td>
<td>88.40</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Centre</td>
<td>98.28</td>
<td>98.02</td>
<td>-0.3%</td>
<td>87.36</td>
<td>-11.1%</td>
<td>88.40</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Basse-Normandie</td>
<td>96.72</td>
<td>96.72</td>
<td>0.0%</td>
<td>86.32</td>
<td>-10.8%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>
### Results from simulations highlight the relevance of policy interventions for the reduction of food waste in France. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.1%. The higher estimated reduction, compared to the baseline scenario, is registered for Mayotte region (-15.3% for Intervention and socioeconomic improvement scenario and -10.9% for Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Champagne-Ardenne and Bourgogne regions (-9.9% in Intervention and socioeconomic improvement scenario).
13 Germany

According to 2017 Eurostat data, the population of Germany amounts to 82,521,653. The Gross Domestic Product (GDP) per capita on purchasing power parity is 36,400 euro, with consistent regional differences ranging from 24,500 euro per capita of Mecklenburg-Vorpommern area to 59,500 euro per capita of the Hamburg region. There are 40,722,600 households, with an average size of 2 persons, and the number of households is, according to Eurostat data. The average employment rate is 75.2%, while the level of tertiary education is 29.1%.

Figure 10: Germany - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.
## Table 13: Germany – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement Household FW (kg/year)</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Intervention and socioeconomic improvement Household FW (kg/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Difference with baseline</td>
<td>Difference with baseline</td>
<td>Difference with baseline</td>
</tr>
<tr>
<td>Germany</td>
<td>94.12</td>
<td>93.60</td>
<td>84.76</td>
<td>84.24</td>
</tr>
<tr>
<td>Stuttgart</td>
<td>96.20</td>
<td>96.20</td>
<td>86.84</td>
<td>86.32</td>
</tr>
<tr>
<td>Karlsruhe</td>
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<td>94.12</td>
<td>85.02</td>
<td>84.76</td>
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<tr>
<td>Freiburg</td>
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<td>94.12</td>
<td>85.28</td>
<td>84.76</td>
</tr>
<tr>
<td>Tübingen</td>
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<td>96.20</td>
<td>86.84</td>
<td>86.84</td>
</tr>
<tr>
<td>Oberbayern</td>
<td>95.68</td>
<td>95.16</td>
<td>85.80</td>
<td>85.80</td>
</tr>
<tr>
<td>Niederbayern</td>
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<td>95.68</td>
<td>83.72</td>
<td>83.20</td>
</tr>
<tr>
<td>Oberpfalz</td>
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<td>92.56</td>
<td>83.20</td>
<td>82.68</td>
</tr>
<tr>
<td>Oberfranken</td>
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<td>93.60</td>
<td>84.24</td>
<td>83.20</td>
</tr>
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<td>94.12</td>
<td>85.28</td>
<td>84.76</td>
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<tr>
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<td>92.04</td>
<td>83.20</td>
<td>82.68</td>
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<tr>
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<td>96.72</td>
<td>87.36</td>
<td>86.84</td>
</tr>
<tr>
<td>Berlin</td>
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<td>98.28</td>
<td>88.40</td>
<td>88.40</td>
</tr>
<tr>
<td>Brandenburg</td>
<td>90.48</td>
<td>90.22</td>
<td>81.64</td>
<td>81.12</td>
</tr>
<tr>
<td>Bremen</td>
<td>95.94</td>
<td>95.68</td>
<td>86.32</td>
<td>85.80</td>
</tr>
<tr>
<td>Hamburg</td>
<td>97.76</td>
<td>97.24</td>
<td>87.88</td>
<td>87.36</td>
</tr>
<tr>
<td>Darmstadt</td>
<td>95.94</td>
<td>95.42</td>
<td>86.32</td>
<td>85.80</td>
</tr>
<tr>
<td>Gießen</td>
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<td>94.64</td>
<td>85.28</td>
<td>85.28</td>
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<td>Kassel</td>
<td>94.12</td>
<td>94.12</td>
<td>84.76</td>
<td>84.76</td>
</tr>
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<td>89.96</td>
<td>81.12</td>
<td>80.60</td>
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<td>93.60</td>
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<td>84.24</td>
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<tr>
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<td>91.52</td>
<td>82.68</td>
<td>82.16</td>
</tr>
<tr>
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<td>92.56</td>
<td>83.46</td>
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<tr>
<td>Weser-Ems</td>
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<td>92.56</td>
<td>83.72</td>
<td>83.20</td>
</tr>
<tr>
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<td>92.82</td>
<td>83.72</td>
<td>83.20</td>
</tr>
<tr>
<td>Köln</td>
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<td>95.42</td>
<td>86.32</td>
<td>85.80</td>
</tr>
<tr>
<td>Münster</td>
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<td>93.08</td>
<td>84.24</td>
<td>83.72</td>
</tr>
<tr>
<td>Detmold</td>
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<td>95.68</td>
<td>86.32</td>
<td>86.32</td>
</tr>
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<td>Arnsberg</td>
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<td>93.60</td>
<td>84.76</td>
<td>84.24</td>
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<tr>
<td>Koblenz</td>
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<td>83.72</td>
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<tr>
<td>Trier</td>
<td>93.34</td>
<td>93.08</td>
<td>84.24</td>
<td>83.72</td>
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<tr>
<td>Rheinhessen-Pfalz</td>
<td>97.76</td>
<td>97.76</td>
<td>87.88</td>
<td>87.88</td>
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<tr>
<td>Saarland</td>
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<td>91.78</td>
<td>82.68</td>
<td>82.68</td>
</tr>
<tr>
<td>Dresden</td>
<td>90.48</td>
<td>89.96</td>
<td>81.12</td>
<td>81.12</td>
</tr>
<tr>
<td>Chemnitz</td>
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<td>88.92</td>
<td>80.08</td>
<td>80.08</td>
</tr>
<tr>
<td>Leipzig</td>
<td>94.12</td>
<td>93.60</td>
<td>84.76</td>
<td>84.24</td>
</tr>
</tbody>
</table>
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Germany. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.5%. The higher estimated reduction, compared to the baseline scenario, is registered for Thüringen region (-10.7% for Intervention and socioeconomic improvement scenario and -10.1% for Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Mittelfranken region (-9.9%).
14 Greece

According to 2017 Eurostat data, the population of Greece amounts to 10,738,193. The Gross Domestic Product (GDP) per capita on purchasing power parity is 19,800 euro, with some regional differences ranging from 13,600 euro per capita of Eastern Macedonia and Thrace area to the 26,800 euro per capita of the Attica region. There are 4,393,900 households, with an average size of 2.3 persons. The average employment rate is 53.5%, while the level of tertiary education is 31.7%.

