



Review of EU legislation and policies with implications on food waste

Final Report

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Reducing food waste through social innovation

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Colophon

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Summary

The purpose of the report *Review of EU legislation and policies with implications on food waste*, together with the report *Review of EU Member States legislation and policies addressing food waste*, is to review and analyze "...legislation and policies impacting food waste generation at EU level and in individual Member and Associated States covered by the FUSIONS consortium, by drawing on existing literature and publicly available information".

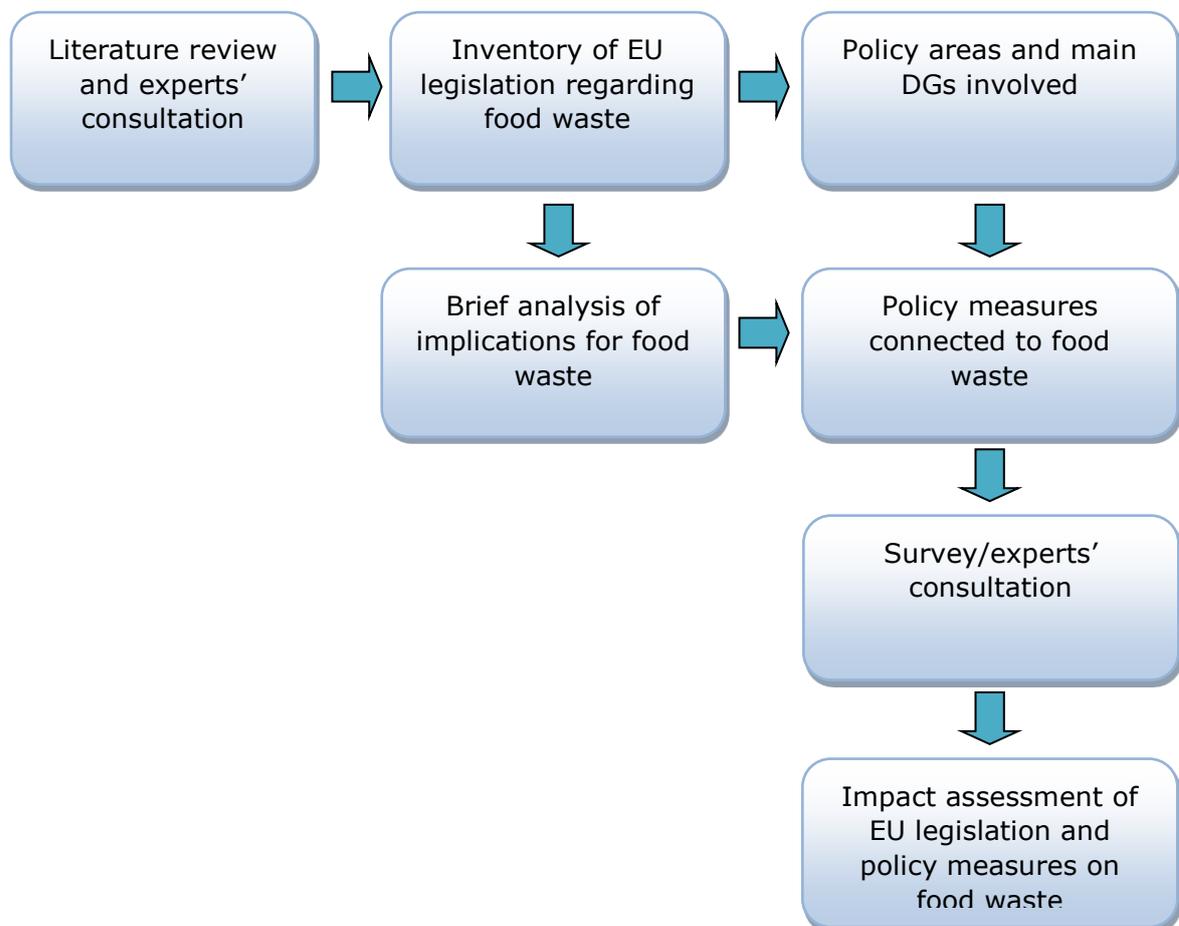
The report comprises two main sections:

- Methodology (Chapter 3)
- Review of EU legislation and policies with implications for food waste (Chapter 4)

METHODOLOGY

The report used a mix of qualitative methodologies aimed at reviewing the state of EU legislative and policy tools with implications for food waste. The methodology mix was designed to address the specific characteristics and constraints of each section of the work.

Figure S1. Methodological approach



REVIEW OF EU LEGISLATION AND POLICIES IMPACTING ON FOOD WASTE

Inventory of EU legislation and policies impacting on food waste

53 EU legislative acts impacting on food waste have been identified:

- 29 Regulations.
- 10 Directives.
- 3 Decisions.
- 10 Communications.
- 1 Parliament Resolution. This is not an EU legislative act, but it has been included in the inventory because its content is relevant to any policy or strategy against food waste.

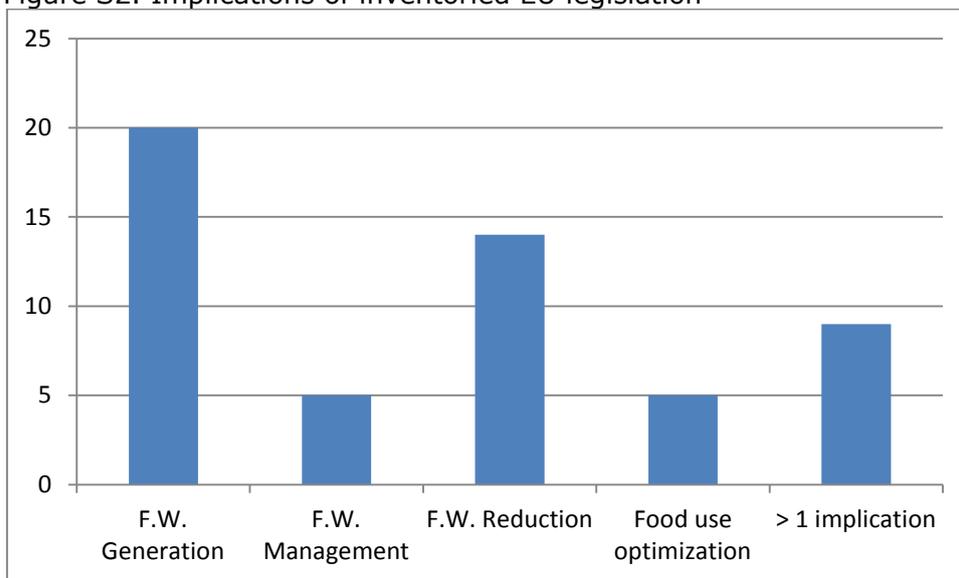
Table S1. EU legislative acts impacting on food waste

N°	Legislative act	N°	Legislative act
1	COM (2014) 398 final	28	Reg n° 589/2008
2	COM (2014) 397 final	29	COM (2007) 136 final
3	COM (2013) 260 final	30	Reg n° 832/2007
4	Reg n° 56/2013	31	Dir 2006/112/EC
5	Reg n° 1308/2013	32	Reg n° 1664/2006
6	Reg n° 1380/2013	33	Reg n° 1881/2006
7	Dec n° 1386/2013/EU	34	COM (2005) 666 final
8	COM (2012) 60	35	Reg n° 1/2005
9	Reg n° 43/2012	36	Reg n° 183/2005
10	Reg n° 44/2012	37	Dir 2004/12/EC
11	European Parliament Resolution 2011/2175 (INI)	38	Reg n° 852/2004
12	COM (2011) 571 final	39	Reg n° 853/2004
13	Reg n° 142/2011	40	Reg n° 882/2004
14	Reg n° 543/2011	41	COM (2003) 301 final
15	Reg n° 1169/2011	42	Dir 2002/99/EC
16	COM (2010) 235 final	43	Reg n° 178/2002
17	Dir 2010/75/EU	44	Reg n° 2150/2002
18	COM (2010) 384	45	Reg n° 999/2001
19	Reg n° 849/2010	46	Reg n° 1639/2001
20	Dec n° 2009/564/EC	47	Dir 2000/29/EC
21	Dec n° 2009/578/EC	48	Dir 1999/31/EC
22	Dir 2009/28/EC	49	Reg n° 850/1998
23	Reg n° 43/2009	50	Reg n° 258/1997
24	Reg n° 129/2009	51	Dir 94/62/EC
25	Reg n° 163/2009	52	Reg n° 315/1993
26	Reg n° 1069/2009	53	Dir 85/374/EEC
27	Dir 2008/98/EC		

Analysis of the implications

The potential implications of inventoried EU legislation have been grouped in five clusters (implying Food Waste Generation, implying Food Waste Management, implying Food Waste Reduction, implying Food Use Optimization, and more than one implication) and summarized in the figure below.

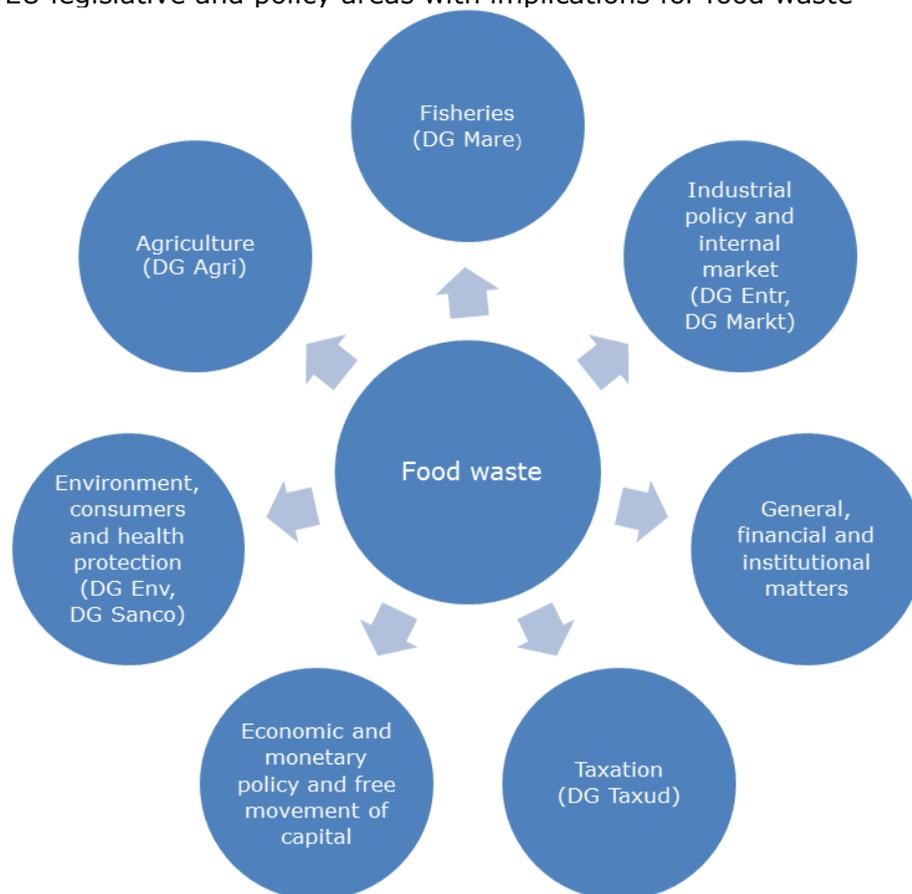
Figure S2. Implications of inventoried EU legislation



Policy areas

Fifty-two legislative acts with implications for food waste have been issued and applied within seven of the twenty areas (Chapters) covered by EU legislation and policies.

Figure S3. EU legislative and policy areas with implications for food waste



In addition to these to the areas noted above, more specific topics and policy measures regarding food waste have been identified and summarized below:

- **Animal by-products and feedingstuffs:** Restrictions on uses of animal by-products because animal residual flows could be dangerous.
- **Catch restrictions:** Quota/limit of fish species for each EU Member State. When a catch exceeds the limit, fish has to be discarded. A discard ban was approved in the Common Fisheries Policy reform, but not effectively applied.
- **Contaminants in food:** When a contaminant exceeds Maximum Residue Levels (MRLs), food must be discarded. However, the zero tolerance criterion for some substances could lead to avoidable food waste as detection methods improve, since technological innovation makes it easy to find negligible amounts of banned substances. Additional scientific evidence and improved knowledge about the real implications of these substances for human and animal health should be sought to avoid the waste of edible and healthy food.
- **Eco-label criteria:** While eco-labels do not cause food waste, if revised they could contribute to food waste reduction. The eco-label is an EU brand that rewards the best products and services from an environmental point of view, while maintaining high performance standards. Food waste prevention measures should be taken into account in the criteria for the assignment of the eco-label.
- **Food information:** The law establishes the rights of consumers to safe food and to accurate and reliable information. Labelling helps consumers to make informed choices while purchasing; however, label information is sometimes unclear. Confusion about the different meanings of "best before," "use by," and "sell by" dates is still a cause of food waste.
- **Free distribution:** The Common Agricultural Policy (CAP) encourages the free distribution of vegetables and fruit withdrawn from the market to charitable organizations and other establishments like penal institutions, schools, children's holiday camps, hospitals, old people's homes, etc., by paying producer organizations 100% of the incurred costs.
- **Hygiene rules:** Several rules exist to ensure hygienic conditions in all segments of Food Supply Chain (FSC). However, some experts caution that a rule excessively binding and disproportionate to practical hygiene needs might cause food waste.
- **Marketing standards:** Edible and safe food products that do not meet aesthetic criteria (e.g. size and shape) can be taken out of the food supply chain.
- **Packaging:** Innovation can both extend food life and simplify labels, thus improving readability.
- **Producer liability:** Recently introduced EU legislation has exempted some producers from liability. One of these cases is connected to food donation, which is a food waste reduction measure.
- **Resource efficiency and waste:** Policy measures targeting strategies to increase resource efficiency are often connected to food waste reduction, because wasting food also means wasting resources used in food production.
- **Statistics:** While this topic does not directly correlate to food waste generation or reduction, it could be a relevant issue. Available statistics on food waste differ

from one EU Member State to another because States often use different definitions and criteria. Policies, measures, or initiatives aimed at preventing or managing food waste cannot be effective if they are not based on precise and sound data.

- **VAT:** Fiscal measures can be an effective tool in a prevention strategy. However, Value Added Tax (VAT) sometimes obstructs efforts to reduce food waste, such as food donation. The VAT amount depends on the market value at the moment of donation. In some countries, if the product cannot be sold, its price, and therefore the VAT of the product, is calculated as “zero.” Conversely, in other EU Member States, the price of a product to be donated is calculated to be the same as its purchase price. Thus, VAT is assessed at the same level. This could discourage donations, with obvious negative consequences. An EU harmonization of VAT in such cases could help to reduce food waste.

Most of these areas can have either a positive (in terms of reduction or prevention) or negative (in terms of generation) impact on food waste, depending on how legislative and policy tools are applied.