Figure 11: Greece - FW estimations before and after intervention

Table 14: Greece – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>96.46</td>
<td>96.46</td>
<td>0.0%</td>
<td>86.84</td>
<td>-10.0%</td>
<td>86.84</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Attica</td>
<td>96.98</td>
<td>96.72</td>
<td>-0.3%</td>
<td>86.84</td>
<td>-10.5%</td>
<td>87.36</td>
<td>-9.9%</td>
</tr>
<tr>
<td>South Aegan</td>
<td>99.32</td>
<td>99.32</td>
<td>0.0%</td>
<td>84.24</td>
<td>-15.2%</td>
<td>89.44</td>
<td>-9.9%</td>
</tr>
<tr>
<td>North Aegan</td>
<td>96.72</td>
<td>96.2</td>
<td>-0.5%</td>
<td>86.84</td>
<td>-10.2%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>

Note: graphical differences are not in the colours, but in the scale.
<table>
<thead>
<tr>
<th>Region</th>
<th>Mean 2017</th>
<th>Mean 2018</th>
<th>Changes</th>
<th>Mean 2017</th>
<th>Mean 2018</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crete</td>
<td>98.28</td>
<td>98.02</td>
<td>-0.3%</td>
<td>88.4</td>
<td>-10.1%</td>
<td>88.4</td>
</tr>
<tr>
<td>Eastern Macedonia and Thrace</td>
<td>97.24</td>
<td>97.24</td>
<td>0.0%</td>
<td>87.36</td>
<td>-10.2%</td>
<td>87.36</td>
</tr>
<tr>
<td>Central Macedonia</td>
<td>97.5</td>
<td>97.24</td>
<td>-0.3%</td>
<td>87.62</td>
<td>-10.1%</td>
<td>87.36</td>
</tr>
<tr>
<td>Western Macedonia</td>
<td>96.2</td>
<td>95.94</td>
<td>-0.3%</td>
<td>86.32</td>
<td>-10.3%</td>
<td>86.32</td>
</tr>
<tr>
<td>Epirus</td>
<td>93.34</td>
<td>93.34</td>
<td>0.0%</td>
<td>83.72</td>
<td>-10.3%</td>
<td>83.72</td>
</tr>
<tr>
<td>Thessaly</td>
<td>95.16</td>
<td>95.16</td>
<td>0.0%</td>
<td>85.28</td>
<td>-10.4%</td>
<td>85.28</td>
</tr>
<tr>
<td>Ionian Island</td>
<td>93.86</td>
<td>93.6</td>
<td>-0.3%</td>
<td>84.24</td>
<td>-10.2%</td>
<td>84.24</td>
</tr>
<tr>
<td>Western Greece</td>
<td>95.16</td>
<td>95.16</td>
<td>0.0%</td>
<td>85.8</td>
<td>-9.8%</td>
<td>85.8</td>
</tr>
<tr>
<td>Central Greece</td>
<td>96.2</td>
<td>95.68</td>
<td>-0.5%</td>
<td>86.84</td>
<td>-9.7%</td>
<td>86.32</td>
</tr>
<tr>
<td>Peloponnese</td>
<td>96.2</td>
<td>96.2</td>
<td>0.0%</td>
<td>86.58</td>
<td>-10.0%</td>
<td>86.32</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Greece. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food of 10%.

The higher estimated reduction, compared to the baseline scenario, is registered for Central Macedonia region (-10.4% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Western Greece region (-9.8% in Intervention and socioeconomic improvement scenario).


15 Hungary

According to 2017 Eurostat data, the population of Hungary amounts to 9,797,561. The Gross Domestic Product (GDP) per capita on purchasing power parity is 20,000 euro, with relevant regional differences ranging from 12,700 euro per capita of Northern Great Plain area to 41,100 euro per capita of the Budapest region. There are 4,131,400 households, with an average size of 2.3 persons. The average employment rate is 68.2%, while the level of tertiary education reaches 25.1%.

Figure 12: Hungary - FW estimations before and after intervention

![Graphical representation of Hungary's FW estimations before and after intervention.](image)

Note: graphical differences are not in the colours, but in the scale.

Table 15: Hungary – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Hungary</td>
<td>97.24</td>
<td>97.76</td>
<td>0.5%</td>
<td>87.36</td>
</tr>
<tr>
<td>Budapest</td>
<td>99.32</td>
<td>100.88</td>
<td>1.6%</td>
<td>89.44</td>
</tr>
<tr>
<td>Pest</td>
<td>97.76</td>
<td>98.02</td>
<td>0.3%</td>
<td>89.96</td>
</tr>
<tr>
<td>Central Transdanubia</td>
<td>97.24</td>
<td>97.50</td>
<td>0.3%</td>
<td>87.36</td>
</tr>
<tr>
<td>Western Transdanubia</td>
<td>97.50</td>
<td>97.76</td>
<td>0.3%</td>
<td>87.88</td>
</tr>
<tr>
<td>Southern Transdanubia</td>
<td>93.60</td>
<td>93.60</td>
<td>0.0%</td>
<td>84.24</td>
</tr>
<tr>
<td>Northern Hungary</td>
<td>96.20</td>
<td>96.72</td>
<td>0.5%</td>
<td>86.84</td>
</tr>
<tr>
<td>Northern Great Plain</td>
<td>95.94</td>
<td>96.20</td>
<td>0.3%</td>
<td>86.32</td>
</tr>
</tbody>
</table>
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Hungary. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.2%. The higher estimated reduction, compared to the baseline scenario, is registered for Northern Great Plain region (-10.6% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Central Transdanubia region (-9.6% in Intervention and socioeconomic improvement scenario).

| Southern Great Plain | 98.28 | 98.54 | 0.3% | 88.4 | -10.1% | 88.40 | -10.1% |

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.
Ireland

According to 2017 Eurostat data, the population of Ireland amounts to 4,784,383. The Gross Domestic Product (GDP) per capita on purchasing power parity is 53,500 euro, with relevant regional differences ranging from 24,700 euro per capita of Northern and Western Ireland area to 65,000 euro per capita of the Southern Ireland region. There are 1,795,000 households, with an average size of 2.6 persons. The average employment rate is 67.7%, while the level of tertiary education is 46.9%.