Impact assessment

Resource efficiency and waste-related measures, and VAT (Value Added Tax) and free distribution-related measures provide the largest contribution to food waste reduction, mainly through Communication (2014) 397 final¹, Directive 2006/112/EC, Communication (2014) 398 final, Regulation No 1308/2013, and Directive 2008/98/EC, which overall emerged as the most positive (top-five) piece of legislation.

The results of the impact assessment suggested that the contribution of these policy measures would be even greater if they were managed differently; for example, if they were at times addressed more specifically to food waste (and not only to waste, as in Directive 2008/98/EC) and at other times more binding from the legislative point of view, by translating certain recommendations or suggestions into mandatory measures (e.g. converting Communications into Regulations).

Moreover, “food information,” “hygiene rules,” and “marketing standards,” having the largest negative impacts on food waste, are the topics of the worst-five legislative acts: Regulation (EU) No 543/2011, Regulation (EU) No 1169/2011, Regulation (EC) No 853/2004, Regulation (EC) No 589/2008, and Regulation (EC) No 852/2004. Thus, the provisions regarding these topics represent policy measures in which strategic changes could result in a larger contribution to food waste reduction.

¹ Communication (2014) 397 and Communication (2014) 398 are part of the Circular Economy (CE) package, that - despite withdrawn by the EC - was a major reference during the development of the present work. Within the context of this study experts evaluated the CE package as positively addressing FW reduction.

In March 2015 the CE package was taken up to the level of the Vice -President Tiemmermans and therefore out of the direct influence of the different Directorate Generals. The Commission considered the CE package as one of the major tools to transform Europe into a more competitive resource-efficient economy and to reduce food waste. It was decided to withdraw the 2014 version in order to present a new and more ambitious circular economy package within the end of 2015.

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1 Introduction

Food waste is an urgent issue that must be solved to achieve global food security and ensure good environmental governance. One of the objectives of FUSIONS is the development of a Common Food Waste Policy that does not yet exist in the European Union. Legislation and policies addressing food waste are multilevel and multisectoral; therefore, there are multiple—and not always explicit—policy effects to be considered. There are a number of policy trade-offs in the relationship between waste and food safety.

This report is a step towards improving general understanding of the food waste challenge and its connections with policymaking at EU level. The work focused on EU legislation and policies, inventorying the legislative acts regarding food waste (section 4.1), analyzing their implications (section 4.2), identifying the main policy areas and measures (section 4.3), and assessing the topics and legislative tools where changes and/or improvements could contribute to significantly reduce food waste² (section 4.5).

² Until March 2015 - as indicated in the Circular Economy (CE) package - the objective set by the EC was to reduce food waste of the 30% by 2025. The CE package was withdrawn by the EC in March 2015 to present a more ambitious package within the end of 2015.

2 Objectives of the report

According to the FUSIONS Document of Work, the purpose of sub-task T3.1.1 is to inventory and analyze "legislation and policies impacting food waste generation at EU level and in individual Member and Associated States covered by the FUSIONS] consortium, by drawing on existing literature and publicly available information". The review must also take into account foreseeable revisions of waste prevention policies within the timeframe of the FUSIONS Project.

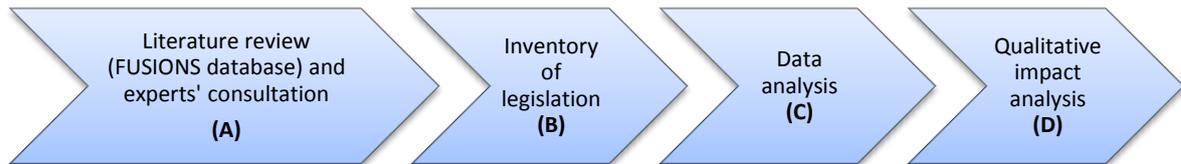
More specifically, the report aims to:

- Inventory the EU legislative and policy tools impacting on food waste.
- Analyze the types of implications (positive or negative) for food waste.
- Identify the measures where changes could promote food waste reduction and prevention.
- Provide the necessary base of information for the development of the other tasks within FUSIONS' WP3.
 - T3.1.2 Scenario analysis of current trends of food waste generation.
 - T3.2.1 Socio-economic policy incentives.
 - T3.2.3 Policies and measures to stimulate socially innovative solutions to address food waste.
 - T3.3 Indicators and criteria for a food waste policy evaluation framework.
 - T3.4 Guidelines for a European Common Policy encouraging food waste prevention and reduction through social innovation.

3 Methodology

The report used a mix of qualitative methodologies aimed at reviewing the state of legislative and policy tools with implications for food waste in the European Union. This methodology was designed to address the specific characteristics and constraints of each section (Figure 3.1).

Figure 3.1 Steps of the methodological approach of the study



A) Analysis of the FUSIONS database and experts' consultation

Literature previously classified in the WP1 FUSIONS Database (302 references as of May 2014) was analyzed to identify existing studies concerning European legislation and policies having either positive or negative impacts on food waste.

The results obtained from the FUSIONS database were integrated with an experts' consultation conducted electronically among FUSIONS experts who were asked to indicate legislative acts not included in the list.

The information obtained from the FUSIONS literature database and the consultation was used to complete an *Inventory of Legislation Form*.

B) Inventory of legislation of European legislation and policies impacting on food waste

Classification criteria

The European legislative and policy acts quoted in the examined publications as relevant to food waste were identified through the EUR-Lex database³ and reported in the Inventory form according to the following classification criteria:

- Type of legislative/policy act (Regulation, Directive, Decision, Communication, etc.)
- Full title of the document
- Coordinates of the act (date, number, EU classification heading, etc.)
- Brief description of the measure
- Link to the document in the EUR-Lex database
- Information source (the reference number in the FUSIONS database)
- Notes
- Submitter of the item
- Submitter's institution

Types of legislative and policy documents

The first part of the research consisted of the identification of the European legislation and policies that, according to the available literature, have an impact on food waste. The identification was made through the EUR-Lex database, which collects and classifies all

³ EUR-Lex: <http://eur-lex.europa.eu/en/index.htm>

official documents issued by the European Institutions. These documents are mostly Regulations, Directives, Decisions, Preparatory Acts (i.e. COM, JOIN, SEC, and SWD documents), and European Court Cases (see Table 3.1). In the inventory form used for the analysis, the most common types of documents were already listed in flag cells.

Table 3.1 Types of European legislative documents inventoried

<i>Type of document</i>	<i>Description</i>
Regulation	A Regulation is a legislative act of the EU that becomes immediately and simultaneously enforceable as law in all Member States. When a Regulation comes into force it supersedes national laws dealing with the same subject, and subsequent national legislation must be made in the light of the Regulation.
Directive	A Directive is a legislative act of the EU that is not directly applicable but needs to be transposed into national law. Generally, Member States have to make changes to their laws in order to implement Directives correctly.
Decision	A Decision is a legal act that is binding upon those Member States or individuals to which it is addressed. Not every EU Decision generates new national laws.
COM Documents	COM Documents are proposals and other acts adopted in the framework of a legislative procedure. Preparatory acts can take the form of communications, recommendations, reports, white papers, and green papers.

Identifying the legislation and policy frameworks through the classification headings of European Union Legislation

European legislation and policy documents are classified in the EUR-Lex database according to the Directory of European Union Legislation. The analytical structure of the Directory consists of twenty chapters, which include all subjects covered by European policies and legislation.

Table 3.2 Chapters of the Directory of European Union Legislation

<i>Code</i>	<i>Chapters/Legislative and policy areas</i>
01	General, financial and institutional matters
02	Customs Union and free movement of goods
03	Agriculture
04	Fisheries
05	Freedom of movement for workers and social policy
06	Right of establishment and freedom to provide services
07	Transport policy
08	Competition policy
09	Taxation
10	Economic and monetary policy and free movement of capital
11	External relations
12	Energy
13	Industrial policy and internal market
14	Regional policy and coordination of structural instruments
15	Environment, consumers and health protection
16	Science, information, education and culture
17	Law relating to undertakings
18	Common Foreign and Security Policy
19	Area of freedom, security and justice
20	People's Europe

These chapters—here named also *legislative and policy areas*—have four levels of detail, each of them identified by two numbers. Thus, the identification code—the “classification heading” indicated in all the European legislation and policy documents collected by the

EUR-Lex database—is composed of four pairs of numbers. The first pair goes from 01 to 20 to identify the twenty chapters (see Table 3.2)

In some cases, the inventoried documents had more than one classification code because that legislative act involved more than one legislative and policy area.

C) Data analysis

Update of inventoried legislation and policy acts

A significant number of acts deemed to impact on food waste have been modified or repealed by later legislation and policy measures. Therefore, since the publication dates of the examined literature ranged from 1980 to 2013, it was necessary to check the validity of the inventoried acts and update the inventory by replacing the acts that are no longer applicable with the new legislation in force.

Identification of types of implications for food waste

Very few studies specifically aimed to investigate the effects of legislation and policy measures on food waste. Most of the inventoried legislation and policy measures are simply mentioned in the context of food waste research applied to other types of analyses.

Regarding the legislation and policies indicated in the available literature as impacting (negatively or positively) on food waste, five types of implications have been defined:

- Implying or potentially implying food waste generation,
- Addressed to food waste management,
- Actively addressed to food waste reduction,
- Actively addressed to food use optimization, and
- More than one implication.

These typologies represent the main categories used in the inquiry to distinguish the different effects of the examined measures on the generation, management, and reduction of food waste and optimization of food use (see Table 3.3).

Beyond the definition of the type of implication, the inventory form also requested a detailed description of the impact of the identified measure.

Table 3.3 Types of implications of legislation and policies impacting on food waste

<i>Type of implication</i>	<i>Description</i>
i) Legislation and policies implying or potentially implying food waste generation	The examined measure implies (or potentially implies) the generation of food waste as a collateral effect of its implementation, and does not have any provision to prevent or manage this inconvenience.
ii) Legislation and policies addressed to food waste management	The examined measure contains provisions to manage the generation of food waste.
iii) Legislation and policies actively addressed to food waste reduction	The examined measure contains provisions targeted to reduce the generation of food waste.
iv) Legislation and policies actively addressed to food use optimization	The examined measure contains provisions actively addressed to recover food excluded or potentially excluded from the supply chain and make use of it for human nutrition.
v) Legislation and policies with more than one implication	The examined measure contains more than one type of implication for food waste.

D) Qualitative impact analysis

The survey “EU legislation impact assessment” was carried out via SurveyMonkey⁴ (see Annex 1) among FUSIONS partners. It consisted of 64 questions focusing on a shortlist of 32 of the 53 inventoried European legislative acts. Only those with more significant positive/negative implications for food waste have been included in the survey.

For each legislative act in the survey, respondents were asked to assess its potential impact on food waste on a five-step scale from “no impact” to “very large impact.” In addition, respondents were asked to identify the changes/improvements required to make each legislative act more effective in delivering a contribution to reduction of food waste. Until early 2015 the objective of the EU was the 30% reduction of food waste by 2025, as proposed in the Circular Economy (CE) package. It was decided to withdraw the 2014 version of the CE package in order to present a new and more ambitious package within the end of 2015.

The results of the survey were used to rank the legislative acts according to the respondents’ assessments. The different scores on the five-step scale were given the following score values:

- No impact: 0
- Very small impact: 1
- Small impact: 2
- Large impact: 3
- Very large impact: 4

For each legislative act, the number of respondents for each score was multiplied by the score value. These sub-sums were added together and divided by the number of respondents who assessed the legislative act in question. This gives an “average score” for each legislative act.

E) Major limitations of the study

The study suffered due to a number of challenges characterizing the food waste discourse:

- Food waste quantification is still rather weak. A lack of consistent and comparable data limits the methodological tools that can be utilized for policy analysis.
- Food waste is an extremely complex subject characterized by a number of different interrelated and multisectoral drivers. For instance, the FUSIONS report *Drivers of current food waste generation, threats of future increase and opportunities for reduction* identified 271 food waste drivers, which constitute a wide, multifaceted, interconnected problem across all stages of the food supply chain, from primary production on farms, to final consumption in food services and households.
- Food waste is multisectoral; therefore, it is addressed by different policy areas at different levels with a number of interconnected and indirect effects.
- The food waste policy arena is evolving rapidly together with the political agenda of national governments and under the pressure of the market and civil society.
- A variety of stakeholders with different agendas are engaged in this sector.
- The EU is made up of different countries and diverse political approaches, and its diversity emerges particularly strongly in any issues related to food including food waste. This results in a variety of governmental approaches, laws and regulations, initiatives, and business and consumer behaviors towards food waste.

⁴ SurveyMonkey is an online survey software. Website: <https://www.surveymonkey.com>

4 Review of EU legislation and policies with implications for food waste

4.1 Inventory of EU legislation with major implications for food waste

Fifty-three EU legislative acts in force in December 2014 have been identified and included in the inventory. Forty of them have been traced from an extended literature review and thirteen from an experts' consultation. The inventory comprises:

- 29 Regulations. These acts become immediately and simultaneously enforceable as law in all Member States.
- 10 Directives. These are not directly applicable but need to be first transposed into national law.
- 3 Decisions. These are legal acts binding upon those Member States or individuals to which they are addressed. Not every EU decision generates new national laws.
- 10 Communications. These are proposals or preparatory acts adopted in the framework of a legislative procedure.
- 1 Parliament Resolution. This is not a true act of EU legislation, but has been included in the inventory because its content appears relevant to any policy or strategy aimed at preventing food waste.

The fifty-three acts are listed chronologically in the following inventory, from the most recent to the oldest:

1. COM (2014) 398 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions towards a circular economy: A zero waste programme for Europe⁵.
2. COM (2014) 397 final. Proposal for a Directive of the European Parliament and of the Council amending Directives 2008/98/EC on waste, 94/62/EC on packaging and packaging waste, 1999/31/EC on the landfill of waste, 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment⁶.
3. COM (2013) 260 final. Proposal for a Regulation of the European Parliament and of the Council on animal health.
4. Commission Regulation (EU) No 56/2013 of 16 January 2013 amending Annexes I and IV to Regulation (EC) No 999/2001 of the European Parliament and of the

⁵ Communication (2014) 397 is part of the Circular Economy package that was withdrawn by the EC in March 2015 to present a more ambitious package within the end of 2015. However the Communication was a major reference during the development of the present work and experts evaluated the CE package as positively addressing FW reduction.

⁶ Also Communication (2014) 398 is part of the Circular Economy package that was withdrawn by the EC in March 2015. Experts evaluated the CE package as positively addressing FW reduction.

Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies.

5. Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products and repealing Council Regulations (EEC) No 922/72, (EEC) No 234/79, (EC) No 1037/2001 and (EC) No 1234/2007.
6. Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC.
7. Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 "Living well, within the limits of our planet."
8. COM (2012) 60 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Innovating for Sustainable Growth: A Bioeconomy for Europe.
9. Council Regulation (EU) No 43/2012 of 17 January 2012 fixing for 2012 the fishing opportunities available to EU vessels for certain fish stocks and groups of fish stocks which are not subject to international negotiations or agreements.
10. Council Regulation (EU) No 44/2012 of 17 January 2012 fixing for 2012 the fishing opportunities available in EU waters and, to EU vessels, in certain non-EU waters for certain fish stocks and groups of fish stocks which are subject to international negotiations or agreements.
11. European Parliament Resolution 2011/2175 (INI) of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU.
12. COM (2011) 571 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Roadmap to a Resource Efficient Europe.
13. Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive.
14. Commission Implementing Regulation (EU) No 543/2011 of 7 June 2011 laying down detailed rules for the application of Council Regulation (EC) No 1234/2007 in respect of the fruit and vegetables and processed fruit and vegetables sectors.
15. Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004.

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16. COM (2010) 235 final. Communication from the Commission to the Council and the European Parliament on future steps in bio-waste management in the European Union.
 17. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
 18. COM (2010) 384 final. Communication from the Commission to the European Parliament and the Council: The TSE Roadmap 2. A Strategy paper on Transmissible Spongiform Encephalopathies for 2010-2015.
 19. Commission Regulation (EU) No 849/2010 of 27 September 2010 amending Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics.
 20. Commission Decision 2009/564/EC of 9 July 2009 establishing the ecological criteria for the award of the Community eco-label for campsite service.
 21. Commission Decision 2009/578/EC of 9 July 2009 establishing the ecological criteria for the award of the Community eco-label for tourist accommodation service.
 22. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.
 23. Council Regulation (EC) No 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required.
 24. Commission Regulation (EC) No 129/2009 of 13 February 2009 amending Regulation (EC) No 197/2006 as regards the validity of the transitional measures relating to former foodstuffs.
 25. Commission Regulation (EC) No 163/2009 of 26 February 2009 amending Annex IV to Regulation (EC) No 999/2001 of the European Parliament and of the Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies.
 26. Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation).
 27. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
 28. Commission Regulation (EC) No 589/2008 of 23 June 2008 laying down detailed rules for implementing Council Regulation (EC) No 1234/2007 as regards marketing standards for eggs.
 29. COM (2007) 136 final. Communication from the Commission to the Council and the European Parliament - A policy to reduce unwanted by-catches and eliminate discards in European fisheries {SEC(2007) 380} {SEC(2007) 381}.
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30. Commission Regulation (EC) No 832/2007 of 16 July 2007 amending Regulation (EC) No 197/2006 as regards uses of former foodstuffs and the extension of the validity of the transitional measures relating to such foodstuffs.
 31. Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax.
 32. Commission Regulation (EC) No 1664/2006 of 6 November 2006 amending Regulation (EC) No 2074/2005 as regards implementing measures for certain products of animal origin intended for human consumption and repealing certain implementing measures.
 33. Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
 34. COM (2005) 666 final. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. Taking sustainable use of resources forward: A Thematic Strategy on the prevention and recycling of waste. Brussels, 21.12.2005.
 35. Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97.
 36. Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene.
 37. Directive 2004/12/EC of the European Parliament and of the Council of 11 February 2004 amending Directive 94/62/EC on packaging and packaging waste - Statement by the Council, the Commission and the European Parliament.
 38. Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs.
 39. Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin.
 40. Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules.
 41. COM (2003) 301 final. Communication from the Commission. Towards a thematic strategy on the prevention and recycling of waste. Brussels, 27.5.2003.
 42. Council Directive 2002/99/EC of 16 December 2002 laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption.
 43. Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.
 44. Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics.
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45. Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies.
 46. Commission Regulation (EC) No 1639/2001 of 25 July 2001 establishing the minimum and extended Community programmes for the collection of data in the fisheries sector and laying down detailed rules for the application of Council Regulation (EC) No 1543/2000.
 47. Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community.
 48. Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.
 49. Council Regulation (EC) No 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.
 50. Regulation (EC) No 258/97 of the European Parliament and of the Council of 27 January 1997 concerning novel foods and novel food ingredients.
 51. European Council Directive 94/62/EC on packaging and packaging waste.
 52. Council Regulation (EEC) No 315/93 of 8 February 1993 laying down Community procedures for contaminants in food.
 53. Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products.

4.2 Analysis of EU legislation with major implications for food waste

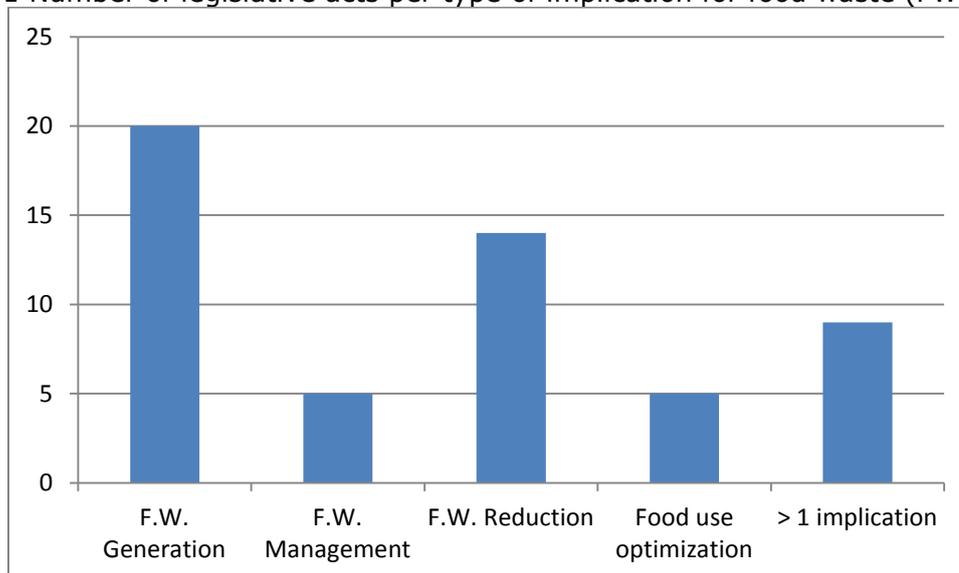
The EU legislative framework reflects the complexity of the food waste challenge. It has implications for the entire food chain—from farmers to consumers—involving a number of different interrelated sectors, such as local and regional authorities, households and consumers, the processing and hospitality industry, the retail supply chain, and businesses and institutions providing catering services. Such a complex issue is addressed and has implications of a different nature in a number of policy areas.

In this work, the types of EU legislation implications have been grouped in five clusters:

- Cluster 1: Legislation potentially implying food waste generation.
- Cluster 2: Legislation potentially implying food waste management.
- Cluster 3: Legislation potentially implying food waste reduction.
- Cluster 4: Legislation potentially implying food use optimization.
- Cluster 5: Legislation with more than one type of implication.

The distribution of the acts in the previous five clusters is shown in the figure below.

Figure 4.1 Number of legislative acts per type of implication for food waste (FW)



Cluster 1: Legislation potentially implying food waste generation

Num 9, 10, 23, 49.

Acts: Council **Regulation (EU) No 44/2012** of 17 January 2012.
Council **Regulation (EU) No 43/2012** of 17 January 2012.
Council **Regulation (EC) No 43/2009** of 16 January 2009.
Council **Regulation (EC) No 850/98** of 30 March 1998.

Description. These Regulations fix for their respective year the fishing opportunities available in EU waters and, to EU vessels, in certain non-EU waters for certain fish stocks and groups of fish stocks that are subject to international negotiations or agreements. Moreover, these Regulations set the minimum landing size of fish.

Implication analysis. The fishing opportunities referred to in the Regulations include catch limits for the respective year; in the text the 'total allowable catch' (TAC) is defined as the quantity that can be taken and landed from each fish stock every year. Considering that each Member State has an allocated quota (a proportion of the TAC), when a catch exceeds the limit, the fish have to be discarded. This rule can

lead to food waste because the fish thrown back into the sea often do not survive. Consequently, this act can be classified as implying or potentially implying food waste generation.

Num 14

Act. Commission implementing **Regulation (EC) No 543/2011** of 7 June 2011.

Description. This Regulation lays down general and specific marketing standards for:

- Apples, citrus fruit, and kiwifruit.
- Lettuces and curled-leaved and broad-leaved endives.
- Peaches and nectarines.
- Pears.
- Strawberries.
- Sweet peppers.
- Table grapes.
- Tomatoes.

Implication analysis. Marketing standards include rules establishing what products should look like (not related to health issues) in terms of size and shape; thus they potentially imply a waste of those products that, although edible, do not meet the aesthetic criteria.

Num 15

Act. **Regulation (EU) No 1169/2011** of the European Parliament and of the Council of 25 October 2011.

Description. This Regulation prescribes what type of and how food information must be provided to consumers in order to ensure a high level of consumer health protection. It combines two Directives (Dir 2000/13/EC on labelling, presentation, and advertising of foodstuffs and Dir 90/496/EEC on nutrition labelling for foodstuffs) into one piece of legislative act that changes the previous law on food labelling including:

- Mandatory nutrition information on processed foods (from 13 December 2016).
- Mandatory origin labelling of unprocessed meat from pigs, sheep, goats, and poultry.
- Highlighting allergens (e.g. peanuts or milk) in the list of ingredients.
- Better legibility, i.e. minimum text size.
- Applying requirements regarding allergen information to foods that are not pre-packed, including those sold in restaurants and cafés.

Implication analysis. Regulation No 1169/2011 improves legislation with regard to food information because it pays more attention to health, environmental, and ethical issues than was done in the past. However, it does not deal with certain aspects considered by some experts to be crucial, such as how to communicate the durability, storage, and safe use of food. Consumers are sometimes confused as to the meaning of "use by" and "best before" dates, and food banks do not use food over the "best before" date, leading to the waste of food that is still safe.

Num 20, 21

Act. Commission **Decision 2009/564/EC** of 9 July 2009.

Commission **Decision 2009/578/EC** of 9 July 2009.

Description. These Decisions establish the ecological criteria for the award of the Community eco-label for campsite services and tourist accommodation services respectively.

Implication analysis. Campsite and tourist accommodation services, as expressly specified within the Decisions, should include the provision of food services. However, food waste prevention measures are not included in the mandatory criteria nor within the optional criteria for the award of the Community eco-label. Only the separate collection of kitchen waste for composting purposes has been included among the optional criteria.

Num 22

Act. Council **Directive 2009/28/EC** of 23 April 2009.

Description. This Directive establishes a common framework for the promotion of energy from renewable sources. It sets mandatory national targets for the overall share of energy from renewable sources, including targets for gross final consumption of energy and for the share of energy from renewable sources in transport.

Implication analysis. Directive 2009/28/EC encourages the use of anaerobic digestion to treat food waste. This could be a potential disincentive for the prevention of food waste, which could be partly justified by its use for energy production.

Num 28

Act. Commission **Regulation (EC) No 589/2008** of 23 June 2008.

Description. This Regulation regulates many aspects of the production, transportation, selling, etc. of eggs. Moreover, it prescribes that the minimum durability (the "best before" date) of eggs shall be fixed at not more than twenty-eight days after laying (Article 13).

Implication analysis. The minimum durability period might be too short in some regions, such as the Nordic countries where the climate is relatively cold and very few cases of salmonella are observed. As a consequence of this rule, eggs in these countries could be wasted before perishing. Thus, this Regulation can be classified as potentially implying food waste generation. This effect is mentioned in several reports analyzing labels and expiration dates. However, eggs are one of those cases where analysis of the connection between waste and legislation requires particular attention because the potential risks to consumer health must be considered.

Num 33

Act. Commission **Regulation (EC) No 1881/2006** of 19 December 2006.

Description. This Regulation lays down Community procedures to protect public health from contaminants in food. Regarding genotoxic carcinogens, contaminants, or cases where current exposure of the population or vulnerable groups is close to or exceeds the tolerable intake, the Regulation establishes that maximum levels should be set As Low As Reasonably Achievable (ALARA).

Implication analysis. Products exceeding tolerance limits of contaminants may be neither sold nor consumed and must be discarded. However, with improvements in detection technology, the imposition of a "zero tolerance" limit for certain contaminants may exclude certain products from the market altogether.

Num 36, 38, 39, 40, 42

Acts. **Regulation (EC) No 183/2005** of the European Parliament and of the Council of 12 January 2005.

Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004.

Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004.

Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004.

Council **Directive 2002/99/EC** of 16 December 2002.

Description. These legislative acts are part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. Food business operators carrying out activities such as production, transport, handling, storage, etc. shall comply with the general hygiene provisions. In addition, these legislative acts prescribe that food companies must adhere to the principles of Hazard Analysis and Critical Control Points (HACCP).

Implication analysis. This work does not intend to argue that these measures cause food waste. On the contrary, hygiene rules generally prevent food from being wasted. However, when very wide safety margins are required and excessive limitations are imposed, food waste might occur, as seen, for example, in the ban on using some foods (e.g. bread) to feed animals or the time limits for selling certain products,

such as eggs. There are some indications that mandatory date labels may lead to the discarding of usable eggs. The "sell by" date for table eggs is set at twenty-one days after laying to ensure food safety. The "best before" date is set at twenty-eight days after laying to ensure the quality of fresh eggs. This implies that consumers can be certain about the freshness and safety of table eggs for one week after purchase. However, for retailers that refrigerate eggs, twenty-one days might be too short. In addition, the time required by national authorities to execute controls is too long. This shortens the life of foodstuffs that then run the risk of being wasted.

Num 45

Act. Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001.

Description. This Regulation lays down rules for the prevention, control, and eradication of transmissible spongiform encephalopathies (TSEs) in animals. It shall apply to the production and placing on the market of live animals and products of animal origin, and in certain specific cases to the export thereof.

Implication analysis. This Regulation imposes a general prohibition on the consumption of animal protein from mammals by ruminants, the monitoring of TSEs, a grading of countries by risk, and a definition of specified risk material (SRM) and its use, to prevent and eradicate TSEs. Annex IV of this regulation is also known as the extended feed ban: all by-products containing protein tissue from land animals may not be fed to productive livestock or fish. Thus, the valorization of harmless material for animal feed is prohibited. This extended feed ban overshadows the species-to-species ban put forth in Article 11 of Regulation (EC) 1069/2009, which states that animals may not eat animal by-products from their "own" kind.

Num 47

Act. Council Directive 2000/29/EC of 8 May 2000.

Description. This Directive focuses on keeping invasive organisms harmful to plants and plant-based products out of the Community and controlling their spread within it.

Implication analysis. If contaminated foodstuffs are identified, the entire batch is destroyed or sent back. In the case of perishable products, this may generate food waste.

Num 50

Act. Regulation (EC) No 258/97 of the European Parliament and of the Council of 27 January 1997.

Description. This Regulation prescribes that new foods and new food ingredients are subject to approval procedures.

Implication analysis. In some cases it takes a long time for new foods and food ingredients to be accepted even when these are eaten elsewhere in the world, prohibiting valuable foods from being eaten.

Num 52

Act. Council Regulation (EEC) No 315/93 of 8 February 1993.

Description. This Regulation establishes Community procedures to set maximum tolerance limits for substances not intentionally added to food, in keeping with the principle of As Low As Can Reasonably be Achieved (ALACRA).

Implication analysis. Products exceeding tolerance limits of contaminants may be neither sold nor consumed and must be discarded. Zero tolerance of certain contaminants has been mandated; however, with improvements in detection technology, this may exclude certain products from the market altogether.

Cluster 2: Legislation addressed to food waste management

Num 16

Act. Communication (2010) 235 final. On future steps in bio-waste management in the European Union.

Description. This Communication explains the steps considered necessary by the Commission to optimize the management of bio-waste.

Implication analysis. Bio-waste as defined in the Waste Framework Directive includes garden and park waste; food and kitchen waste from households, restaurants, caterers, and retail premises; and comparable waste from food processing plants. Thus, this document includes many different elements relating to food waste management. In particular, the Communication includes the following initiatives at EU level:

- Prevention of bio-waste.
- Treatment of bio-waste.
- Protection of EU soils.
- Research and innovation.
- Re-enforced focus on full implementation of the existing EU acquis.

Num 19

Act. Commission Regulation (EU) No 849/2010 of 27 September 2010.

Description. This Regulation indicates how waste statistics must be reported to Eurostat and amended the Regulation (EC) No 2150/2002 of the European Parliament and of the Council (Num 44 of the inventory).*Implication analysis.* Regulation No 949/2010 does not have a direct implication for food waste, however, statistics are an essential tool to identify effective policies. The lack of reliable and consistent data heavily affects policy consistency. Policies, measures, and initiatives aimed at preventing food waste cannot be effective if they are not based on precise data.

Num 24

Act. Commission Regulation (EC) No 129/2009 of 13 February 2009.

Description. This Regulation amended Regulation (EC) No 197/2006 extending the validity of the transitional measures until 31 July 2011.

Implication analysis. The measures listed in the Regulation pertain to the collection, transport, treatment, use, and disposal of former foodstuffs; therefore it implies food waste management.

Num 44

Act. Regulation No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics.

Description. The objective of this Regulation is to establish a framework for the production of Community statistics on the generation, recovery, and disposal of waste. It has been amended by Regulation (EU) No 849/2010 (Num 19 of the inventory), but is still valid.

Implication analysis. No direct implications for food waste generation or reduction are identified in the inventory; however, reliable statistics are an essential tool for the identification of effective policies.

Num 46

Act. Commission Regulation (EC) No 1639/2001 of 25 July 2001.

Description. This Regulation implements the Council Regulation (EC) No. 1543/2000 establishing a Community framework for the collection and management of the data needed to implement the common fisheries policy.

Implication analysis. The main subject of the Regulation is the collection of data. Accurate statistics are a key factor in the management of a sector, policy, or event such as waste. One of the four chapters that constitute the annex of the Regulation lays down the method by which catches, landings, and discards are evaluated.

Unfortunately, the data on discards is neither homogeneous, accurate, nor readily available.

Cluster 3: Legislation actively addressed to food waste reduction

Num 3

Act. **Communication (2013) 260** final. Proposal for a Regulation on animal health.

Description. This Communication aims to reduce the complexity of current legislation on animal health. The proposal streamlines roughly forty legislative documents into a single law.

Implication analysis. The document focuses on the prevention and control of diseases that are transmissible to animals or humans. In light of the FUSIONS definition of food waste therefore, this could imply a reduction of "food waste" due to disease. The proposal addresses the following specific issues:

- Disease detection, notification, and information obligations of operators and Member States.
- Preventive measures, such as vaccination and health checks.
- Requirements for contingency plans and disease eradication programmes.
- Requirements for the identification and traceability of animals.
- Registration and approval of establishments and health certificate requirements.

Num 6, 29

Act. **Regulation (EU) No 1380/2013** of the European Parliament and of the Council of 11 December 2013.

Communication (2007) 136 final. From the Commission to the Council and the European Parliament, Brussels 28.03.2007.

Description. This Communication suggests a policy to reduce unwanted by-catches and progressively eliminate discards in European fisheries. The Regulation reforms the Common Fisheries Policy.

Implication analysis. The reduction of unwanted by-catches and discards is the main implication of these documents for food waste. The documents—most significantly the Regulation—include an obligation to land all catches of species that are subject to EU restrictions. This obligation, known as the "discard ban," will come into force over the period 2015–2019, and will apply to an increasing number of species over that time. However, the rules include a small amount of flexibility as well as exceptions for banned species and those that are highly likely to survive if returned to the sea rather than landed. The science and process for determining such species are currently lacking.

Num 7

Act. **Decision No. 1386/2013/EU** of the European Parliament and of the Council.

Description. The decision has the following priority objectives:

- To protect, conserve, and enhance the Union's natural capital.
- To turn the European Union into a resource-efficient, green, and competitive low-carbon economy.
- To safeguard the European Union's citizens from environment-related pressures and risks to health and well-being.
- To maximize the benefits of European Union environment legislation by improving implementation.
- To improve the knowledge and evidence base for European Union environment policy.
- To secure investment for environment and climate policy and address environmental externalities.
- To improve environmental integration and policy coherence.
- To enhance the sustainability of the European Union's cities.
- To increase the European Union's effectiveness in addressing international environmental and climate-related challenges.

Implication analysis. In the second priority objective (“To turn the Union into a resource-efficient, green, and competitive low-carbon economy”), this Decision states that “To set a framework for action to improve resource efficiency aspects beyond GHG emissions and energy, targets for reducing the overall lifecycle environmental impact of consumption will be set, in particular in the food, housing and mobility sectors. The Commission should present a comprehensive strategy to combat unnecessary food waste and work with Member States in the fight against excessive food waste generation.”

Num 8

Act. Communication (2012) 60. Innovating for sustainable growth: A bioeconomy for Europe.

Description. The Europe 2020 Strategy calls for bioeconomy as a key element of smart and green growth in Europe.

Implication analysis. Bioeconomy encourages the use of sustainable and greener production processes in primary production sectors (such as agriculture, forestry, fisheries, and aquaculture) and in processing industries (such as food, pulp and paper, chemical, biotechnological, and energy industries) in order to contribute to addressing major societal and economic challenges, including food security, climate change, fossil resource dependency, and scarce natural resources, as well as economic growth and job creation. The achievement of these goals involves waste reduction.

Num 12

Act. Communication (2011) 571 final. Roadmap to a resource efficient Europe.

Description. The Communication promotes the idea of a competitive and inclusive EU economy that provides access to high living standards with lower environmental impacts by 2050.

Implication analysis. To reach the targets set in the Communication, all resources should be sustainably managed, from raw materials to energy, water, air, land, and soil. Food waste reduction must be considered one of drivers for the development of resource efficiency.

Num 18

Act. Communication (2010) 384 final, Brussels of 16 July 2010.

Description. The first Transmissible Spongiform Encephalopathy (TSE) Roadmap provided an outline of possible future changes to EU measures in the short, medium, and long-term while still making food safety and consumer protection the highest priority. The aim of this Communication is to outline future possible amendments to the TSE rules allowing a review of the measures.

Implication analysis. Communication (2010) 384 provides some “policy options” to avoid the waste of certain animal parts and by-products not allowed to enter the food/feed chains. In particular this legislative act asks for:

- A review of the list of Specified Risk Materials⁷ (SRM) to be removed from the food and feed chains, on the basis of the new epidemiological situation and the data gained from Bovine Spongiform Encephalopathy (BSE) surveillance.
- A review of the current feed ban⁸ provisions, toward a possible gradual lifting of the feed ban provisions for non-ruminants (pigs, poultry, and fish).

⁷ Specified Risk Materials (SRM) are the organs considered to harbour the BSE infectivity in an animal affected by BSE. In the EU, the removal of SRM from the food and feed chains has been mandatory since 2000. The removal of SRM is the most important public health protection measure. The list of SRM is established based on scientific knowledge and a high level of precaution. The restrictions on the use of SRM include a prohibition on using certain products for the production of derived products for use in food and feed such as tallow, gelatine, collagen, and dicalcium phosphate.

⁸ A ban on the feeding of mammalian meat and bone meal (MBM) to cattle, sheep, and goats was introduced as of July 1994. In order to manage the risk of the presence of prohibited material in ruminant feed through cross-contamination, this partial ban was extended to a total EU-wide suspension on the use of processed animal proteins (PAPs) in feed for any animals farmed for the production of food on 1 January 2001 with some exceptions, like the use of fish meal for non-

Num 25

Act. Commission **Regulation (EC) No 163/2009** of 26 February 2009.

Description. This Regulation lays down rules for the prevention, control, and eradication of certain transmissible spongiform encephalopathies.

Implication analysis. The Regulation contains some measures targeted to reduce food waste. Regulation (EC) No 163/2009 states that the feeding to farmed animals of materials of plant origin and stuffs containing such products following the detection of insignificant amounts of bone spicules may be permitted by Member States if there has been a favourable risk assessment. The risk assessment shall take into account the amount and possible source of contamination and the final destination of the consignment.

Num 32

Act. Commission **Regulation (EC) No 1664/2006** of 6 November 2006.

Description. This Regulation amended Regulation (EC) No 2074/2005 as regards implementing measures for certain products of animal origin intended for human consumption and repealing certain implementing measures.

Implication analysis. Regulation (EC) No 1664/2006 tries to simplify the certification procedures for fishery products and live bivalve mollusks and to incorporate the animal health certification requirements set out in some Commission Decisions. Considering that overly lengthy procedures could shorten the life of products and facilitate waste occurrence, the simplification could have a positive effect by reducing potential waste.

Num 34

Act. **Communication (2005) 666** final. From the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions.

Description. The Sixth Environmental Action Programme (EAP) introduced the concept of Thematic Strategies, the framework for action at EU level in each of the concerned priorities. A draft version of its content was the Communication (2003) 301 final (num 41 of the inventory).

Implication analysis. The EU Commission published the Thematic Strategy on the prevention and recycling of waste, setting the direction for EU action in the field of waste. The aim of the Strategy is to reduce the negative impact on the environment caused by waste throughout its lifecycle, from production to disposal. The implication for food waste is related to the particular emphasis on biodegradable waste, two-thirds of which must be redirected for disposal using methods other than landfill as is required under Directive 1999/31/EC.

Num 35

Act. Council **Regulation (EC) No 1/2005** of 22 December 2004.

Description. Regulation (EC) No 1/2005 requires specific measures to improve animal welfare during transport. It strengthens existing legislation on animal welfare during transport by identifying the parties involved and their respective responsibilities, putting in place enhanced measures on authorizations and inspections, and laying down stricter rules on transport.

Implication analysis. Deaths on arrival (DOA) is an indicator of animal welfare during transport. By improving animal welfare, the number of DOA may be limited and food waste consequently reduced (considering DOA as animals that were ready to slaughter).

Num 37

ruminants. Any presence of prohibited constituents of animal origin in feed breaches the feed ban since the legislation does not provide for any tolerance.

Act. **Directive 2004/12/EC** of the European Parliament and of the Council of 11 February 2004.

Description. This Directive establishes certain amendments to the Directive 94/62/EC (num 51 of the inventory) on packaging and packaging waste.

Implication analysis. Directive 2004/12/EC aims to improve product packaging. Better packaging can promote less food waste.

Num 41

Act. **Communication (2003) 301** final. From the Commission.

Description. Communication (2003) 301 has been inspired by a lifecycle approach to resource management. Prevention and recycling are seen as part of a broader waste management strategy to reduce the environmental impact of resource use. This Communication led to Communication (2005) 666 final (num 34 of the inventory).

Implication analysis. Biodegradable waste, which includes food waste, has a negative environmental impact. For example, biodegradable materials when landfilled produce methane (CH₄), a powerful greenhouse gas. Prevention and recycling, which promote waste reduction, are pillars of the policy aimed at reducing the environmental impact of waste, including biodegradable waste.

Num 51

Act. Council European Parliament and Council **Directive 94/62/EC** of 20 December 1994 on packaging and packaging waste.

Description. This Directive has been amended by Directive 2004/12/EC (num 37 of inventory). Directive 94/62 EC provides for measures aimed at limiting the production of packaging waste and promoting recycling, re-use, and other forms of waste recovery. Final disposal of waste should be considered a last resort.

Implication analysis. Directive 94/62/EC, which obligates Member States to meet targets for the recovery and recycling of packaging waste, also stimulates innovation in the packaging industry. Better packaging may promote less food waste, for example by extending the life of food products or helping consumers to understand the information provided on the package.

Cluster 4: Legislation addressed to food use optimization

Num 4

Act. **Commission Regulation (EU) No 56/2013** of 16 January 2013.

Description. This Regulation amends the EU Regulation 999/2001 on transmissible spongiform encephalopathies (TSEs) and reforms the rules on the use of processed animal proteins (PAPs) from non-ruminants (e.g. pigs and poultry) in feed. It is accompanied by a number of strict measures that aim to avoid the risk of cross-contamination between ruminant and non-ruminant PAPs and between feed chains intended for different species of farmed animals.

Implication analysis. Before Regulation (EU) No 56/2013 came into force, the TSE Regulation imposed a general ban on the use of PAPs in the feeding of both ruminants (e.g. cattle and sheep) and non-ruminant animals, including fish and other aquaculture animals. Now, PAPs from non-ruminant animals are allowed to be used in aqua feed. Thus, one of the effects of this regulation is the optimization of food use. The production of PAPs themselves is subject to the requirements set out in the EU animal by-products legislation (Reg No 1069/2009, Reg No 142/2011, and Reg No 749/2011). These mandate that PAPs must be derived exclusively from so-called "Category 3" animal by-products (e.g. undiseased carcasses and parts of slaughtered animals, including hides, skins, horns, and feet), undergo pressure sterilization, and be subject to controlled storage.

Num 5

Act. Council **Regulation (EC) No 1308/2013** of 17 December.

Description. Following the debate on the Communication *The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future*, the CAP has been reformed with effect from 1 January 2014. The reform covers all the main instruments of the CAP and establishes a common organization of the markets in agricultural products.

Implication analysis. This Regulation provides funding to support on-farm investment in relevant technology, including storage; moreover, it encourages the free distribution of fruit and vegetables withdrawn from the market to charitable organizations (and to other establishments like penal institutions, schools, children's holiday camps, hospitals, old people's homes, etc.) by paying (to the producer organizations) 100% (instead of 50%) of the incurred costs.

Num 30

Act. Commission **Regulation (EC) No 832/2007** of 16 July 2007.