Figure 13: Ireland - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.
### Table 16: Ireland – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>131.04</td>
<td>131.56</td>
<td>0.4%</td>
<td>117.52</td>
<td>-10.3%</td>
<td>118.04</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Northern and Western</td>
<td>130.00</td>
<td>130.00</td>
<td>0.0%</td>
<td>116.48</td>
<td>-10.4%</td>
<td>117.00</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Southern</td>
<td>130.52</td>
<td>130.26</td>
<td>-0.2%</td>
<td>117.00</td>
<td>-10.4%</td>
<td>117.00</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Eastern and Midland</td>
<td>132.08</td>
<td>131.82</td>
<td>-0.2%</td>
<td>118.56</td>
<td>-10.2%</td>
<td>118.56</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Ireland. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food of almost 10%.

In particular, the estimated reduction of FW for the whole country is 9.9%. The higher estimated reduction, compared to the baseline scenario, is registered for Southern region (-10.4% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Northern and Western region (-10% in Intervention and socioeconomic improvement scenario).
17  Italy

According to 2017 Eurostat data, the population of Italy amounts to 60,589,445. The Gross Domestic Product (GDP) per capita on purchasing power parity is 28,400 euro, with relevant regional differences ranging from 17,100 euro per capita of Calabria area to 42,200 euro per capita of the South Tyrol region. There are 25,864,500 households, with an average size of 2.3 persons. The average employment rate is 58%, while the level of tertiary education is 19.3%.

**Figure 14: Italy - FW estimations before and after intervention**

Note: graphical differences are not in the colours, but in the scale.
### Table 17: Italy – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement Household FW (kg/year)</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Intervention and socioeconomic improvement Household FW (kg/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Difference with baseline</td>
<td>Difference with baseline</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>94.64</td>
<td>94.12</td>
<td>85.02</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-10.2%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Piemonte</td>
<td>92.82</td>
<td>93.08</td>
<td>83.72</td>
<td>83.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3%</td>
<td>-9.8%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Valle d’Aosta</td>
<td>95.42</td>
<td>95.16</td>
<td>85.80</td>
<td>85.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.1%</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Liguria</td>
<td>89.44</td>
<td>89.44</td>
<td>80.60</td>
<td>80.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-9.9%</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Lombardia</td>
<td>94.12</td>
<td>94.12</td>
<td>84.76</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-9.9%</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Abruzzo</td>
<td>94.64</td>
<td>94.12</td>
<td>85.28</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-9.9%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Molise</td>
<td>92.04</td>
<td>92.04</td>
<td>83.20</td>
<td>80.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-9.6%</td>
<td>-12.4%</td>
</tr>
<tr>
<td>Campania</td>
<td>96.98</td>
<td>96.72</td>
<td>87.36</td>
<td>86.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-9.9%</td>
<td>-11.0%</td>
</tr>
<tr>
<td>Puglia</td>
<td>96.20</td>
<td>95.68</td>
<td>86.32</td>
<td>85.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-10.3%</td>
<td>-10.8%</td>
</tr>
<tr>
<td>Basilicata</td>
<td>93.86</td>
<td>93.60</td>
<td>84.24</td>
<td>84.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.2%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Calabria</td>
<td>96.72</td>
<td>96.20</td>
<td>86.84</td>
<td>86.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-10.2%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Sicilia</td>
<td>96.20</td>
<td>95.94</td>
<td>85.28</td>
<td>86.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-11.4%</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Sardegna</td>
<td>95.16</td>
<td>95.16</td>
<td>85.80</td>
<td>85.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-9.8%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Bolzano/Bozen</td>
<td>95.16</td>
<td>94.64</td>
<td>85.80</td>
<td>85.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-9.8%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Trento</td>
<td>96.20</td>
<td>95.94</td>
<td>86.32</td>
<td>86.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.3%</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Veneto</td>
<td>94.64</td>
<td>94.12</td>
<td>84.76</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.5%</td>
<td>-10.4%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Friuli-Venezia Giuila</td>
<td>94.64</td>
<td>94.38</td>
<td>85.28</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-9.9%</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Emilia-Romagna</td>
<td>95.94</td>
<td>95.68</td>
<td>86.32</td>
<td>86.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.0%</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Toscana</td>
<td>91.52</td>
<td>91.52</td>
<td>82.16</td>
<td>82.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-10.2%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Umbria</td>
<td>94.64</td>
<td>94.64</td>
<td>85.28</td>
<td>85.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
<td>-9.9%</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Marche</td>
<td>93.60</td>
<td>93.34</td>
<td>84.24</td>
<td>84.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.0%</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Lazio</td>
<td>94.38</td>
<td>94.12</td>
<td>84.76</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.3%</td>
<td>-10.2%</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Italy. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%. In particular, the estimated reduction of FW for the whole country is 10.4%. The higher estimated reduction, compared to the baseline scenario, is registered for Veneto region (-10.4%), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Liguria, Lombardia and Umbria regions (-9.9%).
Lithuania

According to 2017 Eurostat data, the population of Lithuania amounts to 2,847,904. The Gross Domestic Product (GDP) per capita on purchasing power parity is 23,000 euro, 33,000 euro per capita in Sostinės regionas area and 19,100 euro per capita in the Vidurio ir vakarų region. There are 1,357,000 households, with an average size of 2.1 persons, and the number of households is, according to Eurostat data. The average employment rate is 70.4%, while the level of tertiary education is 41.7%.

Figure 15: Lithuania - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.

Table 18: Lithuania – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>97.76</td>
<td>97.76</td>
<td>0.0%</td>
<td>87.4</td>
<td>-10.6%</td>
<td>87.88</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Sostinės regionas</td>
<td>98.28</td>
<td>98.02</td>
<td>-0.3%</td>
<td>88.4</td>
<td>-10.1%</td>
<td>88.40</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Vidurio ir vakarų</td>
<td>96.98</td>
<td>96.72</td>
<td>-0.3%</td>
<td>87.4</td>
<td>-9.9%</td>
<td>87.36</td>
<td>-9.9%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Lithuania. According to the data presented in Table 3, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.
In particular, the estimated reduction of FW for the whole country is 10.1%. The higher estimated reduction, compared to the baseline scenario, is registered for Sostienes Region (-10.1% for Intervention on current situation scenario and Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Vidurio ir vakarų region (-9.9%).
19  Luxembourg

According to 2017 Eurostat data, the population of Luxembourg amounts to 590,667. The Gross Domestic Product (GDP) per capita on purchasing power parity is 74,500 euro. There are 242,400 households with an average size of 2.4 persons.
The average employment rate is 66.3%, while the level of tertiary education is 44.1%.

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luxembourg</td>
<td>98.8</td>
<td>99.32</td>
<td>0.5%</td>
<td>88.92</td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Luxembourg. According to the data presented in Table 3, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 10%.

20  Latvia

According to 2017 Eurostat data, the population of Latvia amounts to 1,950,116, according to 2017 Eurostat data. The gross domestic product (GDP) per capita on purchasing power parity is 19,600 euro.

There are 850,100 households with an average size of 2.2 persons.
The average employment rate is 70.1%, while the level of tertiary education is 33.9%.

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvia</td>
<td>98.8</td>
<td>99.32</td>
<td>0.5%</td>
<td>88.92</td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Latvia. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 10%.
Malta

According to 2017 Eurostat data, the population of Malta amounts to 460,297, according to 2017 Eurostat data. The gross domestic product (GDP) per capita on purchasing power parity is 28,700 euro. There are 183,400 households with an average size of 2.5 persons. The average employment rate is 68%, while the level of tertiary education is 26.3%.

Table 21: Malta – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Malta</td>
<td>98.8</td>
<td>99.32</td>
<td>0.5%</td>
<td>88.92</td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Malta. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 10%.
The Netherlands

According to 2017 Eurostat data, the population of the Netherlands amounts to 17,081,507. The Gross Domestic Product (GDP) per capita on purchasing power parity is 37,700 euro, with some regional differences ranging from 25,800 euro per capita of Drente area to 48,900 euro per capita of the Hovedstaden region. There are 7,819,000 households, with an average size of 2.2 persons. The average employment rate is 75.8%, while the level of tertiary education is 38.3%.

Figure 16: the Netherlands - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.

Table 22: the Netherlands – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>the Netherlands</td>
<td>96,72</td>
<td>96,72</td>
<td>0.0%</td>
<td>91,52</td>
</tr>
<tr>
<td>Groningen</td>
<td>97,24</td>
<td>96,98</td>
<td>-0.3%</td>
<td>87,36</td>
</tr>
<tr>
<td>Friesland (NL)</td>
<td>96,20</td>
<td>95,94</td>
<td>-0.3%</td>
<td>86,32</td>
</tr>
<tr>
<td>Drenthe</td>
<td>93,08</td>
<td>92.82</td>
<td>-0.3%</td>
<td>83.72</td>
</tr>
<tr>
<td>Overijssel</td>
<td>96.20</td>
<td>95.94</td>
<td>-0.3%</td>
<td>86.32</td>
</tr>
<tr>
<td>Gelderland</td>
<td>94.64</td>
<td>94.64</td>
<td>0.0%</td>
<td>85.28</td>
</tr>
<tr>
<td>Flevoland</td>
<td>99.84</td>
<td>99.32</td>
<td>-0.5%</td>
<td>89.96</td>
</tr>
<tr>
<td>Region</td>
<td>1996</td>
<td>1996</td>
<td>0.0%</td>
<td>1999</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Utrecht</td>
<td>98.80</td>
<td>98.80</td>
<td>0.0%</td>
<td>88.82</td>
</tr>
<tr>
<td>Noord-Holland</td>
<td>96.20</td>
<td>96.20</td>
<td>0.0%</td>
<td>86.84</td>
</tr>
<tr>
<td>Zuid-Holland</td>
<td>99.32</td>
<td>99.06</td>
<td>-0.3%</td>
<td>89.44</td>
</tr>
<tr>
<td>Zeeland</td>
<td>95.16</td>
<td>94.64</td>
<td>-0.5%</td>
<td>85.28</td>
</tr>
<tr>
<td>Noord-Brabant</td>
<td>97.24</td>
<td>97.24</td>
<td>0.0%</td>
<td>87.36</td>
</tr>
<tr>
<td>Limburg (NL)</td>
<td>96.46</td>
<td>96.20</td>
<td>-0.3%</td>
<td>86.84</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in the Netherlands. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.2%. The higher estimated reduction, compared to the baseline scenario, is registered for Flevoland region (-10.4% for Intervention on current situation scenario and -9.9% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Gelderland region (-9.9% in Intervention and socioeconomic improvement scenario).
According to 2017 Eurostat data, the population of Norway amounts to 5,258,317. The Gross Domestic Product (GDP) per capita on purchasing power parity is 42,300 euro, with some regional differences ranging from 28,100 euro per capita of Hedmark og Oppland area to 49,700 euro per capita of the Oslo og Akershus region. There are 2,390,100 households, with an average size of 2.2 persons. The average employment rate is 74% while the level of tertiary education is 43.7%.

Figure 17: Norway - FW estimations before and after intervention

Table 23: Norway – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>98.02</td>
<td>98.02</td>
<td>0.0%</td>
<td>99.06</td>
<td>1.1%</td>
<td>87.36</td>
<td>-10.9%</td>
</tr>
<tr>
<td>Oslo og Akershus</td>
<td>100.88</td>
<td>101.40</td>
<td>0.5%</td>
<td>91.00</td>
<td>-9.8%</td>
<td>90.48</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Hedmark og Oppland</td>
<td>93.60</td>
<td>93.34</td>
<td>-0.3%</td>
<td>84.24</td>
<td>-10.0%</td>
<td>83.98</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Sør-Østlandet</td>
<td>95.16</td>
<td>94.64</td>
<td>-0.5%</td>
<td>85.80</td>
<td>-9.8%</td>
<td>85.28</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Agder og Rogaland</td>
<td>99.84</td>
<td>99.58</td>
<td>-0.3%</td>
<td>89.96</td>
<td>-9.9%</td>
<td>89.44</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Vestlandet</td>
<td>99.84</td>
<td>99.84</td>
<td>0.0%</td>
<td>89.96</td>
<td>-9.9%</td>
<td>89.96</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Trøndelag</td>
<td>99.58</td>
<td>99.32</td>
<td>-0.3%</td>
<td>89.44</td>
<td>-10.2%</td>
<td>89.44</td>
<td>-10.2%</td>
</tr>
</tbody>
</table>
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Norway. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.9%. The higher estimated reduction, compared to the baseline scenario, is registered for Carinthia region (-10.4% for Intervention and socioeconomic improvement scenario and -9.9% for Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Vestlandet region (-9.9%).
# Poland

According to 2017 Eurostat data, the population of Poland amounts to 37,972,964. The Gross Domestic Product (GDP) per capita on purchasing power parity is 20,500 euro, with relevant regional differences ranging from 14,100 euro per capita of Lubelskie area to 44,900 euro per capita of the Warszawski stołeczny region. There are 14,465,800 households, with an average size of 2.6 persons. The average employment rate is 66.1%, while the level of tertiary education is 30.9%.