Description. This Regulation amended Regulation (EC) No 197/2006 (on transitional measures under Regulation (EC) No 1774/2002) as regards uses of former foodstuffs and the extension of the validity of the transitional measures relating to such former foodstuffs.

Implication analysis. Regulation (EC) No 832/2007 prescribes that Member States may authorize former foodstuffs to be used in feed without further treatment or used for other purposes without further treatment—avoiding their disposal as waste in a landfill—if such former foodstuffs have not been in contact with raw material of animal origin and the competent authority is satisfied that such use does not pose a risk to public or animal health. Other restrictions on their uses in feed are laid down in Article 22 of Regulation No 1774/2002, replaced by Regulation No 142/2011.

Num 31

Act. Council **Directive 2006/112/EC** of 28 November 2006 on the common system of value added tax (VAT).

Description. This Directive establishes the common European system of value added tax (VAT).

Implication analysis. The EU VAT legislation may hinder the cooperation between retailers and food banks. According to this directive, VAT must be paid on food intended for donation (Article 16). The basis for the VAT on the products is the purchase price at the moment of donation adjusted to the state of those goods at the time when the donation takes place (Article 74). Problems arise from the legal uncertainty as to whether the value of food that is close to its "best before/use by" date is countable/taxable (therefore a VAT-able base) or small or zero (no VAT to be paid). In some Member States⁹ no VAT is paid when food is donated to food banks because these States interpret Article 74 in such a way that the value of the donated food close to its "best before/use by" date is small or zero. The EU VAT Committee agreed on 7 December 2012 on new guidelines to harmonize the application of the Directive across EU Member States.¹⁰ The Directive specifically interprets the content of Articles 16 and 74 on food donation.¹¹ However, it does not address the grey area of the value of donated food close to its "best before/use by" date.

⁹ DA, ET, DE, FR, HU, IR, IT, LT, NL, PL, PT, SL, UK.

¹⁰ The Commission has published all the guidelines of the VAT Committee at http://ec.europa.eu/taxation_customs/taxation/vat/key_documents/vat_committee/index_en.htm

¹¹ "Donation of foodstuffs to the poor, made by a taxable person free of charge, shall be treated as a supply of goods for consideration, in accordance with the first paragraph of Article 16 of the VAT Directive, unless this donation meets the conditions laid down by the Member State to be considered as a gift of small value within the meaning of the second paragraph of Article 16 of the VAT Directive. In cases where such a donation must be treated as a supply of goods for consideration, the taxable amount shall be the purchase price of the goods (or of similar goods or, in the absence of a purchase price, the cost price of the goods) donated, adjusted to the state of those goods at the time when the donation takes place, as provided for in Article 74 of the VAT Directive.

Num 53

Act. Council **Directive 85/374/EEC** of 25 July 1985.

Description. Afterwards amended by Directive 1999/34/EC, this Directive is the first act of a Community policy on producer liability. Under its terms each producer is responsible for defective products.

Implication analysis. Article 7 of Directive 85/374/EEC exempts the manufacturer from liability if the product is not “distributed by him in the course of his business.” This applies to food business operators who transfer surplus food. Therefore, ordinary product liability rules as set by the Directive and by national tort law do not apply to donated food. This means that the Directive promotes the optimization of food use.

Cluster 5: Legislation with more than one implication for food waste

Num 1

Act. **Communication (2014) 398** final. Towards a circular economy: A zero waste programme for Europe (*Communication (2014) 397 is part of the Circular Economy package that was withdrawn by the EC in March 2015 to present a more ambitious package within the end of 2015. However the Communication was a major reference during the development of the present work and experts evaluated the CE package as positively addressing FW reduction*).

Description. Turning waste into a resource is part of “closing the loop” in circular economy systems that aim to stimulate innovation in recycling and reuse, limit landfilling, reduce loss of resources, and create incentives for behavioral change.*Implication analysis.* Communication (2014) 398 emphasizes that up to 30% of all food produced around the world is lost or wasted. To address specific waste challenges the Commission proposes that Member States develop national food-waste prevention strategies and endeavour to ensure that food waste in households and the manufacturing, retail/distribution, and food service/hospitality sectors is *reduced* by at least 30% by 2025 (see p. 12). Moreover, its content referring recycling, reuse and landfilling limitations links this Communication also to *management*.

Num 2

Act. **Communication (2014) 397** final, Brussels, 2.7.2014 (As Communication (2014) 398 also Communication (2014) 397 is part of the Circular Economy package that was withdrawn by the EC in March 2015. The Communication was a major reference during the development of the present work and experts evaluated the CE package as positively addressing FW reduction.

Description. The aim of Communication (2014) 397 is to promote the transition of the EU into a circular economy, boost recycling, secure access to raw materials, and create jobs and economic growth. The Communication pursues this aim by setting ambitious targets and provision tools to achieve and monitor them. The proposal is presented as part of the circular economy package.

Implication analysis. The main elements of Communication (2014) 397 with direct implications for food waste *management* and *reduction* include:

- The definition of “food waste” (among other terms) in Directive 2008/98/EC.
- The requirement for Member States to ensure separate collection of bio-waste by 2025.
- The establishment of a framework for Member States to collect and report levels of food waste across all sectors in a comparable way, and the development of national food waste prevention plans aimed at ensuring that food waste in the manufacturing, retail/distribution, food service/hospitality, and household sectors is reduced by at least 30% between 1 January 2017 and 31 December 2025.
- A specification that by 31 December 2017, the Commission shall adopt implementing acts to establish uniform conditions for the monitoring of the implementation of food waste prevention measures taken by Member States.

-
- The phasing out of landfilling by 2025 for recyclable (including plastics, paper, metals, glass, and bio-waste) waste in non-hazardous waste landfills, corresponding to a maximum landfilling rate of 25%.

Num 11

Act. European Parliament **Resolution 2011/2175 (INI)** of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU.

Description. The European Parliament in the Resolution called on the Council and the Commission to declare 2014 the European year against food waste in order to focus the attention of European citizens and national governments on this important topic.

Implication analysis. Although 2014 was not designated the European year against food waste, the Resolution is an awareness-raising initiative that helps to disseminate useful information among European citizens for the *optimization* and more sustainable use of food. Moreover, this act, which exhorts all players to address as a matter of urgency the problem of food waste along the entire supply chain and to devise guidelines for improving its efficiency, is also actively addressed to food waste *reduction*.

Num 13

Act. Commission **Regulation (EU) No 142/2011** of 25 February 2011.

Description. This Regulation substituted Regulation No 197/2006 on transitional measures under Regulation No 1774/2002 as regards the collection, transport, treatment, use, and disposal of former foodstuffs. Regulation No 142/2011 lays down rules:

- a) Regarding animal by-products and derived products not intended for human consumption.
- b) Concerning certain samples and items exempt from veterinary checks at border inspection posts as provided for in Directive 97/78/EC.

Implication analysis. This Regulation contains rules pertaining to the disposal of animal by-products and derived products (Articles 4, 6, 7, 8, et seq.). Then, this Regulation is linked to food waste *management* issues. It also contains restrictions on the use of animal by-products and derived products. These restrictions might contribute to food waste generation.

Num 17

Act. **Directive 2010/75/EU** of the European Parliament and of the Council of 24 November 2010.

Description. This Directive brings together Directive 2008/1/EC (the "IPPC Directive") and six other Directives in a single Directive on industrial emissions. It establishes a permit procedure and lays down requirements, in particular with regard to discharges. This directive covers industrial activities with major pollution potential such as the mineral, chemical, and energy industries, production and processing of metals, waste management, rearing of animals, etc. Its objective is to avoid or minimize polluting emissions in the atmosphere, water, and soil, as well as waste from industrial and agricultural installations, with the aim of achieving a high level of environmental and health protection.

Implication analysis. One of the general principles of Directive 2010/75/EU is to avoid the generation of waste or, if this is not possible, to enhance recovery or disposal to reduce pollution. Thus, it also has possible implications for food waste *reduction*. Moreover, the rule intended to prevent or reduce emissions includes strategies for waste monitoring and *management* measures. Unfortunately, the maximization of energy efficiency, another obligation of these industrial activities, does not involve food waste prevention as a priority (e.g. composting).

Num 26

Act. **Regulation (EC) No1069/2009** of the European Parliament and of the Council of 21 October 2009.

Description. This Regulation lays down health rules as regards animal by-products and derived products not intended for human consumption and repeals Regulation (EC) No 1774/2002 (Animal by-products Regulation).

Implication analysis. This Regulation pertains to the movement, processing, and disposal of animal by-products and derived products, in order to prevent and minimize risks to public and animal health. Thus, the Regulation may restrict the use of certain food by-products. Moreover, it prohibits the feeding to farmed animals of catering waste and kitchen scraps, as well as raw, partially cooked, and cooked meat products in order to control the potential introduction and spread of major exotic notifiable diseases. As a consequence it may imply food waste *generation* and may also contribute to the *management* of these types of products. However, attention is necessary because animal by-products not intended for human consumption are a potential source of risks to public and animal health. Past crises such as bovine spongiform encephalopathy (BSE) and the occurrence of dioxins in feedingstuffs have shown the consequences of the improper use of certain animal by-products. In addition, such crises may also have negative consequences for society as a whole on the one hand, due to their impact on the socioeconomic situation of farmers and industries and on consumer confidence in the safety of products of animal origin, and on the other hand for the environment, not only due to problems of disposal, but also regarding biodiversity.

Num 27

Act. **Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008.

Description. Directive 2008/98/EC lays down measures to protect the environment and human health by preventing or reducing the negative impact of waste generation and management, reducing the overall impact of resource use, and improving the efficiency of such use. It lays down the five-step hierarchy of waste management options, with waste prevention as the preferred option followed by, in descending order, reuse, recycling, recovery (including energy recovery), and safe disposal.

Implication analysis. The Directive does not set specific measures or targets related to food; however, it outlines a clear strategy for the separate collection and treatment of bio-waste, with a view to composting and digestion. It could therefore have an impact on food waste *management*. Furthermore, article 29 requires Member States to develop Waste Prevention Programmes (WPPs). Although these WPPs do not have to address food as specific target, they might lead to food waste prevention. Moreover, considering that the waste hierarchy set out by the Directive may drive the prioritization of prevention across all types of waste, *reduction* (as consequence of prevention) is a possible implication of this legislative act.

Num 43

Act. **Regulation (EC) No 178/2002** of the European Parliament and of the Council of 28 January 2002.

Description. This Regulation lays down general principles and requirements of food law and food safety at Community and national level and establishes the European Food Safety Authority.

Implication analysis. There were important differences in relation to concepts, principles and procedures between the food laws of the Member States. These differences could constrain the free movement of food, create unequal conditions of competition, and affect the functioning of the internal market. By means of this Regulation, the Commission attempted to approximate these principles and procedures so as to form a common basis for measures addressing and managing food and feed. Measures aimed at guaranteeing that unsafe food is not placed on the market have been adopted. The Commission set a high level of health protection as appropriate in the development of food law. Some observers suggested these measures contributing to food waste *generation*. However, selling or donating food even after the best before date is allowed if the product is still safe and suitable for consumption. This decision might imply potential food use *optimization*.

Num 48

Act. Council **Directive 1999/31/EC** of 26 April 1999.

Description. This Directive is also known as the “landfill Directive” because it provides measures, procedures, and guidance to prevent or reduce negative effects on the environment from the landfilling of waste. The Directive sets targets for Member States to reduce the amount of biodegradable waste in landfills by 65% by 2016 from 1995 levels.

Implication analysis. Since food waste constitutes a significant portion of Biodegradable Municipal Waste (BMW), both the reduction targets and the obligation to set up national strategies could affect food waste *management*, and the amount of food waste going to landfills. The landfill Directive does not include binding specifications on methods for disposal of BMW not sent to landfills, a situation that has led most Member States to opt for incineration. This solution does not correspond to the priority action suggested by the food waste pyramid and can be considered as a potential waste of food and resources utilized in the food production.

4.3 EU policy areas with implications for food waste

A common food waste policy has not been established, and food waste is targeted and influenced by various fields including environment, agriculture, health, and economics. By identifying and analyzing the EU policy areas with implications for food waste this section aims to provide a better understanding of the multiple interlinkages among EU policies and between these policies and food waste.

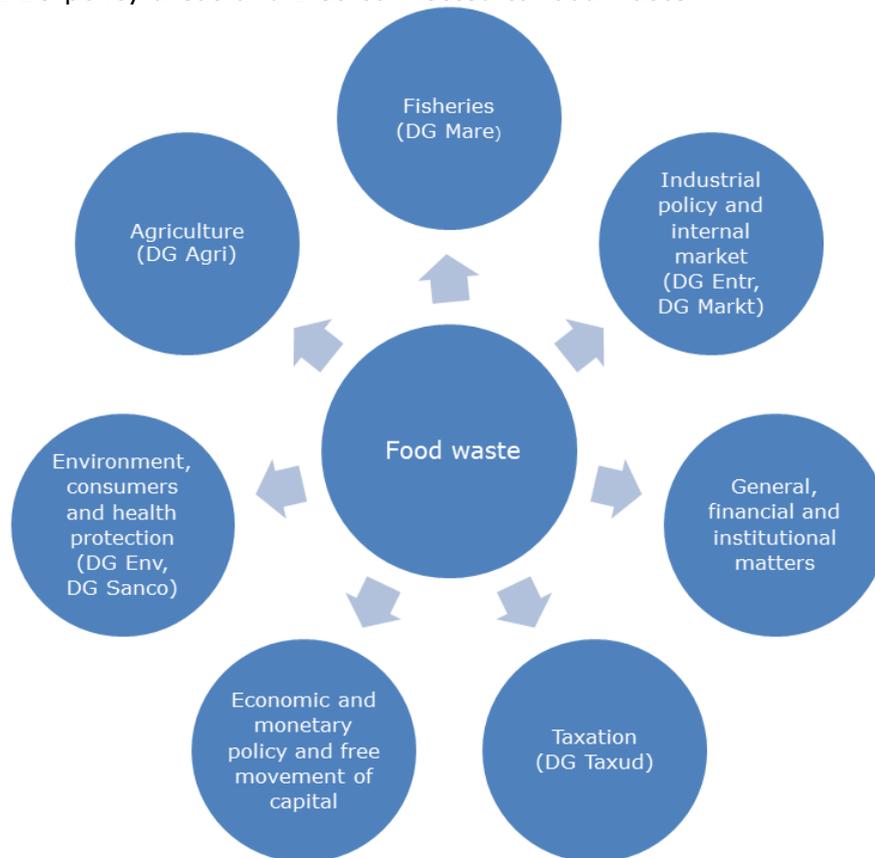
Section 4.3 is divided into two subsections: A) EU policy areas and DGs involved in food waste, and B) Policy measures and topics connected to food waste.