**Figure 18: Poland - FW estimations before and after intervention**

![Map of Poland showing FW estimations before and after intervention]

*Note: graphical differences are not in the colours, but in the scale.*

**Table 24: Poland – results of FW scenarios simulations**

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Poland</td>
<td>129.48</td>
<td>129.22</td>
<td>-0.2%</td>
<td>116.48</td>
</tr>
<tr>
<td>Małopolskie</td>
<td>130.52</td>
<td>128.44</td>
<td>-1.6%</td>
<td>115.96</td>
</tr>
<tr>
<td>Śląskie</td>
<td>127.92</td>
<td>129.22</td>
<td>1.0%</td>
<td>115.44</td>
</tr>
<tr>
<td>Wielkopolskie</td>
<td>131.04</td>
<td>130.78</td>
<td>-0.2%</td>
<td>118.04</td>
</tr>
<tr>
<td>Zachodniopomorskie</td>
<td>130.00</td>
<td>129.48</td>
<td>-0.4%</td>
<td>117.00</td>
</tr>
<tr>
<td>Lubuskie</td>
<td>128.44</td>
<td>127.92</td>
<td>-0.4%</td>
<td>115.44</td>
</tr>
<tr>
<td>Dolnośląskie</td>
<td>129.22</td>
<td>128.96</td>
<td>-0.2%</td>
<td>116.48</td>
</tr>
</tbody>
</table>
Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Poland. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.8%. The higher estimated reduction, compared to the baseline scenario, is registered for Małopolskie region (-11.6% for Intervention and socioeconomic improvement scenario and -11.2% for Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Kujawsko-pomorskie and Podlaskie regions (-10%).
According to 2017 Eurostat data, the population of Portugal amounts to \textbf{10,309,573}. The Gross Domestic Product (GDP) per capita on \textit{purchasing power parity} is \textbf{22,600} euro. With some regional differences ranging from \textbf{19,100} euro per capita of Norte area to \textbf{29,600} euro per capita of the Área Metropolitana de Lisboa region. There are \textbf{4,102,700} households, with an average size of \textbf{2.5} persons.

The average employment rate is \textbf{67.8\%}, while the level of tertiary education is \textbf{25\%}.

\textbf{Figure 19: Portugal - FW estimations before and after intervention}

\textit{Note: graphical differences are not in the colours, but in the scale.}
Table 25: Portugal – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
</tr>
<tr>
<td>Portugal</td>
<td>125.84</td>
<td>125.84</td>
<td>113.36</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Norte</td>
<td>124.54</td>
<td>124.28</td>
<td>111.8</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Algarve</td>
<td>127.14</td>
<td>127.14</td>
<td>114.4</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Centro (PT)</td>
<td>124.02</td>
<td>124.28</td>
<td>111.8</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Lisboa</td>
<td>126.88</td>
<td>126.88</td>
<td>113.88</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Alentejo</td>
<td>123.24</td>
<td>123.24</td>
<td>110.76</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Região Autónoma dos Açores</td>
<td>127.92</td>
<td>127.92</td>
<td>115.44</td>
<td>-9.8%</td>
</tr>
<tr>
<td>Região Autónoma da Madeira</td>
<td>126.10</td>
<td>126.10</td>
<td>113.36</td>
<td>-10.1%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Portugal. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%. In particular, the estimated reduction of FW for the whole country is 10.3%. The higher estimated reduction, compared to the baseline scenario, is registered for Algarve region (-10.4% for Intervention and socioeconomic improvement scenario and -10% for Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Alentejo and Região Autónoma da Madeira (-10.1%).
According to 2017 Eurostat data, the population of Romania amounts to **19,644,350**. The Gross Domestic Product (GDP) per capita on purchasing power parity is **18,400** euro. with some regional differences ranging from **11,400** euro per capita of Nord-Est area to **42,400** euro per capita of the București-Ilfov region. There are **7,482,400** households, with an average size of **2.6** persons. The average employment rate is **63.9%**, while the level of tertiary education is **17.8%**.

**Figure 20: Romania - FW estimations before and after intervention**

*Note: graphical differences are not in the colours, but in the scale.*
Table 26: Romania – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Romania</td>
<td>127.92</td>
<td>127.66</td>
<td>-0.2%</td>
<td>120.64</td>
</tr>
<tr>
<td>Nord-Vest</td>
<td>127.92</td>
<td>127.92</td>
<td>0.0%</td>
<td>115.18</td>
</tr>
<tr>
<td>Centru</td>
<td>128.44</td>
<td>127.92</td>
<td>-0.4%</td>
<td>115.44</td>
</tr>
<tr>
<td>Nord-Est</td>
<td>127.40</td>
<td>126.88</td>
<td>-0.4%</td>
<td>114.40</td>
</tr>
<tr>
<td>Sud-Est</td>
<td>127.92</td>
<td>127.92</td>
<td>0.0%</td>
<td>115.44</td>
</tr>
<tr>
<td>Sud - Muntenia</td>
<td>127.14</td>
<td>126.88</td>
<td>-0.2%</td>
<td>114.40</td>
</tr>
<tr>
<td>Bucureşti - Ilfov</td>
<td>129.48</td>
<td>129.48</td>
<td>0.0%</td>
<td>116.48</td>
</tr>
<tr>
<td>Sud-Vest Oltenia</td>
<td>125.84</td>
<td>125.84</td>
<td>0.0%</td>
<td>113.36</td>
</tr>
<tr>
<td>Vest</td>
<td>129.48</td>
<td>128.96</td>
<td>-0.4%</td>
<td>116.48</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Romania. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 10.2%. The higher estimated reduction, compared to the baseline scenario, is registered for Centru region (-10.1% for Intervention on current situation scenario and -10.5% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Sud - Muntenia and Bucureşti - Ilfov regions (-10%).
Slovenia

According to 2017 Eurostat data, the population of Slovenia amounts to **2,065,895**. The Gross Domestic Product (GDP) per capita on purchasing power parity is **25,100** euro. **20,600** euro per capita in Vzhodna Slovenija area and **30,000** euro per capita in the Zahodna Slovenija region. There are **881,100** households, with an average size of **2.3** persons. The average employment rate is **71.6%**, while the level of tertiary education is **44.5%**.

Figure 21: Slovenia - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.

Table 27: Slovenia – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement scenario Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>97.76</td>
<td>97.50</td>
<td>-0.3%</td>
<td>87.88</td>
<td>-10.1%</td>
<td>87.88</td>
<td>-10.1%</td>
</tr>
<tr>
<td>Vzhodna Slovenija</td>
<td>96.72</td>
<td>96.72</td>
<td>0.0%</td>
<td>86.84</td>
<td>-10.2%</td>
<td>86.84</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Zahodna Slovenija</td>
<td>98.80</td>
<td>98.80</td>
<td>0.0%</td>
<td>88.92</td>
<td>-10.0%</td>
<td>88.92</td>
<td>-10.0%</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Slovenia. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%. In particular, the estimated reduction of FW for the whole country is 10.1%. The higher estimated reduction, compared to the baseline scenario, is registered for Vzhodna Slovenija region (-10.2%). While the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Zahodna Slovenija (-10%).
According to 2017 Eurostat data, the population amounts to 5,434,343. The Gross Domestic Product (GDP) per capita on purchasing power parity is 22,400 euro, with consistent regional differences ranging from 17,900 euro per capita of Stredné Slovensko area to 52,800 euro per capita of the Bratislavský kraj region. There are 1,874,500 households, with an average size of 2.7 persons. The average employment rate is 71.6%, while the level of tertiary education is 44.5%.