A) EU policy areas and DGs involved in food waste

All subjects covered by EU policies and legislation are organized in twenty chapters and classified in the EUR-Lex database according to the Directory of European Union legislation. In this work, the chapters have been defined as policy (and legislative) areas, each of which is under the responsibility of at least one Directorate-General, which are the departments of the European Commission.

Starting from the EU legislative documents included in the inventory, seven EU policy areas have been identified (Figure 4.2).

Figure 4.2 EU policy areas and DGs connected to food waste



General, financial and institutional matters

This policy area consists of several sub-chapters related to principles, objectives, and tasks of the Treaties; governance and administration of institutions; and financial and budgetary provisions.

Only one legislative act [COM (2011) 571] has been inventoried with implications for food waste. In this case, the act proposes a roadmap to a resource-efficient Europe that cannot be achieved if a significant amount of resources continues to be lost in the absence of any food waste prevention strategy.

Agriculture

The agriculture sector has obvious implications for food. Twenty legislative acts referring to this policy area and impacting on food waste have been inventoried. The specific EU policy is the Common Agricultural Policy (CAP), which is under the responsibility of the Directorate-General for Agriculture and Rural Development (DG Agri).

Partially in conjunction with other DGs dealing with structural policies, DG Agri promotes the sustainable development of Europe's agriculture and tries to ensure the well-being of its rural areas. As seen in the previous sections, this policy area is connected to food waste in terms of both potential generation and potential reduction. For instance, the marketing standards set in the CAP context contribute to food waste generation because edible products can be taken out of the food supply chain for aesthetic reasons (e.g. related to size and shape).

Otherwise, the CAP includes a measure of free distribution that allows and provides incentives for the supply of agricultural products withdrawn from the market to deprived persons.

Several measures and topics in this area are potentially connected to food waste, including agricultural productivity, income and price stability, sustainable management of natural resources, and territorial development. However, the CAP has been recently reformed in order to achieve a more efficient and competitive agricultural system. A sector cannot be efficient if it does not eliminate or cut its waste, which also has a negative economic impact. Thus, food waste prevention should be an integral part of agricultural policies.

Fisheries

Fisheries are another policy area with obvious implications for food. Seven legislative acts refer to this area, which is governed through the Common Fisheries Policy (CFP) by the Directorate-General for Maritime Affairs and Fisheries (DG Mare). The CFP is a set of rules for managing European fishing fleets and for conserving fish stocks.

More frequent implementation of legislation framed in this area resulted in food waste generation. Catch restrictions appear to be a negative measure because they encouraged and sometimes obligated the discard of certain fish species. The recent development of the CFP aims to ensure healthy seas, prosperous coastal communities, a safe and stable supply of seafood, and sustainable fisheries.

Taxation

Only one legislative act referring to this area with implications for food waste has been inventoried [Directive 2006/112/EC]. However, taxation seems to be an area in which strategic changes could lead to effective food waste reduction measures.

This area is under the responsibility of the Directorate-General for Taxation and Customs Union (DG Taxud), which plays an active role in achieving the strategic aims of the European Union. DG Taxud manages, defends, and develops the customs union as part of protecting the external borders of the EU; and encourages changes to tax systems so that they support Community objectives, such as competitiveness and sustainable development.

One measure connected to food waste is VAT (value added tax), which could hamper the cooperation between retailers and food banks. This DG should tackle the tax obstacles that currently threaten the donation of food by companies to food banks.

Economic and monetary policy and free movement of capital

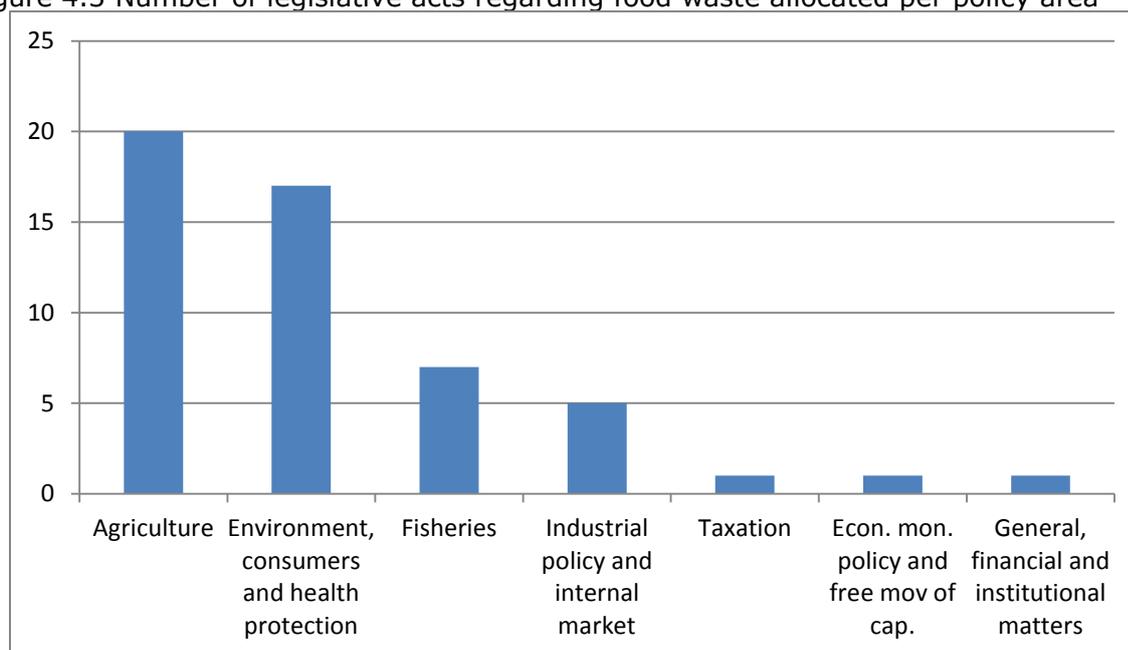
Only one legislative act belonging to this area has been included in the inventory as regards food waste, as this does not seem to be a priority in the integration of EU economies, unlike monetary union and capital movement. However, it would be simplistic to assume that there are no connections between food waste and economic issues. An effective prevention strategy requires the participation of many DGs and policy areas, as well as the coordination of environmental, technical, economic, financial, fiscal, and administrative matters. Indeed, a revision of economic paradigms and production and consumption models would promote caution in resources management, reducing waste occurrence.

Industrial policy and internal market

As in the other policy areas, several Directorate-Generals and Services are involved in this area. The main DGs for these subjects are the Directorate-General for Enterprise and Industry (DG Entr) and the Directorate-General for Internal Market and Services (DG Markt).

Five legislative documents under the responsibility of these DGs have been inventoried regarding food waste. They represent about 10% of the EU laws identified in this study. This is quite a significant and justifiable percentage because one of the objectives of these policies is the promotion of smart, sustainable, and inclusive growth throughout all industrial sectors, contributing to make Europe's economy more competitive, innovative, and resource-efficient. Considering the economic (as well as environmental and social) relevance of food waste on enterprise and the market, any prevention strategy should also involve these areas.

Figure 4.3 Number of legislative acts regarding food waste allocated per policy area



Environment, consumers and health protection

Seventeen legislative acts, representing 32% of all those inventoried, can be placed within this policy area. Considering the characteristics and implications of food waste, it was expected that this policy area involves a large number of EU laws. Food waste clearly impacts the environment, wherein all wasted or discarded products are deposited, and the human health, which can be affected by unsafe food as well as by the type of food waste management.

The main EU administrative departments involved in this policy area are: the Directorate-General for the Environment (DG Env) and the Directorate-General for Health and Consumers (DG Sanco). DG Env aims to protect, preserve, and improve the environment for present and future generations. It is also concerned with the quality of life of EU

citizens. DG Sanco aims to make Europe a healthier and safer place, where consumers can be confident that their interests are protected.

While a zero-risk society is likely only a utopian objective, regulations to reduce and manage risks for consumers are imposed via measures that are sometimes strict. These measures try to ensure food safety to protect and improve public, animal, crop, and forest health. However, if rules are excessively strict, food waste can occur.

B) Policy measures and topics connected to food waste

Within the previous policy and legislative areas, certain topics and policy measures regarding food waste have been identified. These are listed below.

Animal by-products and feedingstuffs

Animal residual flows are considered to be potentially dangerous for human and animal health. Thus, uses of animal by-products are restricted. Policy measures regarding this topic are taken mainly to eradicate or at least reduce the risk of transmission of spongiform encephalopathies (TSEs). To this end, a general ban was imposed on the use of Processed Animal Proteins (PAPs) in the feeding of both ruminants (e.g. cattle and sheep) and non-ruminant animals, including fish and other aquaculture animals. The use of kitchen waste as animal feed is also forbidden.

Under the Commission Regulation (EU) No 56/2013, however, the use of PAPs from non-ruminant animals (e.g. pigs and poultry) in aqua feed has been allowed. Other restrictions on the use of animal by-products may be removed or loosened.

The use of PAPs has been considered a positive measure potentially reducing food waste. Obviously, the production of PAPs must meet legal requirements. According to legislation, PAPs must be derived only from "Category 3," which includes animal by-products classed as low-risk (e.g. carcasses or body parts identified at a slaughterhouse as fit for humans to eat; products or foods of animal origin originally meant for human consumption but withdrawn, not because they are unfit to eat, but for commercial reasons; eggs and egg by-products; and hides and skins from slaughterhouses).

Another potentially positive effect could be a reduction in the use of agricultural commodities (maize, soy) as feed. This could lead to increased availability of these products for human consumption and to reduced environmental pressure resulting from these intensive production systems. However, any further loosening of restrictions should be supported by appropriate studies and scientific tests since the protection of human and animal health must always be the primary goal.

Catch restrictions

Several Regulations implemented in the fisheries policy area include catch restrictions. One of the related measures is named "total allowable catch" (TAC), defined as the quantity that can be taken and landed from each fish stock every year. Each EU Member State is allocated a quota (a proportion of the TAC); thus, when a catch exceeds the limit, the fish have to be discarded. This rule has led to food waste, because the fish thrown back into the sea often did not survive.

However, Regulation (EU) No 1380/2013 introduced the obligation—for all species subject to limitations as well as those subject to minimum sizes in the Mediterranean—to land all catches (Article 15). This measure, called the "discard ban," should reduce food waste, even if some issues are still unclear. The first unclear issue regards the use of the fish after landing if it cannot be marketed. The second regards the exception that the discard ban cannot be applied to species with high survival rates as demonstrated by scientific evidence (Article 15, paragraph 4b). Unfortunately, no such evidence has yet been provided.

Contaminants in food

EU legislation has set Maximum Residue Levels (MRLs) for contaminants in food, which is wasted when these levels are exceeded. MRLs apply to pesticides, medicines, and microbiological contaminants that could threaten food safety for animals and humans.

Food safety must be guaranteed; however, some studies have highlighted potential connections between MRLs and avoidable food waste (Waarts et al., 2011). In particular, the zero tolerance criterion for some substances could lead to food waste due to improving detection methods. Technological innovation makes it easy to find negligible amounts of banned substances. At the same time, however, additional scientific evidence and improved knowledge about the real implications of these substances for human and animal health should be sought to avoid the waste of edible and healthy food.

Eco-label criteria

The eco-label is an EU brand that rewards the best products and services from an environmental point of view, while maintaining high performance standards. The eco-label indicates that the product or service has a reduced environmental impact throughout its entire life cycle.

This brand is also applied to campsite services and tourist accommodation services, which include the provision of food services. However, neither the mandatory criteria nor the optional criteria for the assignment of the eco-label take into account food waste prevention measures. This omission should be addressed in the interest of food waste strategies.

Food information

Food law establishes the rights of consumers to safe food and to accurate and honest information. Labelling helps consumers to make an informed choice while purchasing. However, this information is sometimes unclear. As shown in previous sections of this work and reported in other scientific and informative studies, confusion about the different meanings of "best before," "use by," and "sell by" dates is still a cause of food waste.

Not all consumers know that:

- The "best before" date indicates that the characteristics of a product can change after that date, but the product does not become harmful for human health and can therefore be sold and consumed.
- "Use by," which should appear only on highly perishable food, means that after that date the product could become unsafe for human health and therefore cannot be sold or consumed.
- The "sell by" date, which is intended for stocks to permit inspection, sometimes still appears on packaging, even if unfrequently, thus causing confusion in consumers' minds.

A more uniform and easily understandable date label system could better communicate appropriate information to consumers, contributing to a reduction of food waste.

Free distribution

This measure is supported in the policy area of agriculture, where the recent CAP reform encouraged the free distribution of fruit and vegetables withdrawn from the market to charitable organizations and other establishments like penal institutions, schools, children's holiday camps, hospitals, old people's homes, etc., by paying to the producer organizations 100% (instead of 50%) of the incurred costs.

This free distribution, which could be supported further by non-monetary means such as legislative and/or organizational tools, is an effective measure that should be supported in a food waste reduction strategy.

Hygiene rules

The EU has established hygiene rules regarding food and several other elements of the food supply chain. The main objective is to implement safe procedures to ensure human, animal, crop, and forest health. However, according to literature and expert opinions,

when a rule is excessively binding and disproportionate to real hygiene needs, food waste can occur.

Marketing standards

European legislation establishes general and specific marketing standards for several products. In 2009, the number of specific marketing standards for fruit and vegetables decreased from thirty-six to ten.

This measure allows edible and safe food products that do not meet aesthetic criteria (e.g. size and shape) to be taken out of the food supply chain. Although these products are processable, they are wasted when industry does not use them.

Unfortunately, some operators, including certain big retailers and supermarket chains, establish private standards that can be more negative in terms of food waste generation than the marketing standards laid down by legislation.

Packaging

Although the measures identified for this topic are often designed to reduce packaging waste, they may also be relevant to food waste prevention. These measures stimulate research and innovation that could lead to extended food life as well as to simplified and more readable labels, which have often driven food waste.

Producer liability

Directive 85/374/EEC established the principle of liability without fault, applicable to European producers. When a defective product causes damage to a consumer, the producer may be liable. A product is defective when it does not provide the safety to which a person is entitled. The circumstances taken into account in determining this classification include the following:

- The presentation of the product.
- The reasonable use of the product.
- The time when the product was put into circulation.

However, the Directive also included exemptions releasing producers from liability. One of these exemptions applies to food donation, which could be considered a food waste reduction measure. The rule establishes that a producer is not liable if he proves that the product was not manufactured to be sold or distributed for profit. This should make food donation a better solution than landfilling.

Resource efficiency and waste

This topic includes all legislative and policy measures aimed to increase the efficiency of resource management, by combining economic and environmental needs. Food waste has recently become a subject of great interest, and the need to implement prevention plans is mentioned in several EU legislative documents. In particular, the Commission proposed that Member States develop national food-waste prevention strategies and endeavour to ensure that food waste in the manufacturing, retail/distribution, and food service/hospitality sectors and households is reduced. Until March 2015 - as indicated in the Circular Economy (CE) package - the objective set by the EC was to reduce food waste of the 30% by 2025. The CE package was withdrawn by the EC in March 2015 to present a more ambitious package within the end of 2015.

Statistics

This topic is not directly correlated to food waste generation or reduction; however, it could be a relevant issue. Available statistics on food waste vary from one EU Member State to another because different States use different definitions and criteria. The lack of reliable data affects policy consistency.

VAT

Fiscal measures can be an effective tool in a prevention strategy. However, this work demonstrates that value added tax (VAT) can sometimes be an obstacle to food waste reduction measures, such as food donation.

Representing a percentage of the purchase price, the amount of VAT depends on the market value at the moment of donation. If the product cannot be sold, some countries interpret its price as “zero,” making the tax zero also. Conversely, other EU Member States calculate the purchase price of a product ready to be donated at the same level as the sale/marketing stage. Thus, the VAT is also calculated at the commercial level. This has obvious negative implications and could discourage donation. EU harmonization of the VAT could help to reduce food waste.

4.4 Summary of EU legislation regarding food waste: implications, policy areas, and measures

The information provided in the previous sections is summarized in Table 4.1, which highlights EU legislation regarding food waste. For each legislative act—listed chronologically—the type of implication [FWG (*food waste generation*), FWM (*food waste management*), FWR (*food waste reduction*), and FWO (*food use optimization*)], the legislative and policy area to which it belongs and the specific topic or policy measure impacting on food waste are indicated.

Table 4.1 EU legislation regarding food waste: implications, policy areas and measures

N°	Legislative act	Type of implication				Policy area	Topic/ policy measure
		FWG (1)	FWM (2)	FWR (3)	FWO (4)		
1	COM (2014) 398 final		X	X		Economic and monetary policy and free movement of capital	Resource efficiency and waste
2	COM (2014) 397 final		X	X		Environment, consumers and health protection	Resource efficiency and waste
3	COM (2013) 260 final			X		Agriculture	Hygiene rules
4	Reg n° 56/2013				X	Agriculture	Animal by-products and feedingstuffs
5	Reg n° 1308/2013				X	Agriculture	Free distribution
6	Reg n° 1380/2013			X		Fisheries	Catch restrictions
7	Dec n° 1386/2013/EU			X		Environment, consumers and health protection	Resource efficiency and waste
8	COM (2012) 60			X		Environment, consumers and health protection	Resource efficiency and waste
9	Reg n° 43/2012	X				Fisheries	Catch restrictions
10	Reg n° 44/2012	X				Fisheries	Catch restrictions
11	European Parliament Resolution 2011/2175 (INI)			X	X		Resource efficiency and waste
12	COM (2011) 571 final			X		General, financial and institutional matters	Resource efficiency and waste
13	Reg n° 142/2011	X	X			Agriculture	Animal by-products and feedingstuffs
14	Reg n° 543/2011	X				Agriculture	Marketing standards

N°	Legislative act	Type of implication				Policy area	Topic/ policy measure
		FWG (1)	FWM (2)	FWR (3)	FUO (4)		
15	Reg n° 1169/2011	X				Environment, consumers and health protection	Food information
16	COM (2010) 235 final		X			Environment, consumers and health protection	Resource efficiency and waste
17	Dir 2010/75/EU		X	X		Environment, consumers and health protection	Resource efficiency and waste
18	COM (2010) 384			X		Agriculture	Animal by-products and feedingstuffs
19	Reg n° 849/2010		X			Environment, consumers and health protection	Statistics
20	Dec n° 2009/564/EC	X				Environment, consumers and health protection	Eco-label criteria
21	Dec n° 2009/578/EC	X				Environment, consumers and health protection	Eco-label criteria
22	Dir 2009/28/EC	X				Environment, consumers and health protection	Resource efficiency and waste
23	Reg n° 43/2009	X				Fisheries	Catch restrictions
24	Reg n° 129/2009		X			Agriculture	Resource efficiency and waste
25	Reg n° 163/2009			X		Agriculture	Hygiene rules
26	Reg n° 1069/2009	X	X			Agriculture	Animal by-products and feedingstuffs
27	Dir 2008/98/EC		X	X		Environment, consumers and health protection	Resource efficiency and waste
28	Reg n° 589/2008	X				Agriculture	Food information
29	COM (2007) 136 final			X		Fisheries	Catch restrictions
30	Reg n° 832/2007				X	Agriculture	Animal by-products and feedingstuffs
31	Dir 2006/112/EC				X	Taxation	VAT
32	Reg n° 1664/2006			X		Agriculture	Animal by-products and feedingstuffs
33	Reg n° 1881/2006	X				Industrial policy and internal market	Contaminants in food

N°	Legislative act	Type of implication				Policy area	Topic/ policy measure
		FWG (1)	FWM (2)	FWR (3)	FUO (4)		
34	COM (2005) 666 final			X		Environment, consumers and health protection	Resource efficiency and waste
35	Reg n° 1/2005			X		Agriculture	Hygiene rules
36	Reg n° 183/2005	X				Agriculture	Hygiene rules
37	Dir 2004/12/EC			X		Industrial policy and internal market	Packaging
38	Reg n° 852/2004	X				Industrial policy and internal market	Hygiene rules
39	Reg n° 853/2004	X				Agriculture	Hygiene rules
40	Reg n° 882/2004	X				Agriculture	Hygiene rules
41	COM (2003) 301 final			X		Environment, consumers and health protection	Resource efficiency and waste
42	Dir 2002/99/EC	X				Agriculture	Hygiene rules
43	Reg n° 178/2002	X			X	Agriculture	Hygiene rules
44	Reg n° 2150/2002		X			Environment, consumers and health protection	Statistics
45	Reg n° 999/2001	X				Agriculture	Animal by-products and feedingstuffs
46	Reg n° 1639/2001		X			Fisheries	Statistics
47	Dir 2000/29/EC	X				Agriculture	Contaminants in food
48	Dir 1999/31/EC	X	X			Environment, consumers and health protection	Resource efficiency and waste
49	Reg n° 850/1998	X				Fisheries	Catch restrictions
50	Reg n° 258/1997	X				Industrial policy and internal market	Hygiene rules
51	Dir 94/62/EC			X		Industrial policy and internal market	Packaging
52	Reg n° 315/1993	X				Environment, consumers and health protection	Contaminants in food
53	Dir 85/374/EEC				X	Environment, consumers and health protection	Producer liability

4.5 EU legislation impact assessment

On the basis of the analysis carried out in sections 4.2 and 4.3 a shortlist of thirty-two acts—out of the fifty-three inventoried acts—with larger implications for food waste was identified. These thirty-two legislative acts served as the basis for the development of a survey to assess their impact.

The shortlist of 32 acts includes policy measures related to:

- "Resource efficiency and waste": 11 legislative acts.
- "Catch restrictions": 6 legislative acts.
- "Hygiene rules": 4 legislative acts.
- "Animal by-products and feedstuffs": 3 legislative acts.
- "Contaminants in food": 2 legislative acts.
- "Food information": 2 legislative acts.
- "Free distribution": 2 legislative acts.
- "Marketing standards": 2 legislative acts.
- "Producer liability": 2 legislative acts.
- "VAT": 2 legislative acts.

The types of implications for food waste of the legislative acts (seven of them have double implications) in the survey are structured as follows:

- Food waste generation: 14 legislative acts.
- Food waste management: 7 legislative acts.
- Food waste reduction: 13 legislative acts.
- Food use optimization: 5 legislative acts.

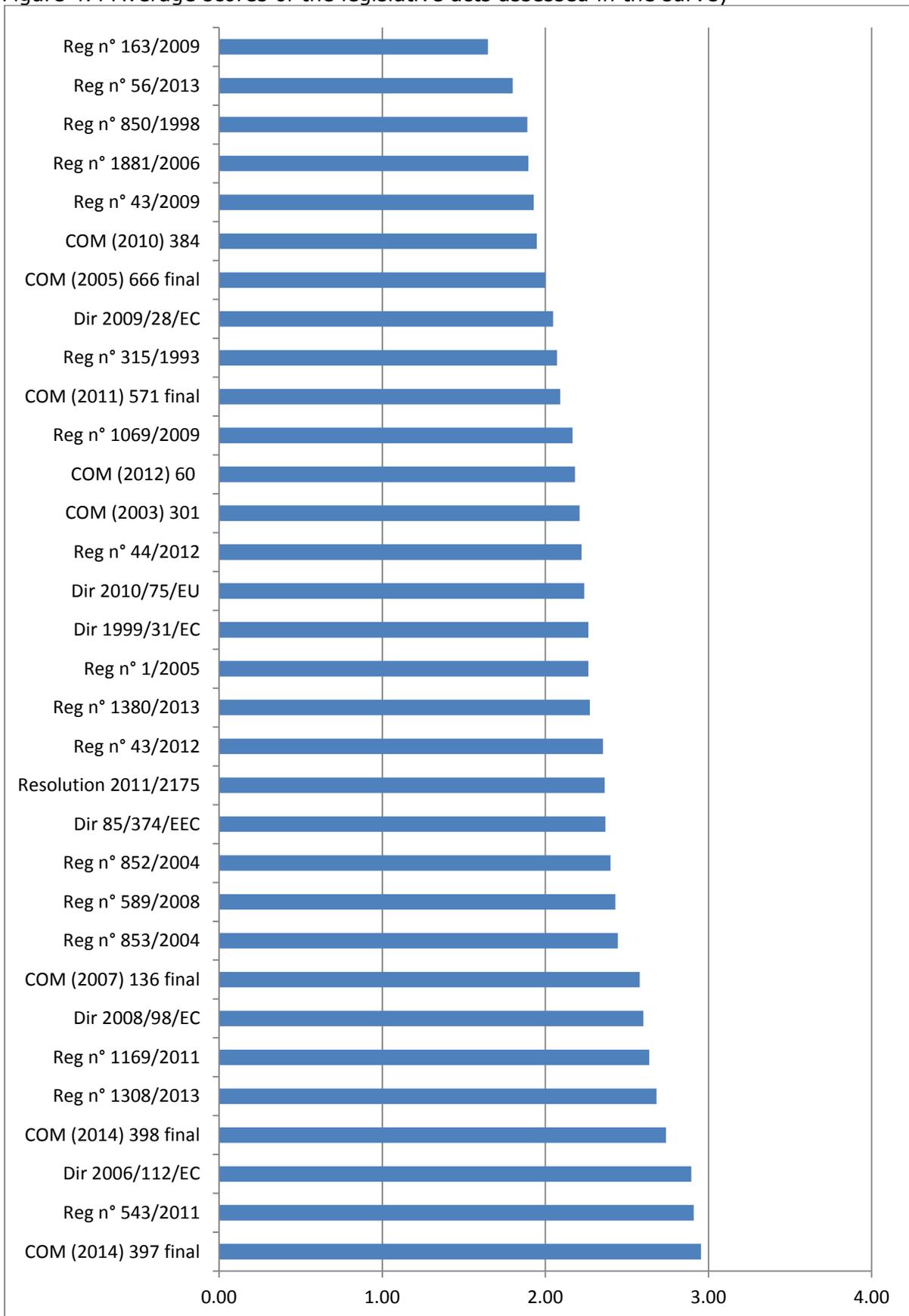
The survey received 26 responses, representing 38% of the 69 recipients. Since respondents had the option to not answer all the questions, the response rate for each question varies from 20% (14 respondents) to 38% (26 respondents) of all recipients.

For each legislative act, the number of respondents for each score was multiplied by the score value. These sub-sums were added together and divided by the number of respondents who assessed the legislative act in question. This gives an "average score" for each legislative act. The ranked results are illustrated in Figure 4.4.

The average scores were distributed as follows:

- No legislative acts were considered to have large to very large impacts on food waste (scores between 3 and 4).
- 26 legislative acts were considered to have small to large impacts on food waste (scores between 2 and 3).
- Six legislative acts were considered to have very small to small impacts on food waste (scores between 1 and 2).
- No legislative acts were considered to have no to very small impacts on food waste (scores between 0 and 2).

Figure 4.4 Average scores of the legislative acts assessed in the survey



(0: No impact; 1: Very small impact; 2: Small impact; 3: Large impact; 4: Very large impact)

The distribution of the eight legislative acts with average scores higher than 2.5 regarding their policy areas, policy measures, and type of implication for food waste is illustrated in the figures below.

Figure 4.5 Legislative acts—having from small to large impact on food waste—by policy area

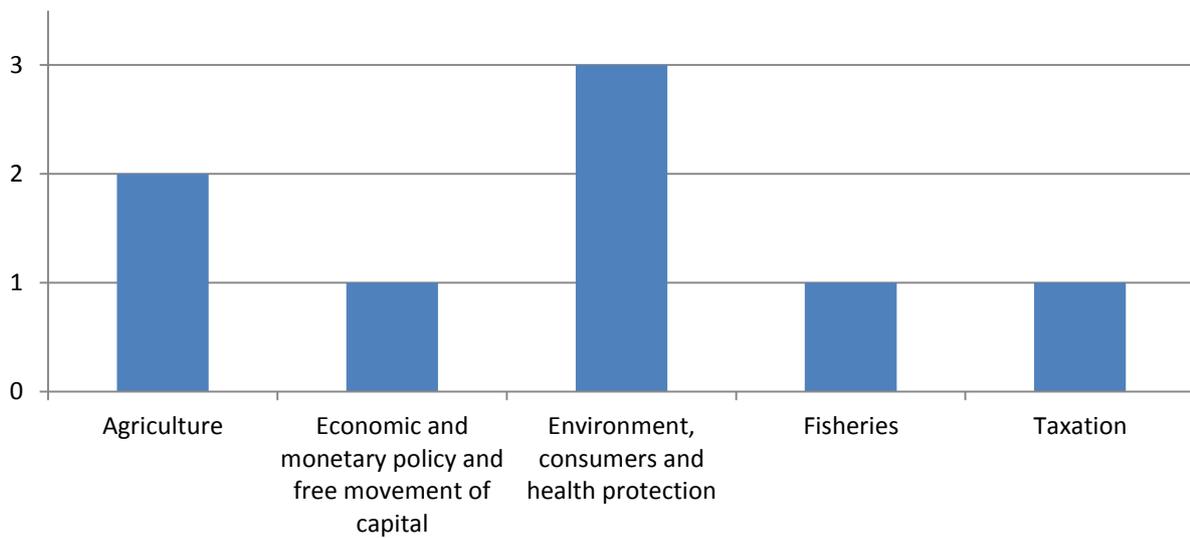


Figure 4.6 Legislative acts—having from small to large impact on food waste—by policy measure