Figure 22: Slovakia - FW estimations before and after intervention

![Slovakia FW estimations](image)

Note: graphical differences are not in the colours, but in the scale.

Table 28: Slovakia – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Slovakia</td>
<td>128.96</td>
<td>128.96</td>
<td>0.0%</td>
<td>115.70</td>
</tr>
<tr>
<td>Bratislavský kraj</td>
<td>129.48</td>
<td>129.48</td>
<td>0.0%</td>
<td>110.76</td>
</tr>
<tr>
<td>Západné Slovensko</td>
<td>128.44</td>
<td>127.92</td>
<td>-0.4%</td>
<td>116.48</td>
</tr>
<tr>
<td>Stredné Slovensko</td>
<td>129.22</td>
<td>128.96</td>
<td>-0.2%</td>
<td>116.48</td>
</tr>
<tr>
<td>Východné Slovensko</td>
<td>129.48</td>
<td>128.96</td>
<td>-0.4%</td>
<td>116.48</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Slovakia. According to the data presented above, the
presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of almost 10%.
In particular, the estimated reduction of FW for the whole country is 10.03%. The higher estimated reduction, compared to the baseline scenario, is registered for Bratislavský kraj region (-14.5% Intervention on current situation scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Východné Slovensko region (-10%).
Spain

According to 2017 Eurostat data, the population of Spain amounts to 46,528,024. The Gross Domestic Product (GDP) per capita on purchasing power parity is 27,100 euro, with some regional differences ranging from 19,000 euro per capita of Extremadura area to 36,600 euro per capita of the Madrid region. There are 18,512,500 households, with an average size of 2.5 persons. The average employment rate is 53.5%, while the level of tertiary education is 31.7%.

Figure 23: Spain - FW estimations before and after intervention

Table 29: Spain – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline Household FW (kg/year)</th>
<th>Baseline Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention on current situation Household FW (kg/year)</th>
<th>Difference with baseline</th>
<th>Intervention and socioeconomic improvement Household FW (kg/year)</th>
<th>Difference with baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>122.20</td>
<td>127.92</td>
<td>4.7%</td>
<td>114.92</td>
<td>-6.0%</td>
<td>114.92</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Galicia</td>
<td>120.12</td>
<td>125.58</td>
<td>4.5%</td>
<td>113.36</td>
<td>-5.6%</td>
<td>112.84</td>
<td>-6.1%</td>
</tr>
<tr>
<td>Principado de Asturias</td>
<td>118.04</td>
<td>124.02</td>
<td>5.1%</td>
<td>111.80</td>
<td>-5.3%</td>
<td>111.80</td>
<td>-5.3%</td>
</tr>
<tr>
<td>Cantabria</td>
<td>120.12</td>
<td>126.10</td>
<td>5.0%</td>
<td>113.36</td>
<td>-5.6%</td>
<td>113.36</td>
<td>-5.6%</td>
</tr>
<tr>
<td>País Vasco</td>
<td>119.60</td>
<td>125.32</td>
<td>4.8%</td>
<td>112.84</td>
<td>-5.7%</td>
<td>112.84</td>
<td>-5.7%</td>
</tr>
<tr>
<td>Comunidad Foral de Navarra</td>
<td>122.72</td>
<td>128.96</td>
<td>5.1%</td>
<td>115.96</td>
<td>-5.5%</td>
<td>115.96</td>
<td>-5.5%</td>
</tr>
<tr>
<td>La Rioja</td>
<td>122.72</td>
<td>128.44</td>
<td>4.7%</td>
<td>115.96</td>
<td>-5.5%</td>
<td>115.44</td>
<td>-5.9%</td>
</tr>
<tr>
<td>Aragón</td>
<td>121.16</td>
<td>126.88</td>
<td>4.7%</td>
<td>113.88</td>
<td>-6.0%</td>
<td>113.88</td>
<td>-6.0%</td>
</tr>
</tbody>
</table>

Note: Graphical differences are not in the colours, but in the scale.
Comunidad de Madrid 122.72 128.44 4.7% 115.44 -5.9% 115.44 -5.9%
Castilla y León 118.56 125.32 5.7% 112.84 -4.8% 112.84 -4.8%
Castilla-La Mancha 121.68 127.40 4.7% 114.66 -5.8% 114.92 -5.6%
Extremadura 119.60 125.84 5.2% 113.36 -5.2% 113.36 -5.2%
Cataluña 120.64 127.66 5.8% 114.92 -4.7% 114.92 -4.7%
Comunidad Valenciana 122.20 127.66 4.5% 114.92 -6.0% 114.92 -6.0%
Illes Balears 122.72 128.44 4.7% 115.96 -5.5% 115.44 -5.9%
Andalucía 122.20 127.66 4.5% 114.92 -6.0% 114.92 -6.0%
Región de Murcia 123.24 128.44 4.2% 115.96 -5.9% 115.96 -5.9%
Ciudad Autónoma de Ceuta 127.92 133.64 4.5% 120.64 -5.7% 120.12 -6.1%
Ciudad Autónoma de Melilla 127.92 133.38 4.3% 120.12 -6.1% 120.12 -6.1%
Canarias 122.20 127.92 4.7% 115.44 -5.5% 114.92 -6.0%

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Spain. According to the data presented above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of 6%, while the only increase of socioeconomic parameters causes an increase in food waste generated at the household level. The higher estimated reduction, compared to the baseline scenario, is registered for Ciudad Autónoma de Melilla (-6.1%). While the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Cataluña region (-4.7%).
30 Sweden

According to 2017 Eurostat data, the population of Sweden amounts to $9,995,153$. The Gross Domestic Product (GDP) per capita on purchasing power parity is $35,600$ euro, with some regional differences ranging from $28,600$ euro per capita of Norra Mellansverige area to $48,800$ euro per capita of the Stockholm region. There are $4,862,700$ households, with an average size of 1.8 persons. The average employment rate is 76.9%, while the level of tertiary education is 43.3%.

Figure 24: Sweden - FW estimations before and after intervention

Note: graphical differences are not in the colours, but in the scale.
Table 30: Sweden – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW (kg/year)</td>
<td>Household FW (kg/year)</td>
<td>Difference with baseline</td>
<td>Household FW (kg/year)</td>
</tr>
<tr>
<td>Sweden</td>
<td>97.5</td>
<td>97.24</td>
<td>-0.3%</td>
<td>87.88</td>
</tr>
<tr>
<td>Stockholm</td>
<td>98.80</td>
<td>98.80</td>
<td>0.0%</td>
<td>88.92</td>
</tr>
<tr>
<td>Östra Mellansverige</td>
<td>98.28</td>
<td>98.28</td>
<td>0.0%</td>
<td>88.40</td>
</tr>
<tr>
<td>Småland med öarna</td>
<td>95.68</td>
<td>95.16</td>
<td>-0.5%</td>
<td>85.80</td>
</tr>
<tr>
<td>Sydsverige</td>
<td>100.62</td>
<td>100.36</td>
<td>-0.3%</td>
<td>90.48</td>
</tr>
<tr>
<td>Västsverige</td>
<td>96.72</td>
<td>96.46</td>
<td>-0.3%</td>
<td>86.84</td>
</tr>
<tr>
<td>Norra Mellansverige</td>
<td>94.64</td>
<td>94.12</td>
<td>-0.5%</td>
<td>85.28</td>
</tr>
<tr>
<td>Mellersta Norrlanid</td>
<td>98.28</td>
<td>98.02</td>
<td>-0.3%</td>
<td>88.40</td>
</tr>
<tr>
<td>Övre Norrlanid</td>
<td>96.72</td>
<td>96.72</td>
<td>0.0%</td>
<td>87.36</td>
</tr>
</tbody>
</table>

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in Sweden. According to the data presented in Table 3, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste of almost 10%.

In particular, the estimated reduction of FW for the whole country is 9.9%. The higher estimated reduction, compared to the baseline scenario, is registered for Norra Mellansverige region (-10.4% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Stockholm region (-10%).
31 United Kingdom

According to 2017 Eurostat data, the population of United Kingdom amounts to 65,844,122. The Gross Domestic Product (GDP) per capita on purchasing power parity is 31.100 euro, with consistent regional differences ranging from 19.000 euro per capita of Southern Scotland area to the 49.600 euro per capita of the Inner London — East region (with the relevant exception of the Inner London — West region, with a GDP of 184.600 euro per capita).

There are 28,830.100 households, with an average size of 2.3 persons, and the number of households is, according to Eurostat data, the average employment rate is 74.1%, while the level of tertiary education is 43.2%.

Figure 25: United Kingdom - FW estimations before and after intervention

Table 31: United Kingdom – results of FW scenarios simulations

<table>
<thead>
<tr>
<th>Region</th>
<th>Baseline</th>
<th>Socioeconomic improvement scenario</th>
<th>Intervention on current situation scenario</th>
<th>Intervention and socioeconomic improvement scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household FW</td>
<td>Household FW</td>
<td>Difference with baseline</td>
<td>Household FW</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>103.48</td>
<td>97.50</td>
<td>-5.8%</td>
<td>87.88</td>
</tr>
<tr>
<td>Tees Valley and Durham</td>
<td>101.92</td>
<td>96.20</td>
<td>-5.6%</td>
<td>86.84</td>
</tr>
<tr>
<td>Northumberland and Tyne and Wear</td>
<td>101.40</td>
<td>98.02</td>
<td>-3.3%</td>
<td>88.40</td>
</tr>
<tr>
<td>Cumbria</td>
<td>100.88</td>
<td>96.72</td>
<td>-4.1%</td>
<td>87.36</td>
</tr>
<tr>
<td>Greater Manchester</td>
<td>100.88</td>
<td>101.14</td>
<td>0.3%</td>
<td>91.00</td>
</tr>
<tr>
<td>Region</td>
<td>Last Year</td>
<td>Change</td>
<td>Last Year</td>
<td>Change</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------</td>
<td>--------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>Lancashire</td>
<td>99.84</td>
<td>-3.1%</td>
<td>87.36</td>
<td>-12.5%</td>
</tr>
<tr>
<td>Cheshire</td>
<td>99.32</td>
<td>-3.7%</td>
<td>86.32</td>
<td>-13.1%</td>
</tr>
<tr>
<td>Merseyside</td>
<td>99.06</td>
<td>-2.4%</td>
<td>87.36</td>
<td>-11.8%</td>
</tr>
<tr>
<td>East Yorkshire and Northern Lincolnshire</td>
<td>98.80</td>
<td>-2.1%</td>
<td>87.36</td>
<td>-11.6%</td>
</tr>
<tr>
<td>North Yorkshire</td>
<td>98.80</td>
<td>-3.7%</td>
<td>85.80</td>
<td>-13.2%</td>
</tr>
<tr>
<td>South Yorkshire</td>
<td>98.80</td>
<td>-0.8%</td>
<td>88.40</td>
<td>-10.5%</td>
</tr>
<tr>
<td>West Yorkshire</td>
<td>98.28</td>
<td>0.8%</td>
<td>89.44</td>
<td>-9.0%</td>
</tr>
<tr>
<td>Derbyshire and Nottinghamshire</td>
<td>98.28</td>
<td>0.3%</td>
<td>88.92</td>
<td>-9.5%</td>
</tr>
<tr>
<td>Leicestershire, Rutland and Northamptonshire</td>
<td>98.28</td>
<td>-1.3%</td>
<td>87.36</td>
<td>-11.1%</td>
</tr>
<tr>
<td>Lincolnshire</td>
<td>98.28</td>
<td>-1.9%</td>
<td>86.84</td>
<td>-11.6%</td>
</tr>
<tr>
<td>Herefordshire, Worcestershire and Warwickshire</td>
<td>98.28</td>
<td>-2.6%</td>
<td>86.32</td>
<td>-12.2%</td>
</tr>
<tr>
<td>Shropshire and Staffordshire</td>
<td>98.02</td>
<td>-4.0%</td>
<td>84.76</td>
<td>-13.5%</td>
</tr>
<tr>
<td>West Midlands</td>
<td>97.76</td>
<td>1.1%</td>
<td>88.92</td>
<td>-9.0%</td>
</tr>
<tr>
<td>East Anglia</td>
<td>97.24</td>
<td>-0.5%</td>
<td>86.84</td>
<td>-10.7%</td>
</tr>
<tr>
<td>Bedfordshire and Hertfordshire</td>
<td>97.24</td>
<td>2.7%</td>
<td>89.96</td>
<td>-7.5%</td>
</tr>
<tr>
<td>Essex</td>
<td>97.24</td>
<td>0.5%</td>
<td>88.40</td>
<td>-9.1%</td>
</tr>
<tr>
<td>Inner London - West</td>
<td>97.24</td>
<td>3.2%</td>
<td>91.00</td>
<td>-6.4%</td>
</tr>
<tr>
<td>Inner London - East</td>
<td>96.98</td>
<td>5.6%</td>
<td>93.08</td>
<td>-4.0%</td>
</tr>
<tr>
<td>Outer London - East and North East</td>
<td>96.72</td>
<td>4.0%</td>
<td>90.48</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Outer London - South</td>
<td>96.72</td>
<td>5.4%</td>
<td>92.04</td>
<td>-4.8%</td>
</tr>
<tr>
<td>Outer London - West and North West</td>
<td>96.72</td>
<td>3.8%</td>
<td>90.48</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Berkshire, Buckinghamshire and Oxfordshire</td>
<td>96.72</td>
<td>1.1%</td>
<td>87.88</td>
<td>-9.1%</td>
</tr>
<tr>
<td>Surrey, East and West Sussex</td>
<td>96.46</td>
<td>-0.3%</td>
<td>86.84</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Hampshire and Isle of Wight</td>
<td>96.20</td>
<td>0.0%</td>
<td>86.84</td>
<td>-9.7%</td>
</tr>
<tr>
<td>Kent</td>
<td>96.20</td>
<td>1.1%</td>
<td>87.88</td>
<td>-8.6%</td>
</tr>
<tr>
<td>Gloucestershire, Wiltshire and Bristol/Bath area</td>
<td>96.20</td>
<td>1.1%</td>
<td>87.36</td>
<td>-9.2%</td>
</tr>
<tr>
<td>Dorset and Somerset</td>
<td>96.20</td>
<td>-3.8%</td>
<td>83.72</td>
<td>-13.0%</td>
</tr>
<tr>
<td>Cornwall and Isles of Scilly</td>
<td>95.94</td>
<td>-1.4%</td>
<td>85.28</td>
<td>-11.1%</td>
</tr>
<tr>
<td>Devon</td>
<td>95.68</td>
<td>0.3%</td>
<td>86.32</td>
<td>-9.8%</td>
</tr>
<tr>
<td>West Wales and The Valleys</td>
<td>95.68</td>
<td>-1.6%</td>
<td>85.02</td>
<td>-11.1%</td>
</tr>
</tbody>
</table>
According to the data, to a reduction of food waste in the United Kingdom, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.