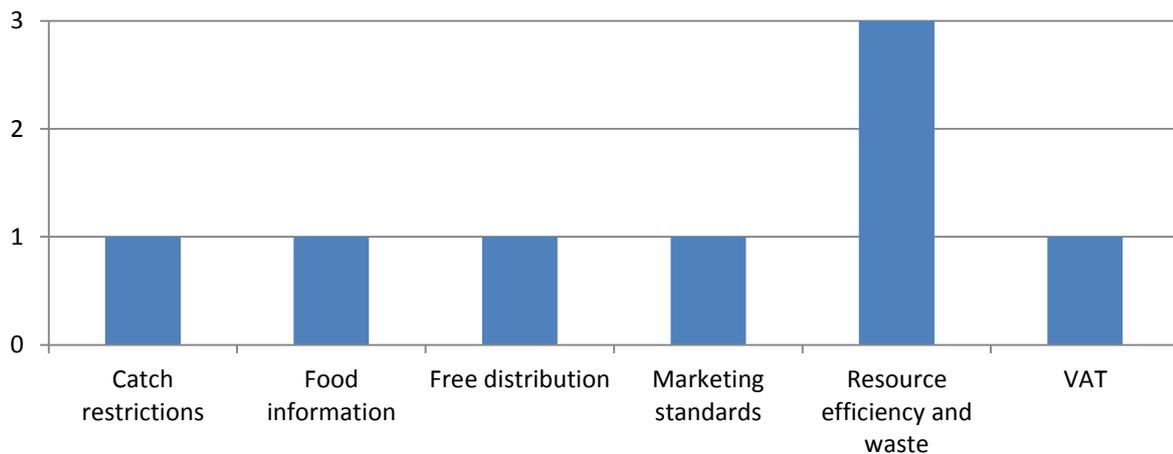
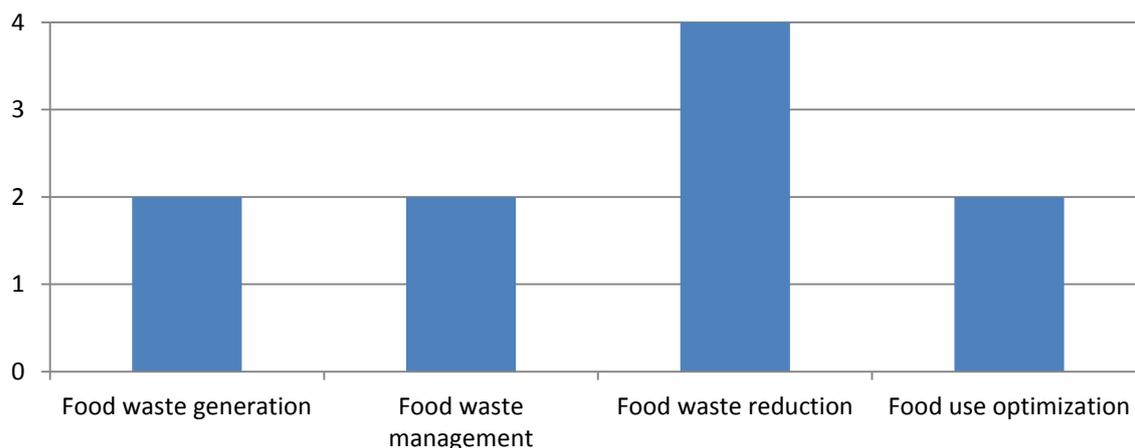


Figure 4.7 Legislative acts—having from small to large impact on food waste—by type of implication for food waste



Note: Two of the legislative acts have implications for both food waste management and food waste reduction.

The policy measures with the largest influence on food waste according to the assessment (upper half of the ranking list) covered by these 16 legislative acts include "Food information," "Free distribution," "Marketing standards," "Producer liability," and VAT." Therefore the assessment suggests that such policy measures may impact food waste to a greater degree than others.

In this context, a legislative act is considered "positive" if it contributes to food waste reduction or food use optimization and, conversely, is "negative" if it contributes to food waste generation. According to these definitions, the most positive and negative five acts have been identified.

The five legislative acts having the largest positive impacts on food waste include:

- i. Communication (2014) 397 final. Proposal for a Directive of the European Parliament and of the Council amending Directives 2008/98/EC on waste, 94/62/EC on packaging and packaging waste, 1999/31/EC on the landfill of waste, 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment. Communication (2014) 397 is part of the Circular Economy (CE) package, that was withdrawn by the EC but that was a major reference during the development of the present work. Experts evaluated the CE package as positively addressing FW reduction. In March 2015 the CE package was taken up to the level of the Vice - President Tiemmermans and therefore out of the direct influence of the different Directorate Generals. The Commission considered the CE package as one of the major tool to transform Europe into a more competitive resource-efficient economy and to reduce food waste. It was decided to withdraw the 2014 version in order to present a new and more ambitious circular economy package within the end of 2015.
- ii. Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax.
- iii. Communication (2014) 398 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions towards a circular economy: A zero waste programme for Europe. Communication (2014) 398 is also part of the Circular Economy package: all the considerations made for Communication (2014) 397 are valid also for this Communication.
- iv. Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organization of the markets in agricultural products and repealing Council Regulations (EEC) No 922/72, (EEC) No 234/79, (EC) No 1037/2001 and (EC) No 1234/2007.

v. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

Three of the top-five “positive” acts focus on “resource efficiency and waste” (see Table 4.2 below). Of these, the two most recent acts—Communication (2014) 397 final and Communication (2014) 398 final—take into account food waste as an urgent problem and propose that Member States develop national prevention strategies to ensure that food waste in the manufacturing, retail/distribution, and food service/hospitality sectors and households is reduced by at least 30% by 2025. As previously mentioned, the CE package was withdrawn because the EC is working to present a new and more ambitious circular economy package within the end of 2015.

The other two legislative acts (Dir 2006/112/EC and Reg No 1308/2013) provide the following policy measures—which may be very effective—to combat unnecessary food waste: taxation, in particular VAT, to be used as a tool to encourage donation of unsold products; and the free distribution of food, which is simplified by removing or reducing bureaucratic, legal, and economic constraints. In this case, the Common Market Organization of fruit and vegetables in the CAP context should be taken as a model.

The results agree in suggesting that these acts would provide an even larger contribution to food waste reduction if they were more specific and/or mandatory with regard to certain aspects of food waste.

Table 4.2 Top-five legislative acts, type of implication, related policy area, and specific topic and policy measure

Rank	Legislative act	Num	Type of implication	Policy area	Topic/ policy measure
I	COM (2014) 397 final	2	FWM and FWR	Environment, consumers and health protection	Resource efficiency and waste
II	Dir 2006/112/EC	31	FUO	Taxation	VAT
III	COM (2014) 398 final	1	FWM and FWR	Economic and monetary policy and free movement of capital	Resource efficiency and waste
IV	Reg n° 1308/2013	5	FUO	Agriculture	Free distribution
V	Dir 2008/98/EC	27	FWM and FWR	Environment, consumers and health protection	Resource efficiency and waste

Note: FWM means Food Waste Management; FWR means Food Waste Reduction; FUO means Food Use Optimization

The worst-five legislative acts having the largest negative impacts on food waste include:

- i. Commission Implementing Regulation (EU) No 543/2011 of 7 June 2011 laying down detailed rules for the application of Council Regulation (EC) No 1234/2007 with respect to the fruit and vegetables and processed fruit and vegetables sectors.
- ii. Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC, and Commission Regulation (EC) No 608/2004.
- iii. Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin.
- iv. Commission Regulation (EC) No 589/2008 of 23 June 2008 laying down detailed rules for implementing Council Regulation (EC) No 1234/2007 regarding marketing standards for eggs.

- v. Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs.

All of these acts potentially imply food waste generation. Three of them are classified in the "Agriculture" policy area, one in "Environment, consumers and health protection," and another in "Industrial policy and internal market." Two of these five policy legislative acts include policy measures regarding "Food information," another two regard "Hygiene rules," and another pertains to "Marketing standards." Consequently, Food information, Hygiene rules, and Marketing standards are the areas in which strategic changes could provide a significant contribution to food waste reduction.

Table 4.3 Worst-five legislative acts, type of implication, related policy area, and specific topic and policy measure

Rank	Legislative act	Num	Types of implication	Policy area	Topic/ policy measure
I	Reg n° 543/2011	14	FWG	Agriculture	Marketing standards
II	Reg n° 1169/2011	15	FWG	Environment, consumers and health protection	Food information
III	Reg n° 853/2004	39	FWG	Agriculture	Hygiene rules
IV	Reg n° 589/2008	28	FWG	Agriculture	Food information
V	Reg n° 852/2004	38	FWG	Industrial policy and internal market	Hygiene rules

Note: FWG means Food Waste Generation

The policy measures covered in the 16 legislative acts with the smallest influence on food waste include "Animal by-products and feedstuffs" and "Contaminants in foodstuffs." The assessment therefore indicates that such policy measures may impact food waste to a lesser degree than others.

Policy measures represented in both the upper and the lower halves of the ranking list include "Catch restrictions," "Hygiene rules," and "Resource efficiency and waste." Therefore, the assessment suggests that the scope and purpose of such policy measures to a large extent determines their potential impacts on food waste.

The legislative acts in both the upper and the lower halves of the ranking list cover all four types of implications for food waste. However, whereas the distribution between "Food waste generation," "Food waste management," and "Food waste reduction" is relatively equal between the upper and lower halves of the ranking list, legislative acts with implications for "Food use optimization" seem to have greater potential impacts on food waste.

4.6 Challenges and opportunities

The comments received through the survey suggested a number of challenges and opportunities to ensure a larger contribution to delivering a significant reduction of food waste by making existing legislation more efficient. These indications are not supposed to provide an exhaustive review of the potential changes and adjustments, but are meant to highlight some of the major challenges and opportunities for intervention.

The main comments are summarized and grouped in the six areas below. The references to different legislative acts indicate the context in which the comments were made.

Targets, strategies, and plans for food waste reduction

The plans and the goals included in the strategies should be translated into regulations and directives in order to stimulate all Member States to take action towards food waste reduction (COM (2014) 398). Moreover, the development of national food waste prevention plans should be made binding for all Member States (COM (2014) 398; COM (2014) 397).

Measures should be sector and segment specific and take into consideration the different needs and characteristics of the food chain stakeholders. Particular attention should be paid to consumers since they could play a crucial role in food waste reduction; however, it is rather difficult to address them through appropriate measures and incentives leading to behavioral change.

Specific measures and targets for food waste in Directive 2008/98 could help to ensure a larger contribution to food waste reduction. Clear and suitable baselines for food waste reduction targets should be introduced along with agreement on definitions and data measurement and evaluation.

The inclusion of on-farm losses in the reduction targets might represent an additional opportunity to address food waste.

Establishing harmonized conditions for monitoring the implementation of food waste prevention measures taken by Member States could be challenging. As a supporting measure, better reporting on food waste data from all Member States should be made mandatory, and specific requirements and incentives for reporting should also be included.

Increased focus on food waste reduction

Economic incentives addressing prevention have positive effects on food waste reduction while food waste management often has little effect (COM (2014) 397). As indicated in the food hierarchy, prevention should take priority in food waste interventions while food waste management practices (e.g. separate collection, composting, and anaerobic digestion) should represent a clear alternative if prevention measures are not effective.

Food waste prevention at the source has to be prioritized over animal feeding and redistribution (e.g. to charitable organizations for human consumption or as animal feed). Animal feed and redistribution are not solutions to prevent food waste, since they are in place once food waste has already been generated (Reg No 56/2013; Reg No 1308/2013; COM (2010) 384; Reg No 163/2009).

It should also be taken into account that food safety and animal health (risk minimization) should be given priority over food waste prevention (Reg No 56/2013; COM (2010) 384; Reg No 188/2006).

Information and consumer communication

All policy measures should be enforced by education campaigns and communication initiatives making extensive use of social media.

The “use by” and “best before” dates are considered major drivers of food waste in the retail and household sectors since different indications might lead to confusion among consumers. Information should be made more clear, harmonized, and prioritized to avoid the risk of an information overload. The harmonization of dates and labels in particular represents an important opportunity for food waste reduction. Some “best before” dates

not linked to food safety and hygiene are excessively limiting and might lead to food waste (Reg No 1169/2011).

Changes in consumer behavior

Retailers and consumers often expect higher cosmetic standards for fruits and vegetables compared to general marketing standards. Awareness raising campaigns (e.g. the campaign “Inglorious Fruits and Vegetables” from Intermarché, the third largest French supermarket chain) are necessary to help consumers make informed choices (Reg No 543/2011).

Marketing standards based on aesthetic criteria and size standards should be removed or at least compensated for by standards based on their nutrition and safety. Within this framework an important opportunity is represented by voluntary agreements between large supermarket chains to review marketing standards (Reg No 543/2011).

Redistribution of food for human consumption

Proper networks and structures for the redistribution of food for human consumption should be encouraged, potential barriers analyzed, and regulation(s) modified accordingly (Reg No 1308/2013). However, it should also be noted that rules making it easier to redistribute food to charitable organizations might also lead to negative effects on food waste because they might favor overproduction, challenging the capacity of charitable organizations to redistribute the food they receive (Reg No 1308/2013).

Another option is to pass the liability of donated food (after “best before” and “use by” dates) to consumers, by using existing models such as the Good Samaritan legislation (Dir 2006/112).

It should be ensured that VAT rules for donating food to charitable organizations are implemented in a harmonized way in all Member States, thus making it easier for international companies to apply the same policies to food donations throughout the EU (Dir 2006/112).

Abandoning the VAT for donated food rather than setting the value of donated food (e.g. close to “best before” dates) to zero (or close to zero) might provide a fair and positive message and incentive to donate food (Dir 2006/112).

Fisheries

The Common Fisheries Policy reform changed rules on fish catch and discards. Fish had to be discarded when smaller than landing size and/or the quota for the species had already been reached. The obligation to land all catches of species, known as the *discard ban*, is gradually coming into force. This process will end in 2019. However, some exemptions for banned species and for highly survivable species are prescribed (House of Lords, 2014).

Within this topic, the main challenges for the Commission, governments, and authorities are the risk that fish waste at the sea will become waste on land, and the lack of knowledge on how to identify highly survivable species (those fish that survive when thrown back into the sea after capture). New technologies allowing species-focused fishing should be developed and implemented.

Coordination

Food waste is multilevel and multisectoral because different legislative and policy subjects impact on it. DG Sanco became the Directorate-General responsible for reduction and prevention strategies. Considering the findings in section 4.3, where several connections between food waste and policy areas (and related DGs) were highlighted, a strong collaboration involving the other Directorates-General seems to be a prerequisite to implement and manage an effective policy.

Review of EU legislation and policies with implications on food waste

According to the FUSIONS Document of Work, the purpose of sub-task T3.1.1 is to inventory and analyze "legislation and policies impacting food waste generation at EU level and in individual Member and Associated States covered by the FUSIONS consortium, by drawing on existing literature and publicly available information". The review must also take into account foreseeable revisions of waste prevention policies within the timeframe of the FUSIONS Project.

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