In particular, the estimated reduction of FW for the whole country is 15.1%. The higher estimated reduction, compared to the baseline scenario, is registered for Tees Valley and Durham region (-15.3% for Intervention and socioeconomic improvement scenario), while the lowest amount of food waste reduction after the intervention, excluding the national value, is registered in Northern Ireland region (-5%).

Note: differences among the national values estimation and the sum of single regional values are due to computational approximations.

<table>
<thead>
<tr>
<th>Region</th>
<th>FW</th>
<th>% Red</th>
<th>Reduction</th>
<th>Estimated Reduction</th>
<th>Total Reduction</th>
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<tbody>
<tr>
<td>East Wales</td>
<td>96.72</td>
<td>-4.1%</td>
<td>87.36</td>
<td>86.40</td>
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<tr>
<td>North Eastern Scotland</td>
<td>95.16</td>
<td>0.0%</td>
<td>85.80</td>
<td>85.28</td>
<td></td>
</tr>
<tr>
<td>Highlands and Island</td>
<td>95.68</td>
<td>1.1%</td>
<td>86.32</td>
<td>86.32</td>
<td></td>
</tr>
<tr>
<td>Eastern Scotland</td>
<td>97.76</td>
<td>3.3%</td>
<td>88.40</td>
<td>88.14</td>
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<tr>
<td>West Central Scotland</td>
<td>97.76</td>
<td>3.9%</td>
<td>88.40</td>
<td>87.88</td>
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</tr>
<tr>
<td>Southern Scotland</td>
<td>95.94</td>
<td>3.1%</td>
<td>86.32</td>
<td>86.32</td>
<td></td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>98.54</td>
<td>5.9%</td>
<td>88.92</td>
<td>88.40</td>
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</tr>
<tr>
<td>Tees Valley and Durham</td>
<td>96.20</td>
<td>-5.6%</td>
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<td>86.32</td>
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<tr>
<td>Northumberland and Tyne and Wear</td>
<td>98.02</td>
<td>-3.3%</td>
<td>88.40</td>
<td>88.40</td>
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<tr>
<td>Cumbria</td>
<td>100.88</td>
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<td></td>
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<td>Greater Manchester</td>
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<td>91.00</td>
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</tr>
<tr>
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<td>96.72</td>
<td>-3.1%</td>
<td>87.36</td>
<td>86.84</td>
<td></td>
</tr>
<tr>
<td>Cheshire</td>
<td>95.68</td>
<td>-3.7%</td>
<td>86.32</td>
<td>85.80</td>
<td></td>
</tr>
<tr>
<td>Merseyside</td>
<td>96.72</td>
<td>-2.4%</td>
<td>87.36</td>
<td>86.84</td>
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</tr>
<tr>
<td>East Yorkshire and Northern Lincolnshire</td>
<td>96.72</td>
<td>-2.1%</td>
<td>87.36</td>
<td>87.36</td>
<td></td>
</tr>
<tr>
<td>North Yorkshire</td>
<td>95.16</td>
<td>-3.7%</td>
<td>85.80</td>
<td>85.28</td>
<td></td>
</tr>
<tr>
<td>South Yorkshire</td>
<td>98.02</td>
<td>-0.8%</td>
<td>88.40</td>
<td>88.40</td>
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<tr>
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<td>99.06</td>
<td>0.8%</td>
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<tr>
<td>Derbyshire and Nottinghamshire</td>
<td>98.54</td>
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<td>88.66</td>
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<tr>
<td>Leicestershire. Rutland and Northamptonshire</td>
<td>96.98</td>
<td>-1.3%</td>
<td>87.36</td>
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<tr>
<td>Lincolnshire</td>
<td>96.46</td>
<td>-1.9%</td>
<td>86.84</td>
<td>86.84</td>
<td></td>
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<tr>
<td>Herefordshire. Worcestershire and Warwickshire</td>
<td>95.68</td>
<td>-2.6%</td>
<td>86.32</td>
<td>86.32</td>
<td></td>
</tr>
</tbody>
</table>

Results from simulations highlight the relevance of policy interventions for the reduction of food waste in United Kingdom. According to the data above, the presence of an intervention having an impact on the 10% of the population leads to a reduction of food waste greater than 10%.
References


